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THE CARNEGIE MAYA IV

CARNEGIE INSTITUTION OF WASHINGTON
THEORETICAL APPROACHES TO PROBLEMS, 1941-1947



COMPILED AND WITH AN INTRODUCTION BY
JOHN M. WEEKS



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THE CARNEGIE MAYA

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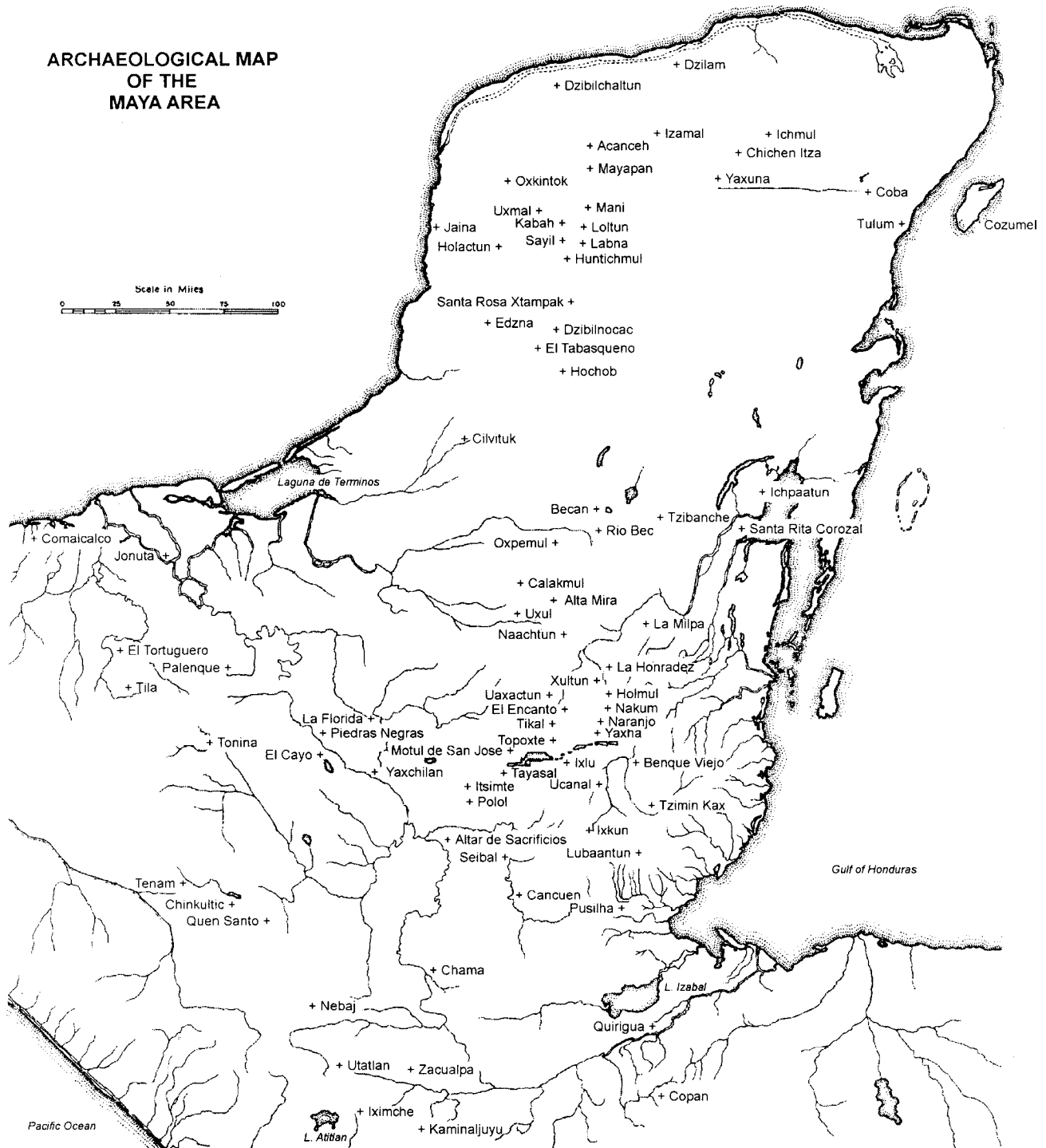
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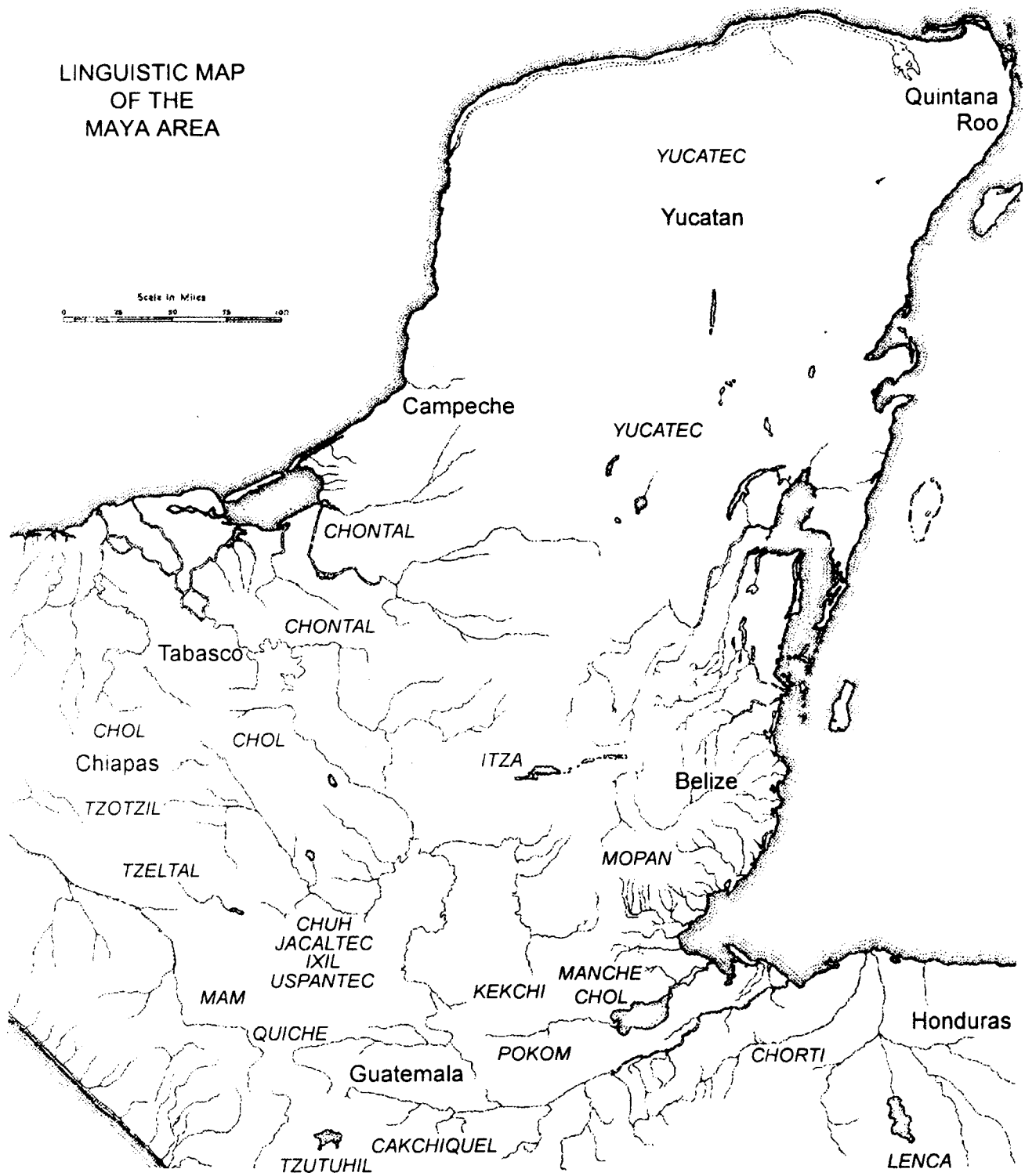
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ARCHAEOLOGICAL MAP OF THE MAYA AREA



LINGUISTIC MAP
OF THE
MAYA AREA

Scale in Miles
0 25 50 75 100



PREFACE

This volume includes approximately 360 authored reports pertaining to the ancient and modern Maya and submitted by a variety of researchers from the Carnegie Institution of Washington (CIW) between 1913 and 1958. Originally published in the annual *Year Books* of the Carnegie Institution of Washington, these reports provide basic information about the ancient and mid-twentieth-century Maya people of the southern Mexican states of Campeche, Chiapas, Quintana Roo, Yucatán, and the parts of Tabasco and Veracruz, as well as Belize (British Honduras), Guatemala, and the western parts of Honduras and El Salvador (Figures 1 and 2). Although much of the material has been presented in formal monographs, most of these monographs have a highly limited distribution and there still remains much information never published outside the *Year Book* series. We seek to remedy this situation because not only are the reports presented in this volume interesting in their own right as archaeological research, but more importantly they document the accomplishments and achievements of

the most significant anthropological project ever undertaken to examine a single anthropological or archaeological region.

One result of the CIW Maya program was the development of the standard image of Maya civilization, one that overwhelmingly emphasizes the activities and achievements of the upper class. As promoted vigorously by Sylvanus G. Morley and J. Eric S. Thompson, the Maya as people *sui generis* were believed to be extraordinarily spiritual, knowledgeable priests, unconcerned with material matters in a life without wars; a people of philosophers and astronomers. The image was of a series of elaborate ceremonial centers, each supported by an extensive slash-and-burn agricultural system. The principal inhabitants of these centers were the kings and priests and their retainers. The farmers lived scattered around the nearly vacant centers. The privileged concentrated on intellectual and religious concerns, carved monuments with esoteric content, and lived relatively peaceful existences. The farmers supported the residents of the centers with food and were

mobilized by the rulers for occasional large construction projects. In return, the priests interceded with the deities to provide an orderly world with predictable rain and abundant crop yields. Archaeologists emphasized not only the elite aspects of ancient Maya society, but also the Classic period in the Petén lowlands of northern Guatemala and in adjacent Belize and Mexico. It was here that the major settlements were located.

Since the closing of the CIW Maya program, research in southern Mesoamerica and northern Central America has increased in frequency, scope, and significance. Universities are now primary sponsors of archaeological, linguistic, and ethnographic research in the Maya region. This research has resulted in major revisions to the scholarly understanding of Maya civilization. New studies of hieroglyphic inscriptions and breakthroughs in decipherment have detailed the history of previously anonymous Maya rulers and their interactions. These inscriptions have revealed a political landscape of the Maya lowlands indicating that the Maya world was not peaceful, but strained by endemic warfare.

The current scientific vision of the ancient Maya is the result of new methodological approaches in archaeology, epigraphy, iconography, history, history of religions, history of art, physical anthropology, and linguistics, which have been integrated into interdisciplinary projects along with other scientific fields, such as biology and astronomy. An increasing willingness by archaeologists and other scholars to contextualize their research within more sophisticated theoretical and methodological constructs as a result of improved academic training in anthropology has produced an emerging understanding and appreciation of the nature and magnitude of Maya civilization.

But it is only fair to recognize that these approaches are firmly rooted in the work of the CIW Mayanists. Our greatest debt is to the archaeologists, ethnographers, linguists, ethnohistorians, and other researchers of the CIW who provided the information published in this volume. The CIW Maya program in southern Mesoamerica is no more; it has been modified, expanded, and replaced by several generations of new scholars. Its legacy, however, stands as a firm foundation upon which an entire field of study was based.

During the course of assembling this volume, we have had the good fortune to find many individuals

who enthusiastically have supported this project. Grateful acknowledgment is made to Ms. Patricia Craig and Ms. Tina McDowell at Carnegie Institution of Washington headquarters in Washington, D.C., for granting permission to reprint the contents of this volume.

The support of Mr. H. Carton Rogers, Vice Provost and Director of Libraries, University of Pennsylvania Libraries, and Dr. Richard M. Leventhal, Williams Director, University of Pennsylvania Museum of Archaeology and Anthropology, are acknowledged with thanks. The facilities and collections at the Museum Library and the Van Pelt–Deitrich Libraries at the University of Pennsylvania have been a continuing source of relevant material and essential services.

At the Peabody Museum of Archaeology and Ethnology, Harvard University, Ms. India Spartz, Senior Archivist, and Ms. Patricia H. Kervick, Associate Archivist, provided us with an updated version by Victoria H. Swerdlow and Sarah R. Demb of the collection description for the archaeological archives of the Carnegie Institution of Washington.

Dr. Christopher Winters, Bibliographer for Geography, Anthropology, and Maps, University of Chicago Libraries, helped us to obtain a complete inventory of field notes for ethnographic and linguistic studies by Robert Redfield, Sol Tax, Manuel J. Andrade, and Norman McQuown, reproduced in the *Manuscripts on Middle American Cultural Anthropology*, *Manuscripts on American Indian Cultural Anthropology*, and *Microfilm Collection of Manuscripts on Cultural Anthropology*.

At the University Press of Colorado, Darrin Pratt, Director, undeterred by the size of the manuscript, has ably guided this volume through its development from a concept, through a manuscript, and finally, as a published book. As our editor, he caught numerous problems and brought them to our attention.

We appreciate the support and, at times, feigned curiosity about the project from Greg Borgstede, Elin Danien, Charles Golden, Christopher Jones, Simon Martin, Sharon Misdea, and Jeremy A. Sabloff.

Mary Ricketson Bullard, Padanaram, South Dartmouth, Massachusetts, sparked the idea for this volume thirty years ago during a drive from Guatemala City to the ruins of Zaculeu, Department of Huehuetenango, in northwestern Guatemala. This book is for her.

INTRODUCTION

Between 1914 and 1958 the Carnegie Institution of Washington (CIW) sponsored extensive archaeological and other investigations in the Maya region of southern Mexico and northern Central America. During these four decades, the CIW was the leader in the field, with monetary and human resources that no university or other research program could match, then or since. The more than 300 publications produced by CIW researchers remain an important, indeed essential, resource for modern scholars. Some, however, have characterized the CIW program as barren and narrow, without any real anthropological purpose. Although there is some truth to such harsh critiques, these criticisms miss the essential contribution of the CIW. From its beginning, the program was designed to study a single civilization in its entirety from a variety of perspectives. This research produced significant results that have had an impact unmatched by more recent efforts.

Information about the inception, progress, and results of various CIW-sponsored research programs was published annually in the CIW's *Year Books*. Each

annual report followed a standard format. An introductory essay prepared by the chair of the Historical Division summarized the general activities and accomplishments of the past year. This essay was usually followed by a series of authored reports on a variety of specific research projects. A final section would detail recent CIW monographs or other series, followed by a bibliography of publications by CIW researchers. These reports are remarkable for a number of reasons. They often provide detailed justification for projects and permit the reader to monitor the development of a research concept or direction. Many reports provide detailed information and primary data that was not subsequently published in other formats. This is especially true of the extensive ethnographic, linguistic, ethnohistorical, and some minor archaeological investigations carried out under the Maya research program. Taken as a body, these reports present the history of the CIW investigation of Maya civilization as well as the development of Maya archaeology as a scientific discipline.

This volume makes available once again the annual reports of the CIW Maya program, issued between 1914 and 1958, and originally published in the *Year Books* series. For historically minded readers the main contribution of these reports lies in the information presented on the development of Maya studies, from the unsystematic pursuit of adventurers, explorers, and crackpots, to the professionalization and formalization of a scientific pursuit. For the specialist in Maya archaeology and ethnography, these reports represent essential primary data not otherwise easily available.

MAYA STUDIES BEFORE THE CARNEGIE INSTITUTION OF WASHINGTON

When the CIW entered the field in 1914, the anthropological study of Mesoamerica was still at a formative stage. Although many fundamental changes in Mesoamerican research occurred during the middle and late nineteenth century, most of these contributions continued, as in earlier periods, to be textual and derived from research libraries (see later discussion on Brasseur de Bourbourg and Förstemann). Fieldwork remained of minor importance. Prior to this period, published archaeological studies were few and, almost without exception, were the work of Mexicans, such as the explorers of the Classic-period Maya site of Palenque (e.g., Guillermo Dupaix, José Antonio Alzate y Ramírez, Antonio de León y Gama, and José Fernando Ramírez). Contributions of another kind came from the great travelers, led by John L. Stephens and Frederick Catherwood, or from historians (e.g., William H. Prescott, Manuel Orozco y Berra, and Hubert H. Bancroft).

A lively debate had raged earlier between scholars who tended to promote indigenous American civilizations and others who considered the American cultures barbaric, a legacy from the anti-indigenists of the Age of Reason. From the 1840s there began in the United States, under the leadership of Lewis Cass, Albert Gallatin, and others, a revisionist and anti-Romantic movement stemming from William Robertson's important *The History of America* (1777), which held that the aboriginal Americans were incapable of ever having reached a high cultural level. Those who shared these blatantly racist views wished to apply to Mesoamerican cultures the same conclusions they had come to in their work on North American Indians.

By the 1880s the direction of Mesoamerican studies was altered significantly by a group of European and American scholars whose collective research would show that only after the careful study of all evidence could one hope to arrive at accurate conclusions without getting lost in a maze of speculation.

This is when modern archaeological science began in Mesoamerica. These studies, which continued to appear until 1910, are diverse. There are bound together intellectually by their "scientific positivism," a realism that rejects general theorizing in favor of a more empirical approach (Bernal 1980:144). These scholars spurned the blanket theorizing that had dominated the field about indigenous superiority or inferiority, whether the roots of indigenous culture lay within the American continent or outside it, and other views that passed judgment on the Spanish conquest and subsequent colonization. What was required was an objective study of facts. They tried, with the limited means at their disposal, to give fresh impetus to archaeology and, with it, ancient history and ethnology. They did not do much archaeological fieldwork, and what fieldwork they did employed techniques that had not advanced very far. Yet, even these efforts, added to their documentary research, brightened the outlook for genuine understanding.

A theme of fundamental importance to these textually based scholars was the decipherment of Maya hieroglyphic script. Little progress had been made in deciphering Maya hieroglyphs even though stelae, or sculptured stone monuments with inscriptions, had been known and identified as writing since the sixteenth-century Spanish conquest. The French abbé Charles Etienne Brasseur de Bourbourg, who discovered in the archives of Madrid parts of the Codex Madrid and Diego de Landa's *Relación de las cosas de Yucatán* (1864), was the first of the so-called armchair Mayanists. Following Brasseur de Bourbourg were Léon Louis Lucien Prunol de Rosny, Cyrus Thomas, Ernst Förstemann, J. T. Goodman, and Charles P. Bowditch, who were to make important studies in deciphering Maya glyphs over the next fifty years. Although Rosny had by 1876 deciphered the directional glyphs, working with the Madrid and Paris codices, and Cyrus Thomas demonstrated in 1882 that inscriptions were read by pairs of columns from the upper left, the most important epigrapher was Ernst Förstemann, librarian of the Elector of Saxony in Dresden. His library held the Codex Dresden, already published fifty years earlier by Edward King, Lord Kingsborough, in his massive nine-volume *Antiquities of Mexico* (1830–1848). Working with Brasseur's edition of Landa and the calendrical treatises of the Mexican Juan Pío Pérez, Förstemann (1886) succeeded in making remarkable advances in the decipherment of the glyphs. The great Mayanist J. Eric S. Thompson (1950:30) later praised Förstemann's accomplishments, noting that "[i]n 14 years this brilliant man had wrestled the secret of the Maya calendar from codex and stelae; he stands shoulders above any other student of Maya hieroglyphs." Remarkably, Förstemann

did not become interested in the Maya script until he was fifty-eight. In the twenty-six years that remained of his life, he concentrated on the Codex Dresden, extended his studies to include other codices as well as stelae, and succeeded in understanding fundamental characteristics of the calendrical system. Förstemann was able to show that the Maya had used place notation to base 20, and he also deciphered the signs for zero/completion. With these principles established, he unraveled the Venus tables in the Codex Dresden and, taking Landa's "calculation of ages" based on the katun, demonstrated the existence and structure of the Long Count.

The structure of the Maya calendar was now clear, but it had not yet been correlated with the Christian calendar to anchor it firmly in time. This final step was taken by Joseph T. Goodman, a West Coast newspaper owner who in 1897 published an important article describing the identification of the glyphic variations in the heads on Maya numerals. This work opened the way for the decipherment of the calendar in both the codices and on the stone monuments. It was, however, still necessary to correlate these dates with the European calendar to enable the two chronologies to be synchronized. The method discovered by Goodman, with a few subsequent minor modifications by J.E.S. Thompson, is the one most commonly used today. The Maya were now part of dated history and Goodman's correlation survives in its essentials in modern scholarship (Houston, Chinchilla Mazariegos, and Stuart 2001).

Quite apart from armchair Mayanists, such as Brasseur de Bourbourg, Förstemann, and Goodman, were the great field explorers of the period. The travels and field observations of John Lloyd Stephens, a special diplomatic envoy to Central America appointed by President Martin Van Buren, and Frederick Catherwood, an illustrator, inspired a diverse group of investigators, including Frenchman Désiré Charnay, who first photographed Maya ruins (Charnay 1888). Despite the value of these descriptive contributions, field archaeology in the Maya area during the last two decades of the nineteenth century was dominated by the valuable work of Alfred P. Maudslay and the photographs of Teobert Maler.

Maudslay, from a middle-class English family active in machine engineering, was educated at Cambridge (Graham 2002). He was a colonial administrator in the South Pacific when he visited Guatemala on a holiday in 1881 and first saw Quiriguá and Copán. He resigned from colonial service and continued to explore the region, documenting archaeological sites and monument inscriptions between 1883 and 1894. Equipped with paper and plaster of Paris for making molds, surveying instruments, and a large-plate cam-

era, Maudslay explored Tikal, Palenque, and Chichén Itzá after Quiriguá and Copán. One of his earliest visits was to Yaxchilán, from where he removed several sculptures to the British Museum (*Guide* 1923). The scientific result of Maudslay's work was the five magnificent oversized volumes published as the *Biología Centrali Americana* (1889–1902). Illustrations published in these works, for the first time, enabled scholars to study and compare detailed reproductions of the original inscriptions. Maudslay's skillful work remains unmatched; he elevated the study of Maya archaeology to a new level of competence. Photographs and drawings made from his casts by Annie Hunter remain primary research tools, and today his casts are often in better condition than the original monuments (Tozzer 1933:64; Bernal 1980:147). Without his work much of the progress made in the decipherment of Maya glyphs would have been impossible. His work has been, and continues to be, useful to many generations of scholars in the field of ancient Maya epigraphy and philology.

Austrian Teobert Maler later published many photographs of Maya hieroglyphic inscriptions (1901, 1903, 1908), which were taken in the Maya lowlands at the same time as Maudslay's work in the late 1880s and 1890s. Maler conducted extensive archaeological explorations along the Usumacinta River and published his results in a series of folio-sized monographs sponsored by the Peabody Museum of American Archaeology and Ethnology at Harvard University.

Elsewhere in Guatemala, German Adolph Bastian (1882) wrote about the sculptures at Santa Lucia Cotzumalhuapa in the southern highlands of Guatemala. Another German with many years' residence in Guatemala was Karl Sapper (1895). A geographer and ethnographer, Sapper classified Mayan ruins into architectural types and related those to ethnographic and linguistic areas. At the turn of the century Thomas W.F. Gann (1900) surveyed and excavated in British Honduras, and Edward H. Thompson (1897a, 1897b, 1898, 1904), the American Consul in Yucatán, dredged the Sacred Cenote at Chichén Itzá and excavated at other sites in northern Yucatán, including Labná, Loltún, and Uxmal. Nevertheless, the explorations of Maler, Bastian, Sapper, Gann, E. Thompson, and others remained superficial explorations, providing descriptions of various ruins but little of the data modern archaeologists are accustomed to collecting.

Although most research was being undertaken by individuals, some institutions were beginning to assemble teams to conduct investigations. The best known was that of the Peabody Museum, which began its archaeological monograph series in 1888 with a benefaction from Charles P. Bowditch. The first large-scale excavation of a Maya site sponsored and published

by the Peabody was excavated by Marshall H. Saville (1892) at Copán in western Honduras. Although based on innovative research and recording techniques, Saville's report, and the reports of his contemporaries, continued to be largely descriptive rather than analytical. Similarly, Alfred M. Tozzer at Tikal (1911) and Nakúm (1913), Raymond E. Merwin at Holmul (Merwin and Vaillant 1932), and Edgar Lee Hewett and Sylvanus G. Morley at Quiriguá (Hewett 1912, 1916; Morley 1913) also wrote descriptive treatments of their investigations in reports that Gordon Willey and Jeremy Sabloff (1980:62) characterize as "virtually modern in the accuracy of recording and completeness of presentation." These archaeologists, however, also attempted to derive a chronological system for their sites, based upon the excavation of buildings in relation to hieroglyphic inscriptions and Mayan calendrical dates.

By the end of the nineteenth century, the lure of the ancient Maya began to attract other explorers who were no longer merely the curious travelers of earlier times, but who approached the status of professional archaeologists. For example, G. Byron Gordon (1898b) deduced that a mound in the Ulúa Valley of western Honduras was the result of two superimposed construction episodes, a simple concept today but revolutionary in its day. Investigators in the Maya area began to sense the importance of material found in situ and the need to understand not only what an artifact is in itself, but the relationship it had to the rest of the environment. However inadequate this fieldwork may appear to us now, it was more modern than work that was then being carried out elsewhere in Mesoamerica (Bernal 1980:148).

With the published information already available, Eduard Seler, the most versatile researcher of the late nineteenth and early twentieth centuries, was able to demonstrate the essential cultural unity of Mesoamerica. He traveled widely throughout Mexico and Guatemala, gathering data and objects, and did almost no excavating; the vast bulk of his work was done at home in Berlin. For example, in a book closely linked with artifacts, *Die alten Ansiedlungen von Chaculá im Distrikt Nentón des Departements Huehuetenango der Republik Guatemala* (1901), Seler achieved an interpretation of the culture based essentially on archaeological objects (Seler 2003). He wrote masterly commentaries to Bernardino de Sahagún's Codex Florentine, the tonalamatl of Aubin, and the Borgia, Vatican B, and Fejérváry Mayer codices, which were perfectly reproduced thanks to funding provided by the Duc de Loubat. Seler went deeply into the indigenous calendar and religion, investigating not in broad outline but in the finest detail.

The majority of the early-twentieth-century studies mentioned above were produced by individuals,

but some show the start of a new way of approaching archaeology: namely, by enlisting the help of scientific bodies that produced journals or publications in series devoted more or less exclusively to the anthropological aspect. *American Anthropologist*, which has devoted many pages to Mesoamerican research, began publication in the United States in 1888, the same year the Peabody Museum began its archaeological series. Significant too were the publications of the Field Columbian Museum of Chicago, the American Antiquarian Society in Worcester, Massachusetts, and the Smithsonian Institution in Washington, D.C.

Many European publications came into existence at this time such as the *Journal of the Royal Anthropological Institute of Great Britain and Ireland* (1870), *Globus* (1861), *Zeitschrift für Ethnologie und Urgeschichte* (1869), *Petermann's Mitteilungen* (1886), *Internationales Archiv für Ethnographie* (1888), and *Journal de la Société des Américanistes de Paris* (1895). All of these journals are still being published except for *Journal de la Société des Américanistes de Paris*. They contained a wealth of seminal work by European scholars such as Erwin P. Dieseldorff, Ernst W. Förstemann, Ernest T. Hamy, Edouard de Jonghe, Walter Lehmann, Alfred P. Maudslay, Karl Sapper, and Eduard Seler. All of this publication activity signaled the beginnings of the professionalization of archaeology, which would make it possible for trained personnel to count on educational centers, institutes, and the other support networks of science (Bernal 1980:155).

The intellectual climate of late nineteenth-century Mesoamerican archaeology prior to the CIW work on the Maya project paralleled that of North America in general, but its emphasis was somewhat different. Mesoamerican archaeology was heavily influenced by the Old World, but more so by individual Europeans than by general intellectual or archaeological developments there (Willey and Sabloff 1980:57; Givens 1992a:78). Like that of the American Southwest, Mesoamerican and Mayan archaeologists were at an essentially "pre-problem" stage of development. The lack of questions to be tested in the field can be traced to archaeological training at universities of that time; there was little emphasis on constructing a well-ordered plan of investigation, let alone more profound theoretical guidance. These archaeological pioneers were still genuine functionalist archaeologists, however crude their methodology may have been. In this respect at least, they had a clear idea of where they were going. Other differences between Mesoamerican archaeology and that of the United States developed from the richness and grandeur of the remains as well as the existence of indigenous writing systems. These systems became the focus for both European and North American scholars; their eventual decipherment would one

day allow Middle Americanists to date sites more accurately, propose a means to correlate Mayan and Western chronologies, and to reconstruct the historical aspects of ancient civilizations.

Perhaps the best evaluation of the state of Mesoamerican studies at the beginning of the twentieth century was provided by German scholar Walter Lehmann (1909:2–3), who writes:

In spite of the variety of all these sources of information, in spite of the tremendous amount of documents already collected, we find so many errors prevailing, so much incertitude, such a number of prejudiced views, that we must take it as a warning to be modest and prudent in our assertions. It would be premature to attempt in the following work anything like a final answer to any of the questions discussed. It can hardly be too often repeated that the study of historic and prehistoric Mexico is still in its cradle; that it is necessary first of all to do away with a number of constant errors, and that what remains afterwards of well-ascertained fact is absolutely insufficient to give anything like a connected view of the former state of things in Mexico. Indeed, that will be impossible as long as systematic excavations are not made throughout the country. The whole land teems with antiquities. In former times archaeologists were satisfied with picking up potsherds and terra-cotta figures, without any heed as to their actual provenance. The word Mexico on a label appeared to be more than enough. It was only later on that travelers began to note down carefully the place where every object was found, and gave us by this means the possibility of classifying types according to localities. I may quote here, among others, the names of Désiré Charnay, Alphonse Pinart, Hermann Strebel, Eduard Seler, and Alfredo Chavero. Seler, for instance, has been enabled, in the course of his numerous and extensive travels, to define a number of well-marked local types, the spreading of which is not without importance for commercial history.

This call for increased methodological rigor and careful contextual study was about to be answered by the most ambitious proposal for archaeological research in the history of Americanist studies.

CARNEGIE INSTITUTION OF WASHINGTON BEGINS THE STUDY OF THE MAYA

The Carnegie Institution of Washington, a private, nonprofit organization engaged in basic research and advanced education in biology, astronomy, and earth sciences, was founded by the industrialist and phi-

lanthropist Andrew Carnegie in 1902 and incorporated by Act of Congress in 1904. Carnegie, who provided an initial endowment of \$10 million and later gave additional millions, conceived the institution's purpose as "to encourage, in the broadest and most liberal manner, investigation, research, and discovery, and the application of knowledge to the improvement of mankind." From its earliest years, the CIW has been a pioneering research organization, devoted to fields of inquiry that its trustees and staff consider among the most significant in the development of science and scholarship.

The work of the CIW has been carried on by its staff in various departments and divisions located in many geographical regions. In California are located its Mount Wilson Observatory and the physical and solar laboratories at Pasadena (1904), and the Department of Global Ecology (2002) and Department of Plant Biology (1903) near Stanford University. In Washington, D.C., are found the Geophysical Laboratory (1905) and the Department of Terrestrial Magnetism (1904). In Baltimore, near Johns Hopkins University, the CIW has established its Department of Embryology (1914). Several other research programs have been closed. The activities of the oceanographic laboratory (1904–1939) on Loggerhead Key, Tortugas, west of Key West, Florida, have been terminated, as have those in the Meridian Astrometry program (1905–1938) carried on in Albany, New York; the Desert Botanical Laboratory (1903–1929) at Tucson, Arizona; the Department of Genetics (1904–1971) in Cold Spring Harbor, New York; the Department of Marine Biology (1904–1939) at Woods Hole, Massachusetts; and the Department of Economics and Sociology (1904–1916) and the Nutrition Laboratory (1907–1946) in Boston (Lester 1941: 26).

Although the CIW is known today for its innovative research programs in the natural and physical sciences, it sponsored important anthropological studies from its founding. When the CIW began to plan for research in support of archaeology in 1902, it convened a panel of three of America's leading anthropologists—William H. Holmes, Franz Boas, and George A. Dorsey—to determine what work should be undertaken. Their report, which was published in the first *CIW Year Book*, was revealing. Although recognizing that there was important work to be done around the world, they advised the CIW to concentrate on American archaeology as well as on vanishing tribes, particularly those in the Americas. Until then, only a few studies had been done in the Americas, and the rise and fall of American civilizations remained largely unknown (Trefil and Hazen 2002:202).

The report was not implemented, however, and the institution instead supported a variety of pro-

grams, including ethnographic and linguistic research in the South Pacific (Churchill 1911a, 1911b, 1912, 1916, 1917; Finley and Churchill 1913; Ivens 1918, 1921) and among the Plains Indians of North America (Dorsey 1904a, 1904b, 1905, 1906), as well as archaeological investigations in northwestern North America adjacent to Siberia (Jochelson 1925, 1928) and in southwestern Asia (Müller 1906–1920; Pumpelly 1905, 1908; Ward 1910).

In 1912 CIW president Robert S. Woodward and the Board of Trustees appropriated funds to expand its activities in anthropology and archaeology. W.H.R. Rivers, Albert E. Jenks, and Sylvanus G. Morley were invited to submit competing plans for a large-scale program of anthropological research. These plans were issued in a remarkable volume published in 1913, *Reports Upon the Present Condition and Future Needs of the Science of Anthropology*. Rivers, a key figure in the development of British social anthropology, stressed the need for ethnographic research among fast-disappearing native peoples, and supported Oceania as the area that would best combine important theoretical problems with a significant relationship to the origins of American indigenous culture. Jenks, founder of the Department of Anthropology at the University of Minnesota, had published *The Bontoc Igorot* in 1905, a major study of the Philippines, and proposed a world clearinghouse for anthropology in the form of a research laboratory devoted to studies in ethnic heredity, environment, and amalgamation. The final report by Morley was equally ambitious but more specific in its details (see Chapter 1.1). Following a documentary and archaeological review of the history of the Maya and their civilization, he outlined the need for a twenty-five-year excavation program at a major site, presenting information on Chichén Itzá to justify its selection. He included details of labor resources, climatic problems, health, and restoration of architectural remains, together with illustrations and a selected bibliography.

Morley was well prepared for the task of implementing his ambitious Maya program. Born in Chester, Pennsylvania, in 1883, he developed an early interest in the ancient peoples of the Americas. Following his training as an engineer at the Pennsylvania Military Academy (now Widener University in Chester, Pennsylvania), he entered Harvard in 1904 and came under the influence of the distinguished scholars Frederic Ward Putnam and Alfred M. Tozzer. His first trip to Mexico in 1907 served as an introduction to a large number of the more important Maya sites, including Chichén Itzá and Uxmal. Practical experience in field surveying was gained in an apprenticeship under Edgar Lee Hewett of the School of American Archaeology (now School of American Research) in the McElmo Canyon region of southwestern Colorado and adja-

cent portions of the Four Corners region. From 1908 to 1914 he worked closely with Hewett in various capacities, making trips to the Maya archaeological sites of Uxmal, Tulúm, Quiriguá, and Yaxchilán. He gradually came to see little future in his position with Hewett, as Morley harbored an ambitious plan to excavate Chichén Itzá, a site in Yucatán that had not been investigated with any level of intensity since Tozzer's initial work in 1903. Morley realized that Hewett's School of American Archaeology and its modest budget could never afford such a grand plan.

On January 16, 1914, before the proposals had even been submitted to the review committee, Morley was informed that his plan was selected over the proposals by Rivers and Jenks, and he was appointed Research Associate in Middle American Archaeology (Brunhouse 1971:50–51; Givens 1992a:88). From the beginning, the Mexican authorities agreed in principle to the CIW investigations, and a more definite proposal concerning “a large archaeological project covering a long term of years at the ruins of Chichén Itzá” was to be prepared (Givens 1992a:89). And the final plan for the Chichén Itzá Project gained quick approval from the Mexican authorities since Mexico had just enacted severe antiquities laws barring trafficking in stolen artifacts and the CIW had no interest in funding museums to house collections. Unfortunately, Morley's plan to excavate the Maya site of Chichén Itzá was delayed by the Mexican Revolution and World War I.

Morley quickly adjusted his plans, devoting himself instead to “the preparation of a work containing descriptions and decipherments of all known Maya texts . . . as a ready and standard reference on Maya chronology.” Early in 1914 he completed *An Introduction to the Study of the Maya Hieroglyphics* (Morley 1915), a general work designed to make the subject comprehensible to the layperson (Stuart 1992:31). This landmark study is still in print (2001). When the United States entered the war against Germany in 1917, Morley served as a secret agent for the U.S. government. He continued his archaeological studies in northern Central America while collecting military intelligence until the end of the war.

Following the completion of this work, Morley concentrated his efforts largely on deciphering hieroglyphic inscriptions. The first major report from the CIW archaeological program was Morley's *The Inscriptions at Copán* (1920). In this enormous work, he provided interpretations of the calendrical matter on the monuments, even those with badly eroded inscriptions. Morley also spent time exploring areas of Central America other than Mexico, discovering and mapping Maya sites and deciphering inscriptions, until he was able to obtain permission and funding to finally begin

a major excavation of Chichén Itzá in 1923 (Trefil and Hazen 2002:205–206).

But he realized that many more ruins must lie undiscovered in the vast Petén region of northern Guatemala and he spent the next decade searching for them. Morley advertised a bounty of \$25 in gold to any chiclero (chicle tapper) who reported to him an unknown site with inscribed monuments. This unofficial program led to the discovery of Uaxactún, among other ruins (Coe 1993:127). Morley published the results of his Petén explorations in the multivolume *The Inscriptions of Petén* (1937–1938), for which he was awarded the Loubat Prize in 1943. This text established the general pattern for most Maya text treatments of the time (Stuart 1992:31). Thus, Morley gradually built a relative chronology for the Maya lowlands based on the time spans of the dates found at sites throughout the region. He was responsible for many noteworthy breakthroughs, including his pioneering work on the Supplementary Series, the string of glyphs including lunar data that follows Initial Series dates, and certain period-ending glyphs. Morley's contributions, although demanding some corrections in light of later work and discoveries of missing fragments, remain among the most productive efforts ever made in the gathering of dated Maya texts for scholars. His work of basic identification and recording of monumental hieroglyphic inscriptions has since been continued by Ian Graham at the Peabody Museum. Graham has done more than any other person since Morley to save the fragile written record of the ancient Maya from destruction by looters, harsh weather, and acid rain. Since 1975 he has published these inscriptions in a series of folio volumes titled the *Corpus of Maya Hieroglyphic Inscriptions*. The ultimate goal of the project is to document all Maya inscriptions.

In 1924 following the upheavals of the World War I, Morley resumed the task of recruiting a team of young archaeologists for a massive investigation of the ancient Maya at Chichén Itzá. Archaeological employment with the CIW was a choice assignment at a time when salaried positions in archaeology were rare. No CIW archaeologist ever had to coordinate his research with an academic schedule, for they never taught; nor did they have to spend time preparing proposals for uncertain funding, for CIW support was almost limitless. None of them had to devote time or energy to negotiating excavation permits with governments, for CIW had long-term agreements. Staff artists were available in the field and at CIW headquarters, and the archaeologists were guaranteed publication.

Few of the archaeologists Morley would recruit had advanced degrees in anthropology, including Morley himself (Black 1990b:355). The research teams at Chichén Itzá and Uaxactún included Monroe Amsden,

Frans Blom, John S. Bolles, Jean Charlot, J. O. Kilmartin, Paul S. Martin, Ann Axtell Morris, Earl H. Morris, Harry E.D. Pollock, Edith B. Ricketson, Oliver G. Ricketson, Karl Ruppert, Edwin M. Shook, A. Ledyard Smith, Robert E. Smith, Gustav Strömsvik, and George C. Vaillant. It is said that A. Ledyard Smith and Robert E. Smith were recruited for the Uaxactún dig by Oliver Ricketson at the bar of the Fly Club, one of the dining clubs at Harvard University. Harry E.D. Pollock was another Fly member. Strömsvik, who later directed the project at Copán, was a Norwegian sailor who had jumped ship in Progreso, Yucatán, and began his career at Chichén Itzá repairing CIW trucks. Edwin M. Shook started his career as a draftsman, and Tatiana Proskouriakoff as a staff artist in Washington, D.C. Several others, including Monroe Amsden, Carl E. Guthe, Samuel K. Lothrop, Earl H. Morris, Oliver G. Ricketson, George C. Vaillant, and Robert Wauchope, were former fieldworkers at Pecos Pueblo in Arizona under the supervision of Alfred V. Kidder. This core group of archaeologists would establish themselves as among the leading Mayanists for many decades.

Field research in the Maya area at the beginning of the twentieth century was considerably different and more complex than it is today. Informal accounts of fieldwork (E. Lothrop 1948; S. Lothrop 1961; Shook 1990; J.E.S. Thompson 1963; Wauchope 1965b; Willey 1988f) describe the difficulties in planning, as well as implementing, major field programs. For example, at the beginning of the century transportation was difficult. Some railroads existed and there were roads used by oxcarts for short distances outside of larger towns. Field travel, however, was usually entirely by mule or by bearers. There was a lack of reliable, or even unreliable, maps. When work began at Uaxactún in 1926, there was not even a supply of water. Everything, including workers, equipment, and provisions, had to be transported up the Belize River in small boats and on muleback for several days through the jungle. Buildings had to be constructed and crops planted for both men and mules. Shipments from New Orleans had to be planned months in advance, calculating for the needs of the camp on their scheduled date of arrival, and packaged so that they could be loaded on mules. One of the fundamental changes has been the improvement in living and health conditions. Before World War II almost all travelers in the tropics experienced multiple infections of malaria and recurrent episodes of dysentery. Cures that took months in the first half of the of the twentieth century are accomplished in days by modern medicine. John Owens, director of the second expedition of the Peabody Museum, who died of fever at Copán in 1891 and is buried in the Great Plaza at Copán, was probably the only archaeologist who died on the job. Yet, several, including Morley and Ricketson,

probably shortened their lives as a result of illnesses contracted in the field.

Excavations were carried out at Uaxactún and Chichén Itzá in the late 1920s and early 1930s. According to the thinking at the time, Maya culture, in the Classic period as it is known today, peaked at two main centers: the more ancient in the Petén lowlands, called the Old Empire, and the more recent in the Yucatán peninsula, called the New Empire. Morley did well to select to study Uaxactún and Chichén Itzá as the most representative centers of the two eras. In addition, he had already shown that Uaxactún possessed the earliest inscribed date then known, the one on the famous Stela 9 discovered by him on May 6, 1916.

THE UAXACTÚN PROJECT

Uaxactún is a moderate-sized center in the southern lowlands located just forty kilometers to the north of the much larger Tikal. Morley selected it as the first of three sites for investigation in part because in the 1920s the earliest known dated stela in the lowlands was located there and because the dated monuments indicated that this site had had a long occupation. Intensive archaeological excavations were carried out at Uaxactún for many years, first by Frans Blom in 1923, then under the direction of Oliver G. Ricketson from 1926 to 1930, and finally under A. Ledyard Smith and Robert E. Smith from 1931 to 1937. The study of Uaxactún was probably the most important archaeological project in the Maya area until the University of Pennsylvania Museum's field research at Tikal in the late 1950s and early 1960s.

In contrast to the Chichén Itzá Project with its emphasis on architectural reconstruction, the Uaxactún Project was a scientific success, giving the first full picture of the rise and fall of a Classic Maya site, which is still useful and valid today. With the publication of the major monographs describing research at the site between 1937 and 1955, archaeological knowledge about the ancient Maya, particularly the elite, expanded dramatically. The Uaxactún Project solidified general understanding of facets of elite culture that had already begun to be established (Sabloff 1990:39; 1991). In the realm of architectural surveys and excavations, research at Uaxactún and elsewhere showed a clear pattern of construction and use of space, particularly in the Classic period. The architectural reconstruction drawings by Proskouriakoff (1946) of Structure A-V and other buildings brought the sterile ruins to life. Several methodological innovations at Uaxactún have become standard in current field research. The trenching and dismantling of architecture as developed Oliver Ricketson and, later,

A. Ledyard Smith, at Uaxactún, produced a wealth of information and an intellectual legacy that continues to be felt, perhaps most strongly through its establishment of a baseline ceramic chronology (R. Smith 1955). For example, Robert Smith's testing for stratified refuse deposits remains one of the most widely applied methodologies in Maya archaeology (Black 1990b:354), as does A. Ledyard Smith's partially successful attempts to correlate dated monuments to architectural phases.

THE CHICHÉN ITZÁ PROJECT

The second important site to be explored and partly reconstructed by the CIW under Morley's direction was Chichén Itzá. Work began in 1924 and had a number of objectives that were later summarized by Alfred V. Kidder (1930b:96). He writes:

The Chichén Itzá Project has differed from most archaeological undertakings in the New World in that from its inception Dr. Morley has striven for three definite objectives over and above the usual single one of recovering specimens and information. These may be stated as follows: to conduct the work in a manner calculated to create a feeling of confidence by the Mexican government and people in the good faith of foreign scientific agencies; to handle the site in such a way as to make a permanent record of the artistic achievement of the Maya; and to develop Chichén Itzá as a focal point for correlated researches.

Kidder continues with detailed explanations of how these aims were achieved and what problems were met along the way. It is unfortunate that these ideals are not now pursued and that in Mexico some see as unacceptable even accurate reconstructions that give the public a chance to appreciate something of their country's ancient art (Bernal 1980:173–174). The Chichén Itzá Project, despite seventeen years of research, remains an archaeological enigma. Michael Coe (1993:128), a Mayanist from Yale University, has suggested that most of the archaeologists spent their time under Morley putting fallen buildings back together for the edification of tourists and very little time reconstructing a cultural picture of the ancient Maya at Chichén Itzá. Still, the CIW work at Chichén Itzá left a legacy of impressive and properly reconstructed ruins, detailed architectural descriptions, accurate reconstructions, and a large corpus of sculptured monuments, panels, and glyphic texts. Several innovative programs were initiated at Chichén Itzá. The successful negotiation of contracts between the CIW and the Mexican government were based on two unprecedented stipulations: that the CIW would return all artifacts to the country of origin after analysis and, in

the case of Chichén Itzá, it would preserve from additional damage any architectural remains that were uncovered. J. O. Kilmartin's map of the site ranks as one of the first professional maps of a Maya site. The chronological presentation by Earl Morris of the excavation and reconstruction methods used at the Temple of the Warriors between 1925 and 1928 is probably the first adequate discussion of methods from a Maya site. An experimental milpa was maintained at Chichén Itzá to investigate soil exhaustion as a major factor for the diminishing decline of yields (Morley 1947:148), and during the seventeen years the CIW carried on archaeological investigations at Chichén Itzá, a free medical clinic was maintained for the Yucatec Maya of the surrounding region (Morley 1947:31).

THE TAYASAL PROJECT

The third early Maya excavation program was conducted at Tayasal. In 1921 and 1922 Carl E. Guthe conducted excavations at Tayasal, a large island in Lake Petén Itzá in northern Guatemala, believed to have been occupied by the Itzá after leaving Chichén Itzá in northern Yucatán. The purpose of the research was to verify the historical and geographical information contained in the early reports on Tayasal (Means 1917), to secure an accurate plan and extent of the ruins, and to carry out appropriate preliminary excavations (Guthe 1921, 1922; Kilmartin 1923).

NEW DIRECTIONS FOR THE CARNEGIE MAYA PROGRAM

In the late 1920s a decision was made to expand the scope of the Maya program. In 1928 President John C. Merriam asked Alfred V. Kidder to evaluate the CIW Maya program and visit all the localities where the institution was working. At the end of the study Kidder recommended to Merriam the organizational changes needed to advance the program. The following year a decision was made to form a larger administrative structure. The CIW Board of Trustees designated the new administrative body, the Division of Historical Research, and placed Kidder in charge (Woodbury 1973:52).

Kidder's selection in 1929 as chairman was the result of several separate circumstances. Unlike Morley, Kidder had earned a doctorate in anthropology and was a professional, anthropologically oriented archaeologist. As a distinguished pioneer archaeologist in Southwestern Pueblo prehistory, Kidder had for some fifteen years worked in the American Southwest where he had developed innovative excavation techniques, particularly in the use of stratigraphy. This background was excellent preparation for Maya studies, as was the concept that archaeological work should be sup-

ported by contributions from a number of related fields. Additionally, Kidder's 1929 field season at Pecos Pueblo was to be his last making him available for new projects. The perception by the Board of Trustees indicated that a new direction was needed for the Maya program, one that involved the better coordination of field efforts. The apparent smuggling of a jade object by Thomas Gann, a close friend of Morley, was a violation of the Mexican Antiquities Law and may have influenced the removal of Morley from his leadership position (Givens 1992a:90). In any case, Morley would spend the remainder of his career with the Carnegie Institution of Washington working on Maya epigraphy.

ALFRED V. KIDDER

Alfred Kidder spent most of his early years in New England. In 1904 he entered Harvard as a premedical student but decided on archaeology as a career after spending the summer of 1907 in Arizona and Utah with Edgar Lee Hewett and Morley. He continued his fieldwork in the Southwest for the next few years and received his doctorate from Harvard in 1914 after writing a thesis on Southwestern pottery. Kidder continued his Southwest research under the Peabody Museum of Harvard University until 1915, when he was appointed director of excavations at the Pecos ruins for the Phillips Academy at Andover, Massachusetts, a position he held until 1929. His was the first systematic stratigraphic archaeological excavation in North America, as well as the largest undertaking of its kind. At Pecos, Kidder made use of the stratigraphic method on a large scale and extended it into a regional strategy of determining cultural chronology. This introduction of a systematic methodology to a field previously unsystematized led Kidder to write *An Introduction to the Study of Southwestern Archaeology* (1924), now a classic in American archaeology. This book also provided the basis for the "Pecos Classification," which was derived during the first Pecos Conference held in 1927. The classification provided a chronology of the cultures in the Southwest, starting with the early Basketmakers and extending to the Pueblo cultures of later historical times. By the late 1920s, Alfred Kidder had become involved with other archaeological interests, and he had considerable knowledge of Mesoamerica.

After Kidder became head of the Division of Historical Research at the CIW in 1929, he put into action his long-anticipated plans for investigations in Mesoamerica. Until his retirement in 1950, Kidder directed intensive and extensive excavations at archaeological sites in Mexico and Guatemala. Kidder had a clear goal for this project: he wanted to keep in mind that

the course of human history in this one particular area was but a part of the much more embracing story of man and society at large (Willey 1988a). He was looking not only at excavating but at joining these various sites in order to reconstruct the chronological range of the Maya culture and gain a new perspective as to its origins. Again this was a major undertaking for Kidder. It included a pan-scientific, or multidisciplinary, approach, and these archaeological excavations were some of the first to use teams of specialists to help analyze artifacts and human remains. Kidder opened up investigations into physical and social anthropology, ethnology, linguistics, environmental studies, geology, and geography, to name just a few. It was this conception of a broad-based approach to Maya culture history that was his most significant contribution to anthropology. CIW staff members and colleagues from other universities became involved with the Maya, living or dead, as well as with their environmental settings during these investigations. H.E.D. Pollock (1980:xxiii) describes the excitement of the time: "The 1920s were a period of great vitality in Mesoamerican archaeology, and by the end of the decade there was considerable searching for new directions in the pursuit of Maya studies."

At the close of the 1920s new developing technology was incorporated into the service of archaeology. With the help of Charles Lindbergh's flights over the Yucatán peninsula in 1929, the CIW inaugurated aerial archaeology in Mesoamerica, as well as the early stages of a coherent site-distribution analysis program. Aerial archaeology became a valuable tool in the location of new sites as well as possible transport routes between various Maya cities. Another aerial survey was conducted the following year by the University of Pennsylvania Museum.

Kidder's redirection of the division's efforts in Mesoamerica began by broadening the program to include all pertinent sciences in the study of the cultural development of the Maya (Kidder 1937). In 1928 he had already begun the task of formulating the needed changes in the division's archaeological work.

DEVELOPMENT OF THE PAN-SCIENTIFIC APPROACH

Alfred Kidder's goals for the pan-scientific approach appeared in summary form in a short paper published in 1928 in the *Bulletin of the International Committee of Historical Sciences* (1928:749–753):

1. Further study of the sequence of cultures in the Valley of Mexico, from the earliest agriculturists to the great civilizations that began early in the Christian era;
2. Reconnaissance of the Guatemala highlands, to better understand the nature of the ancient Maya

influence on or occupation of this area where so many Maya Indians were still living;

3. Intensive excavation of a large Maya site in order to trace its growth step by step and to develop techniques for reconnaissance excavation at sites too large or too remote for complete excavation; and,
4. Comprehensive investigation of the peninsula of Yucatán in cooperation with research workers of other disciplines.

Substantial progress was immediately made in advancing this research agenda. Kidder's former student, George C. Vaillant, was already at work in Mexico and, by 1931, Oliver G. Ricketson was to begin the CIW reconnaissance of the Guatemala highlands. The program directed by Morley had already begun intensive work at Uaxactún, a major "Old Empire" site. The ongoing program at Chichén Itzá was to provide a foundation for the further work in Yucatán.

In Kidder's pan-scientific approach, the archaeologist would supply the prehistoric background, the historian the documentary record of the conquest and the Colonial and the Mexican periods, and the sociologist would consider the structure of modern life. At the same time, studies would be made on the botany, zoology, and climate, and on agriculture, economic system, and health conditions of the urban and rural, European-mixed and indigenous populations. It was hoped that definite conclusions of far-reaching interest would result, that new methods for examining problems of race and culture contacts would be developed, and that an increased familiarity with aims of other disciplines would grow.

The plans were proposed to CIW archaeologists and other investigators at a conference that Kidder arranged at Chichén Itzá in January 1930, two months after his appointment to and the evolution of the Department of Historical Research into a new Division of Historical Research. Kidder promptly published a brief report on the conference in *Science* (Kidder 1930a). The archaeologists accepted Kidder's premise that historical evaluation of the archaeological knowledge derived from Morley's excavations could be made more precise by an accurate knowledge of environmental conditions, supplied by specialists in biology, geology, and other natural sciences. Data on the social condition of the Maya, past and present, would be collected by workers in documentary history, medicine, comparative linguistics, and the several social sciences (Kidder 1930a:391).

Kidder noted that knowledge gained from this multidisciplinary approach not only would benefit the individual subdisciplines, but also would gain cumulative importance, because "geographical concentration would permit pooling of data, interchange of ideas, as well as formulation of combined attack upon prob-

lems of common interest” (Kidder 1930a:391). Kidder posited that all scientists interested in the resolution of archaeological problems, in addition to accumulating knowledge in their own fields, should be in continuous communication with other investigators working on similar problems. Although the CIW ultimately did not have the funding or manpower to undertake all that was required to fulfill this vision, considerable progress was, nevertheless, achieved.

The first formal indication of Kidder’s desire to combine history and archaeology in the CIW program can be found in his first annual report for the division. He (1930a:391) wrote:

[T]he term history has been used as a symbolic of a desire to do away with the somewhat rigid distinction which has generally been drawn between archaeology and history. The work of the Section is, of course, archaeological in that it deals with material remains rather than written records. But archaeologists seek to gather from ruined buildings and potsherds the same sort of knowledge that historians derive from books and manuscripts; and while the subject matter and therefore, the primary methods of the two disciplines are naturally unlike, their ultimate aims are identical, for both archaeology and history strive to recover and to interpret the story of man’s past. Archaeology, however, has all too generally been prosecuted as if the excavation of specimens were an end in itself. Antiquities have, as a rule, been collected more for their beauty than for what they might tell of the doings and the thoughts of human beings who made them. Emphasis in archaeology is generally shifting, however, from things to what things mean; and archaeological finds are fortunately coming more and more to be considered as historical documents.

Kidder further noted that Mayan research could be likened to historical research if certain definite and logical methods were employed. In his plan, the first step was to make a record of the sequent events that characterized the career of the people under investigation. The second step was to seek causes and explain the interrelations of those events. This called for studying the previous two classes of information to formulate “those fundamental laws which have governed the past and which therefore may reasonably be expected to shape, in the future, the course of human affairs” (Kidder 1937:218).

EXPANSION OF THE MAYA PROGRAM

During his first decade with CIW, Kidder initiated or expanded a variety of research activities to supplement the more conventional archaeological work,

which continued. Kidder’s second annual report to the CIW in 1931 reflects other new directions (Chapter 1.19). This report was a landmark in Mesoamerican archaeology, a major attempt to enrich the narrow archaeological work with a broad range of anthropology and other disciplines. In the coming years Kidder repeatedly helped accelerate a shift of emphasis from objects to what they meant. The 1931 report reflects the rapidity with which important new kinds of research got underway: ongoing archaeological work at Chichén Itzá and Uaxactún is reported on by Sylvanus G. Morley, Karl Ruppert, and A. Ledyard Smith; Oliver G. Ricketson described the start of research in the Guatemala highlands; Henry B. Roberts summarizes ceramic studies aimed at continuing the pioneering work in 1927 by George C. Vaillant in his influential doctoral dissertation; Harry E.D. Pollock discusses plans for a systematic survey and analysis of ancient Maya architecture; and Sylvanus G. Morley reports on new field investigations at Yaxchilán in the Usumacinta drainage of Chiapas.

The ethnographic program of Kidder’s broad multidisciplinary approach was directed by Robert Redfield of the University of Chicago. He initiated a new examination of folk cultures, which required the development of new concepts and methods for investigation. He and several colleagues undertook a study of modern Yucatec Maya communities, ranging from the city of Mérida through the town of Chan Kom to smaller villages of the Indians of Quintana Roo. A number of young Latin Americans conducted ethnographic research, including Alfonso Villa Rojas, who became perhaps the most distinguished native researcher; Fernando Camara Barbachano (University of Puerto Rico), Calixta Guiteras Holmes (Museo Nacional de Mexico), and Ricardo Pozas Arciniegas (Universidad Nacional Autónoma de Mexico), who studied the Tzotzil and Tzeltal Maya in highland Chiapas; and Antonio Goubaud Carrera (a Guatemalan ambassador to the United States and former director of Instituto Indigenista Nacional of Guatemala), who studied the Kekchí Maya of the northern highlands.

Other new directions were documented in subsequent division annual reports by many different people, including George C. Shattuck (Department of Tropical Medicine, School of Public Health, Harvard University) on the medical survey of Yucatán; Morris Steggerda (Department of Genetics, CIW) on physical anthropology and human geography in Yucatán (to which was added later human geography); Manual J. Andrade (University of Chicago) on linguistic research among the modern Maya; F. W. Gaige (University of Michigan) on botanical and zoological studies of the Maya area; France V. Scholes (University of New Mexico) on research of the history of Yucatán; and Ralph L.

Roys (a businessman, language student, and part-time member of the CIW staff) on the translation of the Books of Chilam Balam, seventeenth-century copies of older books in the Maya language, preserving history, traditions, and ritual texts. These investigations were supplemented by additional studies, including biological studies by Cyrus L. Lundell (ethnobotany) and L. C. Stuart (herpetology); Robert Wauchope's study of modern Maya house building as an aid to understanding the house ruins associated with archaeological sites; extensive archaeological excavation and restoration at Copán, Honduras, by Gustav Strömsvik (and this led to detailed ceramic studies made later by John M. Longyear); the extension to the Maya region of Anna O. Shepard's studies of ceramic technology; analysis of modern Guatemalan textiles and weaving by Lila M. O'Neale; J. Eric S. Thompson's archaeological excavations at San José, Belize, and subsequent work at Cotzumalhuapa on the Pacific slope of Guatemala; and Morley's study of the genealogy and history of the Xiu family, traditional rulers of Uxmal, based on family papers that recorded details back to the year 1418.

In the years following 1931 a number of other projects were undertaken, mostly in collaboration with scholars at other institutions. For example, James H. Kempton and Guy N. Collins (Bureau of Plant Industry, United States Department of Agriculture) studied the past and present agricultural methods of the Maya; Rollins A. Emerson (Cornell University), Wilson Popenoe (United Fruit Company), and Raymond Stadelman conducted studies of agriculture; Arthur S. Pearse (Duke University) studied the freshwater fauna of Yucatán; R. G. Stone (Blue Hill Observatory, Harvard University) undertook climatological studies in the Maya area; Wallace W. Atwood (Clark University) and Rollin A. Atwood (University of Florida) studied the physical geography of the Guatemalan highlands; Charles W. Cooke (U.S. Geological Survey) made geological studies in Yucatán; and Sol Tax (University of Chicago) conducted ethnographic research in the highland Maya communities of Panajachel and Chichicastenango.

The first decade of Kidder's administration can be characterized as a period of increased activity within the scope of the program and of the acquisition of multidisciplinary data to better enable understanding of Maya cultural development. At the same time, during his tenure Kidder expressed concern about the general failure to study and classify material properly and to publish the results. He traced this shortcoming to a difficulty in raising publication funds, to a lack of time available to the average archaeologist, and to the casual attitude of many institutions toward the "issuance of reports as an essential and immediate sequel to field work." He advocated shorter field seasons, the

use of fewer workers, the preparation of annual publications, and the completion of up-to-date finished manuscripts at least before the start of a new field season (Wauchope 1965a:159). In 1940 a new publication series, *Notes on Middle American Archaeology and Ethnology*, began under the editorship of J. Eric S. Thompson. This series was a minor, albeit highly valuable, device for making available important information not likely to appear elsewhere. Papers included were short notes on specific specimens or topics, and when the series was ended in 1957, 131 short, but useful, papers had been published.

WORLD WAR II AND THE BEGINNING OF THE END

When the United States entered World War II in 1941, all field programs in the Maya region were temporarily closed as many of the staff left for the war or military-related activities. Although substantial writing was accomplished during the war years and important field programs were undertaken again in 1945, the decreasing support by the CIW and threat of possible termination year after year eroded the possibility of the grand synthesis that Kidder had hoped to complete. And the careers of several CIW archaeologists were interrupted by the war. Harry E.D. Pollock was a major with the photographic division of the Army Air Corps from 1941 to 1944 in North Africa and Italy. Gustav Strömsvik participated in the North Atlantic convoys in the Royal Norwegian Navy and served in the Normandy invasion. He later held an administrative position at Norwegian headquarters in Edinburgh. Lieutenants George W. Brainerd and E. Wyllys Andrews served overseas, the former in India and the latter in the Office of Strategic Services (OSS), precursor to the Central Intelligence Agency (CIA). Karl Ruppert, a volunteer in the American Field Service, drove an ambulance with the British forces in Burma and later served with the U.S. Medical Corps in Italy. In spring 1945 he was transferred to northern Europe where he assisted with the evacuation of wounded and helped to clear captured concentration camps. John H. Denison also served as an ambulance driver in North Africa. Robert E. Smith spent 1942–1944 as assistant to the U.S. military attaché in Guatemala. Edwin M. Shook was engaged in the production of quinine at the large El Porvenir plantation in Guatemala. Abraham M. Halpern was an instructor of Japanese and director of the language program in the Civil Affairs Training School at the University of Chicago. Robert S. Chamberlain was senior cultural assistant in the U.S. Embassy in Guatemala, and Francis B. Richardson served as legal attaché at the embassy in Ecuador. John H. Denison, who died of pneumonia while serving with the Fighting French Corps in North

Africa in 1943, is the only known CIW casualty of the war.

Remarkable advances had been made by the 1950s in the development of archaeology as a scientific discipline, thanks to the now-established technology of stratigraphic excavation and environmental reconstruction, which were capable of yielding considerable quantities of information. What had come into being was a fully professional archaeology, albeit one that still displayed, and continues to display, certain features from its nineteenth-century origins. Archaeologists did not seek to study each and every problem, only those that were newly emerging. These emerging problems are still worth working on, even today, and additional new ideas have extended the frontiers of possible investigation. One can now stand and gaze at Chichén Itzá, Uxmal, or Copán, because of the work done at that time and as the result of a series of underlying assumptions that continue to influence archaeology today. Even if only in broad outline, the progress of Maya civilization across time and space could be visualized for the first time, a holistic perspective on pre-Hispanic culture began to emerge, and something was now known of the origins of that culture.

After World War II's end, in addition to investigators returning from the war, the CIW program was further enhanced by the addition of several new scholars, thus continuing the broad and varied style of research that characterized the CIW of the 1930s. For example, George W. Brainerd, who revived the study of Maya ceramics in 1939 after H. B. Roberts left the program, returned and completed his monumental *The Archaeological Ceramics of the Yucatán*, published posthumously by the University of California Press in 1958. Francis B. Richardson, who studied fossil footprints in Nicaragua, was replaced by Howell Williams, a vulcanologist from the University of California. E. Wyllys Andrews IV, from 1940 onward, carried on important investigations in Yucatán, where he later excavated at Dzibilchaltún (1961, 1980) and Becán (Andrews IV, Andrews V, and Brown 1975) under the sponsorship of the Middle American Research Institute at Tulane University and National Geographic Society. Linguistic research on the Maya was continued after the death of Manuel J. Andrade by Norman McQuown, and physical anthropology studies continued through the collaboration of T. Dale Stewart of the Smithsonian Institution.

KLUCKHOHN, TAYLOR, AND CRITICISM OF THE CARNEGIE PROGRAM

Despite its accomplishments, the work of the CIW was coming under attack by the early 1940s. Although regarded as one of the leading American archaeolo-

gists of his time, Alfred Kidder also received harsh criticism for being too conservative in his research as well as for conclusions that seemed to lack significance. Clyde Kluckhohn, an assistant professor at Harvard University, who frankly acknowledged his few contributions to Maya research, published an essay titled "The conceptual structure in Middle American studies," in *The Maya and Their Neighbors* (1940), a festschrift to the great Mayanist Alfred M. Tozzer. Kluckhohn argued that the greater perspective made possible by his regional detachment justified his criticism that Maya research in general, and CIW program in particular, lacked methodological rigor. He leveled serious criticism at the entire basis and aim of the CIW Maya program, praising its fact-collecting technique but stating that its "methodological and theoretical development appears stunted indeed." He characterized its "justly praised scheme for a many-sided attack by specialists drawn from various disciplines as merely pursued with no questioning of fundamental premises and with complete acceptance of traditional assumptions and concepts, thus largely lacking relevance to the primary aims of anthropology." In his essay he (1940:42–43) states, "I should like to record an overwhelming impression that many students in [Middle American studies] are but slightly reformed antiquarians." He continues,

There seems a great deal of obsessive wallowing in detail of and for itself, . . . [D]o researches which require large funds for their support require no social justification other than that of quenching certain thirsts for knowledge on the part of a relatively small number of citizens? . . . I suspect that unless archaeologists treat their work quite firmly as part of a general attempt to understand human behavior they will, before many generations, find themselves classed with Aldous Huxley's figure who devoted his life to writing a history of the three-pronged fork. In Middle American studies up to this time I have been unable to find much evidence of awareness of or interest in the relevance of research and publication to what [Ralph] Linton has asserted to be the prime task of all anthropologists . . . to discover the limits within which men can be conditioned, and what patterns of social life seem to impose fewest strains upon the individual.

He concluded with the comments that "the very sophistication at the levels of method and technique makes the methodological and theoretical naiveté of Middle American studies stand out in shocking contrast" and that "factual richness and conceptual poverty are a poor pair of hosts at the intellectual banquet."

How much influence Kluckhohn's critique of CIW

Maya research had on the institution's directors is unknown, but it was soon reinforced by a much more extensive and carefully documented attack on the program. During the war, a student and intellectual surrogate of Kluckhohn's, Walter W. Taylor, submitted his doctoral dissertation at Harvard on the history, current methodological bases, and needed future directions of archaeology (1943). Subsequently, a revised version of it prepared under a Postwar Fellowship in the Humanities given by the Rockefeller Foundation was published as *A Study of Archaeology* in 1948. Among the six U.S. archaeologists whose work he analyzed in detail—James B. Griffin, Emil W. Haury, Alfred V. Kidder, William A. Ritchie, Frank H.H. Roberts, and William S. Webb—in order to determine their aims, stated or unstated, and their accomplishments measured against those aims, Kidder received the greatest attention.

Taylor found very little of which he could approve, mainly because of a continuing lack in Kidder's publications of syntheses presenting all aspects of the life of a prehistoric group, and also because of the repeated "failure" of publications to present fully enough the details of provenience, materials, dimensions, and associations. The CIW and its entire archaeological program were strongly criticized. Among the devices by which Taylor documented a lack of a cultural synthesis was a table analyzing the CIW publications on Maya archaeology, which showed that out of 79 major and minor works, nearly all published prior to 1946, 50 were descriptive; 21 dealt with epigraphy, calendar, and chronology; and 8 were interpretive. He thus was able to demonstrate that "anthropological" problems had been largely ignored by Kidder and his fellow workers, assuming that the "descriptive" works were essentially useless as a basis for later "anthropological" studies (Woodbury 1954:293). Many of his comments were justified by the record as it then stood, and he either was unaware of or doubted the eventual accomplishment of the future grand synthesis that Kidder looked forward to. The publication had an immediate impact and was widely hailed (Daniel 1951; Guthe 1952)—although it was condemned by some (Burgh 1950; Rouse 1953; Woodbury 1954). And it has continued to be cited as one of the most thorough analyses of the nature and accomplishments of American archaeology (Woodbury 1973:76). Taylor (1948:67) concludes his attack on Kidder with this dismissive assessment:

Kidder has provided us with some of our finest statements as to the obligations, aims, and potentialities of archaeology. But he has been saying one thing, while results have added to quite another. When Kidder writes theory he

often talks historiography and anthropology. When he directs fieldwork and publishes reports, he talks comparative chronicle.

Taylor's arguments were directed to the goal of dislodging Americanist archaeologists of the 1940s from their preoccupation with time-space systematics, and to encourage them to make more and better use of their data. He describes this shifting focus from a concern solely with chronology to a recognition that archaeology should be a means of recovering cultural contexts that are as full-bodied as possible (Watson 1983:x-xi).

A reading of the Division of Historical Research's annual reports makes it obvious that Kidder agreed thoroughly with the goals that Taylor proposed and was aware of the need for methodological rigor. Yet it is also abundantly clear that almost none of the monographs and shorter papers of the Maya program had yet reflected clearly Kidder's turn "from things to what things mean" (Woodbury 1973:75). Much of the archaeological field staff consisted of men devoted to fieldwork, and few of them had substantial training in anthropology and even those certainly were not social scientists in the sense called for by Kluckhohn (Woodbury 1973:75). Even Kidder's recognition of the need for directing archaeology to the large goal of "understanding" man in all of his complexity, and the "laws" that may govern the growth and decline of civilizations, was tempered by his constant insistence that the time for synthesis was mainly in the future and the present need was for facts.

Yet, criticism by Kluckhohn and Taylor did not go unheeded and may be seen in the CIW's subsequent Mayapán Project (Pollock, R. Roys, Proskouriakoff, and A. Smith 1962) and Gordon R. Willey's Belize Valley Project (Willey, Bullard, Glass, and Gifford 1965). The methodological emphasis on detailed mapping, intensive survey, and excavation of a variety of structural types, including a large number of presumed residential structures, can be seen as a response to Taylor.

In the 1946 annual report Kidder announced the need for a general review of the Maya program, including "the problem of whether or not it will be best to continue intensive research on preconquest Maya." He obviously was aware of the CIW administration's doubts about the value of the CIW archaeological program in comparison to other programs; however, no general review of past work or fundamentally new program for future work was published.

VANNEVAR BUSH AND THE END OF THE CARNEGIE INSTITUTE OF WASHINGTON MAYA PROGRAM

The second decade of Kidder's administration at the CIW had focused on the problem of reduced fund-

ing caused by the reallocation to the hard sciences as the result of the impending conflict of World War II. The dissolution of the CIW work in Mesoamerica had been a slow but steady process. Vannevar Bush, John C. Merriam's replacement as president of CIW in 1937, was a distinguished physicist. He had served as dean of the School of Engineering at the Massachusetts Institute of Technology. As President Franklin D. Roosevelt's top science advisor during World War II, Bush had been chairman of the President's National Defense Research Committee (1940), Director of the Office of Scientific Research and Development (1941–1947), and Chairman of the National Advisory Committee for Aeronautics (1939–1941). He had organized and coordinated the science effort for World War II from CIW's headquarters building in Washington, D.C. Bush had overseen more than 200 defense-related ventures, including the development of nuclear fission and the Manhattan Project. Under his direction, CIW scientists had become heavily involved in war work, ranging from the development of antibiotics and the proximity fuse to testing machine-gun barrels. Bush's idea of federally funding science led to the creation of the National Science Foundation in 1950. Not surprisingly, Bush was also no supporter of the humanities.

The antiquarian foundations of Mayanist studies also had been working against the general perception of the CIW program as a scientific one. A colleague of Kidder's, Richard Woodbury (1973:71) has suggested that the failure of the archaeology program to win a permanent place in the CIW was the result of a mindset that archaeology was seen as chiefly "the pursuit of adventurous young men of good family and private income." More likely, the CIW's interest in social sciences and humanities had been declining and its leader—as noted above—had seen the approach of World War II as justification for greater emphasis on the so-called hard sciences and their technological hardware. Such a reorientation seems to have been controversial among some members of the CIW Board of Trustees. Col. Charles Lindbergh, appointed to the Board of Trustees in 1934, resigned from the board at the annual meeting in January 1941, because the CIW was concentrating its research efforts on developing war materials to aid the government.

Just before Bush began his plan to shut down CIW operations in Mesoamerica, Kidder proposed several potential projects. One unsuccessful proposal asked the CIW to underwrite the cost of developing the use of radiocarbon dating for archaeology. Kidder then proposed undertaking a large, longitudinal project at Tikal, as well as a program of research that would turn attention from the Maya to relationships between the two major centers of civilization in the New World, Mesoamerica and the Andes (Givens 1992a:115). These

were not accepted by the CIW although excavations at Tikal were soon initiated by the University of Pennsylvania Museum with Edwin M. Shook, and later William R. Coe, as field director. The Tikal proposal was partially carried out in the 1950s by the Institute for Andean Research's Program on the Interrelationship of New World Cultures. Kidder was, however, able to negotiate a final CIW field project in the Maya region: Mayapán.

MAYAPÁN PROJECT

A decision was finally made for the limited continuation of research at a single site in Yucatán. In 1948 Kidder (*Year Book* 47:207) wrote that "the general outline of the Maya's career had been obtained [and that] indefinite continuance along the lines formerly pursued might lead to over concentration on detail and narrowing of outlook." He announced the need for a "quantitative reduction in objectives and a shift from a general study of the Maya past to an attack upon some specific phase thereof . . . promising to yield, within a predictable time, results of both historical and methodological importance." Consequently, the work in Guatemala and the Petén was closed down, and by the time Kidder retired from the CIW in 1950, the Late Postclassic-period site of Mayapán in northern Yucatán was selected for extensive historical and archaeological investigation under the direction of Harry E.D. Pollock. This research would examine the final expression of pre-Hispanic Maya culture.

This final major CIW archaeological project, conducted between 1949 and 1955, was the first attempt at an extensive field investigation and typological and functional analysis of domestic structures, the first attempt to excavate a sample of the entire range of structural types at a single Maya site, and the first systematic attempt to view a single Maya site within a regional framework. In addition, functional analyses were conducted on the larger civic and religious structures, and there was extensive use of the direct historical approach made possible by the historical researches of Ralph L. Roys. Anticipating modern trends in graduate-student training, Mayapán included the first training program in the Maya region to actively employ groups of graduate students from multiple universities. Some of these was Robert M. Adams (Ph.D., Chicago, 1956), Robert H. Barlow (Universidad Nacional Autónoma de México), Heinrich Berlin (Universidad Nacional Autónoma de México), William R. Bullard (Ph.D., Harvard, 1960), Ann Chowning (Ph.D., Pennsylvania, 1958), David DeHarport (Ph.D., Harvard, 1960), Joseph A. Hester (Ph.D., University of California, Los Angeles, 1954), William N. Irving (Ph.D., Wisconsin, 1964), William T. Sanders (Ph.D., Harvard,

1957), Donald E. Thompson (Ph.D., Harvard, 1955), and Raymond H. Thompson (Ph.D., Harvard, 1955). Despite these and other innovations and advances in research methodology, the emphasis of the project generally remained within the still-dominant traditional approach. Noticeably, the project focused on the elite aspects of the site and, although excavators did try to sample all domestic structures, grander buildings received most of the attention.

THE CARNEGIE INSTITUTION OF WASHINGTON MAYA PROGRAM CLOSES

In 1958 the CIW abolished its Division of Historical Research and thus ended a program of research begun more than forty years earlier by Sylvanus Morley and that had produced more than 300 publications from the CIW outlet alone. The closing was announced unceremoniously in a brief notice in the English journal *Man: Journal of the Royal Anthropological Institute of Great Britain and Ireland*, in which its accomplishments were summarized by Pollock (1958:435–449; Chapter 1.47) in his final report as director. The official director's and others' correspondence, financial documents, reports, news clippings, and miscellaneous items remain at the headquarters of the Carnegie Institution of Washington (Appendix 1). The extensive archaeological archive was turned over to the Peabody Museum of Archaeology and Ethnology at Harvard University (Appendix 2). The ethnographic and linguistic notes of Robert Redfield, Sol Tax, Manuel Andrade, Norman McQuown, and others was deposited at the University of Chicago Library and eventually made available on microfilm (Appendix 3), and the enormous historical archive compiled by France V. Scholes for his history of the Yucatán Project was eventually deposited at the Latin American Library at Tulane University (Appendix 4).

The momentum of institutional research that characterized the golden years at CIW was—as CIW's projects lost steam—embraced and carried on by other institutions. Many developed major projects in the Maya area, including the University of Pennsylvania Museum's Tikal Project, the Peabody Museum's Belize River Valley Project, Tulane University's Dzibilchaltún Project, and Mexico's National Institute of Anthropology and History's second major program at Palenque.

Morley came the closest of any CIW archaeologist to presenting a synthesis of the entire research program in his popular and successful *The Ancient Maya* (published in 1946 and now in its sixth edition). Although the need for a comprehensive review of the work of the CIW was mentioned in the 1938 *Year Book* by Kidder, only a four-page summary of projects in the Maya field, covering twenty-five years of work,

was presented. In his final report Kidder (1950:192; Chapter 1.39) merely wrote of the work of the past two decades:

The program of Maya research inaugurated with the establishment of the Division in 1929 was a very ambitious one. It could not be carried through as originally planned in the hopeful days before the Depression and the war. There is not space here to review its objectives, to summarize its results, or to consider the reasons for its successes and failures. This will be done in a forthcoming report.

The “forthcoming” report was never written. It was premature to hope for a synthesis in 1939 or 1940 of the first ten years of the expanded program of Maya research, as many of the components were term investigations not yet completed, and some were included in a boldly experimental way that in the end contributed rather little. According to Woodbury (1973:80), this was not a fault of the program but instead an inevitable risk in any pioneering research.

The CIW efforts toward full publication of the work, however, are reflected not only in the numerous major reports issued as publications of the CIW, but also in the many monographs published by cooperative arrangements elsewhere (Andrade and Máas Collí 1990–1991; Bolles 1976; Brainerd 1958; Cámara Barbachano 1966; Chamberlain 1951; Guiteras Holmes 1992; Hansen and Bastarrachea Manzano 1984; Hester 1954; Kidder, Jennings, and Shook 1977; O'Neale 1965; Pollock 1980; Popol Vuh 1950; Proskouriakoff 1963; Redfield 1950; Redfield and Villa Rojas 1962; Roys 1965, 1972, 1973; Rubinstein 2002; Scholes and Menéndez 1936–1938; Scholes and Roys 1966, 1968; Solís Acala and Roys 1949; Tax 1953, 1963, 1964; R. H. Thompson 1958; Tovilla 1960; Villa Rojas 1990; Wauchope 1948, 1975).

ASSESSMENT OF THE CARNEGIE INSTITUTION OF WASHINGTON MAYA PROGRAM

As we have seen, the CIW Maya program was attacked for not taking a broader view of the cultural context and for focusing primarily on description. Nevertheless, the program made some real and significant contributions. The CIW Maya program laid a broad foundation for subsequent research, while turning immediate interests from narrowly defined epigraphic and archaeological goals to broader anthropological aims. The approach to the study of the ancient and modern Maya was, of course, still loose and experimental in its structure, without the more precisely defined problems and

specific goals that we are accustomed to today in interdisciplinary research. Expectations were unreasonably high, however, especially when one considers that a final synthesis was expected by Kidder at the end of the second decade of his directorship. More recent large-scale multidisciplinary archaeological efforts at Tikal, Copán, and elsewhere have been far from reaching final syntheses in ten or twenty years.

Moreover, the CIW Maya program played a critical role in the development of Maya archaeology in ways that range from field methods to chronology, to the emerging concepts of the origin and development of Maya civilization. The CIW efforts in southern Mesoamerica were gradually expanded from essentially an epigraphic study to intensive excavations at Uaxactún and Chichén Itzá and into other areas of research, including ethnographic, linguistic, physical anthropological, ethnohistorical, and environmental. Kidder's pan-scientific approach to archaeological problems was presented during the Chichén Itzá Conference of January 1930 and resulted in an expansion of archaeological interpretation. Kidder recognized that archaeologists must consult with other specialists in order to resolve archaeological problems more effectively and to enhance data interpretation. This multidisciplinary emphasis has become the model for longitudinal research projects in Mesoamerica.

Therefore, it seems only fair when evaluating the results of the CIW Maya program to recognize its many individual successes and its role in providing a basis for current studies of the Maya, rather than to fault it for failing to fully achieve its broad and general goals. Not the least of its accomplishments was the remarkably full publication of results so that data from the work in the 1930s and onward are easily accessible to scholars today. Richard Woodbury (1973:80) has noted that with the termination of the CIW's Division of Historical Research, Maya research lost one of its organizational mainsprings, as well as a primary publication vehicle. Although the CIW had been taken to task by Kluckhohn (1940) and Taylor (1948) for a tendency to neglect interpretation in favor of data, its contribution was still enormous and included the publication of many key works, ranging from Morley's compendiums of site-specific calendrical text analysis (1920, 1937–1938) to J.E.S. Thompson's summary of Maya writing (1950). These publications, whether descriptive or analytical, have provided a foundation for all modern archaeological research in the Maya region (Appendix 6).

Morley, perhaps more than any Mesoamerican archaeologist since, created exceptional goodwill between archaeologists and their national hosts. Contract negotiations in Mexico, Guatemala, British Honduras, and Honduras were based on two unprecedented

stipulations: that the CIW would return all antiquities to the country of origin after analysis and, in the case of Chichén Itzá, that the CIW would preserve architectural remains. The Chichén Itzá Project (1924–1937) left a legacy of properly reconstructed ruins, detailed architectural descriptions, solidly based artistic reconstructions, and a large corpus of sculptured monuments, panels, and glyphic texts. CIW work at Copán (1935–1941) was a joint project cosponsored by the government of Honduras, the first time a local government actually helped fund major archaeological excavations at a Maya site, providing labor and transportation of supplies and personnel within Honduras. The 1933–1934 work at Quiriguá continued a policy of helping host countries restore the major Maya ruins and, in the 1940s, the United Fruit Company appointed Kidder as adviser for its reconstruction project at Zaculeu in the western highlands of Guatemala. Stanley H. Boggs, John M. Dimick, and Gustav Strömsvik, former CIW archaeologists, were assigned to the project.

Morley, in particular, had an unusual talent for popularizing the story of the Maya and conveying the excitement of discovery to the public through clear, informative text and attractive photographs and illustrations. Morley's *The Ancient Maya* (1946), published in numerous editions (1947; Morley and Brainerd 1956; Morley, Brainerd, and Sharer 1983; Sharer 1994), is a triumph in popularization and is found in most libraries and bookshops today. Morley, Ann Axtell Morris (1931), Earl Morris (1931), and J. Eric S. Thompson (1954) also wrote stimulating accounts for the general public in popular books and magazines such as *National Geographic*.

Morley, Kidder, and Pollock administered one of the largest and most complex archaeological research organizations ever (Table 1). Their task was to coordinate efforts by CIW staff and related Middle American government interests in order to resolve relevant archaeological and anthropological problems. Kidder, in particular, excelled in the organization of large-scale archaeological research and was successful in soliciting additional funds from CIW. It is a rough measure of Kidder's success as an administrator that between 1929 and 1936, the CIW appropriations for archaeology more than doubled (Trefil and Hazen 2002:209). Indeed, the budget of the program increased from \$3,000 in 1914–1915, to begin a survey of archaeological sites in the Petén, to \$31,000 in 1924, when excavations began at Uaxactún and Chichén Itzá, to \$150,000 during the Depression. Between 1913 and 1940, the budget for historical research, including archaeology, totaled \$2,700,000, or approximately 6 percent of expenditures by the Carnegie Institution of Washington. The average annual expenditure of the

historical research program was approximately \$100,000 (Lester 1941:28), still considerably more than most archaeological projects today. The organizational arrangement of the CIW program would be replicated in subsequent projects at Tikal, Kaminaljuyú, Copán, and elsewhere.

At the beginning of the CIW program there was no systematic method for recording excavation or architectural plans, sections, or elevations, and no formal training in archaeological techniques existed. Most field methods were transferred from working in the American Southwest. Perhaps the greatest change in Mesoamerican archaeology has resulted from its growth, both in diversification of interests and in number of practitioners. Early archaeologists often lacked a formal academic background or had transferred from another discipline. Today, albeit under the umbrella of anthropology, archaeological specialists are trained at major research universities. Another radical change in archaeology has come from the development of techniques to determine absolute age, specifically radiocarbon dating. Kilmartin's map of Chichén Itzá is one of the first professional maps of a Maya site (Morris, Charlot, and Morris 1931:plate 2), and his annual report (Chapter 1.12)] provides the first substantial published account of the difficulties of mapping lowland Maya sites. Subsequent mapping projects at Uaxactún, Mayapán, Kaminaljuyú, Copán, and other sites continue to use Kilmartin's mapping procedures and cartographic conventions.

Despite its failure to meet the standards of the theoretical forerunners of the "New Archaeology," CIW was considerably ahead of its time in a number of areas that helped make archaeology a professional, scientific, and internationally cooperative pursuit. The CIW formulated high standards of scholarly research for its archaeological program; refused to remove artifacts for museum collections; and, as part of its excavation program, pledged to faithfully restore ancient structures so that the public could enjoy them as part of the national heritage.

Stratigraphic analysis is now a common feature throughout the Maya area, mainly as a result of the work of the CIW program. At the beginning of the twentieth century, archaeological data collected were few, geographically spotty, and imprecise. Method and theory were nonexistent. Only the spectacular received attention and data regarding typology and chronology were generally lacking. The first Maya ceramic stratigraphy was identified by Raymond Merwin during his 1910–1911 excavations at Holmul in Guatemala, but not published until after his death (Merwin and Vaillant 1932). In 1924, stratigraphy was identified and examined at Uaxactún by Oliver Ricketson and George Vaillant, and at Chichén Itzá by Vaillant.

Rather than focusing exclusively on finds, CIW publications also addressed methodological concerns associated with problems posed by Maya sites. A major effort by A. Ledyard Smith in 1929 at Uaxactún to relate the stelae to plaza floors and adjacent temples by trenching represents the first substantial and nonstructural excavation undertaken in the Maya lowlands (Black 1990b:95). Under Ricketson (1926–1930), excavations focused on the E-Group at Uaxactún revealed the first substantial evidence of a Preclassic occupation in the Maya lowlands. Morris's chronological presentation of the excavation and reconstruction methods of the Temple of the Warriors is perhaps the first adequate discussion of method in a Maya site report (Morris, Charlot, and Morris 1931, 1:91–164).

The value of pottery and its analysis in establishing antiquity and for determining the geographic range of given cultures and subcultures at various periods also was established at CIW excavations at Uaxactún. The ceramic report for Uaxactún by Robert E. Smith (1955) produced a wealth of information and an intellectual legacy that continues to be felt, perhaps most strongly through its establishment of a baseline ceramic chronology. The report also established an unequaled standard of description and illustration.

The first concerted effort to obtain residential settlement data in the southern Maya lowlands was possibly the most important work of the 1929 season at Uaxactún. Enrique Shufeldt, under A. Ledyard Smith's supervision, mapped a cruciform-shaped area surrounding the site center "to determine the number, frequency, locality, and possible relations to each other, of house mounds and chultuns, for the purpose of estimating populations" (Ricketson 1929, 28:317).

Perhaps one of the most experimental and holistic innovations of the CIW program was its emphasis on ethnographic analogy in interpreting archaeological remains by striving to link prehistoric sites or cultures with living Maya. This approach is perhaps best exemplified by J. Eric S. Thompson's work at San José in Belize. An experimental milpa was established at Chichén Itzá to consider soil exhaustion as a major factor for the diminishing decline of yield, complementing Raymond Stadler's (1940) extensive research on milpa agriculture in northwestern Guatemala in 1936 and 1937. Robert Wauchop's excavation of modest architectural structures at Uaxactún and his surveys of modern Maya domestic construction in 1934 and 1935 provided baseline data for Maya settlement archaeology.

Similarly, the study of the historical demography and subsistence strategies of the Maya was formalized during archaeological, ethnographic, and ethnohistorical research throughout the Yucatán peninsula. The CIW research in the Yucatán peninsula investigated modern Maya production of maize and

the assumed reliance by ancient Maya populations on similar subsistence techniques and products, and it used caloric needs and settlement characteristics of modern Yucatán populations to predict maximum possible densities.

The use of documentary evidence to bridge the present and past was incorporated into archaeological field research at the end of the program. The pioneering work of Ralph L. Roys, France V. Scholes, and Robert S. Chamberlain laid the foundation for subsequent ethnohistorical and historical research in the Maya region. The archive pertaining to the Colonial-period Maya, assembled by Scholes and presently at the Latin American Library at Tulane University, serves as a rich resource for ethnohistorians.

Perhaps most innovative of all at the time of its inception was the establishment of a free medical clinic maintained for the Yucatec Maya of the surrounding region. Basic medical care and medicines were distributed among them for free during the seventeen years that the CIW carried on archaeological investigations at Chichén Itzá. The medical survey, organized and directed by the Department of Tropical Medicine of the Harvard School of Public Health, was carried out in 1932 under the auspices of the CIW as part of the institution's broad purpose to make use of many disciplines in its continuing study of the Spanish-Maya civilization. This "action anthropology" or "public interest anthropology" is increasingly popular in current research programs. Both the free medical clinic and the medical survey of the CIW Maya program were seminal in the development of modern action anthropology as well as medical anthropology. Thus, despite some inevitable shortcomings, the achievements and accomplishments of the CIW Maya program were indeed significant.

ORGANIZATION OF THE VOLUME

This volume includes the publication of annual reports pertaining to the Maya research program published in the *CIW Year Books* from 1914 through 1958, as well as Sylvanus Morley's initial proposal of research that was the catalyst for the entire program (Chapter 1.1). The content of the original reports has been rearranged from a temporal to a thematic and regional organization. For example, all administrative reports by the director now appear together. Similarly, all reports pertaining to Chichén Itzá appear in one place and are arranged in sequential order. The thematic sections, ordered by chapter, include the following categories:

1. Administrative
2. Art and Architecture

3. Environment
4. Ceramics
5. Textiles
6. Hieroglyphic Writing
7. Linguistics
8. Ethnography
9. Ethnohistory
10. Physical Anthropology

Regional sections, arranged by country, state (in the case of Mexico), and specific archaeological site, include the following categories:

11. Belize
12. Baking Pot
13. Pusilhá
14. San José
15. Campeche (Mexico)
16. Calakmul
17. Edzná
18. Chiapas
19. Bonampak
20. Yaxchilán
21. El Salvador
22. Guatemala
23. Kaminaljuyú
24. Sites Near Lake Petén (Polol, Chakantún, Tayasal, Topoxté)
25. La Muralla
26. Piedras Negras
27. Quiriguá
28. Uaxactún
29. Zacualpa
30. Honduras
31. Copán
32. Nicaragua
33. Quintana Roo
34. Cobá
35. Tabasco and Veracruz
36. Yucatán
37. Chacchob
38. Chichén Itzá
39. Ek Balam
40. Mayapán
41. Uxmal
42. Yaxuná

All of the reports are published as they appeared originally with only a few exceptions. We have left out a few unnecessary photographs, corrected obvious typographical errors, and modernized some place names, but we did not change the content. Dated spellings, misspellings, grammatical errors, and awkwardness have all been allowed to stand. Deletions, of which there are some, are indicated by the use of ellipses. Notes are presented where explanation or clarification may be helpful to the reader. Words are explained in the glossary if they cannot be found in the standard abridged dictionaries of English and Spanish. Notes in the originals have been, wherever appropriate, incorporated

into the text. Bibliographic citations have similarly been placed within the text rather than as endnotes.

As presented, the reports published in the *CIW Year Books* from 1914 through 1958 document the development of the CIW program and also the transition of Maya studies from an informal and amateur pursuit to a formalized professional endeavor. Although most of the material contained herein was eventually incorporated into published monographs, there are notable exceptions, such as the ceramic research of Henry B. Roberts. Similarly, the largely unpublished extensive linguistic work of Manuel J. Andrade and his successor, Norman A. McQuown has only been

available in microfilm format (see Appendix 4). The ethnographic work of Robert Redfield has appeared in several monographs, but much of Sol Tax's work at Chichicastenango in the Guatemala highlands was never published. Similarly Asael Hansen's urban anthropological research at Mérida was not published for many decades (Hansen and Bastarrachea Manzano 1984). The ethnohistorical work of Frances Scholes, Ralph Roys, and Robert Chamberlain was partially published and the archives of their primary sources photographed at the Archivo General de Indias in Seville remains an immense treasure at Tulane University's Latin American Library in New Orleans.

TABLES

Table 1. Individuals Associated With Carnegie Institution of Washington Maya Program

ADMINISTRATION		
Guillot, I., mechanic, 1928	Hammond, L. C., mechanic, 1927	Harrison, M. W., editor, 1934–1955
Holbrook, B. L., secretary/bookkeeper, 1929	Jacobus, D., secretary/bookkeeper, 1931	Jameson, K., secretary/bookkeeper, 1926
Kerr, A. J., mechanic, 1929	MacKay, K., nurse/housekeeper, 1927–1931	Piatt, N. E., secretary/bookkeeper, 1927, 1928
Rhoads, F. K., camp assistant, 1931	Sánchez, C., secretary/interpreter, 1932	
AGRONOMY		
Cook, O. F., 1922	Loomis, H. F., 1922	Stadelman, R., 1937, 1938
ARCHAEOLOGY		
Adams, J. P., 1915	Adams, R. McC., 1953	Amsden, M., 1924, 1927, 1928, 1931, 1955
Andrews, E. W., 1939–1942	Austen, A., 192	Barker, F. M., 1937
Barrow, D., 1938	Berlin, H., 1950–1954	Beyer, H., 1932
Binney, A., 1946	Binney, D., 1946, 1947	Blom, F., 1924
Boggs, S. H., 1939–1942	Bowers, W., 1932	Brainerd, G. W., 1939–1942, 1949
Bullard, W. R., 1952, 1953	Burgh, R. F., 1941	Canby, J., 1950
Chowning, A., 1955	Currie, L. J., 1941	Daremus, E. B., 1946
Denison, J. H., 1932–1938	Dimick, J. M., 1941	Elliott, D., 1942
Ennis, M., 1938	Espinoza, G., 1949	Fontaine, P. N., 1936
Franks, R. A., 1926, 1927	Fry, E. I., 1955	Gann, T.W.F., 1916, 1918, 1926
Gates, W. E., 1920, 1921	Guthe, C. E., 1920–1922	Harrington, J. C., 1936
Held, J., 1917, 1918	Holmes, W. H., 1916	Irving, W. N., 1954
Jackson, P., 1937	Jennings, J. D., 1937	Jessup, M. K., 1922
Kennedy, E.T.P., 1937	Kidder, A. V., 1926, 1931–1953	Kratz, C., 1936
Lee, F., 1940	Longyear, J. M., 1938, 1939, 1942, 1946	Lothrop, S. K., 1916, 1922, 1932, 1933
Martin, P. S., 1927, 1928	Morgan, H., 1948	Morley, S. G., 1914–1946
Morris, E. H., 1924–1928, 1934	Navarette, C., 1954	Núñez, J., 1942
Nusbaum, D., 1935	O'Neill, J. P., 1932, 1933	Parris, F. P., 1933
Patton, R. T., 1937	Pollock, H.E.D., 1929–1958	Proctor, F. I., 1926
Proskouriakoff, T., 1939–1958	Richardson, F. B., 1933, 1935, 1938, 1941, 1942	Ricketson, E. B., 1925–1936
Ricketson, O. G., 1921–1926, 1929–1936	Roys, L. 1936, 1951, 1952	Roberts, H. B., 1927, 1930–1936
Roosevelt, G. E., 1938	Sanders, W. T., 1955, 1956	Ruppert, K., 1925–1955
Rutherford, A. K., 1921	Shufeldt, E., 1929	Shepherd, W. E., 1937
Shook, E. M., 1934–1955	Smith, R. E., 1931–1957	Smith, A. L., 1928–1955
Smith, P. E., 1954	Teeple, J., 1929, 1930	Smith, T. R., 1933, 1934
Strömsvik, G., 1927–1955	Thompson, J.E.S., 1926, 1933–1957	Temple, C. R., 1955
Thompson, D. E., 1955	Vaillant, G. C., 1926–1928	Thompson, R. H., 1950–1952
Trik, A. S., 1936–1938	Wiggin, G., 1926	Wauchope, R., 1932, 1934–1936
Wheelwright, A. W., 1941		Winters, H., 1954

ARCHITECTURE AND SURVEYING

Bolles, J. S., 1931–1934	Carpenter, A. W., 1916	Conant, K. J., 1926
Fontaine, P. N., 1935, 1936	Kilmartin, J. O., 1923, 1924, 1929	Lincoln, W. L., 1932
Lindsay, J., n.d.	Love, W. A., 1923	Remondet, A., 1937

ART

Charlot, J., 1926–1928	Fite, H., 1938	Franks, R. A., 1926, 1927
Houser, L., 1927, 1928	Lucas, V., 1937	Morris, A. A., 1925–1929
Smith, J. L., 1926, 1941	Smith, R., 1934	Tejeda, A., 1941, 1947, 1948
Tejeda, C., 1942, 1945–1949	Willard, L., n.d.	

ASTRONOMY

Pogo, A., 1935

BIOLOGY

Gaige, F. M., 1931	Pearse, A. S., 1936
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BOTANY

Bartlett, H. H., 1931	Collins, G. N., 1935, 1937	Emerson, R. A., 1935
Kempton, J. H., 1935–1937	Lundell, C. L., 1933, 1937, 1938	Popenoe, W., 1936

CERAMICS

Shepard, A. O., 1936–1957

CLIMATOLOGY

Stone, R. G., 1932

CONSERVATION

Cosgrove, H. S., 1937	Ichikawa, S., 1928	Richard, P., 1937
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ENTOMOLOGY

Bequaert, J. C., 1929

ETHNOGRAPHY

Camara Barbachano, F., 1944	Davidson, W., 1946	Dios Rosales, J. de, 1938, 1941
Gillin, J. P., 1942, 1944	Goubaud Carrera, A., 1944, 1945	Guiteras Holmes, C., 1944–1946
Hansen, A. T., 1931–1938	Lincoln, J. S., 1941	Pozas Arciniegas, R., 1944–1946
Redfield, R., 1930–1946	Tax, S., 1935–1946	Villa Rojas, A., 1931–1946

ETHNOHISTORY

Adams, E. B., 1936–1948	Barlow, R. H., 1950	Carrasco, P., 1953
Chamberlain, R. S., 1932–1942, 1947	Hanke, L., 1935	Roys, R. L., 1931–1953
Rubio Mañe, J. I., 1935–1939	Scholes, F. V., 1931–1947	

GENETICS

Steggerda, M., 1931–1939

GEOGRAPHY

Atwood, R. S., 1932	Atwood, W. W., 1932	Hester, J. A., 1952–1954
McBryde, F. W., 1932		

GEOLOGY

Bryan, K., 1945	Cooke, C. W., 1931	Williams, H., 1941, 1950
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HELMINTHOLOGY

Sandground, J. H., 1929

HERPETOLOGY

Stuart, L. C., 1933

LINGUISTICS

Andrade, M. J., 1930–1938	Bradshaw, S. L., 1941–1947	Halpern, A. M., 1941
McQuown, N. A., 1947–1949		

MEDICINE

Bennett, B. L., medical laboratory technician, 1929–1932	Clarke, S. T., medical researcher, 1934	Curth, W., dermatologist, 1932
LaFleur, M., physician, 1916	Goodner, K., bacteriologist, 1929	Hill, T. J., pathologist, 1937
Shattuck, G. C., physician, 1929–1932, 1936, 1939	Rife, D. M., physician, 1931	Saunders, G. M., medical clinician, 1931, 1932
	Underhill, G., physician, 1916	

MUSEOLOGY

Barrett, S. A., 1937	Peter, G., 1937
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ORNITHOLOGY

Trautman, M. B., 1936	Traylor, M. A., 1939	Van Tyne, J., 1931, 1936, 1937
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PHOTOGRAPHY

Acuña, R., 1956	Crandall, E. L., 1926	De Harport, D., 1953
Sopeña, J., 1922, 1926	Webb, W., 1942	

PHYSICAL ANTHROPOLOGY

Stewart, T. D., 1947	Williams, G. D., 1931
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TEXTILES

O'Neale, L. M., 1936

ZOOLOGY

Connell, F. H., 1931, 1932	Murie, A., 1931	Ray, C., 1955
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Table 2. General Chronological Scheme for Maya Archaeology

<i>Conventional</i> ¹	<i>Gregorian</i>	<i>CIW</i> ²	<i>Gregorian</i>	<i>Maya</i>
Late Postclassic	AD 1200–1524	New Empire III	AD 1441–1697	11.11.1.0.0–12.4.1.0.0
		New Empire II	AD 1194–1441	10.18.10.0.0–11.11.1.0.0
Early Postclassic	AD 800–1200	New Empire I	AD 987–1194	10.8.0.0.0–10.18.10.0.0
		Old Empire III	AD 731–987	9.15.0.0.0–10.8.0.0.0
Late Classic	AD 500–800	Old Empire II	AD 633–731	9.10.0.0.0–9.15.0.0.0
Early Classic	AD 250–500	Old Empire I	AD 317–633	8.14.0.0.0–9.10.0.0.0
Late Preclassic	400 BC–AD 250	Pre-Maya III	353 BC–AD 317	7.0.0.0.0–8.14.0.0.0
Middle Preclassic	900–400 BC	Pre-Maya II	1000–353 BC	
Early Preclassic	2000–900 BC	Pre-Maya I	3000–1000 BC	
Archaic	7000–2000 BC			
Paleo-Indian	Pre-7000 BC			

1. Sharer 1994

2. Morley 1946

I.O. ADMINISTRATIVE

"It has seemed all day as though my horizon was not big enough to hold me. This means that my sole ambition for me [these] last [few] years is about to be realized. Rarely, I think are aims so clearly defined in life as mine have been. Ever since visiting Chichén Itzá seven years ago . . . it has been my fondest wish to someday excavate that city."

—SYLVANUS G. MORLEY, DIARY, JANUARY 16, 1914, THE DAY HE WAS NOTIFIED OF
HIS APPOINTMENT TO THE CARNEGIE INSTITUTION OF WASHINGTON

I.I.

SYLVANUS G. MORLEY

*Archaeological research at the ruins of
Chichén Itzá, Yucatán*

*In Reports Upon The Present Condition and Future
Needs of the Science of Anthropology; Presented by
W.H.R. Rivers, A. E. Jenks, and S. G. Morley; at the
Request of the Carnegie Institution of Washington. pp.
61–91. Carnegie Institution of Washington,
Publication 200, 1913. Washington, D.C.*

ARCHAEOLOGICAL RESEARCH AT THE RUINS OF CHICHÉN ITZÁ

INTRODUCTION

THE GREEKS OF THE NEW WORLD

This question is often asked: What aboriginal people of the New World had achieved the highest culture before the coming of Europeans? And indeed it is a matter of recognized importance to determine which Native American race had traveled farthest on the road from savagery to civilization.

A comprehensive review of man and his achievements in the Western Hemisphere discloses but two peoples whose claims need be considered for this distinction, namely, the Inca¹ of Peru and the Maya of southern Mexico and Central America. These two nations were the leaders of civilization in their respective continents, and in each case their nearest competitors were far behind. But when it comes to a choice between the two, to awarding pre-eminence to one over the other, justifiable differences of opinion exist. In the first place, neither race surpassed the other in every branch of human activity. In some fields the Inca excelled, and in others the Maya. The Inca were preceded by several earlier civilizations, to which they were

largely indebted for essential features of their culture, whilst the Maya had no such inheritance. They were originators and not adapters of art and architecture. Maya remains present an unbroken cultural development extending over 1,500 years. It is admitted that the Inca surpassed the Maya in the textile arts and possibly also in governmental and social organization. But even granting this partial superiority, the writer believes that a broader comparison of the two cultures will award first place to the Maya. It is certain that the latter far excelled the Inca in the arts of sculpture, painting, and architecture, and in the sciences of writing, arithmetic, astronomy, and chronology. Their history recorded in their hieroglyphic inscriptions covers a range of more than a thousand years; their observations in astronomy reveal a knowledge of the movements of heavenly bodies equaled by that of few peoples of antiquity; their system of chronology kept an account of elapsed time which in accuracy rivals our own; while in sculpture, painting, and architecture the Maya have been most aptly termed "The Greeks of the New World."²

THE AREA COVERED BY THE MAYA CIVILIZATION

The region occupied by the Maya was the low Atlantic coastal plain in what are now the northern parts of Honduras and Guatemala, and of British Honduras, and the Gulf States of southern Mexico, an area approximately 500 miles [805 km] north and south by 300 miles [483 km] east and west.

The southern part of this region is abundantly watered by a network of streams, which have their rise in the Cordillera, while the northern part, comprising the peninsula of Yucatán, is entirely lacking in such water courses and were it not for large natural wells found here and there it would be uninhabitable.³ In the south the country is densely forested, though occasional savannas break the monotony of the tropical jungles. The surface is rolling and is traversed in places by ranges of hills, which in British Honduras rise to a maximum elevation of 3,700 feet [1,120 m] above the sea level.⁴ In the north the nature of the soil and the scarcity of water are not favorable to the growth of luxuriant vegetation, and this region is therefore covered with a smaller forest growth and a sparser bush than the area to the south. The deer, monkey, tapir, peccary, jaguar, and numerous other mammals are abundant throughout the entire region and doubtless formed a large part of the food supply in ancient times. The climate is tropical. There are two seasons, the rainy and the dry, the former corresponding roughly to our summer and autumn, and the latter to our winter and spring. At present there are over 20 different tribes,

representing more than a million people, who speak dialects of the Maya language. It might be added in this connection that in spite of the loss of their former glory the Maya still remain the finest aboriginal people of North America.

THE ANCIENT MAYA

The ancient Maya probably emerged from savagery about 2,000 years ago, at least their earliest dated monuments can not assuredly be referred to a more remote period, and any estimate as to how much time before that had been required to develop their complex calendar and hieroglyphic system to the point of graphic record is only conjectural. One thing alone is certain: a long interval must have elapsed from the first crude and unrelated scratches of savagery to the elaborate and highly involved hieroglyphics found on the earliest monuments.

By the end of the second century AD, the Maya had emerged from savagery and were at the threshold of civilization. There then began an extraordinary development throughout the southern part of the area. City after city sprang into prominence, each contributing by its growth to the general uplift. During this period all of the great southern cities flourished: Tikal, Copán, Palenque, Naranjo, Piedras Negras, Yaxchilán, Quiriguá, and Seibal.⁵ Besides being the largest, the first three mentioned were also the leaders in cultural progress. The period during which these cities flourished lasted for upwards of 400 years, or until the close of the sixth century AD. It has been called "The Golden Age of the Maya," since, in so far as sculpture is concerned, it is best comparable with the classic period of Greek art.

The causes which led to the decline of civilization in the south are unknown. It has been suggested that the Maya were driven from the various cities above mentioned by barbarian pressure from the south, east, and west; or again, that the Maya civilization, having run its natural course, collapsed through sheer lack of physical ability to go forward, or, in other words, through racial decay and deterioration. It matters little what explanation is advanced to account for the general decline, this one all important fact remain: Just after the close of Cycle nine of Maya chronology, or about 600 AD, there is a sudden and final cessation of dates in all the southern cities. Some universal calamity apparently overtook the Maya people at the opening of their Tenth Cycle, as a result of which their homes were abandoned and their country left desolate.

About a century before the end of Cycle 9, however, the country lying to the north, that is, the peninsula of Yucatán, seems to have been discovered and colonized for the first time. Some have even gone so far

as to ascribe the downfall of the southern cities to this very event; and it does not seem improbable that, after the discovery of Yucatán by the Maya and the subsequent opening of that vast region to colonization, the southern cities commenced to decline. As the new country waxed in strength and power the old waned, so that by the end of the sixth century AD the rise of the one and the fall of the other had been accomplished.

The occupancy of Yucatán marked the dawn of a new era for the Maya, although their Renaissance did not begin at once. At first the struggle for bare existence must have largely absorbed the energies of all, and not until their foothold was secure could there have been much time or wealth available for the cultivation of the aesthetic arts. Then, too, at first there seems to have been a feeling of unrest in the new land, a shifting of houses and testing of new localities, all of which retarded the development of sculpture, architecture, and other arts. Bakhalal, the first settlement in the north, was abandoned after an occupancy of only 60 years. Chichén Itzá, destined to become the greatest of all Maya cities, was the next settlement, and although occupied for more than a century, it also was abandoned and the search for a new home resumed. One group of Maya, moving westward from Chichén Itzá across Yucatán, occupied the city of Chakanputún, in the western part of the peninsula, about the beginning of the eighth century. Here they are said to have lived for about 200 years or until 960 AD, when this city was destroyed by fire. By this time, however, the Maya had become familiar with their new environment and their energies once more had begun to find outlet in artistic expression. The Transitional Period was at an end, and the Maya Renaissance was under way.

The opening of the eleventh century witnessed important and far reaching political changes in Yucatán. After the destruction of Chakanputún, the horizon of Maya activity expanded. Some of the Maya returned to their former homes at Chichén Itzá and reoccupied that city, while others established themselves at a new site called Mayapán. At this time also the city of Uxmal was founded. In 1000 AD these three cities formed a confederacy, under the terms of which each shared equally in the government of the country. Under the peaceful conditions which followed this coalition, the arts blossomed anew. This was the second and last great Maya epoch. During its course there doubtless arose, the many cities whose crumbling ruins are to be found today throughout the length and breadth of Yucatán. When these were occupied, the country must have been one vast hive of activity, for only large numbers of people, actuated by a great religious and aesthetic awakening, could have left remains so extensive.

This era of universal peace was abruptly terminated about 1200 AD by an event which shook the political structure to its foundations and disrupted the "Triple Alliance," under whose beneficent rule the land had grown so prosperous. The ruler of Chichén Itzá seems to have plotted against his colleague of Mayapán, and in the disastrous war which followed, the latter (by the aid of Nahua allies brought from Mexico) utterly routed his opponent and drove him from his capital.

The conquest of Chichén Itzá seems to have been followed during the thirteenth century by attempted reprisals on the part of the Itzá, which plunged the country into civil war. After the dissolution of the "Triple Alliance" it seems probable that Chichén Itzá was given by the ruler of Mayapán to his Nahua allies in recognition of their assistance. At least many of the buildings at Chichén Itzá are strongly Nahua in character, a condition which prevails at no other large city in the Maya area.⁶

According to the early Spanish chroniclers, the fourteenth century was characterized by increasing arrogance and oppression on the part of the rulers of Mayapán, who found it necessary to surround themselves with Nahua fighting men to keep in check the rising discontent of their subjects. This unrest culminated about the middle of the fifteenth century, when the Maya nobility, goaded to desperation by this oppression, banded themselves together under the Lord of Uxmal, sacked Mayapán, and slew its ruler.

The destruction of Mayapán sounded the death knell of the Maya civilization. As the native chroniclers tersely put it, "(After this) the chiefs of the country lost their power," and again, "They were destroyed and it was ended with those called Mayas." The population was split into a number of warring factions. Ancient feuds and jealousies, no longer held in leash by a strongly centralized government, were doubtless revived, and again the land was rent with strife. Presently, to the horrors of civil war were added those of famine and pestilence, each of which visited the peninsula in turn, carrying off great numbers of people.

These several calamities, however, were but fore-runners of worse soon to come. In 1517 Francisco de Cordova landed the first Spanish expedition on the coast of Yucatán,⁷ and, although he was repulsed after having accomplished little more than the discovery of the country, this was the beginning of the end. The following year Juan de Grijalva descended on the peninsula, but meeting with such determined resistance, he also sailed away, having gained nothing. The next year (1510) Hernán Cortés landed on the northeastern coast, but re-embarked for Mexico after a few days' stay. Seven years later, in 1526, Francisco Montejo obtained the title of "*Adelantado* of Yucatán" from the

King of Spain and set about the conquest of the country in earnest. He landed an expedition of 500 men on the northeastern coast and, with the elaborate formalities customary to such occasions, took possession of the country in the name of Charles V. This empty ceremony proved to be only the prelude to a sanguinary struggle which broke out almost immediately thereafter and continued with extraordinary ferocity the Maya fighting desperately in defense of their homes. Indeed it was not until 14 years later, or on June 11, 1541 (old style), that the Spaniards, having defeated a coalition of Maya chieftains near the city of *Icheansihoo* (Mérida), effected the permanent occupancy of the country.

Here ends the independent history of the Maya. For 15 centuries this remarkable people had preserved their cultural life singularly intact and free from alien influences, only to succumb in the end to causes working from within. Through racial decay and internecine strife, the product or perhaps the price of its development, the Maya civilization came at length to naught. And while the Spanish conquest was the immediate cause which shattered this once great culture, the seeds of its decay and downfall had been sown long before the discovery of America.

PREVIOUS WORK IN THE MAYA FIELD

The archaeological importance of the Maya field was first made known by John L. Stephens, who visited the Central American republics in 1839 and 1840, on a special mission from the United States government. His charming book entitled *Incidents of Travel in Central America, Chiapas and Yucatán* [1841] still remains, after the lapse of 75 years, a standard authority on the subject; and, indeed, so far as the purposes of general description are concerned, this book and its sequel, *Incidents of Travel in Yucatán* [1843], have never been superseded.

Following the preliminary work of Stephens, there was a hiatus of nearly 50 years before a real scientific study of this region was undertaken. In the decade 1881–91, Mr. A. P. Maudslay visited the principal ruin groups previously mentioned, and, through an arrangement with the editors of the *Biologia Centrali Americana* [1889–1902], published a superb set of photographs, maps, plans, and drawings of monuments and buildings at these sites. This work is of such a high character that it easily ranks as the greatest single contribution to the study of Maya archaeology. It consists of four volumes of text and some 400 plates. Mr. Maudslay's work, however, was largely of a preliminary character. He did little excavating, but devoted the greater part of his time to surveying and mapping the sites visited, and photographing and making molds of various sculptures. The wealth of material

for the study of Maya sculpture, architecture, and hieroglyphic writing, which his work made accessible, gave a tremendous stimulus to Maya archaeology and awakened an interest which is still maintained.

In 1888 the Peabody Museum of Harvard University entered the Maya field. The first work undertaken by this institution was the exploration of the ruins of Labná in northern Yucatán; this was continued in the two years following and several other sites in the vicinity were explored.

In 1891 a more ambitious project was inaugurated, namely, the excavation of the large ruined city of Copán, in the western part of Honduras. This work was carried on for four years, and during its course much valuable material was obtained. Unfortunately, its discontinuation became necessary in 1895, bringing to a close the most important research ever made in the Maya area and, with one exception, the only intensive study of a large representative site (Gordon 1896, 1898b, 1902) that has yet been undertaken.

After the discontinuance of the Copán project, the Peabody Museum returned to exploratory work. In 1896 and 1897 the valley of the Ulúa River was visited and important collections of pottery were made (Gordon 1898a). In 1899 Mr. Teobert Maler, of Mérida, Yucatán, was sent to the Department of Petén, northern Guatemala, where for the next five years he made extensive explorations, which, however, were largely preliminary in character. Mr. Maler made sketch maps of the different sites visited, prepared plans and cross-sections of the principal buildings, and photographed all the sculptured remains he could locate. The results of his studies have been published by the Peabody Museum (Maler 1901, 1903, 1908, 1910, 1911). His chief contribution to the science has been his admirable photographs, which constitute a treasury of hitherto unknown material for the study of Maya art and hieroglyphic writing. In 1910 the Peabody Museum resumed its operations in northern Guatemala (Tozzer 1911) by sending an expedition to this region. A survey and a map of the large ruined city of Tikal were made, and several other sites in the vicinity were explored. This reconnaissance was continued in 1911 and 1912, and resulted in the discovery of several ruin groups of secondary importance.

To the Field Museum of Natural History in Chicago is due credit for the standard handbook on Maya architecture. Under the auspices of this institution, Mr. W. H. Holmes visited the principal northern ruin groups in 1894 and published the results of his observations in *Archaeological Studies among the Ancient Cities of Mexico* [1895–97]. The clear architectural sketches and restorations, and the panoramic views of the different sites described, make this publication the best scientific handbook on Maya architecture that has yet appeared.

Since 1904 the Archaeological Institute of America has maintained a Fellow in this field, and considerable data on archaeology, ethnology, and linguistics have resulted from this activity (Tozzer 1907). In 1909 the School of American Archaeology, a branch of the same institution, began the investigation of the ruins of Quiriguá, Guatemala, with the cooperation of the St. Louis Society of the Institute and the United Fruit Company. Work has been conducted for three years and will be continued until an exhaustive study of this site has been made (Morley 1912, 1913).

The University of Berlin has sent out exploring and collecting expeditions from time to time, which have resulted in the acquisition of much new archaeological and ethnological material. These expeditions have devoted themselves chiefly to reconnaissance work, little or nothing in the way of close study at particular sites having been attempted.

In addition to the field work above described, considerable research has been carried on at some of the larger universities and scientific institutions. Here should be included the pioneer work of Dr. D. G. Brinton, of the University of Pennsylvania, in the field of Maya history and mythology (Brinton 1882a-b, 1885, 1890); the masterly studies of the illuminated manuscripts by Prof. Ernst Förstemann, of the Royal Library at Dresden (Förstemann 1906), and Dr. Cyrus Thomas, of the Bureau of American Ethnology (1882); and the definitive researches in the hieroglyphic writing and Maya chronology by Mr. J. T. Goodman, of Alameda, California (1897), and Mr. C. P. Bowditch, of Boston (Bowditch 1901a-c, 1903b, 1904, 1906, 1909, 1910). These scholars have laid the broad foundations of archaeological research in Central America, and it is on their work that succeeding generations of students must build.

Maya art has been studied by Dr. H. J. Spinden, of the American Museum of Natural History, whose researches have established the chronological sequence of Maya sculpture beyond all doubt (Spinden 1913). The work of Mr. Juan Martínez, of Mérida, Yucatán, on post-Conquest Maya documents (Martínez 1910, 1912), also is entitled to special mention. Mr. Martínez is easily the foremost authority on the Maya language and his studies have shed much light on the subject of Maya mythology. The contributions of Mr. Thomas E. Gates, of Point Loma, California, on Maya manuscripts, are also worthy of notice (Gates 1910). The writer's own researches have been concerned chiefly with Maya history, chronology, and hieroglyphic writing (Morley 1910a-b, 1911a-c, 1912).

PRESENT NEEDS OF THE MAYA FIELD

From the preceding section it is clear that by far the greater part of the archaeological work hitherto con-

ducted in the Maya field has been of a preliminary nature. The work of most of the expeditions mentioned has been exploratory in character, and few of them have undertaken an intensive study of particular problems. Useful as this exploratory work has been in establishing the boundaries of the Maya civilization and in ascertaining its more obvious features, such as the number, size, and distribution of its different centers, the character of its art and architecture, the nature of its hieroglyphic writing, etc., the time has now come for a more detailed study of these problems for research rather than reconnaissance.

Maya archaeology has passed through its preliminary stages. It is now generally conceded, by those most competent to judge, that in the future the greatest contributions to the science will come from the intensive study of representative sites. Such study necessarily involves the vigorous and continued prosecution of archaeological work at some important site for a number of years. So large and complex are these ancient Maya cities that the problems they present can be solved only by an expedition operating over a considerable period.

The project contemplates the conduct of archaeological research at one of the largest centers of the Maya civilization, and the intensive study for a number of years of the site chosen. After the work has been thoroughly organized and has proceeded to the point of producing noteworthy results (perhaps a matter of several years), its scope should be gradually extended to cover the surrounding region through subordinate expeditions emanating from the original base of operation. This extension of the research is suggested simply to indicate the magnitude of the problem awaiting investigation in any special archaeological province of the Maya culture area. These problems are not so large as to be incapable of definite solution within a reasonable period of time, but yet extensive enough to engage the energies of a fairly large expedition for at least a score of years.

In selecting a site for the concentration of such research, there are several general qualifications which the place chosen should possess, namely: 1. It should be large enough and of sufficient importance to offer material for study for at least 20 years; 2. It should be the center or metropolis of the surrounding region; 3. Its archaeological significance should be such as to justify intensive investigation; and 4. It should be as healthful and at the same time as accessible as possible.

On these last two factors very largely depends the efficiency of any scientific, expedition operating in the tropics. The site which combines the greatest number of these factors is therefore the one at which extended research can be carried on most advantageously.

ADVANTAGES OF CHICHÉN ITZÁ AS A BASE OF OPERATIONS

After a careful comparison of the largest Maya cities, the writer has concluded that there are many important reasons, practical as well as scientific, why Chichén Itzá, in northern Yucatán, is better fitted for immediate intensive investigation than any other Maya center. Before giving these reasons in detail, a word as to the situation of the site may not be out of place.

The ruins of Chichén Itzá are in the northeastern part of the peninsula of Yucatán, 15 miles [24.1 km] from the nearest railroad and 100 miles [161 km] from Mérida, the capital of the state. The surrounding country is a vast limestone plain, level as a table top and destitute of water sources.

This ancient city was named after the tribe which founded it, and from the two great natural wells (or cenotes) found there: *chi*, mouths; *chen*, wells; and *Itzá*, the name of the people which settled there, hence Chichén Itzá: "The mouths of the wells of the Itzá." To these two large natural reservoirs, the city may be said to owe the fact of its existence. As the Maya moved northward into Yucatán from their former haunts, the more arid character of the new land must have troubled them greatly, hence where water was found in abundance, as at Chichén Itzá, inevitably a large city would rise. However, only one of these wells seems to have been used as a source of water supply in ancient times. This cenote is 100 feet [30.5 m] in diameter and about 70 feet [21 m] in depth to the surface of the water. Down one of its vertical sides there winds a steep stairway which terminates in a platform, where formerly the water carriers were wont to fill their jars. The remaining well, the Cenote of Sacrifice, had a more exalted use, which will be explained in another place.

We will now present in more detail the reasons why Chichén Itzá is the most promising and, at the same time, the best adapted site in the Maya field for intensive study.

SCIENTIFIC REASONS

1. CHICHÉN ITZÁ, THE POLITICAL CENTER OF YUCATÁN.

Chichén Itzá was the largest city of the Maya civilization and, as such, offers a practically inexhaustible field for research. Its temples and palaces cover an area a mile square [2.6 sq km], and surrounding this on every side, for a distance of 5 miles [8.1 km], the bush is filled with groups of outlying buildings. In addition to being the largest city, Chichén Itzá for many centuries was the political and governmental center of Yucatán, and consequently every activity, such as sculpture, mural painting, and architecture, experienced a correspondingly high development there.

2. CHICHÉN ITZÁ, THE RELIGIOUS CENTER OF YUCATÁN.

As a holy or sacred city, Chichén Itzá was pre-eminent. In the native manuscripts of the sixteenth and seventeenth centuries its inhabitants are referred to as "The Itzá, holy men" (Brinton 1882b:101, 125, 145), apparently indicating a widespread belief in the sacred character of the city and its people. This holiness was considerably enhanced by "The Cenote of Sacrifice," to which pilgrimages were made from distant points, even outside the Maya area, until the Spanish conquest in the sixteenth century. Offerings of all kinds were cast into this cenote, even including human sacrifices in times of drought, to appease the anger of the offended rain deities (Appendix 1.4). Says an early chronicler, in speaking of "The Cenote of Sacrifice":

From the court in front of these theatres⁸ there goes a beautiful and broad causeway to a well about two stone throws distant. In this well they used to have, and still have, the custom of casting living men in sacrifice to the gods in times of drought, and they hold that these do not die, even though they are seen no more. They also cast into this well many other things, stones of value and whatever else they regard as precious. And so if this country had had gold in it, it would be found in this well, so great is the devotion of the Indians to it (Landa 1864:344-346).

Recent archaeological investigations substantiate the sacred character of this cenote and the fact that human victims were thrown into it.

The causeway above mentioned commences at the edge of the broad terrace in front of the Castillo the principal temple at Chichén Itzá, and leads to a small shrine at the brink of "The Cenote of Sacrifice." From this latter point the victims were hurled into the water below. The fact that Chichén Itzá was the holiest city of the Maya, in short, "The Mecca of the Maya World," considerably increases its archaeological importance.

3. CHICHÉN ITZÁ, THE FOREMOST CITY OF THE MAYA RENAISSANCE.⁹

When the Maya moved northward into Yucatán from the older centers of their civilization, Chichén Itzá was the first large city founded in the new land. For this reason it is the best place at which to study the changes effected in the old civilization by the new environment. Under the pressure of these new surroundings, many of the customs and practices of former times fell into disuse, and finally were forgotten altogether. But side by side with this process of decay, there went on a corresponding process of growth. New needs gave rise to new ideas, and these in turn so

leavened society that in due time the Maya civilization experienced its renaissance. Chichén Itzá was the leader in this cultural revival, and it is probable that this site will furnish the best data on the various stages of its development.

4. CHICHÉN ITZÁ, THE KEY TO THE CORRELATION OF MAYA AND CHRISTIAN CHRONOLOGY.

Chichén Itzá is the only site in the Maya area that is known to have had dates recorded in both the old and the new system of Maya chronology. After the colonization of Yucatán, the system of chronology prevalent in the south, the so-called Initial Series,¹⁰ seems to have fallen into disuse. Indeed, Chichén Itzá is the only large site in the north at which it has been found. A drawing of the lintel with this remarkable inscription is given in the accompanying figure. The date here recorded was the day 10.2.9.1.9, 9 Muluc 7 Zac of Maya chronology, or approximately 600 AD. This date was found inscribed on the lintel of the principal doorway of a small and apparently insignificant temple. In place of the method of recording dates by Initial Series, there was developed in Yucatán a more abbreviated method, called the *u kahlay katunob*,¹¹ which, though less accurate, was more easily recorded. This latter method, because of its greater simplicity, prevailed until the coming of the Spaniards; and, what is of more importance, it has been accurately correlated with Christian chronology by means of several historical events, dated in terms of both the Maya and the Christian calendars. Since the whole question of the age of the Maya ruins depends upon the proper alignment and correlation of the Initial Series with the *u kahlay katunob*, it follows that Chichén Itzá is the only site at which this important question can be studied. In a word, it is the key site for the study of Maya chronology.

5. CHICHÉN ITZÁ, THE CONNECTING LINK BETWEEN THE MAYA AND NAHUA CIVILIZATIONS.

In studying any ancient civilization it is important to establish its cultural affinities; that is, to trace not only its influence upon surrounding cultures, but also the influence of surrounding cultures upon it. Chichén Itzá is the only large Maya city that ever came under strong foreign influence. It has been explained that after the defeat of the Itzá, about 1200 AD, their city was probably given over to the Nahua allies of the victorious ruler of Mayapán. Here, then, are sufficient historical grounds to account for the presence of a strong Nahua influence at Chichén Itzá. This influence is to be seen most clearly in the so-called Ball Court group. The Ball Court proper is composed of two massive stone walls, each 272 feet [83 m] long, 34

feet [10.4 m] thick, and 27 feet [8.2 m] high. These walls are parallel and 119 feet [36.3 m] apart. A small temple faces each of the open ends, and a very beautiful temple, "The Temple of the Jaguars," surmounts the eastern wall at its southern end. The name of this temple is derived from a frieze of stalking jaguars, which forms a conspicuous element of the façade decoration. An admirable restoration of this temple [is provided] by Maudslay. A comparison of this with the photograph of the building will show that it is correct, even to the smallest sculptural details. High on the side of each wall of the Ball Court, midway between the ends, there is a large stone ring fastened vertically to the face of the wall. The game played in this court was not unlike the modern game of basketball, except that in the Maya game the ball was driven through an opening at right angles to, instead of parallel with, the ground (Appendix 1.5). The Ball Court is a purely Nahua importation. The game was originated and developed in the Nahua area, whence it spread to Yucatán at a comparatively late date, probably after 1200 AD, as we have seen. Indeed there is only one other certain occurrence of a Ball Court in Yucatán, namely, at Uxmal. There are many other features of the architecture and sculpture at Chichén Itzá that bespeak Nahua origin, and few of them are found at any other Maya site (Spinden 1913:205). This condition, coupled with the historical event which probably gave rise to it, makes Chichén Itzá the site par excellence at which to study the cultural affinities between the Maya and the Nahua, the two greatest aboriginal civilizations of North America.

6. CHICHÉN ITZÁ, THE MOST LIKELY SITE AT WHICH TO FIND A MAYA "ROSETTA STONE."

The point just mentioned has an important corollary, in that the meanings of a large number of the Nahua hieroglyphs, particularly those denoting personal and place names, are known. In the lower chamber of the Temple of the Jaguars there is sculptured a band of warriors, to each of which is attached a hieroglyph drawn in Nahua style. The finding of Maya equivalents of these glyphs would shed much light on the whole question of the undeciphered parts of the Maya hieroglyphic texts. Should there then exist such a thing as a Maya "Rosetta Stone," that is, a bilingual text in Maya and Nahua, Chichén Itzá is by far the most likely place to find it.

7. CHICHÉN ITZÁ, THE MOST NOTABLE HISTORIC SITE IN THE MAYA CULTURE AREA.

Chichén Itzá has a recorded history extending over a period of 11 centuries, or from 430 AD to 1540 AD

(Morley 1910b, 1911a), This is true of no other Maya city, and indeed of no other aboriginal site in the Western Hemisphere. Recorded history pertaining to pre-Columbian centers of population is exceedingly rare; in fact, this lack constitutes one of the greatest obstacles to the study of American archaeology. In Egyptian, Babylonian, Greek, and Roman archaeology, history acts as a constant check against speculation. Therefore, when there are definite historical references to a New World site, its archaeological importance can not be overestimated.

In summing up the scientific reasons for the selection of Chichén Itzá as a base of operations for extended research in the Maya field, it may be said that this site offers far more material for the study of Maya archaeology in its various phases than any other center of the civilization.

PRACTICAL REASONS

1. ACCESSIBILITY.

Few Maya sites are so accessible from the United States as Chichén Itzá. This group of ruins may be reached from New York City, via the New York and Cuba Mail S. S. Co. (that is, the Ward Line) to Progreso, Yucatán (7 days), and the United Railways of Yucatán, Progreso to Dzitas, and wagon to the ruins (one day); or from New Orleans, via the Montes Line to Progreso (3 days), and Progreso to Dzitas and the ruins (one day). Excepting Uxmal (also in Yucatán) and Quiriguá (Guatemala), the same accessibility can not be claimed for any other large Maya ruin. Indeed, most of the others are very difficult to reach. Palenque, Tikal, Naranjo, Yaxchilán, Piedras Negras, and, Seibal, for example, are hidden in the jungles of southern Mexico and northern Guatemala, many days distant from the nearest railroads or steamship lines, and they can be reached only by very difficult travel over foot trails, often blocked by luxuriant vegetation. The accessibility of the site recommended for the base of operations has a direct bearing not only on the cost of placing an expedition in the field, but also of maintaining it there. A scientific expedition can, be sent to Chichén Itzá and there maintained more economically than at any other large center of the Maya civilization, with the possible exceptions of Uxmal and Quiriguá, above noted.

2. LENGTH OF THE FIELD SEASON.

Northern Yucatán has a shorter rainy season than any other part of the Maya area, and this fact directly influences the length of the field season at Chichén Itzá. It was the experience of the Peabody Museum at

Copán (Honduras) and of the School of American Archaeology at Quiriguá (Guatemala) that excavation could not profitably be carried on during the rainy season. The writer was in immediate charge of the excavations at Quiriguá in 1912, and he well remembers how torrential were the first rains of the season, early in May, and how suddenly they put an end to the work by flooding the diggings. The rainy season at Chichén Itzá commences about the close of May and extends until about the middle of December, leaving at least 5 months during which it is possible to conduct archaeological work without hindrance. At the southern Maya sites, such as Palenque, Tikal, Copán, and Quiriguá, the dry season is much shorter. At Quiriguá, for example, only the months of February, March, and April are entirely free from rain, and similar conditions prevail at the other southern cities. The field season at Chichén Itzá and Uxmal is almost twice as long as at any of the southern sites.

3. HEALTHFULNESS.

Chichén Itzá is by far the most healthful site in the Maya area. It is free from the malarial fevers which render Copán, Quiriguá, and Uxmal so perilous. These fevers are so pernicious at Uxmal that it is said no child born at the hacienda has ever lived to adult age (Holmes 1895-97:80). The untimely death of Dr. J. G. Owens,¹² of the Peabody Museum, at Copán in 1893, still lingers in memory as a tragic reminder of the unhealthfulness of that locality. During the three seasons the School of American Archaeology carried on work at Quiriguá, every member of the field staff suffered severe attacks of malaria at one time or another. Such conditions are of course inevitable where the rainfall is so excessive and where there is so much standing water in which mosquitoes may propagate. Chichén Itzá, with its ideal natural drainage, offers a marked contrast to the above. Mosquitoes are practically unknown there, and with this element of danger absent there is nothing to make the place unhealthful. Since the amount of work which may be accomplished by any scientific expedition depends largely on the health of its field force, the incontestable claims of Chichén Itzá in this respect should not be overlooked.

4. LABOR CONDITIONS.

The success of any large field research depends not a little upon local labor conditions, and in selecting a site for intensive study this fact should be borne in mind. In the south, two American industrial organizations have established themselves during the last decade, and these have materially increased the cost of labor in certain parts of the Maya area: the United

Fruit Company, with plantations in eastern Guatemala, Honduras, and British Honduras, and the American Chicle Company in northern Guatemala, southern Yucatán, and British Honduras. The increasing number of laborers necessary to the activities of these two corporations has steadily raised the price of labor in the regions where they operate. In 1912 the School of American Archaeology was obliged to pay 75 cents (gold) a day for laborers at Quiriguá, with every indication that the price would soon advance to one dollar a day. Indeed, the Guatemala Northern Railroad was already paying the latter price for Carib labor.¹³ Another drawback at some of the large southern cities is their remoteness from settlements of any kind, necessitating the importation of outside labor, always a costly and usually an unsatisfactory proceeding. At Chichén Itzá efficient Indian laborers may be had at from 37.5 cents to 50 cents (gold) a day. These wages are doubtless as low as those prevailing elsewhere in the Maya area, and they are from a third to a half lower than are paid in Guatemala and British Honduras by the two corporations above mentioned. The Maya Indian is intelligent, strong, and willing, and the amount of work he can accomplish in a day is astonishing.¹⁴ A working force of 50 to 75 could easily be brought together at Chichén Itzá, and for efficiency would equal, if not surpass, a similar force from any other part of the Maya area.

5. FIELD QUARTERS.

Chichén Itzá is peculiarly fitted for conducting an extended research in another important respect. There is no other ruin at which an expedition can be so intensively and at the same time so comfortably quartered as at Chichén Itzá. Indeed all the other large sites, except Uxmal, Quiriguá, and Copán, are in a tropical wilderness where it would be necessary to build more or less expensive mosquito-proof field quarters and even these three groups of ruins have no such facilities as those offered at Chichén Itzá. The question of suitable field quarters may seem relatively unimportant, but in inaugurating a work, to extend over a score of years, the comfort of the field corps becomes an item of considerable moment.

In summing up the practical reasons for conducting archaeological research at Chichén Itzá, in preference to every other Maya site, the question resolves itself into one of maximum efficiency at minimum cost. More work can be accomplished at Chichén Itzá for a given amount of money than at any other site. Measured by such a standard, only three large Maya sites, Chichén Itzá, Uxmal, and Quiriguá, are sufficiently near railroad points to be worked at low cost. While cost of operation should not weigh too heavily in se-

lecting a site for intensive study, still a reasonable return of results for the amount expended should be expected. Of the three ruins mentioned, Chichén Itzá has by far the most in its favor, and the writer firmly believes that more can be accomplished there than anywhere else in the Maya field, regardless of the amount of the annual appropriation.

NATURE OF THE PROJECT HEREIN PRESENTED

The project herein submitted to the Carnegie Institution of Washington contemplates an exhaustive study of the ruins of Chichén Itzá. This study would depend largely on excavation, but photography, mapping, drawing, and molding should be utilized as well. The ruins at Chichén Itzá divide naturally into different groups of more or less closely related structures, each group constituting a well defined unit of work (Appendix 1.3). Such are the Ball Court Group, the Monjas Group, the Group of the Columns, etc.

It is recommended to excavate this ancient city, group by group, until it is completely uncovered and the relations of its component parts are disclosed. This method has another obvious advantage: By dividing the whole research into a number of units, it will be possible to issue fairly complete reports covering finished units every 4 or 5 years. Such reports would constitute a progressive commentary on the progress of the research. It is confidently expected that important contributions to the study of Maya architecture, sculpture, painting, ceramics, chronology, and hieroglyphic writing will result from these excavations. Indeed, it is practically certain that the knowledge of these subjects will be greatly extended as the work of excavation advances.¹⁵

Accompanying the work of excavation, a reasonable amount of repair and restoration should be done. The time has passed when a scientific expedition can rifle a site of its specimens and then retire, leaving weakened buildings to fall under the destructive action of the elements. Today the best practice in archaeological work demands that walls weakened by excavation shall be permanently repaired, and that any really important site must be left in as good condition after excavation as it was found to be before. This obligation is always binding in any tropical environment, but particularly so when the site excavated is one of the largest and most magnificent cities of aboriginal America. At Chichén Itzá, moreover, the need of repair work is especially urgent. Scarcely a rainy season passes that some elaborately sculptured façade, loosened by the roots of clinging vegetation, does not fall. The whole front of the Castillo, the chief temple at Chichén Itzá, is a case in point. The wooden lintels of

the main doorway are gradually giving way under the tremendous weight of the superimposed masonry, and unless repairs are speedily made this beautiful example of Maya temple architecture will suffer irreparably. Examples of this kind might be multiplied indefinitely, but the one given above is sufficient to show the need for a reasonable amount of repair work in connection with the excavation of Chichén Itzá.

It is recommended to carry out at Chichén Itzá a research similar to that of the Smithsonian Institution in connection with the prehistoric remains in our Southwestern States. At Casa Grande, Arizona, and in the Mesa Verde National Park, Colorado, remarkable and praiseworthy work has been done under the direction of Dr. J. Walter Fewkes and of Mr. J. L. Nusbaum. Views of the Spruce Tree House, one of the cliff dwellings of the Mesa Verde National Park before excavation and after excavation clearly indicate the great improvement which a reasonable amount of repair work makes in the appearance of archaeological remains. The only previous attempt of this kind in the Maya field has been the work of the School of American Archaeology at Quiriguá, Guatemala. Here, in connection with the excavation of the principal building, the walls were relaid in cement and finished with a cement cap to render them impervious to the excessive rainfall of the region (Hewett 1911a-b; Morley 1912, 1913).

In addition to the work of excavation and repair, extensive use should be made of photography. Chichén Itzá offers a particularly rich field for the camera and this phase of the work should receive special attention. It is recommended to make a complete photographic record of the site, showing the progress of the excavations, and other features also: groups of buildings, single buildings, architectural and sculptural details, statuary, hieroglyphic inscriptions, mural paintings, etc. If an archaeological expedition is sent to Chichén Itzá, its photographic equipment should be of the best, since no branch of the work except excavation will be of greater importance.

The making of maps from accurate surveys is a necessary feature of such research. A map of the entire city, with detailed ground plans of its individual structures, is a vital part of the general plan of work and will not only shed much light on the question of the assemblage of Maya structures, but also on the much larger question of Maya social organization. The map of Chichén Itzá, although accurate so far as it goes, does not begin to cover the limits of the city, nor even to show all of the buildings, pyramids, platforms, and causeways in the area surveyed.

Molds should be made of the different sculptures recovered, including the statuary, façade decorations, hieroglyphic inscriptions, and the like. The Mexican Government takes the stand that original objects

should not be taken out of the country, and the justice of this position cannot be questioned.

After more than a century of robbery and exploitation, both Greece and Italy found it necessary to forbid by law the removal of antiquities from their domains. Mexico, with antiquities relatively as priceless as the Elgin marbles of the Old World, has an equal right of protection against similar exploitation at the hands of unscrupulous collectors. The archaeologist of today has no more in common with the pot hunter of 40 years ago than modern medical practice has to do with the quackery of the Middle Ages. In the modern science of archaeology any specimen is of value only for the story it tells of the people who produced it; and so long as the specimens found are preserved for the use of future students it is immaterial where they are housed.

This question of the ultimate disposition of objects found during the course of excavation has been the rock upon which many an archaeological expedition has foundered, not only in Mexico but also in other parts of the world. The stand herein taken, that archaeological objects belong to the country in which they are found, rather than to the finders thereof, it is confidently expected, will enlist the active interest and sympathy of the Mexican Government in this particular project. The antiquities at Chichén Itzá, whether they be in the form of statuary, reliefs, wood carvings, vases, metal ornaments, or what not, were the product of a Mexican civilization, and for that reason, originals should in all justice remain in the custody of the Mexican nation. For exhibition in museums and for scientific instruction, casts would serve as well.

Concerning the length of time which will be required to complete the work herein outlined, something has already been said. It was suggested that research in the Maya field should not be organized for a period of less than 20 years. The writer has reached this conclusion only after a careful study of the situation. The experience of the Peabody Museum of Harvard University at Copán, Honduras, and of the School of American Archaeology at Quiriguá, Guatemala, was such as to indicate that at least 5 years are necessary to complete satisfactorily a single unit of work; and it is only in the aggregate that completed units of work yield reliable scientific data. In observational sciences, final proof of any point rests on the accumulation of sufficient evidence touching thereon upon corroborative material from a number of sources, hence the desirability of continuing this research long enough to obtain such corroborative data. As stated above, the writer believes this would require a period of not less than 20 years.¹⁶ The problems presented are numerous, and a number of years of sustained effort will be required for their ultimate solution. Moreover, in making this estimate, the number of laborers em-

played in the excavations, as well as the length of the annual field season, are all important factors. The above estimate of time is based on an annual field season of 5 months, and on a working force of 50 laborers.

In conclusion the writer believes that, as a result of the work outlined, it will be possible not only to treat this particular site monographically, but also to establish the larger part of the truth concerning the whole Maya civilization.

CONCLUSION

It is the writer's belief that no other archaeological field in the New World offers such rich promise as the region occupied by the ancient Maya, and, at the same time, no equally important field has been so inadequately studied. An attempt has been made to show briefly in the preceding pages that the Maya were the most highly civilized aboriginal people in the two Americas; that their recorded history covered a range exceeding a thousand years before the Spanish conquest; and, finally, that, notwithstanding its archaeological importance, this civilization has been the subject of very little intensive study. The few exceptions noted, especially the work of Mr. A. P. Maudslay and the Peabody Museum of Harvard University, are the more conspicuous because they stand alone. It is generally recognized that the most pressing need of Maya archaeology is intensive research at some representative site through a period of years. The site best fitted for such research is, in the writer's opinion, the great ruin group of Chichén Itzá in northern Yucatán. The various reasons, practical as well as scientific, which have led him to this conclusion, have been set forth at some length, and they constitute, it is believed, a strong argument for selecting Chichén Itzá in preference to any other Maya site. The character this investigation should assume, together with its ultimate scope, has been described in detail with a brief word respecting the nature of the results which may reasonably be expected. Finally, the period of time that would be required to produce results worthy of the endeavors of the Carnegie Institution of Washington has been judged to be about 20 years.

APPENDIX 1.1

LIST OF BOOKS ON THE MAYA CIVILIZATION

Arnold and Frost 1909; Bancroft 1875-76; Bowditch 1901a-c, 1903a-b, 1904; 1906, 1909, 1910; Breton 1906; Brinton 1882a-d, 1885, 1890, 1894; Catherwood 1844; Casares 1905; Förstemann 1906; Gann 1897-98; Gates 1910; Goodman 1897; Gordon 1896, 1898a-b, 1902; Hewett 1911a-b; Holmes 1895-97; Landa 1864; Maler

1901, 1903, 1908, 1910, 1911; Martínez 1910, 1912; A. C. Maudslay and Maudslay 1899; A. P. Maudslay 1889-1902; Morley 1909, 1910a-b, 1911a-d, 1912, 1913, 1914; Río 1822; Schellhas 1904; Seler 1908; Spinden 1913; Stephens 1841, 1843; Thomas 1882, 1894-95, 1897-98; E. Thompson 1897a-b, 1898, 1904; Tozzer 1907, 1911; Tozzer and Allen 1910; Valentini 1879; Waldeck 1866.

APPENDIX 1.2

LIST OF WRITINGS RELATING TO THE ARCHAEOLOGICAL SITES MENTIONED IN THIS REPORT

Chichén Itzá: Arnold and Frost 1909, Chapter 6; Bancroft 1875-76:4:220-236; Charnay 1888, Chapter 18; Holmes 1895-97:101-137; Landa 1864:340-346; Maudslay 1889-1902:3:1-43, Plates 1-66; Morley 1911a; Relación de la ciudad de Valladolid 1900:13:3-40, 90; Stephens 1843:2: Chapters 16-17. Copán: Bancroft 1875-76:4:77-105; Gordon 1896, 1898, 1902; Maudslay 1889-1902:1:1-69, Plates 1-119; Morley 1911; Stephens 1841:1: Chapters 5-7. Labná: Arnold and Frost 1909:193-196; Stephens 1841:2: Chapter 3; E. Thompson 1897. Mayapán: Stephens 1843:1:130-141. Naranjo: Maler 1908:80-127, Plates 20-44. Palenque: Bancroft 1875-76:4: Chapter 6; Charnay 1888, Chapters 13-14; Holmes 1895-97:1:151-209; Maudslay 1889-1902:4:1-38, Plates 1-93; Stephens 1841:2: Chapters 17-20; Waldeck 1866; Río 1822. Piedras Negras: Maler 1901:40-75, Plates 7-33. Quiriguá: Hewett 1911, 1912; Maudslay 1889-1902:2: 1-19, Plates 1-66; Morley 1912, 1913; Stephens 1841:2: Chapter 7. Seibal: Maler 1908:1-28, Plates 3-10. Tikal: Bancroft 1875-76:4:135-138; Charnay 1888:464-473; Maudslay 1889-1902:3:44-50, Plates 67-82; Tozzer 1911. Uxmal: Charnay 1888: Chapter 20; Holmes 1895-97:1:80-96; Morley 1910a, 1911b; Stephens 1841:2: Chapters 24-25; Stephens 1843: Chapters 7,8,10,11,14. Yaxchilán: Charnay 1888: Chapter 22; Maler 1903: Chapter 13, Plates 39-80; Maudslay 1889-1902: 2:40-47.

APPENDIX 1.3

INCOMPLETE LIST OF GROUPS OF RELATED STRUCTURES AT CHICHÉN ITZÁ, YUCATÁN

1. The Monjas Group.
The Main Range.
The East Wing.

- The L-shaped Annex.
 - The Southeast Temple.
 - The Iglesia (church).
 - The Caracol (snail, winding stairway). This structure has an interior spiral stairway.
 - The Casa Colorado. A small nameless temple, and about a dozen other structures now in ruin.
2. The Akatzib (writing in the dark), named after a hieroglyphic inscription in a dark, interior chamber.
 3. The Group of the High Priest's Grave.
 - The Temple of the High Priest's Grave.
 - The Temple of the Atlantes and four or five other structures now in ruin.
 4. The Castillo Group.
 - The Castillo.
 - The Temple of the Cones.
 - The Sacred Way leading to the Cenote of Sacrifice.
 - The small temple on the edge of the Cenote of Sacrifice.
 5. The Ball-Court Group.
 - The Ball Court.
 - The North Temple.
 - The South Temple.
 - The Temple of the Jaguar.
 - The Lower Chamber of the Temple of the Jaguars, and five or six other structures now in ruin.
 6. The Group of the Column.
 - The Temple of the Tables.
 - The Temple of Chac Mool¹⁷
 - The Small Ball Court no. 1 (?)¹⁸
 - The Small Ball Court no. 2 (?)
 - The Peristyle (this imposing structure surrounds a court of over five acres).
 - The Temple of the little Tables.
 - The Temple of the Stairway.
 - The Sunken Court, and many smaller peristyles, temples, and pyramids. This group covers more ground and contains more structures than any other in the city.
 7. The North Group (a mile [1.6 km] north of the Cenote of Sacrifice).
 - The Temple of the Butterfly.
 - The Temple of the Jaguars no. 2.
 - The Causeway leading to "The Cenote of Sacrifice," and several other structures now in ruin.
 8. The Group of the Temple of the Initial Series (Old Chichén Itzá).
 - The Temple of the Initial Series.
 - The Temple of the Phalli.
 - The Temple of the Owl and a dozen other structures now in ruin.
 9. The South Group (a mile [1.6 km] south of the Monjas. Old Chichén Itzá).
 - The Temple of the Hieroglyphic Lintel.
 - Nameless temple.
 - Nameless temple.

10. The West Group (about a mile [1.6 km] west of the Monjas. Old Chichén Itzá).

This group contains a number of structures in an advanced state of ruin, which probably date from the earliest occupancy of the city. In addition to the foregoing, there are a number of other groups of related structures at Chichén Itzá, too ill-defined to describe here, some of which are as much as 6 miles [9.7 km] distant from the center of the city.

APPENDIX 1.4 DESCRIPTION OF HUMAN SACRIFICES AT "THE CENOTE OF SACRIFICE," CHICHÉN ITZÁ, YUCATÁN

The following description of human sacrifices at "The Cenote of Sacrifice" is taken from a letter written by three of the original conquistadores of Yucatán, and is part of a general description of Chichén Itzá. This letter was written in response to a general circular sent out by the Council of the Indies in 1579, asking for information about the discovery and conquest of the colonial possessions, and about the native inhabitants thereof.

At this cenote, the lords and chiefs of all the provinces of Valladolid observed this custom. After having fasted for 60 days without raising their eyes during that time even to look at their wives, nor at those who brought them food, they came to the mouth of this Cenote and, at the break of day, they threw into it some Indian women, some belonging to each of the lords, and they told the women that they should beg for a good year in all those things which they thought fit, and thus they cast them in unbound, but as they were thrown headlong, they fell into the water, giving a great blow on it; and exactly at midday she who was able to come out cried out loud that they should throw her a rope to drag her out with, and she arrived at the top half dead, and they made great fires round her and incensed her with Copal, and when she came to herself she said that below there were many of her nation, both men and women, who received her, and that raising her head to look at some of them they gave her heavy blows on the neck, making her put her head down, which was all under water, in which she fancied were many hollows and deeps; and in answer to the questions which the Indian girl put to them, they replied to her whether it should be a good or bad year, and whether the devil was angry with any of the lords who had cast in the Indian girls, but these lords already knew that if a girl did not beg to be taken out at midday, it was because the devil was angry with them, and she never came out again. Then, seeing that she did not come out, all the followers of that lord and

the lord himself threw great stones into the water, and with loud cries fled from the place.

APPENDIX 1.5 DESCRIPTION OF THE AZTEC BALL GAME *TLACHTLI*

The following description of the Aztec ball game, *tlachtli*, is taken from a general account of the diversions of Montezuma and his court, by Antonio de Herrera, in *Historia general de los hechos de los Castellanos en las islas i tierra firma del Mar oceano* (Madrid, 1726–30. 5 v.). As the ballcourt at Chichén Itzá is known to have been of Nahua origin, it is probable that this same game, or at least one very similar, was played there.

The king took much delight in seeing sport at ball, which the Spaniards have since prohibited, because of the mischief that often happened at it; and was by them called *tlachtli*, being like our tennis. The ball was made of the gum of a tree that grows in hot countries, which, having holes made in it, distils great white drops that soon harden, and, being worked and molded together, turn as black as pitch. The balls made thereof, though hard and heavy to the hand, did bound and fly as well as our foot-balls, there being no need to blow them; nor did they use chaces, but vied to drive the adverse party, that is, to hit the wall, the others, were to make good, or strike it over. They struck it with any part of their body, as it happened, as they could most conveniently; and sometimes he lost that touched it with any other part but his hip, which was looked upon among them as the greatest dexterity; and to this effect, that the ball might rebound the better, they fastened a piece of stiff leather on their hips. They might strike it every time it rebounded, which it would do several times, one after another, insomuch that it looked as if it had been alive. They played in parties, so many on a side, for a load of mantles or what the gamesters could afford, at so many scores. They also played for gold and feather-work, and sometimes played themselves away, as has been said before. The place where they played was a ground room, long, narrow, and high, but wider above than below, and higher on the sides than at the ends, and they kept it very well plastered and smooth, both the walls and the floor. On the side walls they fixed certain stones, like those of a mill, with a hole quite through the middle, just as big as the ball, and he that could strike it through there won the game; and in token of its being an extraordinary success, which rarely happened, he had a right to the cloaks of all the lookers-on, by ancient custom and law amongst gamesters; and it was very pleasant to see, that as soon as

ever the ball was in the hole, the standers-by took to their heels, running away with all their might to save their cloaks, laughing and rejoicing, others scouring after them to secure their cloaks for the winner, who was obliged to offer some sacrifice to the idol of the tennis-court, and the stone through whose hole the ball had passed. Every tennis court was a temple, having two idols, the one of gaming, and the other of the ball. On a lucky day, at midnight, they performed certain ceremonies and enchantments on the two lower walls and on the midst of the floor, singing certain songs, or ballads; after which a priest of the great temple went with some of their religious men to bless it; he uttered some words, threw the ball about the tennis-court four times, and then it was consecrated, and might be played in, but not before. The owner of the tennis-court, who was always a lord, never played without making some offering and performing certain ceremonies to the idol of gaming, which shows how superstitious they were, since they had such regard to their idols, even in their diversions. Montezuma carried the Spaniards to this sport, and was well pleased to see them play at it, as also at cards and dice.

NOTES

1. By *Inca* is here meant the people who dominated Peru at the time of the Spanish Conquest. The Inca civilization, like the Aztec, was of comparatively recent origin, not extending back more than three or four centuries before the first coming of Europeans in 1525.

2. For a brief bibliography of the Maya civilization and culture area see Appendix 1.1.

3. These large natural wells, often 200 feet [61 m] in diameter, and called by the Maya cenotes.

4. Victoria Peak, In the Cockscorn Mountains of British Honduras, in said to reach this elevation.

5. For the location of them sites and for a description of them, as well as the others mentioned in this report, consult the references given in Appendix 1.2.

6. This particularly true of the Ball Court, which is a purely a Nahua type of building.

7. This expedition, however, was not the first appearance of white men on the shores of Yucatán. In 1511 a caravel, bearing the regidor Valdivia from Darien to Española (Cuba), was wrecked near Jamaica, and all aboard were lost, except Valdivia and about 10 companions, who took to a small open boat. After untold suffering, during which half of them died, the miserable survivors were cost upon the eastern coast of Yucatán, where they were seized by the Maya, thrust into prison, and held for sacrifice. One by one they were killed until only a half dozen were left. These rendered desperate by the cruel fate of their comrades, broke out of their prison one dark night and fled to a neighboring village whose lord was not so bloodthirsty. Here they were enslaved. In the course of time all but two died, Geronimo de Aguilar and Gonzalo Guerrero. The

former, after eking out a miserable existence for eight years, was rescued by Hernán Cortés in 1519, and lived to play an important role in the conquest of Mexico as one of Cortés' two interpreters. Gonzalo Guerrero had even a more picturesque career. He exhibited such proficiency in military affairs that his master a Maya lord, put him in charge of his army. His successes here won him an Indian wife of noble blood, by whom he had several children. He became a Maya in every respect, covered his body with tattooing, allowed his hair to grow, pierced his ears for earrings, and as the pious chronicler concludes: "It is even believed he was an idolater like them" (Landa 1864:16).

8. These two theaters appear just north of the Castillo. They were probably used for performing certain religious rites, more or less public in character, and were theaters only in that limited sense.

9. The Maya Renaissance took place during the tenth century, or after the close of the Transitional Period in 960 AD.

10. The Initial Series method of recording dates has been so named because when it is present it always stands at the beginning of an inscription. It denotes, by means of five time periods, the number of days which have elapsed from the starting point of Maya a chronology to the date recorded. It is interesting to note in this connection that practically all of the southern Maya cities flourished during Cycle 9 of their epoch or about 3,500 years after the starting point. This long gap between the starting-point and the first recorded dates clearly indicates the hypothetical nature of the starting-point, a parallel case being that of Bishop Landa's date of 4004 BC for the creation of the world. The Maya doubtless developed their complex chronological system 2,000–3,000 years after the date which they selected for its starting-point.

11. The *u kahlay katunob* (Maya for "record of the katuns") is, as its name signifies, a record of the katuns, a Maya time period containing 7,200 days or nearly 20 years (19.71+). In the *u kahlay katunob*, the katuns were regarded as following each other in an endless sequence since the beginning of the record, and events were described as having occurred in such and such a katun.

12. John G. Owens, a member of the Peabody Museum of American Archaeology and Ethnology, Harvard University, expedition died of tropical fever at Copán in 1893. He was buried at the foot of the Hieroglyphic Stairway. In 1912 Earl Morris inscribed Owens' name and date of death on a large stone slab [ed.].

13. At Quiriguá the native laborer at 75 cents a day was so inefficient as to be actually more costly than the imported Carib laborer at \$1.00 a day.

14. The writer has had experience with both the Maya and Guatemalteco, and has found the former to be about twice so capable and efficient in the latter.

15. A case in point is the Monjas. This building clearly dates from several different epochs [...] Several styles of decoration appear in the four or five different additions, which together make up the building, and excavation would doubtless establish their chronological sequence. This chronological sequence of style, once determined, would serve as a guide in establishing the relative ages of buildings which show only a single style of decoration.

16. While the writer believes at least 20 years would be necessary to complete satisfactorily a definite research in the Maya field, it is not to be supposed, on that account, the intensive investigations for a shorter period would be devoid of important results. It is highly probable that much valuable scientific data would be gathered during a 10 years' study of Chichén Itzá, though such a period of research would by any means exhaust the possibilities of the site. The point which this writer wishes particularly to emphasize is that, to complete a large and definite research at Chichén Itzá and its environs, 20 years at least will be required.

17. This name has been applied to a class of sculptures at Chichén Itzá, which represents a human being, partially reclining, lying on its back; the knees and elbows are raised, and the feet drawn in; the head is elevated and turned to one side; the hands hold a bowl for burning incense. One of these Chac Mools was found in front of this temple, hence its name: The Temple of Chac Mool.

18. The identification of these two structures as Ball Courts is not certain, though probably correct. Excavation would doubtless clear up this point.

1.2.

SYLVANUS G. MORLEY

Archaeology

YB 13:333, 1914

After conferences in July 1914 with the President [Robert S. Woodward] of the Institution, Mr. Morley proceeded to Santa Fe [New Mexico] to take up the preparation of a work containing descriptions and decipherments of all known Maya texts, which will be so arranged as to be a ready and standard book of reference on Maya chronology.

The Maya hieroglyphic inscriptions, so far as they have been deciphered, deal exclusively with the counting of time either in relation to the Maya calendar or certain astronomical phenomena with which the Mayas were familiar. Especially important are the so-called Initial Series, which fixed dates in the Maya chronological system in such a way that they could not recur, filling all the given conditions, until after a lapse of 374,400 years. During the past five years at least 50 new Initial Series have been discovered which have never been published; and when it is taken into consideration that only about 90 had been previously described, it seems probable that the investigation of the new material already in hand, as contemplated in this research, will shed much light on the whole field of Maya chronology and clear up many existing problems.

1.3.

SYLVANUS G. MORLEY
Archaeology

YB 14:343–346, 1915

In December 1914 Mr. Morley submitted a report to the President [Woodward] suggesting the advisability of further field work at certain centers of the Maya civilization, notably La Honradez and Cancuen in northern Guatemala, and Copán in western Honduras, before the publication of his report on the Maya hieroglyphic inscriptions then in course of preparation. This report having been approved, he came to Washington in January to arrange the details of the trip and to secure the necessary outfit therefore. It was planned that he should visit the three sites mentioned (and such others as he deemed pertinent to the object of the research); and that he should secure whatever additional data might be necessary for a complete presentation of their hieroglyphic texts.

In execution of this plan, Mr. Morley sailed from New Orleans for Belize, British Honduras, early in February, accompanied by Mr. J. P. Adams as assistant.

The itinerary followed is shown in Figure 1.3.1. It divides conveniently into three parts, the objective in each case being one of the three sites mentioned above.

The first trip from Belize to the ruins of La Honradez and return took three weeks. The route lay at first up the Belize River to El Cayo, and thence northward through the dense tropical forests of northern Guatemala to La Honradez. The country is virtually a trackless jungle, the only inhabitants being a few mahogany cutters and chicle bleeders. The operations of the former are confined exclusively to the immediate vicinities of the few navigable streams, but the latter have traversed the bush hinterland in every direction in search of chicle, the principal ingredient of chewing-gum. Indeed, is chiefly due to the activities of the *chiclero* that new archaeological sites are discovered from time to time and that the intensive study of the antiquities of the region is made possible.

The second trip, to the ruins of Copán in the western part of Honduras, lay in a different direction. On March 15 the expedition sailed from Belize for Puerto Barrios, Guatemala, thence by rail inland to Zacapa, thence by mule-train two days' journey eastward to Copán. This region is entirely different in character from the densely forested, gently rolling plains of northern Guatemala. It is traversed by ranges of high mountains, whose steeply sloping sides and the valleys at their feet are all cleared and under cultivation, chiefly in coffee. Much tobacco is also grown, the Copán Val-

ley, in which the ruins are located, being particularly famed for the superior quality of its leaf, said to be equal that of the finest Havana tobacco. This site was one of the largest centers of the ancient Maya world, and is particularly rich in hieroglyphic texts, perhaps as high as 35 percent of all known Maya inscriptions being found here. The copying and photographing of this material, much of which is new, consumed five weeks and the expedition did not return to Puerto Barrios until the last of April.

The third and last trip was the most difficult. The route lay from Puerto Barrios to Livingston and thence up the Golfo Dulce and Río Polochic to Panzos, and thence by mule-train to Cahabón, in the department of Alta Vera Paz, one of the richest coffee-producing states in Guatemala. There are no mule-trails beyond Cahabón, and from this point it was necessary to proceed on foot, the baggage being borne by Indian carriers.

After a week's journey through the bush in a north-westerly direction, the ruins of Cancuen on the Río de la Pasión were reached, and here the Indian carriers

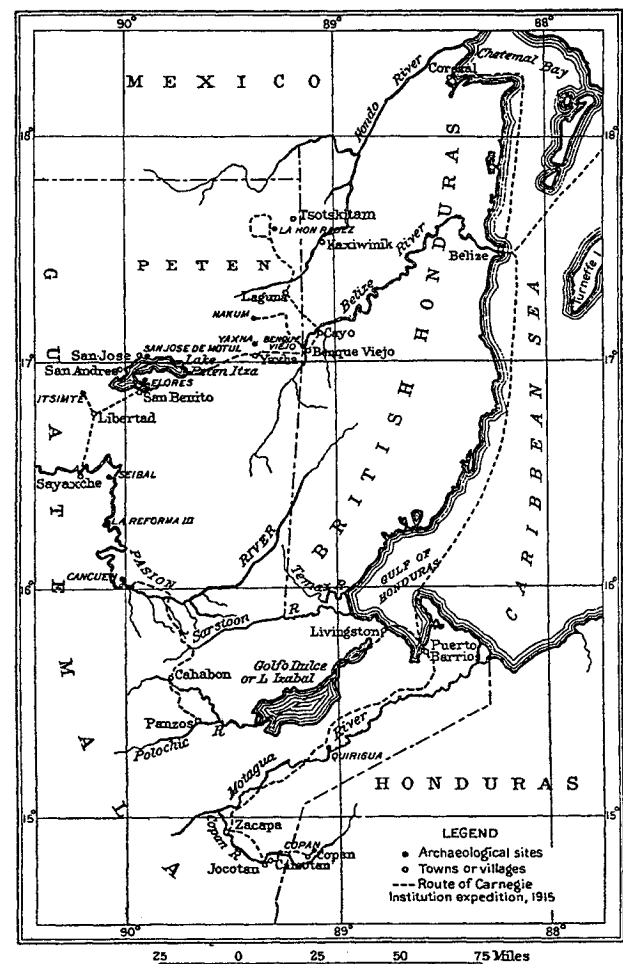


Figure 1.3.1. Itinerary of the 1915 Central American Expedition.

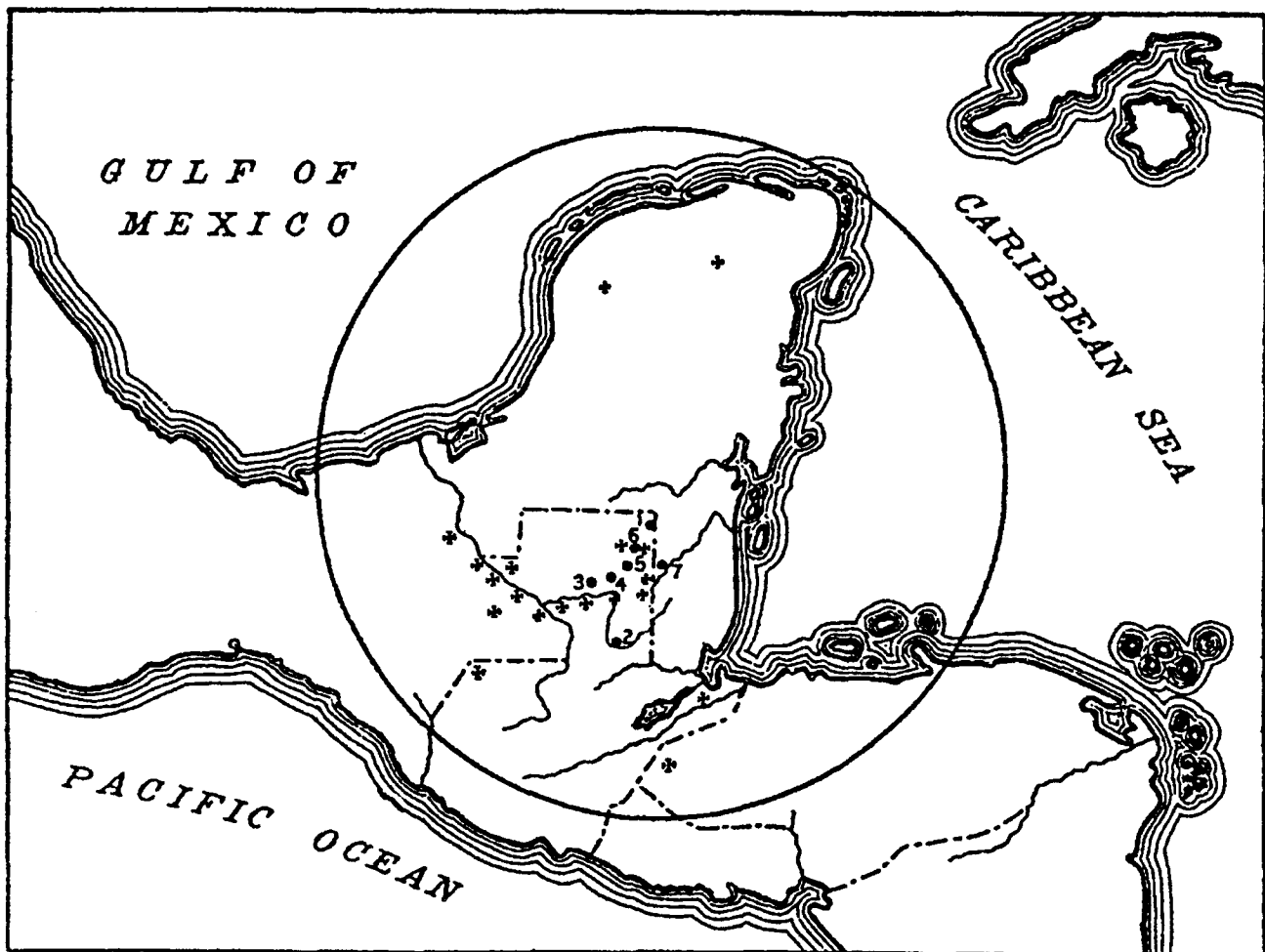


Figure 1.3.2. Map Illustrating Archaeological Investigations in Mexico and Central America (the circle encloses the region occupied by the Maya civilization).

turned back. After an examination of this little-known site and the discovery of a new altar there the journey out was commenced on May 14.

The expedition proceeded down the Río de la Pasión in a mahogany dugout to Sayaxché, the headquarters of the American and Guatemalan Mahogany Export Company, and thence by mule-train to Flores, the picturesque little island-city on the Lake of Petén Itzá, visited by Hernán Cortés in 1525 on his memorable and tragic march from Tabasco to the Gulf of Honduras.

After resting here a few days, the journey out to the coast was resumed, and on June 5 the expedition returned to Belize, thus closing a loop of over 1,000 miles [1,610 km] of mule, foot, and motor-boat travel, which had taken three months almost to a day. In addition to the three sites, an examination of which was contemplated in the original plan, nine other ruin-groups were visited, as follows: Quiriguá, La Reforma III, Seibal, Itsimté, Flores, San José de Motul, Yaxhá,

Benque Viejo, and Nakúm; and new material were obtained at each.

The results, arising from the study of the various inscriptions at the foregoing 12 sites, may be summarized as follows:

First and most important, seven new dated cities have been added to the 19 previously known, an increase of nearly 37 percent in this direction, as follows: 1. La Honradez, 2. Cancuen, 3. Itsimté, 4. Flores, 5. Yaxhá, 6. Nakúm, and 7. Benque Viejo. The distribution of these is shown in Figure 1.3.3, where the newly dated cities are represented by black dots and those the dates of which were previously known by crosses.

Four new monuments were discovered: a stela at Seibal, an altar at Cancuen, and an altar and a rock-cut shrine at Copán.

Eight new Initial Series were discovered: four at Copán, three at Itsimté, and one at Yaxhá.

Ten new period-ending dates were discovered: two at Copán, two at Cancuen, two at Flores, two at Nakúm,

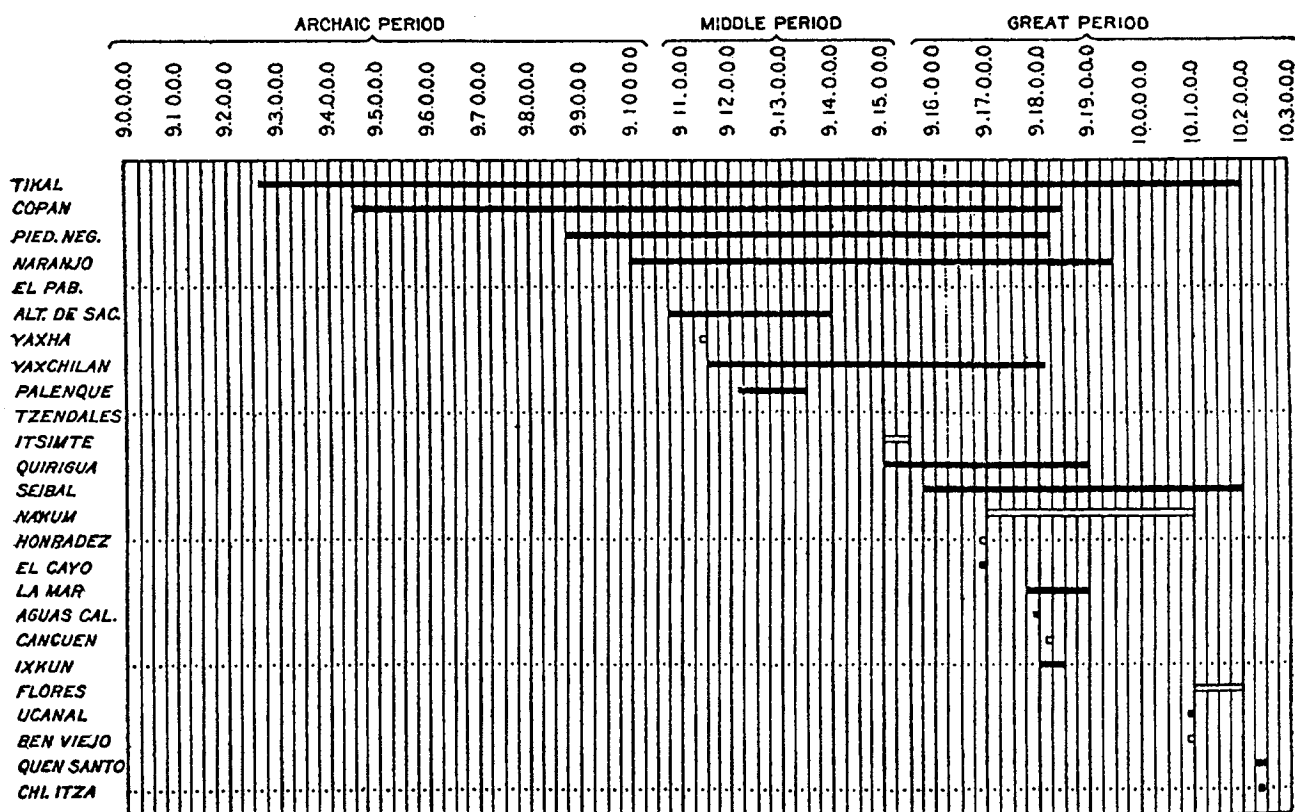


Figure 1.3.3. Diagram Showing Distribution of the New Chronological Material Gathered by the Carnegie Institution Expedition in 1915 (new dates are in outline, previously known dates in solid black).

one at Seibal, and one at Benque Viejo. In addition to the foregoing, a large number of "corrected readings" of previously deciphered texts, as well as new readings of previously reported but heretofore undeciphered texts, were secured. Many of the earlier readings were found to be inaccurate, and a thorough revision of all previous decipherments was undertaken.

The general relation of this new material to the whole subject of Maya chronology is set forth graphically in Figure 1.3.3. This figure shows the several periods of occupancy of the different southern cities based upon the dated monuments at each.

The successive 20-year periods of the Maya era appear across the top of the figure, there being 20 years (7,200 days) between any two adjacent heavy black lines, that is, from 9.0.0.0 to 9.1.0.0 for example, and five years (1,800 days) between any two adjacent lines. The new dates appear in outline, previously known dates being shown in solid black.

It will be seen in Figure 1.3.3 that all of the new dates, except the one from Yaxhá, occur during the Great Period; and that not a few fall at its very close from 10.1.0.0 to 10.2.0.0 (580–600 AD). This is perhaps the most important single contribution of the expedition; that is, the accumulation of data tending to

show that the Old Empire made its final stand in the northeastern corner of Guatemala, in what is now the Department of Petén at the cities of Seibal, Flores, Tikal, Ucanal, Benque Viejo, Nakúm, and Naranjo.

In the extreme south, at Copán and Quiriguá, and in the west from Palenque southeastward, including the long chain of cities on the Usumacinta River (Piedras Negras, El Cayo, Yaxchilán, El Pabellon, Altar de Sacrificios, and Aguas Calientes) the practice of setting up monuments appears to have ceased by the end of Cycle 10, that is, 10.0.0.0; and the inference is reasonable that these centers had either been abandoned outright, or at least had sunk to such a low level of cultural activity as to be incapable of artistic and chronological expression. Only in the northeastern part of Petén the light of culture was kept burning for a half century longer, to be extinguished finally by the great exodus which put an end to the Old Empire about the beginning of the seventh century AD.

The swiftness with which the closing catastrophe fell, whatever may have been its nature, is apparent from the fact that not a single city of the Old Empire has a date later than 10.2.0.0, although a number of cities were surely occupied down to this time or 20 years prior thereto.

1.4.

SYLVANUS G. MORLEY

Archaeology

YB 15:337–341, 1916

During the summer and fall of 1915 work on the inscriptions of Copán, Honduras, was continued. After returning from the field in June, Mr. Morley proceeded to Cambridge to examine the original texts, casts, and photographs in the Peabody Museum, Harvard University, and to incorporate this material with the results of his previous studies in a forthcoming monograph on the inscriptions at this site (Morley 1920).

The 1916 Central American Expedition took the field early in the year, sailing from New Orleans for Puerto Barrios, Guatemala, on February 3 and returning to this country on June 5. During this period the personnel of the party changed several times. After the highlands trip, Mr. A. W. Carpenter became photographer and continued in this capacity until the close of the season.

Dr. George Underhill was the expedition physician for the Copán and Tulúm trips, and Dr. Moise Lafleur for the Uaxactún trip. The tragic death of the latter and of a guide, on May 17, in northern Petén, has already been made the subject of a special report to the President of the Institution [Carpenter 1950].

In addition to the foregoing regular members of the staff, the expedition was peculiarly fortunate in having the services at one time or another of several other collaborators who materially increased the range of activities. Mr. W. H. Holmes, Head Curator of Anthropology at the U. S. National Museum, accompanied the party to the ruins of Copán and made an archaeological panorama of the site, which he has kindly placed at the disposal of the Institution. Mr. S. K. Lothrop, of Harvard University, was with the expedition until the end of March. He made a number of maps and plans, including a survey and archaeological panorama of the ruins of Tulúm. Dr. T. Gann, chief medical officer of British Honduras, made the Tulúm trip for the purpose of copying the extensive mural paintings there, an excellent representative series of which was secured.

The itinerary of the expedition may be divided into four parts or trips, each corresponding to a well-defined unit of work: 1. the highlands of Guatemala; 2. the ruins of Copán; 3. the ruins of Tulúm, on the east coast of Yucatán, Mexico; 4. the ruins of Uaxactún, northern Petén, Guatemala.

The objectives of the first trip were the ruins of Chinkultic and Ocosingo in the State of Chiapas, Mexico,

where hieroglyphic inscriptions have been reported by Seler and others. Owing to the revolutionary disturbances in this region, however, it was impossible to proceed beyond Huehuetenango in the highlands of Guatemala, and the party returned to the capital without having reached either of its destinations.

The Copán trip was more successful. Several new inscriptions, chiefly fragmentary texts from the Archaic period, were discovered and copied. The most notable find, however, was that of a heretofore unreported stela, which was located in the walls of the cabildo at Santa Rita, a small village seven miles [11.3 km] up the valley from the main group of ruins. Its several pieces were removed from this exposed position, and after the inscription had been copied and photographed, they were carried to a place of safety. The new monument, to which the number 23 has been given, dates from the early part of the Middle Period 9.11.0.0.0, approximately 380 AD.

The third trip, to Tulúm on the east coast of Yucatán, was exceedingly fruitful. This site has long held a peculiar interest for students in the Maya field, not only because of its size and individuality, but also on account of its comparative inaccessibility and isolation.

It was first described by the American traveler Stephens, in 1840 (Stephens 1841:2:385–409), though owing to the War of the Castes, which ravaged Yucatán in 1848, it has since been closed to investigation. Maya Indians, fleeing from the victorious Mexicans in the western part of the peninsula about the middle of the last century, settled in the region around Tulúm, where they have maintained themselves in virtual independence ever since. They have successfully resisted such Mexican troops as have been sent against them, falling back into the bush before large parties and killing such small parties as have ventured into their country.

Only twice since Stephens's time has the site been visited, once by an expedition from Harvard University in 1911, and once by an expedition from the School of American Archaeology in 1913. Neither party stayed at the ruins for more than 24 hours, and beyond a brief reconnaissance, little was accomplished by either.

Several circumstances made the present season especially opportune for visiting the site. Friendly relations have been established between the Mexican government and the Maya for the first time in many years. The expedition was at Belize, the best point from which to make the trip; and finally the party was sufficiently numerous, five investigators and assistants, to insure an adequate study of the site in a minimum of time. A small steamboat, of about 40 tons, was hired at Belize and the expedition sailed for Tulúm on March 19.

The most important result was the location of the hieroglyphic monument first reported by Stephens, and later by Howe of the Peabody Museum expedition. Howe's reading of the date as 9.6.10.0.0, approximately 290 AD (Howe 1911), was verified and drawings and photographs were made. The occurrence of such an early date as 290 AD at such a late Maya site as Tulum is difficult to explain. Geographically, architecturally, stylistically, and historically considered, Tulum is a thousand years later than the Initial Series date of this stela. Indeed, barring this one date, there is nothing at Tulum to connect it with the Old Empire; on the contrary, its location, architecture, and mural decoration strongly indicate that it is to be referred to the close of the New Empire, probably some time after 1200 AD. The question is an important one, and further investigation will be necessary before this apparent anachronism can be satisfactorily explained and the discrepancy between the chronological and other criteria cleared away.

Dr. Gann secured tracings of a number of the mural paintings and made the necessary color notes for their accurate reproduction. In the time available, however, it was impossible to make more than a beginning upon this important work. The subjects portrayed are exclusively of a religious nature, representations of the principal deities of the Maya pantheon in various acts of sacrifice. God B of the Schellhas classification, probably the chief Maya divinity, occurs repeatedly. The delineation of the figures so closely resembles that in the Codex Tro-Cortesiano as to strongly suggest that this manuscript originated not far from Tulum.

A map of the religious and civic center of the city, that is, the area within the walls¹ was prepared by Mr. Lothrop, as well as elevations and ground-plans of all the more important structures. The archaeological panorama already mentioned was based upon these data and conveys an excellent idea of the city as it once appeared.

The foregoing material, together with the photographic record secured by Mr. Carpenter, now makes possible for the first time the preparation of an adequate preliminary report of this little-known site and paves the way for its more intensive investigation.

The last trip, to northern Petén, was the most profitable of the season, resulting in the discovery of a large new city and the oldest monument yet reported from the Maya field. This site, to which the name Uaxactún was given,² is of major influence. Although less extensive than the largest Maya cities, Tikal, Copán, Chichén Itzá, and Uxmal, it may be classed with such noteworthy sites as Quiriguá, Naranjo, and Nakúm, and was easily a center of large population.

Time and facilities were lacking for the thorough exploration of the region, so proximate was the rainy

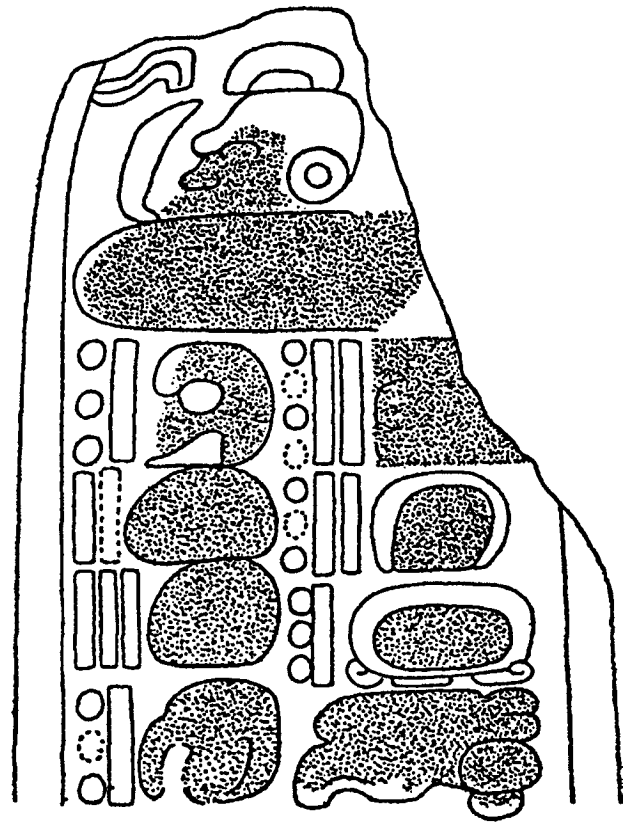


Figure 1.4.1. Stela 9, Uaxactún (The earliest monument yet reported from the Maya area (approximately 50 AD); and the only stela known dating from Cycle 8 of the Maya chronological era).

season and so dense the tropical forests, but three large architectural complexes were located in an area not over half a mile square [1.3 sq km]. Each contained numerous courts, surrounded by the remains of extensive buildings, both of the dwelling and religious types, that is, palaces or monasteries and temples, and many monuments.

Group A, the first discovered, has five sculptured stelae and 10 plain ones; Group B has four sculptured stelae and 14 plain ones; and Group C has two sculptured stelae and four plain ones, a total of 39, and without doubt further investigation would bring others to light. The main plaza seems to have been at Group B, and here the most important monuments as well as the largest pyramid-temple were found. The most important monument is easily Stela 9 at Group B, which was found to record a Cycle 8 Initial Series as follows: 8.14.10.13.15, approximately 50 AD.

Stela 9 is the first and only monument yet reported which may safely be referred to Cycle 8 of the Maya chronological era, all others dating from Cycle 9 or 10; and it is therefore the earliest monument known.³ The carving is extremely archaic in character, note the

irregularity of the glyphic outlines, and the relief has suffered greatly from erosion. Fortunately the Initial Series is sufficiently preserved to decipher.

Of the 11 sculptured stelae found, seven have Initial Series; one has a Calendar Round date, and three are too effaced or broken to be determined. It is possible to decipher four of the seven Initial Series to the day, as [shown in Table 1.4.1].

Table 1.4.1. Calendrical Decipherments, Initial Series Dates, Uaxactún.

Monument	Date in Maya Chronology	Approximate Date in Christian Chronology
Stela 2	9.16.0.0.0 2 Ahau 13 Tzec	480 AD
Stela 3	9.3.13.0.0 2 Ahau 13 Ceh	230 AD
Stela 7	9.19.0.0.0 9 Ahau 18 Mol	540 AD
Stela 9	8.14.10.13.15 8 Men 8 Kayab	50 AD

Between the dates of Stelae 9 and 7 nearly five centuries elapsed, the longest recorded occupation of any Old Empire site.

Approximate readings of the remaining three Initial Series, Stelae 1, 5, and 6, have also been attempted. Stela 5 apparently records another Cycle 8 date, the best reading being 8.15.10.3.12, although this is open to considerable doubt. Stela 6 may certainly be referred to the Archaic Period, probably to Katuns 6, 7, 8, or 9, and Stela 1 with equal certainty to the Great Period, the best reading being 9.14.0.0.0.

The great importance of this new site lies in the number of its very early inscriptions. Stela 9 is the oldest dated monument known, and Stela 3 is the fourth oldest; and it is to be expected that other early texts will be found in the vicinity. The region is new territory, having been penetrated for the first time by chicleros less than three years ago. Other important sites are known to exist beyond Uaxactún, at least one having large standing buildings and sculptured monuments. The important bearing this site, and indeed the whole adjacent region, may have on the much-vexed question of the origin of the Maya civilization in its historical context, is readily apparent, and its further investigation is strongly recommended.

NOTES

1. The city is enclosed on three sides by a high wall, the bluff along the sea protecting the fourth side. This wall encloses an area of some 22 acres [0.089 sq km]. It varies from 8 to 13 feet [3.9 m] in thickness at the base, and from 10 to 15 feet [3.1–4.6 m] in height. The north and south

sides are pierced by two gateways and the west side by one.

2. The Tuxtla statuette and the Leyden plate are not included in the above statement. Although both record earlier dates than Stela 9 (8.6.2.4.17 and 8.14.3.1.12 respectively) neither is a monument, and neither, properly speaking, was found *in situ*. The Tuxtla statuette is a little figurine of nephrite, about 7 inches [17.8 cm] high, found near San Andrés Tuxtla, Mexico; and the Leyden plate is a plaque of the same material and of about the same length, which was found on the Río Graciosa near Puerto Barrios, Guatemala. Neither can be regarded as a large stone monument in the sense used here.

1.5.

SYLVANUS G. MORLEY

Archaeology

YB 16:285–289, 1917

During the autumn, winter, and spring of 1916–17 work was continued on the inscriptions of Copán, Honduras, and was brought almost to a close. An examination of all the available texts was completed, and there remains only the preparation of a concluding chapter, appendices, index, and tables. This work was suspended in April, when the 1917 Central American Expedition took the field, sailing from New Orleans for Puerto Barrios, Guatemala, on April 26, under instructions to make an archaeological reconnaissance of Central America, so far as that might be practicable. Mr. Morley was accompanied by Mr. John Held, Jr., of New York, as artist, and the expedition will remain in the field indefinitely.¹

The first trip was an archaeological reconnaissance of western Honduras, the itinerary of which is shown in Figure 1.5.1, together with the locations of the new sites discovered. The expedition left Zacapa, Guatemala, on May 15, going first to the ruins of Copán, Honduras, where several days were spent in drawing and photographing the new texts, which had been discovered since the previous visit in March 1916. One of these, a fragmentary stela, to which the number 24 was given, proved to be the earliest monument yet found at this site, recording the date 9.2.10.0.0 of the Maya era, or approximately 210 AD.

The circumstances surrounding the discovery of this particular fragment are of special interest because of the light they shed upon a common Maya practice throughout the period of the Old Empire, namely, the

Figure 1.5.1. Itinerary of the 1917 Central American Expedition.

re-use of earlier monuments in later constructions. This piece was found near the southwestern corner of the village plaza, 3 feet [91 cm] below the present level of the ground. It rested directly upon the foundation stone of Stela 7, in the support of which it seems to have been used. But the date of Stela 7, in the support of which it seems to have been used. But the date of Stela 7 is 9.9.0.0.0 of the Maya era, approximately 340 AD; in other words, Stela 24 was broken up and re-used in the foundations of this later monument 130 years after the date upon which it was originally erected (210 AD). This practice was known to have been common during the Middle and Great Periods of the Old Empire, but the present case is the first example of its occurrence as far back as the Early Period.²

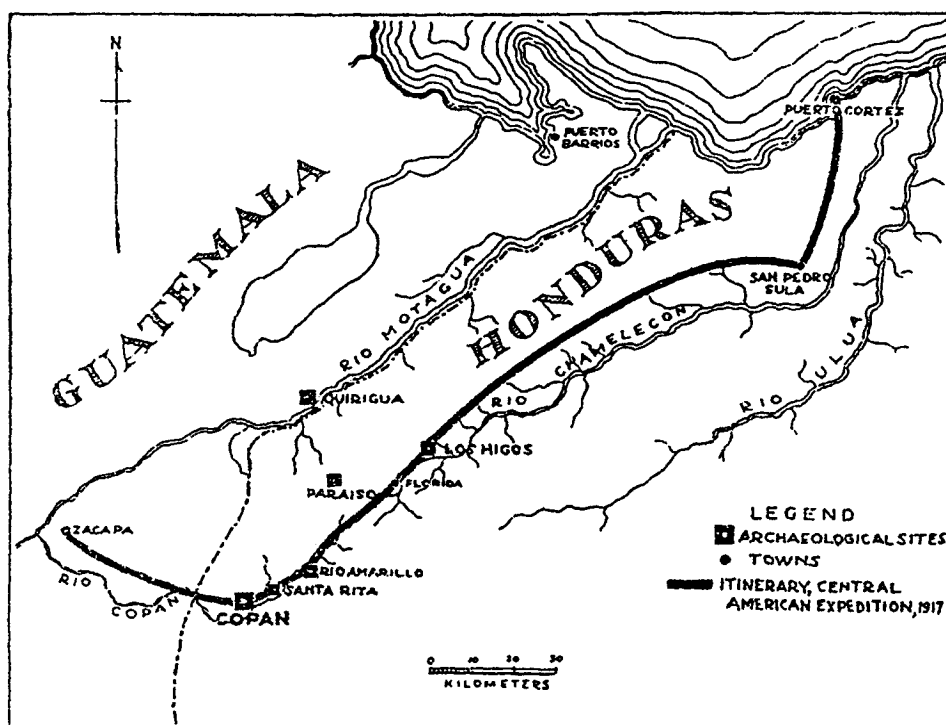
The front and back of Stela 24 are inscribed with hieroglyphs, the sides being left plain, though dressed smooth. The single fragment was recovered from about 3 feet [91 cm] below the surface and presents the cycle, katun, tun, uinal, and day signs, all perfectly preserved and permitting the certain decipherment of the date as given above.

Another interesting point in connection with this monument is that it records a half katun end (lahuntun), just like Stelae 15 and 9, the next two earliest monuments at Copán; furthermore, each is 40 years apart from the next. Indeed, it is probable that the marking of the first and third quarters of the katuns (hotuns) did not commence until later, about the close of the Early Period.³

Table 1.5.1. Calendrical Decipherments, Stelae, Copán.

Stela 24	9.2.10.0.0	ca. 210 AD
Stela 15	9.4.10.0.0	ca. 250 AD
Stela 9	9.6.10.0.0	ca. 290 AD

Stela 24 is three years earlier than the earliest date yet deciphered at Tikal and indicates that the antiquity of Copán, the southern Maya metropolis, may yet



to be found to exceed that of her great northern rival.⁴

A very fine altar of the Great Period, called W' was discovered in a small plaza about a half mile [0.8 km] east of the Main Group on the western bank of the river. The front was sculptured with a representation of the two-headed monster, and the back and sides with hieroglyphs. Many of the signs that are the unusual full-figure variants, and the dedicatory date would appear to have been the hotun ending 9.17.5.0.0, approximately 505 AD. Photographs and drawings were made of all four faces.

Two of the three missing fragments of the east altar of Stela 5 were also found during the past year in the bush just north of the stela. One of these presents Glyphs C, D, and E of the Supplementary Series. Photographs and drawings were made of the inscription.

The long missing fragment of a Great Period Initial Series, photographed by Maudslay in the eighties, was located in the foundations of a house on the southern side of the village plaza and was removed to the cabildo for safe keeping. This piece is chiefly important as presenting the latest example of an Initial Series yet found at Copán. Several other fragments, probably referable to the Early Period, were found, and also removed to the cabildo.

The next site visited was Santa Rita, 7 miles [11.3 km] up the valley from Copán, where Stela 23 was discovered last year [Chapter 1.4 this volume]. A drawing of one of the sides omitted last year was made, which completes the record of this text.

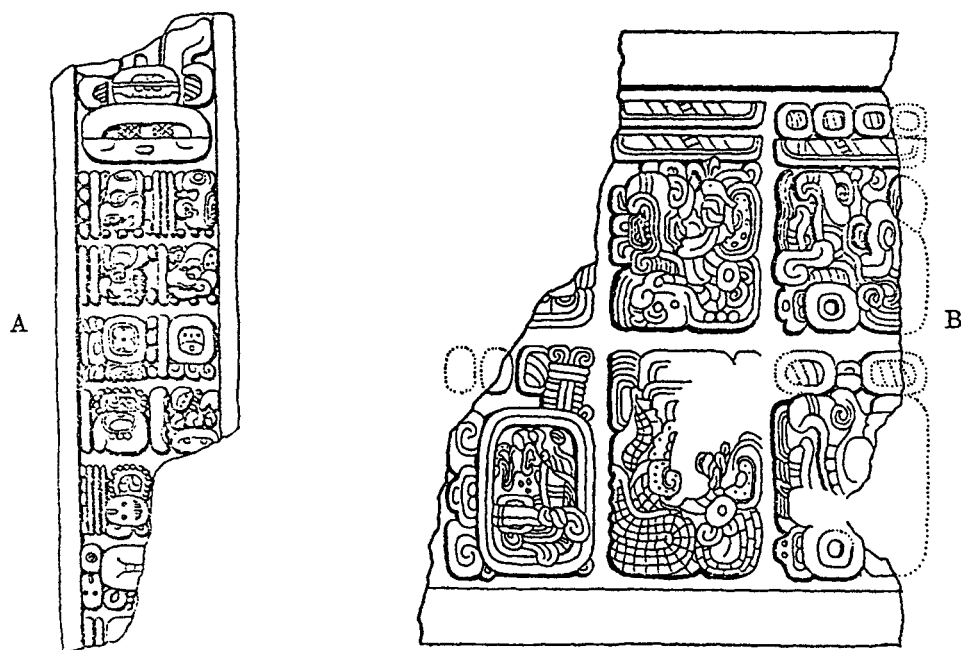


Figure 1.5.2. Los Higos, Stela 1; Copán, Stela 24. a. Stela 1, Los Higos, Honduras. This monument records the date 9.17.10.0.0 of the Maya era, or approximately 510 AD. It is the best style of the Great Period of the Old Empire, which was the golden age of Maya art; b. Stela 24, Copán, Honduras. This fragment of a monument presents the earliest date yet found at Copán, namely 9.2.10.0.0 of the Maya era or approximately 210 AD. One hundred and 30 years after its erection, it was broken up and used over again in the foundations of another monument.

The first of the two new sites discovered on this trip, Río Amarillo, is on the bank of the Copán River, about 12 miles [19.3 km] northeast of Santa Rita. A number of mounds are built on the side of a hill, which has been artificially terraced, and at the eastern end, near the base, are two hieroglyphic altars. Unfortunately, although the inscriptions are perfectly legible, neither presents a date in the Long Count; and it is therefore impossible to assign either to its exact position in Maya chronology. From the style of the carving, however, both are surely referable to the Great Period. It is to be regretted that not a single date can be deciphered here, although the approximate age of the site is doubtless determinable from the stylistic criteria. A map of the site, and drawings and photographs of both inscriptions, were made.

Leaving the Copán Valley and passing over the divide into the Chamelecón Valley, another new site was discovered at Los Higos, some 12 miles [19.3 km] northeast of the village of La Florida.⁵ This site is on the west side of the Chamelecón River and an eighth of a mile [1.3 km] back, at the base of the first foothills. It contains upwards of 30 mounds, including several fairly high pyramids and one very fine stela in the best style of the Great Period. The inscription is unusually well preserved and records the date 9.17.10.0.0 of the Maya era, approximately 510 AD. It is evident from this single piece of sculpture that the city derived its artistic inspiration from Copán; indeed, it was probably colonized from Copán during the Middle or Great Period. A map of the site was made, and the inscription was drawn and photographed.

One of the results of the past four years work in this part of the Maya field has been the rather definite

location of the eastern or southeastern Maya frontier.

During this period four new sites (Paraiso, Santa Rita, Río Amarillo, and Los Higos) have been added to the two previously known (Copán and Quiriguá) and the general historical development of the region has been worked out. A comparison of the earliest and latest dates at these six cities clearly establishes their relative ages.

Table 1.5.2. Chronological Development of Six Classic Maya Sites.

Copán	210–530 AD	
Santa Rita	380 AD	Only one date
Quiriguá	475–540 AD	
Río Amarillo	460–600 AD	Date based upon stylistic criteria
Paraiso	460–600 AD	Date based upon stylistic criteria
Los Higos	510 AD	Only one date

Copán was the first settlement in this region, possibly being founded as early as the first century before Christ. Although Santa Rita had been founded as early as the beginning of the Middle Period, 380 AD, it was not until the beginning of the Great Period, 100 years later, that the extensive colonization of the region really began. Quiriguá was founded in 475 AD or possibly 22 years earlier, and Los Higos was established shortly afterward, 510 AD.

Although it has been impossible to date either Paraiso or Río Amarillo exactly, both are certainly referable to the same general period on stylistic grounds, and we may accept the great extension of Maya dominion in the south as having taken place toward the close of the fifth century, beginning about 475 AD.

The frontiers of Maya esthetic influence doubtless overlapped the frontiers of actual empire in most places.

For example, the pottery of the Ulúa frontier, which lies considerably east of this chain of cities, shows unmistakable Maya influence. Also, during the present field season a large collection of pottery from north-western Salvador was found to contain many pieces almost exactly like those from the Copán tombs. Just as Rome influenced the life and art of the outer barbarians, so the Maya coerced the life and art of surrounding peoples of lower culture and imposed their esthetic standards and practices beyond the frontiers of their empire. The latter would appear to have been the chain of cities just described, whereas the former were strongly felt as far as the Ulúa Valley.

A second trip was made in Salvador and the central part of Honduras during July and August. Mr. Held made color drawings of the painted vases in the Justo Armas collection in San Salvador; and at Tegucigalpa he painted a magnificent specimen of Maya ceramic art from Copán. At San Pedro Sula a fine example of painted ware in the Waller Collection from the Ulúa Valley was also drawn in color. At Tegucigalpa occasion was taken to call upon His Excellency President Bertrand and Dr. Mariano Vásquez, the Minister of Foreign Relations, and to explain the work of the Carnegie Institution of Washington in Honduras, particularly at Copán. Friendly relations were established with these officials, and it is believed that the way was paved for more extensive work there in the future.

NOTES

1. During 1917 and 1918 Morley was an operative for the Office of Naval Intelligence hired to search for rumored German submarine bases along coastal Central America, to combat pro-German activities, and to organize a regional intelligence network. Other involved in this work included archaeologists Samuel K. Lothrop, Thomas Gann, J. Alden Mason, Herbert J. Spinden, the botanist Wilson Popenoe, and the cartoonist John Held (Harris and Sadler 2003:46 [ed.]

2. The Tuxtla statuette and the Leyden plate are not included in the above statement. Although both record earlier dates than Stela 9 (8.6.2.4.17 and 8.14.3.1.12 respectively) neither is a monument, and neither, properly speaking, was found *in situ*. The Tuxtla statuette is a little figurine of nephrite, about 7 inches [17.8 cm] high, found near San Andrés Tuxtla, Mexico; and the Leyden plate is a plaque of the same material and of about the same length, which was found on the Río Graciosa near Puerto Barrios, Guatemala. Neither can be regarded as a large stone monument in the sense used here.

3. The earliest first or third quarter of a katun now known is that recorded on Stela 25 at Piedras Negras, namely, 9.8.15.0.0, approximately 335 AD.

4. For further data relating to this question [see Chapter 1.4 this volume].

5. This site and monument were discovered through information furnished by Mr. Basil Booth, a mahogany contractor of Guatemala, and Mr. Samuel K. Lothrop, of the Peabody Museum of Harvard University.

I.6.

SYLVANUS G. MORLEY

Archaeology

YB 17:269–276, 1918

The Central American Expedition did not return to the United States during 1917, but remained in the field until the end of May 1918. Throughout this period the personnel of the staff continued the same: Mr. Morley as director and Mr. John Held, Jr., as artist. During the Yucatán trip, Dr. Thomas Gann, of Belize, accompanied the expedition as a collaborator, having filled a similar position with the 1916 expedition.

The itinerary of the expedition may be divided into three parts or trips, as follows: 1. A reconnaissance of the Mosquito Coast of Honduras and Nicaragua in September and November 1917. 2. An examination of all archaeological sites in the peninsula of Yucatán known to have hieroglyphic inscriptions, in February, March, and April 1918. 3. A trip to the ruins of Palenque in the state of Chiapas, Mexico, in May 1918. It may be noted also that Mr. Morley was present during the earthquake-shocks of December 25, December 29, and January 3, which destroyed Guatemala City, and he assisted in the relief work there [see Chapter 1.4 this volume].

The reconnaissance of the Mosquito Coast was undertaken primarily to establish how far eastward along the Atlantic littoral of Central America Maya esthetic influences may have extended, and it was a continuation of the work carried out in the summer of 1917, when the eastern frontier of actual Maya empire was somewhat definitely fixed as the Chamelecón Valley in Honduras.¹

At Tela, 35 miles [56.4 km] east of the mouth of the Chamelecón River, a beautiful clay head of purest Maya type was found, together with some fine flints and smaller objects. Further excavation, however, would be necessary here before it could be determined whether this head was of local origin, or whether it had been brought in by trade from farther west.

One hundred miles [161 km] farther east, at Trujillo, and on the Rincon peninsula, several sites were visited through the courtesy of Mr. H. D. Scott, superintendent of the Trujillo Railroad. These consist of deposits of potsherds, among which incised and modeled wares predominate, handles and animal's heads, fragments of tripod bowls, etc., and a few beautiful painted ware of the Ulúa Valley sites, which are themselves just west of the area of actual Maya dominion as established last year. One of these deposits on the right of way of the Trujillo Railroad, in a borrow-pit near the Aguan River, was fully 10 feet [3.1 m] below the present level of the ground, underneath a stratum of alluvial soil laid down by the river in one or more of its many wanderings over the flood-plain. Similar objects have been found on the adjacent Bay Islands, notably at Roatán and Guanajá, and it seems probable, from the preliminary examination, that this part of the coast and adjacent islands may be assigned to one and the same archaeological province, the culture of which was certainly inferior to that of the Maya and probably of subsequent origin as well.

East of the Aguan River no sites were found, although such may possibly exist in the dense bush behind the beach. From this vantage point eastward, moreover, the character of the country begins to change; the mountains draw away from the shore-line and finally disappear altogether, and there commences a series of shallow lagoons separated from the sea only by a low sandy strip of land. These and the surrounding marshes mark the edges of the great deltas of the Patuca and Wanks Rivers, and they were unadapted to the development of a high culture (Morley 1918).

The present inhabitants of this region are the Miskito Indians, a degenerate mongrel tribe in which Carib and possibly other strains appear. They are a simple fishing people, living in thatched huts along the banks of the lagoons and water-courses, with crude arts and crafts, among which stone carving is not included.

There are traditions of a more cultured tribe, the Sumus, who formerly occupied the region, but who long ago were driven back into the less desirable interior by the Miskito. Remnants of these older inhabitants of the littoral are still to be found several days' journey up the Patuca and Wanks rivers of eastern Honduras and northern Nicaragua.

It may be stated with reasonable assurance, although final proof must await further exploration and excavation, that proceeding eastward along the coast-plain evidences of high cultural activity fall off rapidly once the Ulúa River is left behind; also, that the Maya civilization proper does not seem to have exerted much influence east of this same valley.

The second trip, to the peninsula of Yucatán, was by far the most important of the year, and the results

obtained, through the discovery of the system of dating used in the northern cities, promise to shed a flood of light upon the little-known chronology of the New Empire. It has long been recognized that, after the Maya migrated northward from Guatemala and Honduras during the sixth and seventh centuries after Christ, into the peninsula of Yucatán, along with many another custom and practice, their system of recording dates also underwent considerable modification. The extraordinarily accurate Initial Series, for example, by means of which one day could be distinguished from any other in a period of 374,143 years, which had been so prevalent in the south, practically disappear in the north. Of the 150 odd Initial Series known, only three are found in Yucatán. Not only Initial Series, but all the other kinds of texts, become very much scarcer in the north. Indeed, in the whole peninsula there are only 12 sites known having as much as a single inscription, as compared with thrice that number in the south; and the whole content of these few constitutes less than 3 percent of the *Corpus Inscriptionum Mayarum* (Morley 1948).

Because of this scarcity of material, hardly offset by the few manuscript chronicles (the Books of Chilam Balam) that have come down to us. And because of our lack of knowledge as to the method of dating used, it followed that we knew much less of Maya history during the New Empire (600 AD to 1541 AD) than during the Old Empire (100 BC to 600 AD).

The immediate object of the second trip, therefore, was an examination of all known Yucatán sites having inscriptions, together with a first-hand study of the original texts, in the hope that some of this obscurity might be cleared away. The sites visited and their respective locations will be found on 1.6.2.

The results of this investigation was most promising, no less than the discovery of the system of dating used in the New Empire, as noted above. This was found to be a kind of Period Ending dating, and its discovery was made possible by the decipherment of the so-called "Winged-Cauac" glyph, which proved to be another variant of the tun sign. Mr. Morley had previously shown that the "Winged Cauac" had this meaning in the hotun sign (Morley 1915); and its extension to a more general use in Period Ending dating with coefficients other than 5, as already noted in the case of the hotun sign, was a logical development of Maya chronological practices.

The system was variously employed, the several methods in use depending for their varying degrees of accuracy upon the number of factors present. The simplest is merely the record of a given day falling in a given tun, for example, the day 6 Kan in Tun 9. As every Tun 9 contained one day 6 Kan, and some two such days, and as a Tun 9 recurred every 19.71 years,

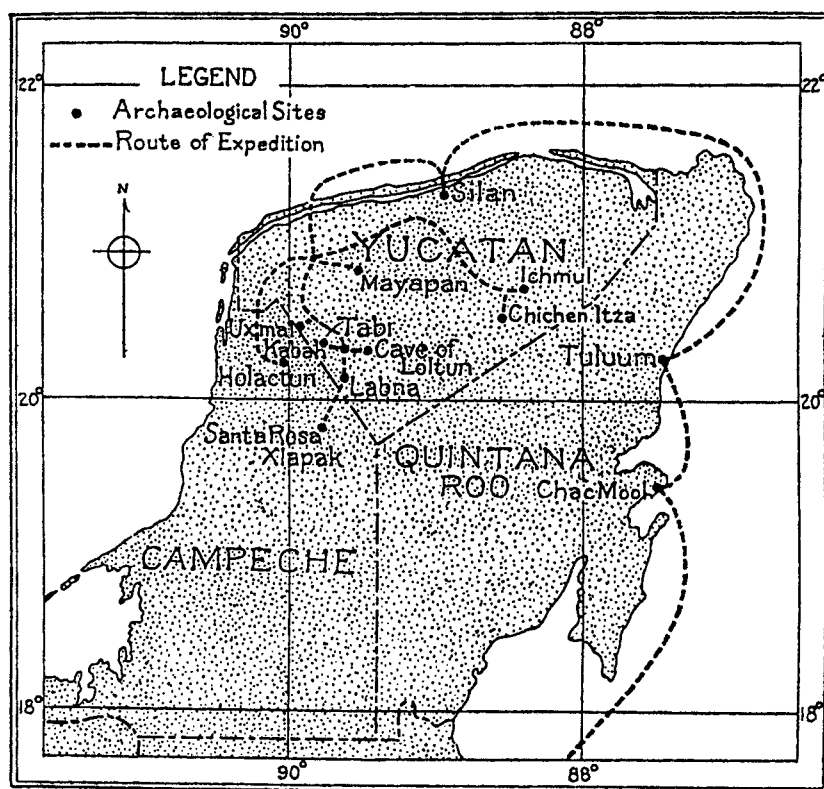


Figure 1.6.1. Itinerary of the 1918 Central American Expedition (All sites shown above, with the exception of Chac Mool on the East Coast, have hieroglyphic inscriptions).

texts are fragmentary, enough remains of each to permit its decipherment, the dates of both being the same.²

A final modification of this last method is seen on the lintel from the north chamber of the western range of the Monjas Quadrangle at Uxmal, where not only the particular tun in which the date fell is given, but the particular katun as well. See Figure 1.4.1, where 5 Imix 19 Kankin is declared to have occurred in Tun 18 of Katun 13. By the addition of this last factor, accuracy within a period of 374,143 years was achieved. The more factors present, the more exact became the resulting date until the extreme accuracy of the Initial Series is equaled by this last method.

Although much remains to be done in working out the details of the new system, already it has been possible to decipher some new dates at different sites. These are given in Table 1.6.1, with the corresponding approximate equivalents in Christian chronology.

In addition to the foregoing dates recorded in the new system, several others recorded either as period endings, or calendar round dates, or in the *ukahlay katunob*, were displaced elsewhere.

The true date of the Temple of the Initial Series at Chichén Itzá is 10.2.10.0.0 2 Ahau 13 Chen, which makes it conform with the hotun hypothesis mentioned elsewhere. Previously this had been regarded as being 10.2.9.1.9 9 Muluc 7 Zac, that is, the Initial Series on the under side of the lintel. The contemporaneous date, however, is doubtless that recorded on the front of the lintel and is as given above.

Through the accidental discovery of an important missing fragment of the Tulum stela, it has been possible to date that monument as 10.6.10.0.0 7 Ahau 18 Yaxkin, that is, just one cycle later than its Initial Series 9.6.10.0.0 8 Ahau 13 Pax. That this Initial Series could hardly have been the contemporaneous date of the monument was noted in [Chapter 1.4 this volume], and elsewhere (Morley 1917); but the discovery of this fragment, which fits at the bottom of the inscription, gives a more satisfactory reading. Fortunately this important monument was not lost in the destructive hur-

this method was not very accurate. Happily it does not seem to have been much used much, occurring only once in the 16 cases under observation.

The commonest method (being used in half the cases) is the record of a given tun and the day upon which it ended, as for example Tun 13 ending on the day 2 Ahau. Such a date could not recur fulfilling all the given conditions until after a lapse of 256.26 days. As most of the New Empire sites were not founded until after 950 AD, and at the most were occupied less than 500 years, it is never necessary in such cases to distinguish between more than two possible readings, and usually only one is historically probable.

By the addition of the day of the month to the above method, as Tun 11 ending on the day 2 Ahau 18 Xul (a date found in the Temple of the High Priest's Grave at Chichén Itzá), accuracy within a far greater stretch of time was secured, no less indeed than within a period of 18,707 years.

A third method, which occurs in six out of the 16 cases, is far more accurate than even the preceding. It involves the use of a Calendar Round date with a given tun, ending on a given day. For example, 10 Ix 17 Pop falling in a Tun 17 ending on the day 12 Ahau. Such a date can not recur, fulfilling all the given conditions, until after the lapse of 243,193 years. An example of this kind is the inscription from the north sides of the rings in the ballcourt at Uxmal. Although both of these

Table 1.6.1. Calendrical Decipherments, Chichén Itzá, Uxmal, and Holactún.

Site	Building	Date in Maya Era	Corresponding Date in Christian Era
Chichén Itzá	Temple of the Two Lintels	11.7.12.16.18 9 Eznab 11 Yax	1107 AD
Chichén Itzá	Temple of the High Priest's Grave	11.19.11.0.0 2 Ahau 18 Xul	1350 AD
Chichén Itzá	Temple of the Owl (lintel)	12.2.13.0.0 1 Ahau 14 Ceh	1411 AD
Uxmal	Ball Court	11.15.16.12.14 10 Ix 17 Pop	1277 AD
Uxmal	Monjas Quadrangle, East Range, North Room	11.12.17.11.1 5 Imix 19 Kankin 11.2.8.4.9	1219 AD
Holactún	Temple of the Initial Series	7 Muluc 17 Tzec	1012 AD
Holactún	Temple of the Initial Series	11.2.13.0.0 2 Ahau 8 Yax	1017 AD

ricane of October 1916, as previously reported (Morley 1917:194).

Following Bishop Landa's statement that there were hieroglyphic monuments at Silan near the north coast (Landa 1864:52), the expedition visited this village and found fragments of two stelae, of which one had the Calendar Round date given above. This is but another of the many instances of the remarkable reliability of Bishop Landa's statements, which have been substantiated at every point by modern investigations in this field. The Mayapán date is from the stela found by Abbé Brasseur de Bourbourg, while digging at the site in the sixties of the last century. It is another corroboration of Bishop Landa, who had described hieroglyphic monuments here three centuries earlier. It is not improbable that this monument was the last katun stone to be erected at Mayapán, since the city was destroyed and abandoned before the expiration of the next 20 year period, that is, Katun 8 Ahau, when the next stone would have been erected.

One large new site was discovered on the east coast of the peninsula, between Asención Bay and Espíritu Santo Bay. It is about half as large as Tulúm and named Chac Mool, after an heroic-sized Chac Mool statue in stucco reclining under the arch or covered gateway leading to the principal temple.

The third and last trip of the season to the ruins of Palenque in northern Chiapas yielded little new material. Palenque has been more extensively visited than any other Maya site and its architecture and hieroglyphic inscriptions have been more adequately published (Maudslay 1889–1902).

Two new Initial Series were found, both in stucco; one on the left-hand pier of the façade of the Temple of the Sun, and the other on the back wall of the outer chamber of the Temple of the Beau Relief. Unfortunately

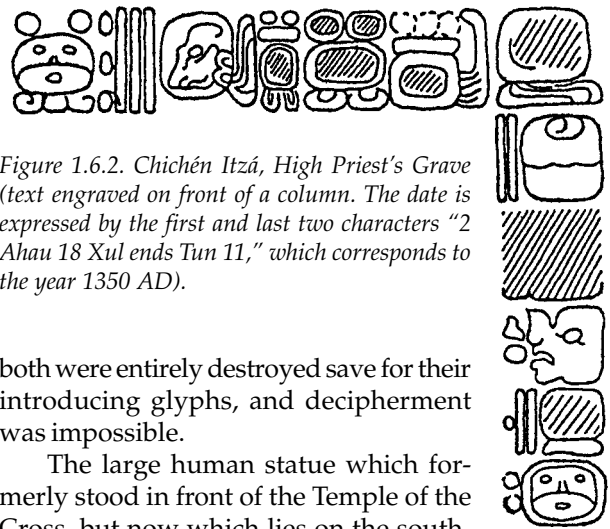


Figure 1.6.2. Chichén Itzá, High Priest's Grave (text engraved on front of a column. The date is expressed by the first and last two characters "2 Ahau 18 Xul ends Tun 11," which corresponds to the year 1350 AD).

both were entirely destroyed save for their introducing glyphs, and decipherment was impossible.

The large human statue which formerly stood in front of the Temple of the Cross, but now which lies on the southern slope of the substructure, has a single glyph carved upon its front. This is quite clearly the day 8 Ahau and in all probability denotes the katun ending 9.13.0.0.0 8 Ahau 8 Uo. This is also the latest date on the tablet of the Foliated Cross in the temple of the same name nearby, and on the tablet in the Temple of the Inscriptions across the stream, and is possibly to be interpreted as indicating that these three temples were all dedicated on the same day.

In spite of certain architectural evidence to the contrary, it seems fairly clear from the seven or eight dates now known at Palenque, that the city was at its zenith about 9.13.0.0.0 and not 100 years later, as has been suggested. Indeed, 9.13.0.0.0 is the latest date that has yet been found there. Beautiful as the Palenque sculptures are, possibly the best in the whole Maya area, their excellence may probably be ascribed to the superiority of the sculptural media, stucco or a very fine-grained limestone, rather than to a later period of ori-

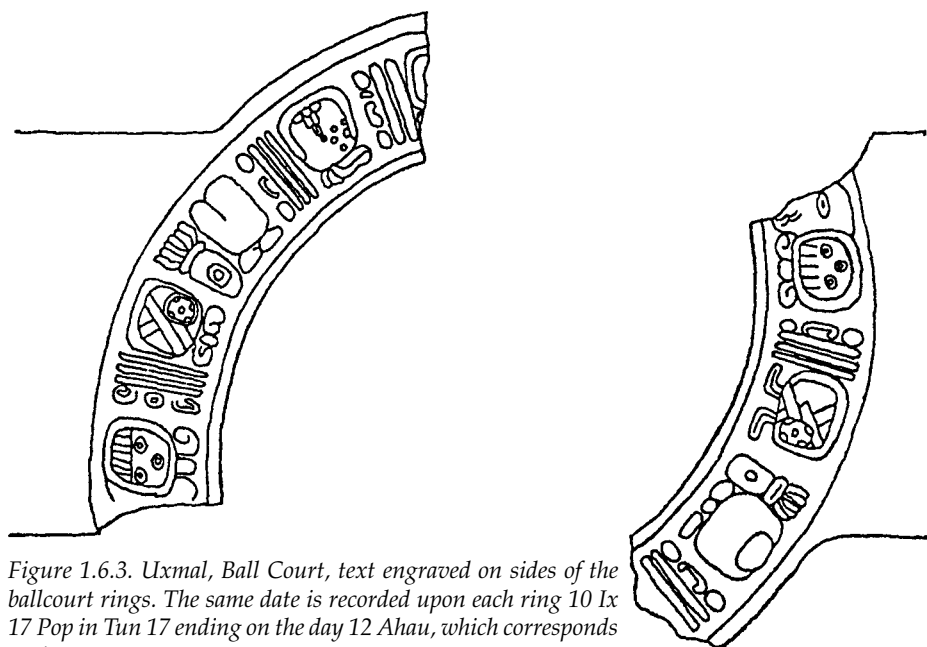


Figure 1.6.3. Uxmal, Ball Court, text engraved on sides of the ballcourt rings. The same date is recorded upon each ring 10 Ix 17 Pop in Tun 17 ending on the day 12 Ahau, which corresponds to the year 1277 AD.

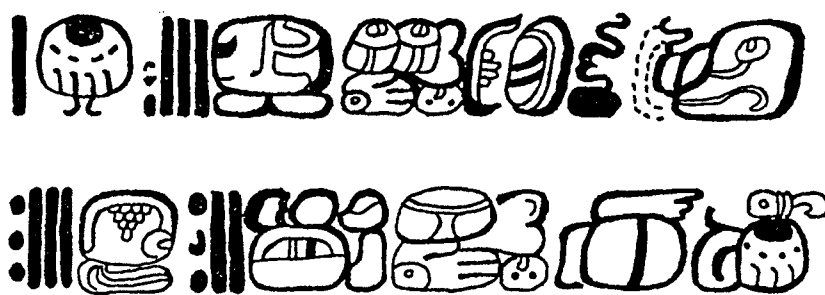


Figure 1.6.4. Uxmal, Monjas Quadrangle, Text Painted on a Capstone (The date is expressed by the first two characters in each line 5 Imix 19 Kank'in in Tun 18 of Katun 12, which corresponds to the year 1219 AD).

gin, and the city itself had probably already reached the zenith of its esthetic development before the beginning of the Great Period in 9.15.0.0.0.³

NOTES

1. Stone carvings of grotesque animal heads reported to have come from a site 5 to 6 days' journey up the Black River, just east of the Aguan River, were examined at Rincon. These are quite un-Mayan in character and suggest a local intensive development of stone-carving rather than an extensive distribution of the technique.

2. These two inscriptions may record a very important fact in New Empire chronology. It will be noted that while the corresponding day remains the same in each, that is, 10 Ix, on the left ring the month is apparently 16 Pop, and on the right ring it is 17 Pop, that is, a shift of one day in the month in the month coefficient. But this is precisely the degree of shift that occurred between the month coeffi-

cients of the Old Empire texts and the very late Books of Chilam Balam. In the Old Empire Ix has a corresponding month coefficient of 2, 7, 12, and 17, while in the Books of Chilam Balam it has 1, 6, 11, and 16. These two inscriptions, apparently recording the same date with this single difference, may possibly commemorate the fact that upon this date this important change was effected at Uxmal.

3. A correction should be noted here in the report of the previous year's work. [In Chapter 1.6 this volume] attention was called to the discovery of the ruins of Los Higos in the Chamelecón Valley, Honduras, through information derived from Mr. S. K. Lothrop, of Harvard University, and Mr. Basil Booth, of Guatemala City.

Credit for this discovery, however, it has been subsequently ascertained, belongs instead to the well-known Central American traveler, E. G. Squier (1883), who visited this site as early as 1850, and who seems to have published his first account thereof in *Frank Leslie's Magazine* for April 1883. Although he was unable to read the hieroglyphic inscriptions there, his visit having antedated by more than 30 years the first successful attempts at decipherment by Professor Ernst Förstemann and J. T. Goodman, Squier's priority of discovery remains unquestioned and any credit arising therefrom belongs to him; acknowledgment of which is made here.

1.7.

SYLVANUS G. MORLEY
Archaeology

YB 18:317, 320-321, 1919

During the month of March 1919, Mr. Morley visited Costa Rica and Nicaragua. The archaeological collections in the national museums at San José and Managua respectively, as well as the larger private collections, were examined, but beyond the ceramic remains no traces of direct Maya influence were found.

The decorative motives in pottery occasionally have elements which resemble the Maya ceramic designs, but as a whole the material cultures of the two countries, judging from the collections examined, show few such resemblances, and we may probably assume that, if felt at all, the Maya influence was but slight.

The Lenca, on the eastern Maya frontier [Chapter 1.4 this volume], and the Pipil, a Nahuatlan people along the southeastern frontier, formed a fairly effective linguistic barrier against a general southeastward extension of the Maya civilization, and although the material cultures of the Lenca and Pipil themselves show a strong Maya influence, particularly in their ceramic art, the original Maya strains had become greatly attenuated by the time such borrowings had been passed on to the tribes of Nicaragua and Costa Rica.

Two trips were made to the ruins of Copán, Honduras, one in December 1918, and the other in June 1919, to secure certain final data for a monograph on the inscriptions of that city (Morley 1920). During the course of the last visit, the mound of Stela 7, where the most archaic monuments at Copán have been found, was excavated, disclosing (among other things) a cruciform vault or chamber underneath the foundation-stone of Stela 7, but no new monuments.

Valuable information as to the original provenance of Stelae 15 and 7 and Altars L', M', T, and U was received from the three oldest inhabitants of the modern village, an aged trio between 70 and 80 years of age. The memory of these informants reaches back clearly to 1860; the oldest was an old lady of nearly 80, whose recollections extend to 1850. All three remember distinctly when the dense tropical forest, described by Stephens in 1839, still filled the entire valley, and when the modern village, now numbering a thousand souls, was composed of only three houses in small clearings in the forest. The information given by these people has proved of great help in checking up the original provenance of the six monuments mentioned.

Before leaving, Mr. Morley installed a small local museum in the cabildo, composed of the fragmentary monuments he has been collecting from the different houses and patios of the village during the past five years. The material left in the new museum comprises the following:

1. Stela 7, two large pieces.
2. Stela 15, two large pieces and one small piece.
3. Stela 22, one medium piece.
4. Stela 21, one small piece.
5. Stela 20, three pieces, one large, the other two medium.
6. Stela 24, one large piece.
7. Stela 25, two small pieces.

8. Fragment E', one small piece.
9. Fragment Y', one small piece.
10. Fragment Z', one small piece.
11. Altar S, complete in one piece.
- 12-24. Fragments V', 13 small pieces of archaic stela.

The discovery of the meaning of the "Winged Cauac" sign as a variant for the tun-sign, announced in [Chapter 1.5 this volume] is already fulfilling the anticipations there expressed as to its importance in the study of Maya chronology. By means of this sign, it has recently been possible to date a beautifully sculptured peccary skull taken from Tomb 1 at Copán by the First Peabody Museum Expedition in 1892, the inscription and date of which, although unusually well preserved, had long baffled decipherment. By the identification of this new variant for the tun-sign, it is now possible to date the text in question as 9.7.8.0.0, 1 Ahau 3 Ceh. This latter is the first contemporaneous date in the *Corpus Inscriptionum Mayarum* (Morley 1948) which has yet been found, that may be referred to the katun-ending in 9.8.0.0.0, and fills a previous lacuna in the chronological record at Copán. It is confidently anticipated that this glyph will prove of increasing value, particularly in the decipherment of New Empire texts.

1.8.

SYLVANUS G. MORLEY

Archaeology

YB 19:321-324, 1920

The first four months of 1920 were devoted to the completion of the monograph on *The Inscriptions at Copán* (Morley 1920) which appeared in April. As originally contemplated, this investigation was to have included a study of all the Maya inscriptions [Chapter 1.2 this volume], but soon after its inauguration it became apparent that the hieroglyphic texts at Copán alone, about 40 percent of the *Corpus Inscriptionum Mayarum* (Morley 1948), were sufficient to merit monographic treatment. Meanwhile the research has been broadening in other directions. Recent advances in the decipherment of previously unknown glyphs, the accumulation of a large amount of new material gathered by the Carnegie Institution's Central-American expeditions for 1915 to 1920 [Chapters 1.3-1.6 this volume], while delaying publication of the results,

have at the same time made possible a much more exhaustive presentation of the subject and the inclusion of much new related matter. As completed, this volume with its appendices presents a standard cross-section of Maya chronology to which all other ancient American cultures must ultimately be referred for their true positions in time.

During the final phases of this investigation Mr. Morley had the collaboration of Mr. William Gates, of Point Loma, California, and Dr. Carl E. Guthe, of Phillips Academy, Andover. Mr. Gates compiled the index, contributed a study of the distribution of the Maya linguistic stock (Appendix XII), and assisted in the preparation of the appendix on the correlation of Maya and Christian chronology (Appendix H), besides generously placing his large and important collection of manuscript material at the author's service. Dr. Guthe verified all the Maya calculations, as well as all the bibliographic references and citations, and spent the month of April in Washington on the final revision of the page proof.

The staff of the 1920 Central American expedition took the field at the end of April. The objectives of the party (composed of Mr. Morley and Dr. Guthe) were, first, the exploration of the northern part of the Department of Petén, Guatemala (into which no archaeological expeditions had penetrated for the past four years), for the purpose of ascertaining whether any new sites with associated hieroglyphic monuments had been discovered by chicle-bleeders during the period; second, a visit to the village of Copán, Honduras, to present to that municipality a specially bound copy of Publication 219 (Morley 1920).

The trip to Petén, although less than month in duration, was unusually successful. The expedition first visited the capital of the Department, the island village of Flores and placed itself in touch with the local authorities. No large sites had been discovered in the central part of Petén during the past 4 years, and the expedition returned to the frontiers of British Honduras, preparatory to making another trip into the northeastern corner of the department, which offers the most promising field for exploratory work. At Benque Viejo, British Honduras, information was received of a new site, about 60 miles [96.6 km] to the northwest, and a mule-train was engaged and the party proceeded thither during the last fortnight in May. The new site, to which the name Xultún was given, proved to be of great importance, no less in fact than a city of the second class with two principal plazas, 50 subsidiary courts, and 18 sculptured monuments. It has more structures, covering a larger area, than either Piedras Negras or Quiriguá, and has more sculptured monuments than either Nakúm or Palenque. It is larger than La Honradez in the same

region, and was probably the largest city of the Old Empire in northeastern Petén.

The inscribed monuments are the most important feature of the new city. They are found around the sides of the two principal plazas, 10 in Group A and 8 in Group B, all the earlier monuments being in the latter and all the later ones in the former. Of these 18 sculptured stelae (no plain stelae were found at the site), eight have Initial Series dates, two have Period-Ending dates, and eight are as yet indeterminate. Of the Initial Series stelae, the dates of three have been surely deciphered, and a fourth probably so, as follows:

Table 1.8.1. Calendrical Decipherments, Initial Series Dates, Xultún.

						Approx.
Group A	Stela 3	10.1.10.0.0	4 Ahau	13 Kankin		600 AD
Group A	Stela 10	10.3.0.0.0	1 Ahau	3 Yaxkin		630 AD
Group B	Stela 11	9.15.0.0.0	4 Ahau	13 Yax (?)		472 AD
Group B	Stela 13	9.14.0.0.0	6 Ahau	13 Muan		452 AD

Stela 10 is of unusual importance since it is the latest monument, by 20 years, yet reported from any Old Empire site. The date is recorded by an Initial Series, the coefficients of which are all bar and dot numerals, and there is no doubt as to the accuracy of the reading given. It is interesting to note that the discovery of this monument proves that the close of the Old Empire was contemporaneous with the beginning of the New Empire, as suggested in *The Inscriptions at Copán*, since the date on the Temple of the Initial Series at Chichén Itzá, in northern Yucatán (New Empire), is just 10 years earlier than the date of Stela 10 at Xultún¹ (Old Empire); in a word, the monumental series of the Old and New Empires are now seen to, have overlapped by at least 10 years. On the basis of the dates thus far deciphered, the city would seem to have had a period of occupation of about 180 years, being founded in the Middle Period of the Old Empire and occupied down to the close of the Great Period, possibly even being the last Old Empire city to be abandoned.

More than half of the Xultún stelae (11 out of the 18) have fallen with their sculptured faces down, so that they are probably in excellent state of preservation. The 1920 expedition, with the means at its disposal, was able to turn only two, of these, but the almost perfect condition of their relief and the beauty of the subjects portrayed (an elaborately costumed deity ruler, or priest, with accompanying inscription) justify the belief that when the expedition returns next year to turn over the others, an unusually fine group of sculptured panels will be recovered.

Before leaving Petén, notices in Spanish to the chicle-workers, to be on the lookout for new sites during their

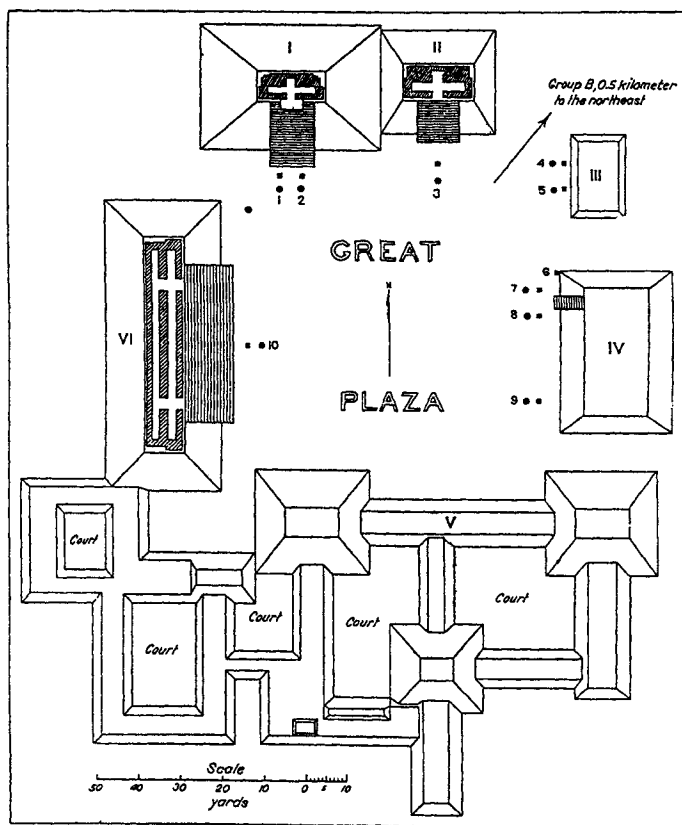


Figure 1.8.1. Xultún, Great Plaza, (Group A) plan, showing location of principal temples (Roman numerals) and sculptured monuments (Arabic numerals).

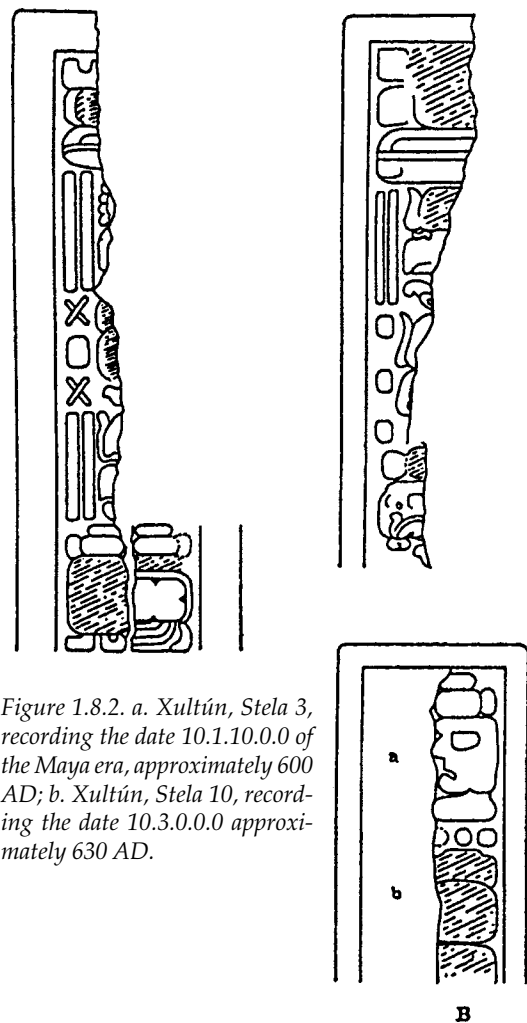


Figure 1.8.2. a. Xultún, Stela 3, recording the date 10.1.10.0.0 of the Maya era, approximately 600 AD; b. Xultún, Stela 10, recording the date 10.3.0.0.0 approximately 630 AD.

excursions into the bush during the current rainy season, were extensively distributed in the frontier towns and chicle camps. Adequate rewards were offered for such information, and it is anticipated that other new sites will be located in the region as a result of this measure.

The second trip (to Copán, Honduras) also had satisfactory issue. Upon the arrival of the expedition at the village, the alcalde for the current year, Don Tobias Guerra, arranged for a special session of the cabildo, all the villagers being invited to attend. At this meeting *The Inscriptions at Copán* (Morley 1920) was formally presented to the municipality in the name of the Carnegie Institution of Washington and accepted by the village authorities. This ceremony was duly entered into the Book of the Acts of the cabildo of Copán, and a certified copy of the act was furnished for deposition in the archives of the Institution.

During the past five years Mr. Morley has made annual visits to Copán and the villagers have warmly cooperated in the Institution's investigations there. Equally friendly relations have been established with

the central authorities at Tegucigalpa, the capital, and the way paved for closer cooperation in the future.

The field season closed with a visit to Guatemala City, where arrangements were perfected with the Guatemalan government, through the Ministry of Foreign Relations, for continuing the archaeological exploration of Petén next season, and a permit was secured for excavating anywhere in the department, it being understood that all specimens recovered should remain in the republic. There exists a friendly and sympathetic interest in the Institution's activities in both Guatemala and Honduras (the southern Maya field), and the opportunity for intensive archaeological investigations in either of these countries was never so favorable as it is now.

NOTES

1. *Xul* is the Maya word for "end" or "close," and *tun* the word for stone. *Xultún*, therefore, may be translated "end stone" or "last stone," the name being suggested by the fact that the latest Old Empire monument yet reported is Stela 10 at this site.

1.9.

SYLVANUS G. MORLEY
Archaeology

YB 20:359–364, 1921

The Central American Expedition for 1921 sailed from New Orleans for Puerto Barrios, Guatemala, on January 7, remaining in the field for five months. The staff consisted of Dr. Morley, Dr. Carl E. Guthe, Mr. William Gates, Mr. O. G. Ricketson, Jr., and Mr. A. K. Rutherford.

Owing to this increase in personnel over that of former years, it was possible not only to cover more territory than in any previous season, but also to enlarge the field of investigation, thus adding excavation proper and a first-hand study of the Maya linguistic problem to the usual exploratory work of the Institution in this region.

The activities of the year may be classified and described under three headings as follows: 1. The further exploration of northern Petén in search of archaeological sites and hieroglyphic inscriptions by Dr. Morley (6th season); 2. The excavation of Tayasal, the last independent Maya capital, on an island in the lake of Petén Itzá in northern central Petén by Dr. Guthe (new); and, 3. A study of the Maya dialects spoken at the present time in northern British Honduras and in the Department of El Quiché in the highlands of Guatemala by Mr. Gates (new).

After a preliminary trip to Guatemala City to notify the Ministry of Foreign Relations that the Carnegie Institution was prepared to begin operations under the permit granted to it in June 1920 by the Government of Guatemala for exploration and excavation in the Department of Petén [Chapter 1.8 this volume], Dr. Morley returned to Belize, where he was met by Messrs. Ricketson and Rutherford, and thence proceeded by motor-boat up the Belize River to El Cayo on the frontier of British Honduras, where a mule-train was secured for the journey into the interior of Petén.

The exploratory work of the year was divided into three trips: The first from February 7 to March 6 in northeastern Petén to the ruins of Xultún, Uaxactún, and Nakúm; the second from March 23 to April 11, in northern central Petén, to the ruins of Benque Viejo, Naranjo, El Encanto, Tikal, Uolantún (new), Ixlú (new), and Tayasal, and the third from April 22 to June 1 in northwestern Petén to the ruins of Itsimté and Piedras Negras.

The new material discovered during these three trips may be briefly summarized as follows: 1. Two new sites, Uolantún,¹ 4 miles [6.5 km] south of Tikal in northern central Petén, and Ixlú² at the western end of

Lake Petén Itzá; 2. Seventeen new Initial Series; 3. Twenty-one new monuments³; and, 4. Thirty newly deciphered dates⁴

The 17 new Initial Series are [outlined in Table 1.9.1].

Table 1.9.1. Calendrical Decipherments, Xultún, Naranjo, Tikal, Uolantún, and Piedras Negras.

Site	Monument	Maya Date	Christian Era
Xultún	Stela 5	9.12.0.0.0	413 AD
Xultún	Stela 6	9.3.7.0.0	242 AD
Xultún	Stela 11	9.5.7.0.0	282 AD
Xultún	Stela 21	9.14.10.0.0	462 AD
Naranjo	Stela 25	9.5.18.4.0	100 BC
Tikal	Stela 6	9.4.0.0.0	255 AD
Tikal	Stela 15	9.3.0.0.0	235 AD
Uolantún	Stela 1	8.18.13.5.11	150 AD
Piedras Negras	Stela 23	9.16.10.0.0	502 AD
Piedras Negras	Stela 26	9.9.15.0.0	368 AD
Piedras Negras	Stela 30	9.5.0.0.0	275 AD
Piedras Negras	Stela 32	9.10.15.0.0	388 AD
Piedras Negras	Stela 34	9.10.19.5.9	392 AD
Piedras Negras	Stela 38	9.12.10.0.0	423 AD
Piedras Negras	Stela 39	9.12.5.0.0	418 AD
Piedras Negras	Stela 40	9.15.14.9.13	486 AD

Note: Stela 23 has two Initial Series, but one is entirely destroyed except for the Initial Series introducing glyph.

Perhaps the most important discovery of the field season was the decipherment of the Initial Series on Stela 25 at Naranjo as 8.5.18.4.0, which makes it the earliest historical Initial Series yet reported anywhere. This early Baktun 8 date, although it does not represent the contemporaneous date of this monument, nevertheless antedates the Initial Series on the Tuxtla Statuette (8.6.2.4.17) by 4 years and that on page 70 of the Dresden Codex (8.6.16.12.17) by 18 years, the two earliest historical Initial Series previously known.

The outstanding importance of this discovery lies in the fact that we may probably interpret it as indicating that the Maya in Baktun 9 still preserved definite traditional knowledge, if not indeed actual contemporaneous historical records, reaching back to the beginning of Baktun 8, 4 or 5 centuries earlier.

Of scarcely less importance were the discovery and decipherment of another Baktun 8 Initial Series at Uolantún. In the case of this monument, however, its Initial Series (8.18.13.5.11) is the contemporaneous date, which makes it the second oldest Maya monument yet reported, being 81 years later than Stela 9 at Uaxactún and 66 years earlier than the earliest date yet deciphered at Tikal (9.2.0.0.0 on Stela 9).

Uaxactún, containing the oldest Maya monument yet reported (8.14.10.13.15, on Stela 9), is 10 miles [16.1 km] north of Tikal [Chapter 1.4 this volume] and Uolantún is 4 miles [6.5 km] south.

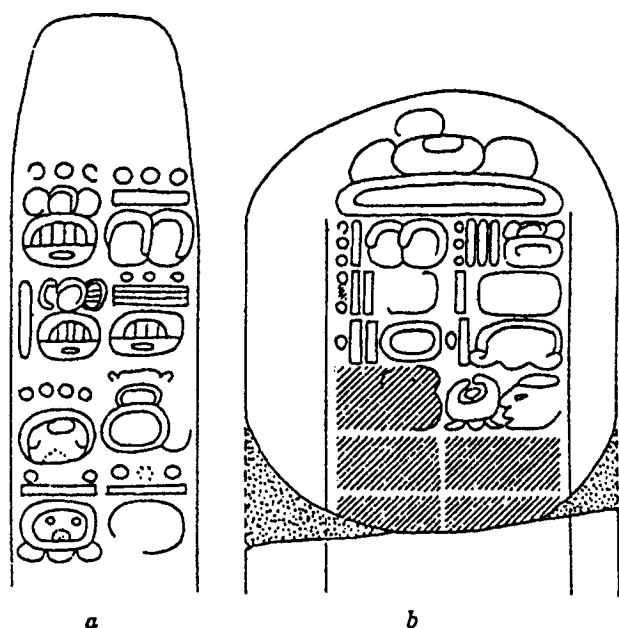


Figure 1.9.1. Naranjo, Stela 25. a. The inscription on this monument opens, with the date 8.5.18.4.0 (100 BC) the earliest historical Maya date yet discovered. The contemporaneous date, however was 445 years later or 345 AD; b. Stela 1 at Uolantún. This monument bears the date of 8.18.13.5.11 (150 AD) which makes it the next oldest Maya yet discovered, Stela 9 at Uaxactún antedating it by 80 years. It has been broken into fragments in ancient times and the top fragment was reshaped for use as an altar after it had been broken.

In the same vicinity, at El Encanto, 12 miles [19.3 km] northeast of Tikal, Dr. R. E. Merwin discovered another early monument in 1910 (Tozzer 1913:152, 163, 194); and although it has been impossible to decipher the date of this, on stylistic grounds it may surely be referred to the early part of Baktun 9.

At Tikal four very early Baktun 9 dates were deciphered this season as follows:

Table 1.9.2. Calendrical Decipherments, Baktun 9 Dates, Tikal.

Tikal	Stela 9	9.2.0.0.0	216 AD
Tikal	Stela 7	9.3.0.0.0	235 AD
Tikal	Stela 15	9.3.0.0.0	235 AD
Tikal	Stela 6	9.4.0.0.0	255 AD

Indeed there are only four other undated monuments now known at this site which on stylistic grounds may be earlier: Stelae 1, 2, 4 and 18. This clustering of the earliest Old Empire monuments, either at or around Tikal, strongly suggests that this was the first part of the Petén region to be occupied by the Maya when they migrated thither from some habitat farther to the west, possibly somewhere along the Gulf Coast

of Mexico (For hypotheses concerning the origin of the Maya civilization see Morley 1920:402–415).

These several cities are located at the head of the Holmul Valley, and although much further exploration throughout Petén will be necessary before final conclusions can be drawn, indications now are that the upper reaches of this valley may have been the center of the earliest Maya occupation in the Old Empire region.

Somewhat surprising was the decipherment of two early dates at Xultún, the large city of the second class discovered by the Carnegie Central American Expedition of 1920 [Chapter 1.8 this volume]. That this was a comparatively recent Old Empire site seemed to be indicated by the very late dates deciphered there last year, 10.1.10.0.0 on Stela 3 and 10.3.0.0.0 on Stela 10; also by the failure to find any date earlier than the close of the Middle Period (9.14.0.0.0 on Stela 15),⁷ and more particularly by the location of this city, well up in the northeastern corner of Petén directly in the line of migration followed by the Maya northward into Yucatán at the close of the Old Empire.

However, the decipherment of the dates of Stelae 6 and 11, 9.3.7.0.0 and 9.5.7.0.0. respectively, carries the monumental sequence here back toward the beginning of Baktun 9 and gives a recorded occupation of this site of nearly a baktun (9.3.7.0.0 to 10.3.0.0.0), that is, for 387 years. The discovery of these two early dates at Xultún indicates that the Maya spread northeastward from around Tikal for a considerable distance at a fairly early date and established themselves in northeastern Petén not very long after they had colonized the Copán region, 200 miles [322 km] to the southeast.

The new site at the eastern end of Lake Petén Itzá, Ixlú, contains five new monuments, viz, two sculptured stelae, a sculptured altar, and two plain stelae. The first three date from the very close of the Old Empire, Stela 1 from 10.1.10.0.0 and Stela 2 and the altar from 10.2.10.0.0, and it is obvious that this is a very late site. These two dates exactly alternate by lahuntun intervals (3,600-day periods) with the two stelae found in the modern village of Flores on an island at the extreme western end of the lake, viz:

1.9.3. Calendrical Decipherments, Stelae, Flores and Ixlú.

Flores	Stela 1	10.1.0.0.0	590 AD
Ixlú	Stela 1	10.1.10.0.0	600 AD
Flores	Stela 2	10.2.0.0.0	610 AD
Ixlú	Stela 2	10.2.10.0.0	620 AD

These new monuments are magnificent specimens of Old Empire sculpture; indeed, Stela 2 and its associated altar will rank among the very finest examples of Maya plastic art that have come down to us.

Dr. Guthe's discovery of two inscribed monuments at Tayasal, the last Itzá capital (1450–1697 AD), was a find of first importance. One is a stela, the other a lintel. Unfortunately, only the base of the former is preserved; enough remains, however, to show that it had been inscribed with a double column of glyphs on the back.

The lintel, although broken, is more nearly complete. It clearly records a Calendar Round date, of which the day is surely 11 Ahau and the month 18?, the incomplete month-sign bearing more resemblance to Mac than to any other month sign. There were no katuns, lahuntuns, or hotuns which ended on the day 11 Ahau 18 Mac during the occupation of Tayasal, but the tun ending 12.5.9.0.0 (1467 AD) fell on this date. If the above reading is correct, this lintel must have been carved very shortly after the Itzá established themselves at Tayasal; unfortunately, the doubtful identity of the month sign casts a cloud on its accuracy. In any event, Dr. Guthe's discovery of inscribed monuments at the very beginning of his work justifies the expectation that subsequent excavations will uncover other similar material and shed much light on this final phase of independent Maya history.

The last fortnight of the field season (May 18 to June 1) was spent at Piedras Negras on the Usumacinta River in the westernmost corner of Petén. As already noted, five new monuments and nine new Initial Series were discovered at this site. Scale drawings of all Initial and Supplementary Series were made and a large number of photographs were secured.

The most important contribution here was the filling in of lacunae in the sequence of the hotun markers, so that now the corresponding marker for every 1,800-day period from 9.10.5.0.0 to 9.18.5.0.0, 33 in all, has been identified. In some cases, as for example, Stelae 39, 38, and 40, it was even possible to predict what their corresponding dates would be in advance of the actual decipherment of them, because these particular hotun-endings, 9.12.5.0.0, 9.12.10.0.0, and 9.15.15.0.0, respectively had not been represented heretofore in the monumental sequence. These three new monuments were found to record, precisely these three dates.

Piedras Negras presents a longer unbroken sequence of hotun markers than any other Maya city, 33 (165-years), as compared with 14 (60 years) at Quiriguá, the next most perfect. This feature, it is anticipated, will greatly assist in the final elucidation of the Supplementary Series, which is a lunar count associated in some as yet undetermined way with eclipse phenomena.

One other discovery at Piedras Negras is worthy of special namely, the finding of a fragment of Stela 30, reused in the roofing of a drain through the platform

north of Mound VI. This indicates that Stela 30 had been broken in ancient times, since a piece of it had been built into the roof of a drain before the city had been abandoned. Owing to this sheltered position, its inscription was perfectly preserved and records the date 9.5.0.0.0 (275 AD). This date is 75 years older than the earliest date previously reported at this site (9.8.15.0.0 on Stela 25) and carries the foundation of this city at least as far back as the first quarter of Baktun 9.

This pushing back of the monumental remains to the early part of Baktun 9, and even earlier, at a number of sites, Tikal, Xultún, Uolantún, and Piedras Negras, for example, is one of the most significant results of the last field season, and it is confidently anticipated that further exploration, especially in the region around Tikal, will shed much light on the beginnings of the Maya civilization in the Old Empire region.

NOTES

1. This Maya word means *uolan*, something which has been rounded, *tun*, stone, *uolantun*, stone which has been rounded. This site was so named because of a unique feature presented by the single monument found there. This monument had been broken in ancient times and the top fragment, a piece 2.5 feet [76 cm] long, had been reshaped to serve as a round altar for the larger bottom piece, hence the name stone which has been rounded.

2. *Ixlú* is the Maya word for a certain fish found in Lake Petén Itzá, after which the arroyo running into the eastern end of the lake is named. As this second site is just north of the north bank of the Ixlú Arroyo it has been given the same name.

3. This total includes the two new monuments (a stela and a lintel) found by Dr. Guthe early in April at Tayasal.

4. This total includes 18 new Period Ending dates, and 12 out of the 17 new Initial Series, the remaining five new Initial Series not having been surely deciphered as yet.

5. Mr. Gates has suggested this word for the 144,000-day period, heretofore known as the cycle. It is composed of the Maya word *bak*, meaning 400 (Beltrán de Santa Rosa 1859:201), and *tun*, the word for the 360-day period. An analogue for this exists in the word for the 7,200-day period, *katun*, generally assumed to be a contraction for *kaltun*, *kal* being the word for 20. The word *hotun*, which has been suggested for the 1,800-day period, is derived in the same way, *ho* being the Maya for 5, and hotun five times the tun or the 1,800-day period.

6. The contemporaneous date of Stela 25 at Naranjo is 9.9.0.0.0, 445 years later than the date of its Initial Series, which is still 20 years earlier than the earliest contemporaneous date previously reported at this site, that is, 9.10.0.0.0 on the reused lintel found in the Hieroglyphic Stairway.

7. In the first announcement of the discovery of this site this monument was called Stela 13. In the revised nomenclature it has been assigned the number 15.

1.10.

SYLVANUS G. MORLEY

Archaeology

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The members of the Central American Expedition for 1922 were Messrs. Morley, Guthe, Lothrop, Ricketson, Jessup, and Sopeña; Messrs. Cook, Loomis, and Martin, of the Bureau of Plant Industry, United States Department of Agriculture, also accompanied the party on the first trip into Petén during the last half of March and early April.

Owing to the increasing personnel of the Central American expedition and to the extension of its activities, it has become impracticable for all members to take the field at the same time. Dr. Morley and Dr. Lothrop sailed from New Orleans for Puerto Barrios, Guatemala, on January 14; Dr. Guthe and Messrs. Ricketson, Jessup, and Sopeña sailed from New Orleans for Belize, British Honduras, on January 28; and Messrs. Cook, Loomis, and Martin for the same destination on February 25.

The activities of the current field-season may be described under four main headings, as follows: 1. A further exploration of the east coast of Yucatán, notably of the ruins of Tulum, by Dr. Morley and Dr. Lothrop (third season); 2. A continuation of Dr. Morley's explorations in northern Petén in search of new archaeological sites and hieroglyphic inscriptions (sixth season); 3. An investigation of the agricultural possibilities of the northern Petén region by Mr. O. F. Cook; and, 4. A continuation of Dr. Guthe's excavations at Tayasal, the last Maya stronghold on the shores of Lake Petén Itzá (second season).

After the usual preliminary trip to Guatemala City, to arrange for the continuation of the Institution's investigations in the Department of Petén under the permit granted by the Government of Guatemala in June 1920, Dr. Morley and Dr. Lothrop returned to Belize, where they were met by Messrs. Ricketson and Sopeña. A small schooner, with auxiliary gasoline engine, the *Esperanza*, was chartered and on February 7 the expedition sailed for the ruins of Tulum on the east coast of Yucatán, Mexico. A stop was first made at Payo Obispo, Quintana Roo, to secure the necessary permits from the local authorities, and here Señor Miguel Carral joined the party as the official representative of the Ministry of Fomento.

This trip lasted from February 7 to March 6, during which time two new sites, Tancar and Xelhá¹ were discovered, mapped, photographed, and described, and a more extensive study was undertaken at the ruins of Tulum.

At Tancar, 4 miles [6.5 km] north of Tulum and 0.25 mile [0.4 km] back from the beach, there are two principal plazas and about a dozen stone buildings. At the southern end of the site is a cave with rock carvings, a roughly carved, stone slab leaning against the back wall, and a small square altar of stone and stucco.

Xelhá lies some 15 miles [24.2 km] north of Tulum and a mile [1.6 km] inland from the sea. The lagoon of the same name extends perhaps half a mile [0.8 km] back from the sea, and bifurcates at its inner end. The point of land lying between these two reaches of the lagoon has a narrow neck, where it joins the mainland and this had been fortified by a well-laid stone wall, 150 feet [45.7 m] long, 25 feet [7.6 m] thick, and 10 to 12 feet [3.1–3.7 m] high, pierced by a single offset passageway, the whole construction constituting an admirable defense against an attack by land. Half a mile [0.8 km] back from the end of this lagoon lies the main group of ruins, centering around a single plaza 315 feet [96 m] long by 75 feet [22.9 m] wide. There are 10–12 stone buildings, the principal temple being in an excellent state of preservation, with the original sapote beams of the door-lintel still in position.

A fortnight was spent at the ruins of Tulum, easily the largest site on the east coast of Yucatán, where sufficient data were collected to complete the material for a preliminary report, Dr. Morley first visited this site in 1913, again with Dr. Gann and Dr. Lothrop in 1916 [Chapter 1.5 this volume] and with Dr. Gann and Mr. Held in 1918 [Chapter 1.6 this volume].

This year a much more extensive investigation was possible. The forest was felled completely inside the inner enclosure and around all the principal, temples. Dr. Lothrop, made a number of tracings of the mural paintings, especially in Temple 16, as well as extensive architectural and stylistic notes. Mr. Ricketson, assisted by Mr. Alfred Harvey, resurveyed the city, correcting and amending the map made by Dr. Morley and Dr. Lothrop in 1916. Individual plans and elevations of all constructions within the great wall were also made, and more than 200 photographs were secured by Mr. Sopeña.

The most important contributions made this year at Tulum were:

1. The discovery that the principal temples of the city, save only these within the inner enclosure (the Castillo Group) and the so-called Guard House by the East Gate of the North Wall, are distributed along a single main thoroughfare running the entire length of the city from the West Gate in the North Wall to the West Gate in the South Wall. This is unique feature in the assemblage of Maya structures, the regular practice being arrangement around a single plaza, or groups of connected plazas.

2. The discovery of three new stelae, two of which are carved, the third being covered with stucco and then painted a brilliant light blue. Stelae 2 and 3 (carved) are very similar stylistically to the late stelae at Mayapán, notably to Stelae 8 and 9 (Morley 1920:574–575; [Chapter 1.6 this volume]). All four of these stelae are surrounded with borders of the same kind, that is, squares with central dots; and Stela 2 at Tulúm, like Stela 9 at Mayapán, has an ahau sign as the only glyph upon it. The best decipherment indicates that this monument dates from some Katun 2 Ahau. Any given katun-ending recurred every 256 years, though on stylistic grounds only the last three occurrences of this katun need be considered here: 1004 AD, 1261 AD, and 1517 AD. Of these, the last (1517) appears most probable to Dr. Morley, although the second (1261) is by no means an unlikely date for this stela. The first (1004) is almost certainly too early. Only one piece of Stela 3, the top, was recovered; this was built into the western pier of Structure 33 (a small altar) in ancient times.

All of the archaeological evidence the architecture, the mural paintings, the stucco ornamentations, the serpent columns, the Mayapán type of stelae, everything, indeed, save only the comparatively early Stela 1 (10.6.10.0.0.?, approximately 699 A.D.) points to Tulúm, as having reached its zenith after 1400 A.D., and it should not be forgotten that it was occupied as late as 1518, when Juan de Grijalva made the first voyage down the east coast of Yucatán (Ternaux Compans 1838:11).

On March 13 the expedition again left Belize by motor-boat for El Cayo, at the head of navigation on the Belize River, and on March 18 set out from El Cayo for northern Petén with a pack-train of 42 mules and horses. The personnel on this trip consisted of Dr. Morley and Dr. Lothrop, Messrs. Ricketson, Sopeña, and Harvey, Messrs. Cook, Loomis, and Martin of the United States Department of Agriculture, and Mr. A. M. Adams, whose services as transport manager had been placed at the disposition of the expedition by Mr. James Craik, of Belize, the local manager of the Chiclé Development Company.²

This trip lasted a month, during which the ruins of Naranjo, Nakúm, Uaxactún, Tikal, Uolantún, Tayasal, Ixlú, and Chichantún³ (a new site of Class 4), were visited, the party returning to El Cayo on April 11.

On April 14, Messrs. Ricketson and Harvey revisited the ruins of Naranjo, where they made a surveyed map of that site, returning to El Cayo again and thence to Belize early in May. The only previous map of Naranjo had been that made in 1904, by its discoverer, Mr. Teobert Maler, which was inaccurate and incomplete. The new map shows Naranjo as considerably larger than appears from Maler's map, indeed, when

considered with its 36 sculptured stelae and its Hieroglyphic Stairway, it may well be regarded as one of the largest cities of the Old Empire.

On April 18, Dr. Morley and Mr. Sopeña left El Cayo for a month's trip across the northeastern corner of the Department of Petén, penetrating to within 5 miles [8.1 km] of the Mexican boundary at a point almost due north of Flores. Two new sites were discovered: Xmakabatún⁴ (a city of Class 3) with four sculptured stelae and seven plain ones, and Naachtún.⁵ This name was given to the now Class 2 site found this year because of its extreme remoteness, being at the very center of the Yucatán peninsula, far removed from every point of approach] (a city of Class 2) with 11 sculptured Stelae and seven plain ones; the party returned to El Cayo on May 14 and to Belize on May 18.

The new material discovered during the course of these several trips in northeastern Petén may be briefly summarized as follows: 1. Three new sites: Naachtún, 5 miles [8.1 km] south of the northern boundary of Petén and almost due north of Flores; Xmakabatún, 35 miles [56.4 km] north of El Cayo and just west of the eastern boundary of Petén; Chichantún, at El Gallo, on the camino real from Plancha de Piedra to Flores, eastern central Petén; 2. Fourteen new Initial Series; 3. Thirty-one new monuments; and 4. Nineteen newly deciphered dates, including all, but one of the Initial Series under no. 2.

The 14 new Initial Series are [listed in Table 1.10.1].

Table 1.10.1. Calendrical Decipherments, Initial Series Dates, Naachtún, Quiriguá, and El Encanto.

<i>Site</i>	<i>Monument</i>	<i>Maya Date</i>	<i>Christian Era</i>
Uaxactún	Stela 18	8.16. 0.0.0	97 A.D.
Uaxactún	Stela 19	8.16. 0.0.0	97 A.D.
Naachtún	Stela 1	9. 9.10.0.0	364 A.D.
Naachtún	Stela 2	9.10.10.0.0	383 A.D.
Naachtún	Stela 3	9. 5. 0.0.0	275 A.D.
Naachtún	Stela 4	Undeciphered	
Naachtún	Stela 6	9. 6.10.0.0	304 A.D.
Naachtún	Stela 7	9.17. 0.0.0	511 A.D.
Naachtún	Stela 8	9.16. 0.0.0	492 A.D.
Naachtún	Stela 9	9.15. 0.0.0	472 A.D.
Naachtún	Stela 10	9.16.10.0.0	502 A.D.
Quiriguá	Stela T	0.14. ?.?.?	452 A.D.
Quiriguá	Stela U	9. 2. ?.8.0	216–235 A.D.
El Encanto	Stela 1	9. 8. ?.9.?	334–354 A.D.

The most important results of Dr. Morley's explorations this season, center around the highly significant new stela found at Uaxactún, and the discovery of so large a new city as Naachtún. The ruins of Uaxactún were discovered in 1916 by the Institution's Central American Expedition. At that time this site was unique in having the first and only Baktun 8 Initial

Series monument then known, namely, Stela 9, recording the date 8.14.10.13.15, approximately 68 A.D. [Chapter 1.4 this volume]. Last year another Baktun 8 Initial Series monument was, discovered at a new site, Uolantún, 12 miles [19.3 km] south of Uaxactún, recording the date 8.18.13.5.11, approximately 150 A.D. [Chapter 1.9 this volume].

This year no less than four more Baktun 8 dates were deciphered at Uaxactún, three of them on new monuments: Stelae 14, 18, and 19, and the fourth on Stela 4, discovered in 1916 (Table 1.10.2).

Table 1.10.2. Calendrical Decipherments, Stelae, Uaxactún.

Site	Monument	Maya Date	Christian Era
Uaxactún	Stela 18	8.16.0.0.0	97 AD
Uaxactún	Stela 19	8.16.0.0.0	97 AD
Uaxactún	Stela 4	8.18.0.0.0	137 AD
Uaxactún	Stela 17	8.19.0.0.0	157 AD

The first two, Stelae 18 and 19, stand in front of the same temple and record exactly the same day, an Initial Series in each case, the coefficients being expressed by simple bar and dot numerals, and their decipherment is correspondingly certain. This date is less than 29 years later than the date on Stela 9 at this site, and these two stelae, therefore, become the second and third earliest monuments yet found in the Maya area. They also corroborate the reading suggested for Stela 9 six years ago. Although the dates on Stelae 4 and 17 are recorded as Period Endings, both are reasonably certain, particularly that on Stela 4, which shows quite clearly 8 Zotz followed by an Ending-sign. This can hardly be other than 8.18.0.0.0 12 Ahau 8 Zotz, as suggested above.

Another important new early monument discovered at Uaxactún this year is Stela 20, probably dating from 9.3.0.0.0 (235 A.D.), also recorded as a Period Ending. The front is carved with an heroic-sized human figure, front view, carrying a ceremonial bar in the arms, the presentation being almost identical with that on Stela 7 at Copán, for example, so close, in fact, that the sculptors of these two widely separated monuments must have had a common source of inspiration, a striking example of the homogeneity of Old Empire culture even at this early date.

Another important monument found this year was the fragment of a very early stela which had been worked down into a round altar in ancient times and re-used as such with Stela 9. Unfortunately, it was impossible to date this fragment exactly, but stylistically it would seem to have been at least as early as Stela 9, itself the earliest Maya stela known, if not indeed earlier.

The number of these early stelae at Uaxactún, coupled with the fact that the next earliest stelae elsewhere is nearly a century and a half later (Stela 9 at Tikal, 9.2.0.0.0, 216 A.D.),⁶ strongly indicates the advisability of further intensive investigation, including excavation at this site. No other site now known would probably shed more light upon the beginnings of the Old Empire (certainly so far as the Petén region is concerned) than Uaxactún, where all the earliest surely deciphered monuments have been found.

The geographic location of this site is also significant. It became apparent from this year's explorations that Uaxactún is located at the head of the Ixcán Valley⁷ in that mountain cluster which is precisely the very backbone of the Yucatán peninsula, the waters of the Ixcán River finding their way out through the Hondo River into Chetumal Bay and thence into the Caribbean Sea, on the east side of the peninsula. Northwest of Uaxactún 8 or 10 miles [4.9–16.1 km] is the

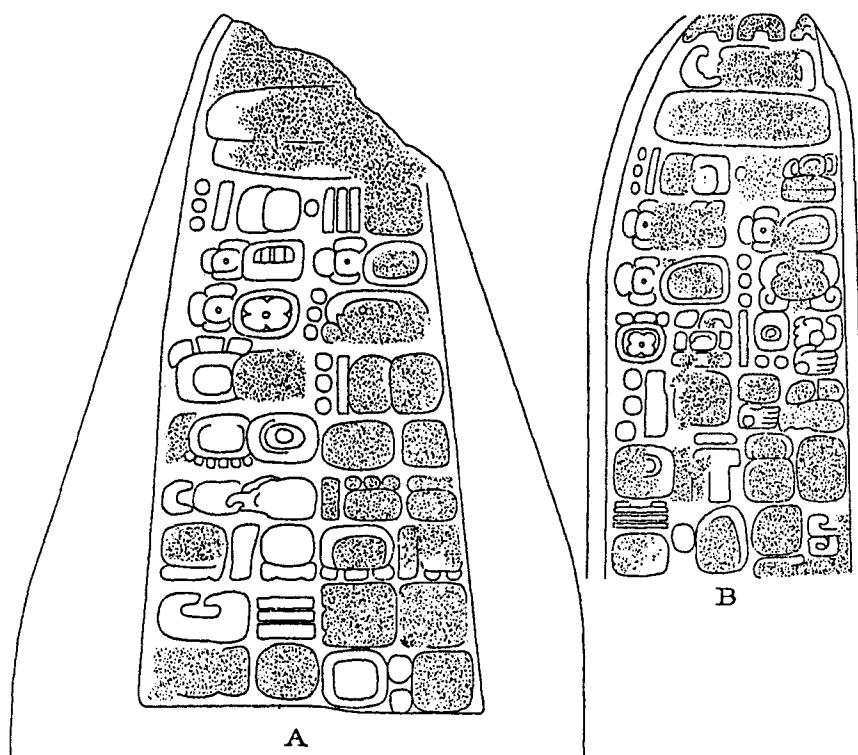


Figure 1.10.1. Uaxactún, Stela 19 (a) and Stela 18 (b). These two stelae record the same date: 8.16.0.0.0, approx. 150 A.D. Next to Stela 9 at this same site they are the two earliest Maya monuments known.

main divide of the peninsula, streams rising on the far side of this range, such as the Paixban River for example, flow out through the San Pedro Martír and San Pedro Candelaria Rivers into the Gulf of Mexico, while to the south are ranges beyond which lies the great interior drainage basin of which Lake Petén Itzá is the largest member.

Uaxactún is thus located at the geographical as well as the topographical center of the Old Empire region, the central point from which distribution subsequently took place to other regions, judging from the pronounced chronological priority of the Uaxactún dates.

Another factor contributing to the scientific importance of this site is its length of occupation (561 years), more than a century and a half longer than any other Old Empire city on the basis of the dated remains.

During the present field season two very late Old Empire monuments were also found here, their dates being recorded as Period Endings (Table 1.10.3).

Table 1.10.3. Calendrical Decipherments, Stelae, Uaxactún.

Uaxactún	Stela 13	10.0.0.0.0	571 AD
Uaxactún	Stela 12	10.3.0.0.0	630 AD

The former is the first monument yet discovered, dating from the closing day of Baktun 10. The previous katun-ending, 9.19.0.0.0, had been found recorded on four monuments at three different sites, as, for example, here at Uaxactún on Stela 7, at Naranjo on Stela 7 and 10, and at Quiriguá on Temple 1; and the succeeding katun-ending, 10.1.0.0.0, appears on eight monuments at five different sites: Benque Viejo, Stela 1; Flores, Stela 2; Ucanal, Stela 3; Nakúm, Stela D; and Seibal, Stelae 8, 9, 10 and 11, but no monument had been found previously dating from 10.0.0.0.0 until the discovery of Stela 18 at Uaxactún in April of this year.

The other Baktun 10 monument found this season (Stela 12) is of even greater importance. This records the date 10.3.0.0.0, which make it of exactly the same, age as Stela 10 at Xultún, discovered by the expedition of 1920 [Chapter 1.8 this volume], and together they have the unique distinction of being the two latest Old Empire monuments known anywhere.

Priority of origin, length of occupation, lateness of abandonment, centrality of location, all combine to make Uaxactún the most promising of all Old Empire sites for intensive operations.

Naachtún, the large new site discovered on May 3 of this year, is interesting chiefly because of its location, being the northernmost city of the Old Empire yet reported. It is on a low bench of hills toward the head and on the southern side of the Paixban Valley, the streams of which flow into the San Pedro Candelaria

River; it thus lies northwest of the ranges forming the main watershed of the Yucatán peninsula. The long axis of the city extends for about half a mile [0.8 km] east and west; there are two principal plazas and a score or more of subsidiary ones. The buildings are now mostly fallen, destroyed by the luxuriant forest growth, though here and there a wall is standing, mute witness to former magnificence.

An analysis of its inscriptions shows Naachtún was not as old as Uaxactún by more than two centuries, nor survived it as late by more than a century. Its art and architecture, in spite of its size, are provincial, probably because it was a frontier city, and its sculptures are not to be compared with those of Piedras Negras and Quiriguá, though both the latter sites have fewer structures and cover less area. The earliest date deciphered is 9.5.0.0.0 (275 A.D.) on Stela 3, and the latest, some time during Katun 17 (511–531 A.D.) on Stela 7. Judging by the provenance of the dated monuments, the Eastern Plaza was built during the Early Period and the Western Plaza during the Great Period, with no monuments thus far found dating from the Middle Period.⁸ Naachtún is an excellent example of a large provincial Old Empire city of mediocre esthetic achievement.

A few scattering new inscriptions should be noted here. Mr. R. D. Martin, of the U. S. Department of Agriculture, discovered a new monument at Naranjo, to which the name Stela 36 was given. This bears the Calendar Round date 12 Ahau 8 Pax, which corresponds to the Initial Series 9.17.10.0.0. (521 A.D.). There is a band of four glyphs across the top of the stela, the rest of the front, the back, and sides being plain. It would almost appear as though this monument had been left in an unfinished state.

At the conclusion of his explorations in Petén in May, before returning to the United States, Dr. Morley spent two days at Quiriguá, Guatemala, where two new stelae had been found on the summit of a hill 2 miles [3.2 km] west of the principal group.

These monuments, which were named Stelae T and U respectively, proved of exceptional interest, and one of them, Stela U, offers several perplexing problems. It has only four period-glyphs between the Initial Series introducing-glyph and the day-sign, and it is therefore evident that one of the period-glyphs has been omitted, probably the kin-sign.⁹ The best reading for the Initial Series is 9.2.?8.0, which in itself raises another problem. If Stela U really dates from Katun 2 as this reading would indicate, it would make it more than two and a half centuries earlier than the next earliest monument here at Quiriguá, an improbable situation. On the other hand, there are no Secondary Series on the monument to bring it down to the period of the other Quiriguá stelae.

The other new Quiriguá monument, Stela T, dates from some time in Katun 14, and because of its close stylistic similarities with Stela U, it seems not improbable that this latter monument also dates from the same katun, though this fact has not yet been established from its inscription.

Mr. O. F. Cook's study of the agricultural possibilities of the Petén region developed nothing in the way of the former use of agricultural terraces like those he found in Peru or in the Cahabón District of southern Guatemala, nor do the natural conditions indicate that the land was kept in permanent cultivation.

In a preliminary announcement Mr. Cook states:

The milpa system of agriculture, the planting of maize and other crops in temporary clearings, probably was used by the ancient inhabitants of Petén, as it still is by the modern representatives of the Mayas in the neighboring regions of Central America. The milpa system has a natural limit when the land becomes occupied by grasses, since, the burning over of grasslands does not kill the roots or allow crops to be planted. In the absence of plows or metal tools for the tillage of grass lands, primitive people generally were limited to the destructive, bush burning, milpa agriculture. But in view of the long occupation of the ancient sites in Petén, it is believed that precautions must have been taken to keep the milpa fires from spreading to adjacent lands, a custom still followed in the Cahabón district, south of Petén. By confining the fires to the milpas the fallow lands are kept in bush, and the complete deforestation and reduction of the country to a grass land, or savannah, are deferred. Nevertheless, a gradual extension of savannahs is to be expected in any populous region that is farmed continuously by the milpa system, so that in time the planting of corn or other crops is restricted and the population declines or moves to new lands, as the Mayas appear to have done when the cities of Petén were abandoned and new cities were built in Yucatán, in the sixth century A.D. (*The Official Record*, US Department of Agriculture 1(20):1, 3, 1922).

Extensive artificial terracing has been found recently in the hill country of western British Honduras, in the Cayo District, south of the Belize River: All the archaeological evidence here, however, pottery, mounds, etc., indicates that the region was occupied very much later than the lowlands of Petén, just west of it; that whereas the cities of the latter date from the Old Empire (down to 630 A.D.), the sites of the Cayo District are probably to be assigned to the very close of the new Empire, possibly as late as the fifteenth and sixteenth centuries.

It is suggested that this region may have been colonized from the highlands of Guatemala by groups of the southern Maya, the Kekchí, for example, who still

have villages as far north as San Antonio in southwestern British Honduras and San Luis and Poctún in southeastern Petén. The southern Maya probably developed the use of agricultural terraces after the abandonment of the Petén region and their migration southward into the mountain valleys of Guatemala (after 630 A.D.), so that the discovery of such terraces in the Cayo District may point to their southern origin, and thus corroborates rather than vitiates Mr. Cook's conclusions as to their non-existence during the Old Empire in Petén.

Further study of these terraces as well as of the archaeology of the Cayo District will be necessary before final conclusions may be formulated, but it already seems fairly evident that its occupation dates from a time long subsequent to the Old Empire period, and that its colonization possibly may not have taken place until after the thirteenth century.

On August 5, Dr. Morley sailed for Río de Janeiro, where he represented the Institution at the Twentieth International Congress of Americanists, held there August 20–30.

Dr. Guthe resigned from the Institution on August 1 to accept a position with the University of Michigan.

NOTES

1. Both of these names are probably of ancient origin. John Lloyd Stephens (1843) speaks of Tancar as early as 1841 and Oviedo mentions a point on the east coast of the peninsula named Xelhá three centuries earlier.

2. The president of this corporation, Mr. M. D. Bromberg of New York, has taken an active interest in Dr. Morley's investigations in Petén, offering all the facilities of the company's large field organization, camps, supplies, mule-trains, and credits, thus contributing largely to the successful exploration of this remote region.

3. Chichantún: small stone; *chichan*, small, and *tun*, stone. This name was given to this new Class 4 site because the two sculptured stelae found here were very small, not more than 4 feet [1.2 m] high.

4. Xmakabatún, stone without a name; *xmakaba*, without a name and *tun*, stone. This name was given to this new Class 3 site because of the fact that two of its four sculptured monuments (Stelae 3 and 4) had no hieroglyphs at all inscribed upon them, and the other two (Stelae 1 and 2) showed only the faintest traces of them.

5. Naachtún, distant stone; *naach*, distant or far off; and *tun*, stone.

6. Uolantún is an exception to this statement, but it is so small, having only a single pyramid and a, single monument, that it has been disregarded in this connection.

7. In Dr. Morley's report for last year it is stated that Uaxactún lies at the head of the Holmul Valley [Chapter 1.9 this volume]. Closer exploration this year established the fact that this site lies just north of the low divide between the Ixcán and Holmul Valleys, and that it is therefore at the head of the Ixcán valley instead.

8. Stela 2 really dates from the first decade of the Middle Period (9.10.10.0.0), but from its provenance it is evident that it was associated with an Early Period building.

9. The day-sign of the Initial Series terminal date is surely Ahau, indicating that the kin coefficient was zero, and as such could therefore be omitted without sacrifice of clarity (Morley 1914:127, 128; 1920:203, 301).

1.11.

SYLVANUS G. MORLEY

Archaeology

YB 22:267–272, 1923

Three separate and independent, expeditions were maintained in the field during the season of 1923, as follows: Dr. Morley in Mexico, Yucatán, Guatemala, and Honduras; Messrs. Ricketson and Love (Department of Terrestrial Magnetism, Carnegie Institution of Washington) in northeastern Petén; Guatemala; and Mr. Kilmartin (United States Geological Survey) at Tayasal on Lake Petén, Guatemala.

The activities in Middle American Archaeological Research for the current year may be described under five main headings, as follows: 1. The securing of permits from the Governments of Guatemala and Mexico for the inauguration of intensive excavation projects in these respective countries, to extend over a period of years, by Dr. Morley; 2. The discovery of new hieroglyphic inscriptions from Chichén Itzá, Ocosingo, Chiapa, Copán, and in the National Museum of Archaeology and History at Mexico City, by Dr. Morley; 3. The determination of the exact geographical positions by latitude and longitude of 12 of the most important archaeological sites in northeastern Petén, by Messrs. Love and Ricketson, being the seventh season of work in this region; 4. A topographical survey of Lake Petén, Guatemala, with special reference to the location and topographical characteristics of the ancient Itzá capital of Tayasal, by Mr. Kilmartin, being the third season of work at this site; and, 5. The preparation of the report on the archaeological sites along the east coast of Yucatán, with special reference to the ruins of Tulúm, by Dr. Lothrop, now in press (Lothrop 1924).

Dr. Morley left Washington on January 31, for Yucatán, to make arrangements for the visit of the President of the Institution and General Parsons of the Board

of Trustees, who followed a week later. The purpose of this trip was, by a first-hand examination of the ruins of Chichén Itzá to ascertain the nature of the archaeological problem at this site and how far the Institution' might cooperate in its solution.

The President and General Parsons returned to the United States after a fortnight's stay in Yucatán; and Dr. Morley, after a further examination of Chichén Itzá, left Yucatán on March 30 for Mexico City, to lay before the Direction of Anthropology of the Ministry of Agriculture and Public Works, in preliminary and unofficial conversations, the outline of a plan for archaeological investigations at Chichén Itzá by the Institution.

On April 16 Dr. Morley proceeded to Guatemala City, where he took up with Señor Abraham Cabrera, the Minister of Public Instruction, the question of securing a permit from the Government of Guatemala, under which excavations and archaeological studies might be carried on at any one or all of the three following sites: Uaxactún, Piedras Negras, and Tayasal, in the Department of Petén.

The permit obtained concedes, for a period of five years beginning January 1, 1924, the privilege of making excavations and archaeological studies at these sites under the direct supervision of the Minister of Public Instruction. It was, signed by that official on behalf of the Government of Guatemala on May 12 and delivered to Dr. Morley on May 23.

On the occasion of the formal organization of the Geological and Historical Society of Guatemala, Dr. Morley delivered an illustrated lecture, on the archaeological remains of the Republic, in the Palacio Centenario in the presence of President Orellana, the cabinet, and diplomatic corps. He returned Mexico on May 26.

The President of the Carnegie Institution arrived in Mexico City on June and at once began conferences with Dr. Manuel Gamio, the Director of Anthropology of the Mexican Government, as to the nature of the project to be undertaken at Chichén Itzá. Conferences were also had with Señor Don Ramón P. De Negri, the Minister of Agriculture and Public Works, and with General Obregón, President of Mexico, and on June 5 the formal proposition of the Institution was presented to the Mexican Government.

Dr. Morley spent the month of June in Mexico City arranging the details of the agreement with Dr. Gamio, of the Direction of Anthropology.

This contract (signed by the Minister of Agriculture and Public Works representing the Federal Government of Mexico) concedes to the Institution "permission to carry out archaeological explorations and excavations as well as all such repairs and restorations as may be necessary in the ruins of Chichén Itzá,

in the State of Yucatán, . . . for a term of 10 years beginning January 1, 1924."

Although the contract does not come into operation until January 1, 1924, under article 20 the right was given to commence immediately certain preliminary work, such as clearing away the forest growing over that part of the city which it is planned to excavate first, and constructing field-quarters for laborers and staff.

In conformity with this clause, Dr. Morley left Mexico City for Yucatán on July 12 and visited Chichén Itzá in company with Dr. Gamio and Mr. Reygadas of the Direction of Anthropology. The Group of the Thousand Columns was selected as the first point for intensive operations, and early in August the felling of the forest over this area was commenced, and the nature of the work to be undertaken was fully discussed with the responsible officials of the Mexican Government on the ground.

In December Mr. J. O. Kilmartin, by arrangement with the United States Geological Survey, went to Chichén Itzá to survey the property which it is proposed to rent for field-quarters and to make a preliminary map of the Group of the Thousand Columns, as well as to supervise the construction of additional quarters for members of the scientific staff and the Maya Indian laborers. Dr. Morley returned to the United States on August 29 and spent the autumn in organizing the Chichén Itzá project. The members of the staff are to take the field early in January 1924.

During the course of the field season it was possible, from time to time, to further the general work on the Maya inscriptions by the discovery of a few new texts, of which three were found to have Initial Series.

At Chichén Itzá on March 6 a new stela was found in the niche between the double stairway on the west side of the second terrace leading to the Caracol or Round Tower. This monument has 132 hieroglyphs sculptured on its front, sides, and top, and is the longest inscription yet found at this site. It has not yet been possible to decipher the date, although its hieroglyphs are well preserved.

Underneath this stela was found a large circular stone with a projection for tenoning it into a wall. On the front of the round part 12 human figures are sculptured in two lines before an altar, arranged as if engaged in some sacrificial rite. A double row of hieroglyphs around the periphery completes the carving on this unique piece of Maya sculpture.

Several new inscriptions were located in the National Museum of Archaeology and History at Mexico City; a small stela from Ocosingo, or more correctly from the archaeological site of Toniná near by and two stelae and a small round altar of unknown provenance, probably from the Usumacinta Valley.

The Toniná stela is short, like all the monuments at this site. Although it is not more than 4 feet [1.2 m] high, it is a perfect example of a Maya stela; the front is sculptured with a typical Maya figure, priest, ruler, or deity, holding in his arms the Ceremonial Bar. The back is inscribed with a double column of hieroglyphs surmounted by an Initial Series introducing-glyph. The inscription is badly effaced, though the katun coefficient is almost certainly below 11 and the tun coefficient is surely 0. The best reading of the, Initial Series would appear to be 9.7.0.5.9, though this is far from satisfactory.

The other two stelae mentioned above, as of unknown provenance, are, on stylistic grounds, probably to be assigned to the Usumacinta Valley. One of them has a human figure in profile upon its front and an Initial Series on its back. This reads quite clearly 9.12.0.0.0. The other, also sculptured with a human figure in side presentation on its front, has the day 9 Ahau carved in a conspicuous position before this figure. On the assumption that this day fell on a katun-ending, there are two possible readings in Baktun 9: 9.6.0.0.0, 9 Ahau 3 Uayeb and 9.19.0.0.0, 9 Ahau 18 Mol neither is particularly satisfactory, the former being as much too early as the latter is too late.

The small, round altar at the National Museum of Archaeology and History is a beautiful example of Maya sculpture from the Great Period of the Old Empire. It portrays a small, seated figure, facing to the left and holding in its hand a platter containing an object which may be the sun-sign. This is surrounded by a circle of 15 hieroglyphs of which the ninth (commencing at the top and reading clockwise) is the day 13 Ahau; the fifteenth is the day 9 Ahau. These two days are just one tun apart, if read in this order, and if it be assumed that the day 9 Ahau also corresponded with a katun-ending as well, the Initial Series, 9.19.0.0.0, 9 Ahau 18 Mol could be assigned to this piece, not an improbable reading on stylistic grounds.

Before leaving Mexico City, Dr. Morley also examined the important Stone of Chiapa,¹ through the courtesy of its owner, Señor Don Emilio Rabasa. This piece is only about one-third of the original monument, which must have been between 6 and 7 feet [1.8–2.1 m] high. The front is sculptured with the head and shoulders of a human figure facing to the left, with an elaborate head-dress; opposite the head are the remains of a single column of six or seven beautifully carved, but very small, hieroglyphs, each 1.5 inches [3.8 cm] square.

The significant point is that the first glyph which remains has a coefficient of nine surely, and the next one of 16, 17, 18, or 19;² and the next two possibly of 0 each. Could this be the Initial Series 9.19.0.0.0 with the Initial Series introducing-glyph effaced? The style of this monument indicates that dates from the most bril-

liant epoch of Maya art, namely, the Great Period of the Old Empire, 472–630 A.D.

It is the inscription on the back, however, which gives this monument its principal importance. This is presented in four columns, of five hieroglyphs each; the Secondary Series in the first two columns is apparent composed of eight orders of units, involving possibly the highest Maya time-period known, the great-great-great cycle.³ It is unfortunate, therefore that it has been impossible to connect this Secondary Series either with one or the other of the two Calendar Round dates on the back or with the other Secondary Series of 2.14.15 present.

The first week in May was devoted to excavating two small temple-sites at the ruins of Quiriguá, Guatemala: the Temple of Stela S in the banana fields of the United Fruit Company, about a kilometer southwest of the main group, and The Temple of Stelae T and U, about 1.5 km behind the Quiriguá Hospital, on the highest point of the first range of hills on the northern side of the Motagua Valley. The former proved to be only a foundation mound composed of two platforms, the lower 2 feet [61 cm] high with a battered wall, and the upper 4 feet [1.2 m] high with a vertical wall. On the summit were traces of a third very low platform, one step high. A stone stairway on the south side, now in ruinous condition, gave access to the summit. There were no vestiges of any former superstructure; and if this foundation mound had ever supported one, it must have been built of some perishable material. The monument associated with this mound, Stela S, stands about 50 yards [45.7 m] in front of the center of the south side, facing south, and dates from 9.15.15.0.0.

Very little material was recovered during the course of the excavations; no whole pieces of pottery, and only a few potsherds and obsidian flakes. These were turned over to the Minister of Public Instruction, in accordance with the terms of the permit, at the conclusion of the excavations.

The Temple of Stelae T and U was completely excavated. It faces the valley, that is, south, and contains but a single small chamber, 10 feet 2 inches [3.1 m] long by 3 feet 8 inches [1.1 m] wide, which had been floored with stone flags. A single doorway 5 feet 6 inches [1.7 m] wide in the southern wall gives access to it. The walls are 5 feet [1.5 m] thick. Further attempts were made to decipher the Initial Series of Stelae T and U, but unsuccessfully. The former dates surely from Katun 14, 9.14.0.0.0 being the best reading, and on stylistic grounds Stela U is probably not more than one katun later, that is, 9.15.0.0.0.

In 1921 a splendid cache of 24 eccentric-shaped flints (now in the Ministry of Public Works in Guatemala City) was found either in the southeastern corner of this chamber or in the hearting of the eastern

wall. The excavations this season yielded only a few obsidian flakes.

Dr. Morley was at Copán for three days in May. Three fragments of early stelae had been found, in tearing down the walls of the house at the west end of the block on the north side of the village plaza, and had been placed in the cabildo for safe-keeping. None has any decipherable calendrical hieroglyphs, but on stylistic grounds all three may be assigned to the early part of Baktun 9.

One of the most spectacular caches of jade in the Maya area was found on April 2, 1921, at Copán, just west of the northwest corner of the Mound 6 of Stela 7, in a cruciform vault below the foundation-stone of some Early Period stelae.

About 6 inches [15.2 cm] below the level of the cement floor on which the mound of Stela 7 was built, a large slab of stone 5 feet 1 inch [1.6 m] long, 2 feet 9 inches [84 cm] wide, and a foot [31 cm] in thickness was unearthed. This would appear to have been the foundation stone upon which one of the several Early Period stelae, found in the immediate vicinity, had rested, though just which one it is impossible to say. This foundation-stone in turn lay directly upon a large circular stone 3 feet 9 inches [1.1 m] in diameter and 9 inches [23 cm] in thickness, which in turn covered the cruciform vault. At the intersection of the axes of this vault was found the cache above mentioned. This contained the following objects of jade: one anthropomorphic statuette 7.25 inches [18.4 cm] high and weighing 2.5 pounds [1.13 kg]; eight jade pendants carved with representations of the human figure or grotesque animals; two pairs of round ear-plugs; and two long tubular beads. Also, there were 38 seashells, *Spondylus calcifer*; three shell beads; and a small quantity, perhaps enough to fill a two-ounce bottle, of quicksilver.

Two or three yards [1.8–2.7 m] east of this cache was found a human burial with a number of jade objects: beads, ear-plugs, and several small figures; also sea shells and quicksilver. In 1919 Dr. Morley found three pieces of beautifully worked jade not more than 4 yards [3.7 m] south of the above burial, in the northwest corner of this mound, practically on the surface: an anthropomorphic figure 3 inches [7.6 cm] high, pierced for use as a pendant, and the two halves of a jadeite pebble, from each of which a small cylinder had been cut out, probably for making into a pair of ear-plugs. Finally, the Museum of the American Indian, Heye Foundation, has a large jade pebble with a beautifully carved seated human figure on the front, which came from the cruciform chamber under the foundation of Stela 7 (Morley 1920:103–105).

The stylistic characteristics of these objects indicate that they all date from the Early Period of the Old Empire, which is in agreement with the dates actually

recorded upon the stela found on or around this mound, that is, 9.2.10.0.0 (Stela 24) to 9.9.0.0.0 (Stela 7). The jade objects found on or around this mound easily constitute the largest and most important collection of early Old Empire jades known anywhere.

The archaeological reason for this particular investigation was to ascertain the exact geographic positions of these different sites, from which data it would be possible to make an accurate map of the northern Petén region, that is, the very heart of the Old Maya Empire, showing the relative positions and distances apart of its largest centers.

The area in question is not large, a 50 mile square [129.5 sq km] in the northeastern corner of the Department of Petén practically comprises it, and none of these sites are far apart in an air-line.

Some surprising and, in view of existing highways of travel (the only too casual and round-about chicle trails), disconcerting facts developed there from. For example, it takes a mule-train, over existing trails, two days to go from Xmakabatún to Xultún, which are only 11.4 miles [18.4 km] apart, and other instances of the proximity of these cities one to another might be cited. Indeed, no two of them are so far apart as to require an Indian on foot more than a single day to travel between them, and some of them, as, for example, Tikal and Uolantún, are so close together, 3.5 miles [5.6 km], that they must be regarded as parts the same city.

Evidence multiplies that this section of the Old Empire was one of most densely populated areas of its size in the whole world during the first centuries of the Christian era, and the occupation of the land between different larger centers, like Tikal, Uaxactún, Xultún, Nakúm, Naranjo, etc., must have been practically continuous.

NOTES

1. Drawings of both sides of this stela were published by D. G. Brinton (1894: Fig. 82).

2. The drawing of the front of this monument published by Brinton (1894: Fig. 82), incorrectly shows this coefficient as 12. The original, however, has clearly three bars in addition to at least one dot.

3. Attention has already been called to the importance of this Secondary Series in *The Inscriptions at Copán* (Morley 1920:281). It appears to be composed of eight orders of units with the tuns omitted. The number probably recorded is 13.13.13.1.1.0.11.4. The only other Maya number known, involving eight orders of periods, is the Initial Series on Stela 10 at Tikal: 1.11.19.9.3.11.2.0.

4. The other objects which were found in this chamber were: A seashell (*Arca grandis*), a stone with a hole through it, an obsidian spearhead 7 inches [17.8 cm] long, another of the same material slightly longer, an obsidian knife 6 inches [15.2 cm] long, and a small fragment of an Early Period stela.

1.12.

SYLVANUS G. MORLEY
Archaeology

YB 23:209–211, 1924

Three separate expeditions were maintained in the field during the first six months of 1924, as follows: Dr. Morley, Messrs. Morris, Kilmartin, and Amsden in Yucatán, Mexico; Mr. Blom and Mr. Ricketson, in Petén, Guatemala; and Mr. Ricketson in British Honduras.

The several activities in Middle American Archaeological Research for the current year maybe described under four main headings as follows: 1. The lectures and conferences of Dr. Manuel Gamio, Director of Anthropology of the Mexican Government in the Administration Building in Washington in April; 2. The Chichén Itzá Project under Dr. Morley, Messrs. Morris, Kilmartin and Amsden, being the first season's work at this site; 3. The Uaxactún Project under Mr. Blom, being the eighth season's work in the Petén region, and the first season of intensive work at this site; and, 4. The excavations at Baking Pot, British Honduras, under Mr. Ricketson, the first season's work at this site.

Dr. Morley left Washington for Guatemala on February 5 to confer with governmental officials of that country with regard to archaeological investigations at the sites of Uaxactún and Tayasal in Petén.

Before leaving Guatemala, Dr. Morley delivered an illustrated lecture before the Geographical and Historical Society at the Palacio Centenario, covering the Institution's recent archaeological work in that country and in Mexico.

During the fall of 1923 a formal invitation had been extended by the President of the Institution to Dr. Manuel Gamio, Director of Anthropology of the Mexican Government, to deliver two lectures in Washington in the spring of 1924, upon the results of recent archaeological work in Mexico under the Director of Anthropology.

Dr. Gamio accepted this invitation, and these lectures were delivered at the Administration Building in Washington on the evenings of April 16 and 17. An exhibition of native Mexican arts and crafts, as revived by Dr. Gamio at San Juan Teotihuacán, was held in connection with his lectures, and a remarkable collection of paintings, pottery, tiles, textiles, basketry, and native jewelry was shown.

The lectures were followed by two archaeological conferences: one devoted to a discussion of the Chichén Itzá Project and general problems of archaeological research in Mexico, and the other more specifi-

cally to Dr. Gamio's own work in Mexico and his proposed classification of the several cultural horizons represented there. These conferences were attended by 25 representatives of the following institutions and organizations: American Museum of Natural History, New York; Archaeological Institute of America, Washington; Bureau of American Ethnology, Washington, DC; Carnegie Institution of Washington; Direction of Anthropology, Mexico; Museum of the American Indian, Heye Foundation, New York; National Geographic Society, Washington, DC; Peabody Museum of American Archaeology and Ethnology, Harvard University, Cambridge, MA; Phillips Academy, Andover, MA; University of Arizona, Tucson; and the United States National Museum, Washington, DC.

Dr. Gamio's lectures and the material he exhibited convincingly set forth the importance of the archaeological and sociological work now being carried on by the Mexican Government under his direction, and the conferences brought out a number of points relative to the conduct of archaeological investigations in Mexico, and served to clarify several issues under discussion.

On May 12 Dr. Morley and Messrs. Morris and Amsden left New Orleans for Yucatán to start work at Chichén Itzá, Mr. J. O. Kilmartin, of the United States Geological Survey, having proceeded thither six months earlier (November 1923) to commence the survey and basemap of the site.

The work at Chichén Itzá in 1924 falls under two headings: 1. The erection of quarters for the staff and laborers, and the repair of the buildings leased from Mr. E. H. Thompson, the owner of the hacienda of Chichén upon which the ruins are located, and 2. The excavations proper under Mr. Morris.

The property which has been leased by the Institution consists of the hacienda house and its outbuildings, and 100 acres of adjoining woodlands for the location of the necessary corn-fields and lime-kilns, and as a source of supply for building-stone, timber, and firewood.

It was impossible to undertake all of the necessary repair work on this property during the current field season, but new roofs were added to four buildings; one of the rooms was floored with cement for use as a store-house; and doors were fitted in several places where they were missing. A new two-room stone house with thatched roof was built for Mr. Morris, and the construction of quarters for the laborers was commenced along the south side of the principal square, which is to be known as the Park Chichén. It is estimated that at least 20 of these thatched dwellings will be necessary to shelter the required number of laborers.

Excavations closed at Chichén Itzá, on July 5, and Dr. Morley and Mr. Ricketson returned to the United States by way of New Orleans on July 17, the remain-

ing members of the staff proceeding thither by way of Veracruz and Mexico City on July 16.

Before leaving Yucatán Dr. Morley visited the island of Jaina, off the northwest coast, to examine a newly-reported hieroglyphic inscription. This trip was undertaken through information received from Mr. W. A. Sheetz of Mérida, who, together with Mr. Ricketson, accompanied Dr. Morley. The site is composed of half a dozen mounds, the easternmost of which is the second largest, being perhaps 30 feet in height. Fragments of two stelae were found at its northeastern corner, carved with representations of rulers and deities and columns of hieroglyphics; and one of these (Stela 1) proved to be of the very highest importance, no less, indeed, than the fourth Initial Series yet to be found in the entire New Empire region, that is, the peninsula of Yucatán.

The front of this stela is sculptured with nine human or divine figures, four seated across the top; 3, including the principal figure, standing in the middle; and two incomplete figures at the bottom. The sides and back are inscribed with hieroglyphs. The inscription begins on the left side with an Initial Series introducing glyph, but most unfortunately in view of the importance of the text, the rest of the Initial Series, save only for a part of the katun sign, is destroyed. The day-sign, Supplementary Series, and month-sign which are presented on the right side are, however, almost perfectly preserved. The day-sign is, either 12 Ahau or 13 Ahau, the former being the preferable reading; the month-sign is surely 8 Ceh. Possible Initial Series values corresponding to these two terminal dates follow, although this monument may be of much earlier date than either (Table 1.12.1).

Table 1.12.1. Calendrical Decipherments, Jaina.

11.18. 9.0.0	12 Ahau 8 Ceh	approx. 1329 A.D.
12. 5.15.0.0	13 Ahau 8 Ceh	approx. 1473 A.D.

In spite of the fact that only four Initial Series have yet been reported from the New Empire region, their distribution fairly well covers the peninsula of Yucatán from east to west: 1. At Tulúm on the eastern coast, 2. At Chichén Itzá in the northeastern quarter, 3. At Holactún in the northwestern quarter; and 4. At Jaina on the western coast. The particular value of this discovery lies in the fact that Initial Series stelae are so exceedingly rare from the New Empire that the few known constitute historical landmarks of first importance.

Dr. Lothrop's report (1924) on the ruins of Tulúm and the east coast of Yucatán was issued early in the spring. It contains 179 pages of text, 27 plates, of which five are in color, and 182 figures.

1.13.

SYLVANUS G. MORLEY
Archaeology

YB 24: 247–251, 1925

The activities in Middle American Archaeological Research during 1924 were concentrated at Chichén Itzá, Yucatán, Mexico, where the second season's [Chapter 1.12 this volume] excavations were commenced in February with a staff of follows: Dr. Morley, in charge; Mr. E. H. Morris, archaeologist in charge of excavations; Mr. Karl Ruppert and Mr. O. G. Ricketson, Jr., assistant archaeologists; Mr. E. L. Crandall, photographer (U. S. Department of Agriculture); and Miss E. H. Bayles, secretary and book-keeper. In addition, Mrs. E. H. Morris was of invaluable aid in copying the mural paintings from the Temple of the Warriors (Station 4) and in assisting Mr. Morris in connection with the excavations and repair work at Station 3.

Dr. Morley left Washington on December 19 for Mexico City, to confer with Mr. José Reygadas Vertiz, the newly appointed Chief of the Department of Anthropology, as to the plans for the coming field season, and reached Yucatán on January 12.

Work was commenced at Chichén Itzá on January 19, the first month being devoted to moving the equipment from Dzitas, the nearest railroad point to Chichén Itzá, 14 miles [22.5 km] distant by an automobile highway, repairing the field quarters, installing a gasoline pump and pressure tank, and clearing the forest growth from the high pyramid at the northwest corner of the Court of the Columns, where excavations were commenced on February 16.

During the short 1924 field season excavations had been carried on at three principal stations, all in the Group of the Thousand Columns, as follows: Station 1. The Northeast Colonnade; Station 2. The South Temple adjoining it; and, Station 6. The Small Ball Court.

During the current season excavations have been carried on at four additional stations, two in the Group of the Thousand Columns, one in the middle part of the city, and one at Old Chichén Itzá, as follows: Station 3. The temple on the northeast bank of the Xtoloc Cenote; Station 4. The Temple of the Warriors; Station 5. The Caracol; and, Station 7. The Temple of the Four Lintels, at Old Chichén Itzá.

Special reports describing these activities by Mr. Morris and Mr. Ricketson, and a report on the constructions in the Court of the Columns by Mr. Ruppert, will be found below.

GENERAL SUMMARY OF THE PRINCIPAL RESULTS OF THE YEAR

By far the most extensive piece of work undertaken this season was at the Temple of the Warriors (Station 4), which was completely cleared and partially repaired by Mr. Morris. The excavations proved that this building was one of the most important in the entire city; it is second only to the Castillo in point of size, and even exceeds the latter in wealth of sculptural decoration.

The pyramid supporting the temple proper covers two-thirds of an acre [2,700 square m], and rises in four retreating terraces to a height of 37 feet [11.3 m] above the general paved level of the Group of the Thousand Columns. The three lowest terraces have their cornices elaborately sculptured with jaguars, eagles, and another as yet unidentified animal with woolly covering, which were originally painted in brilliant colors. Only the top-most terrace seems to have been plain.

A steep stairway, 34 feet [10.4 m] wide, composed of 36 steps and flanked by two balustrades carved with representations of the feathered serpent, leads to the summit, where an imposing vista greets the eye.

The two massive feathered serpent columns, dividing the entrance into a triple doorway, rear themselves 15 feet [4.6 m] aloft, their massive heads resting on the ground, their tufted tail-rattles above. These were found scattered out in front of the temple and were restored to their original positions by Mr. Morris during the course of the excavations.

The temple proper is 69 feet square [6.4 square m] and is divided by a single partition, running north and south, into two chambers of equal size, 61 feet [18.6 m] long by 30 feet [9.1 m] wide, an outer chamber with a corbelled arch roof supported by 12 sculptured columns, and an inner sanctuary with eight sculptured columns, painted wall-benches at the north and south ends, and a magnificent altar or dais against the back or east wall, 13 feet 8 inches [4.2 m] wide, 8 feet 3 inches [2.5 m] deep, and 2 feet 8 inches [81 cm] high. This altar is supported by 19 painted Atlantean figures in an excellent state of preservation.

Both exterior and interior walls were elaborately painted, but the collapse of the entire roof has wrought irreparable damage to these once fine mural paintings. More than 800 stones, fallen from the roof and bearing fragments of these frescoes, were recovered during the excavations and removed to a storehouse at the hacienda for safe-keeping. Mrs. Morris copied in water-colors more than 200 of the best preserved of these before she returned the States. The subjects portrayed are gods, priests, warriors, men, animals, fish, and serpents, engaged in a variety of pursuits, offering in-

cense, fighting, rowing, swimming, fishing, etc. Marine subjects seem to have formed a large part of the design.

The outstanding features of The Temple of the Warriors are: 1. The three sculptured and painted terraces surrounding the pyramid on all four sides, with their imposing array of human and animal figures; 2. The sculptured and painted columns, of which there are 22; the two feathered serpent columns in the doorway, 15 feet [4.6 m] high; and the 20 inside, carved on all four sides with representations of gods, priests, and warriors, 12 feet [3.7 m] high. Originally, all of these had been brilliantly painted, and much of the pigment is still adhering; 3. The sculptured and painted altar against the back wall of the sanctuary, supported by 19 painted Atlantean figures; and, 4. The mural paintings.

Excavations were undertaken at the small temple on the northeastern bank of the Xtoloc Cenote (Station 3) which lies at the southwestern corner of the Group of the Thousand Columns, in the hope that some relationship might be established between it and the nearby cenote, which served as the chief source of the city's water supply in ancient times, and also because no single temple at this site previously had been completely excavated.

The most important feature of the temple was found to have been a handsomely sculptured panel on the back side of the arch in the sanctuary, directly above the altar. This had, originally been composed of five courses of sculptured blocks, each course containing six blocks, or a total of 30. Of these, only 19 were recovered, seven being found at considerable distances from the temple, whither they had been carried in Spanish times to build a rough stone wall. Fortunately, five of the six blocks forming the middle of this panel were found. These present two warriors, elaborately clothed, having head-dresses, of sweeping plumes, and a hissing, feathered serpent above the head of each. The border, of which more than half was recovered, is composed of flowering vines, with birds here and there. This panel is one of the most notable sculptures in the city, not only because of its unique location on an arch, being the only example of its kind yet found at Chichén Itzá, but also because of the presence of flowers and vines, an unusual subject in Chichén Itzá bas-reliefs.

Another important undertaking of the season was the repair of the upper part of the Caracol or Astronomical Tower (Station 5). This structure is the only one of its kind in the city and, with the exception of the round tower at Mayapán, the only one known in the Maya area.

The upper part, containing several small passageways which were used as lines of sight in making astronomical observations, was in a highly ruinous condition, and immediate repair-work was impera-

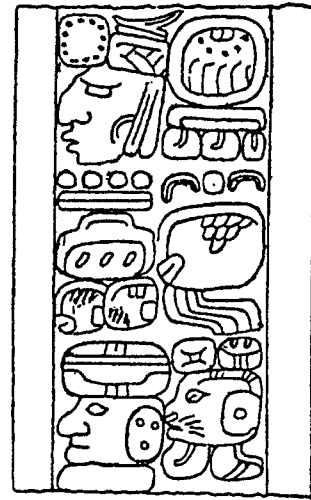


Figure 1.13.1. Chichén Itzá, Caracol, hieroglyphic fragment.

tive if these lines of sight were to be saved from shifting, owing to the crumbling condition of the masonry. This work was successfully carried out by Mr. Ricketson, and the entire upper part of the tower so strengthened with cement and masonry that the danger of any shifting of the lines of sight from their present positions has been eliminated.

Mr. Ricketson finds that the principal passageway still standing, that looking west, would seem to have been used in determining the dates of the equinoxes and the summer solstice.

During the excavation, of the Caracol, several fragments of a hieroglyphic band came to light. One of these, shown in Figure 1.13.1, was of especial interest as follows: 3 Imix 9 Yax, Tun 1. New Empire dates are rarely as carefully recorded as those of the Old Empire, but the intent here would seem to have been, fairly clear, to indicate the day 3 Imix 9 Yax falling in some Tun 1. An examination of Goodman's chronological tables show that the only place where this day occurred in a Tun 1 within the limits historically possible at Chichén Itzá was at the position 11.16.0.4.1, 3 Imix 9 Yax, corresponding to 1280 A.D., which therefore is probably the date recorded upon this fragment.

Just before the close of the field season, excavations were undertaken at a small temple in Old Chichén Itzá (Station 7), where in 1911 Mr. E. H. Thompson had found two hieroglyphic lintels, in the hope that more of these exceedingly valuable texts might be found. This operation was under the supervision of Mr. Ricketson and two additional inscribed lintels were discovered there on May 22 and 26 respectively, both of which are practically in "mint state." One has 72 glyph blocks, and the other 80. Because of this discovery this structure was renamed "The Temple of the Four Lintels."

Table 1.13.1. Stelae with Tun 13 and 1 Ahau Dedication Dates, Chichén Itzá and Yulá.

<i>Lintel</i>		<i>Tun 13</i>	<i>1 Ahau</i>
1	Temple of the Four Lintels ¹	Glyph 13	Glyph 14
2	Temple of the Four Lintels	5	6
2	Temple of the Four Lintels,	40	41
3	Temple of the Four Lintels	2	
3	Temple of the Four Lintels	74	75
4	Temple of the Four Lintels	14	15
1	Temple of Two Lintels, Yulá		15
2	Temple of Two Lintels, Yulá	2	4
2	Temple of Two Lintels, Yulá		64

1. (Chichén Itzá)

At Yulá, 5 miles [3.1 km] south and slightly east of Chichén Itzá, there is a small temple having two hieroglyphic lintels of a similar character. Dr. Morley made a comparative study of these six lintels, and found that all of them, both the two at Yulá, as well as the four in Old Chichén Itzá, were apparently dedicated on the same day, namely a Tun 13 ending on a day 1 Ahau. The following table shows the position on each of these lintels where this particular tun and day are recorded, in some cases as often as twice on the same lintel (Table 1.13.1).

Nor do the similarities between these six lintels end here. The date 9 Lamat 11 Yax is recorded thrice at the Temple of the Four Lintels, as follows: on Lintel 1, by Glyphs 9 and 11; on Lintel 3, by Glyphs 70 and 72; and on Lintel 4, by Glyphs 9, 11, and 12.

Finally, the fronts of Lintel 1 at Old Chichén Itzá and Lintel 1 at Yulá have the same figure of a bird carved upon them, with a human head issuing from the bird's opened beak. And again, Lintel 4 at Old Chichén Itzá and Lintel 2 at Yulá both have the same figure of a serpent carved upon them, with a human head issuing from the gaping mouth; the two pairs being practically identical in design:

As has been pointed out in a previous *Year Book* [Chapter 1.6 this volume], the method of dating used in the New Empire was much more abbreviated and correspondingly less accurate than the Initial Series dating of the Old Empire. Thus any given tun, as 13 here, for example, ending on any given day, as 1 Ahau here, could recur, fulfilling these two conditions, at intervals of every 256.25 years. Fortunately, in the present case the historical probabilities limit the possible Initial Series values to one of two readings: 11.9.13.0.0, 1 Ahau 13 Pop, which corresponds to the year 1155 A.D., or 12.2.13.0.0, 1 Ahau 13 Chen corresponding to the year 1411 A.D. Of these the former appears the better reading since the latter was within 35 or 40 years of the final abandonment of the city, when decadence already must have set in, and when it would have been practically impossible

to have executed such beautiful sculptures as these lintels.

The endings of Tun 13 appear to have been of especial significance to the ancient Maya, even from early Old Empire times (Morley 1920:358), and it is therefore not surprising that this particular Tun 13 should have been so scrupulously recorded on these six lintels, all of which appear to have been dedicated upon this date.

The other date, 9 Lamat 11 Yax, recorded on three different lintels in the same temple, appears to have had the Initial Series value 11.8.19.5.8.¹ This is practically within one day of being exactly 13.5 solar years earlier dedicatory date, or exactly eight Venus years of 584 days and one tzolkin or 260-day period, earlier.

On February 26, the President of the Institution and Dr. Wissler and Dr. Kidder of the Advisory Committee arrived at Chichén Itzá for a visit of 10 days. Technical and other problems arising from the excavations were discussed, and a closer contact was established between the members of the committee and the staff.

Excavations were brought to a close on June 20, although Mr. Morris and a corps of masons continued working at certain urgent repairs on the Temple of the Warriors for another fortnight. The experience of the past two seasons tends to indicate that excavation can not be carried on profitably long after the middle of June. By that time the rainy season in Yucatán is well under way, and, what with necessary time out for the heavy afternoon showers as well as the resultant flooding of the diggings, the work is retarded and operations are not only unprofitable but also unsatisfactory.

Mr. Crandall returned to the United States by way of New York on June 9. Dr. Morley and Mr. Ruppert left Yucatán on June 27, going by way of Veracruz and Mexico City, where Dr. Morley discussed with Mr. Reygadas a number of problems which had developed during the season, as well as preliminary plans for next year. In developing the Chichén Itzá Project, the policy has been from the beginning to consult frequently the Mexican officials concerned, in order that there should be entire agreement at all to the work done, and the best interests of the research thus secured.

Mr. and Mrs. Morris, Mr. Ricketson, and Miss Bayles returned to the United States by way of New Orleans early in July, thus bringing to a close the activities of the second field season.

NOTES

1. This date was at first erroneously deciphered as 9 Eznab 11 Yax with the Initial Series, a value 11.7.12.16.18 [Chapter 1.6 this volume] and was so used by Spinden (1924:281) but a re-examination this season of the day-signs,

on Lintels 3 and 4, as well as on the newly discovered Lintel 1, all at the Temple of the Four Lintels, demonstrated beyond any doubt that the day-sign in each case is Lamat and not Eznab, and the corresponding Initial Series value probably 11.8.19.5.8.

1.14.

SYLVANUS G. MORLEY

Archaeology

YB 26:231–240, 1927

Two principal investigations were carried on during 1927 in Middle American archaeological research as follows: 1. The Chichén Itzá Project; and, 2. The Uaxactún Project.

In addition to these two projects, two expeditions were sent out from Chichén Itzá, Yucatán, Mexico, and one from Uaxactún, Petén, Guatemala: 3. The Edzná Expedition; and, 4. The Muralla Expedition.

The Chichén Itzá Project completed its fourth field season on May 28, although minor repair operations continued for another two months.

The staff for 1927 was as follows: Sylvanus G. Morley, in charge; E. H. Morris, archaeologist-in-charge of excavations; Karl Ruppert, P. S. Martin, H. B. Roberts, and R. A. Franks, assistant archaeologists; Jean Charlot, Mrs. E. H. Morris and Lowell Houser, artists; E. L. Crandall (U. S. Department of Agriculture), photographer; Miss Katheryn MacKay, housekeeper and trained nurse; Miss N. E. Piatt, secretary and book-keeper; L. C. Hammond, mechanic; and Gustav Strömsvik, carpenter.

Dr. Morley left Washington on December 14 for Mexico City to discuss the plans for the current field season with Mr. Jose Reygadas Vertiz, the Director of Archaeology of the Mexican government. While there he delivered two illustrated lectures in Spanish: one, under the auspices of Dr. J. M. Puig y Casauranc, the Minister of Public Education, upon the results of the Institution's work at Chichén Itzá in 1926; and the other upon the Institution's larger program of archaeological investigations in the Maya field, before the Sociedad Antonio Alzate, the leading scientific society of Mexico. He reached Yucatán on January 20 where excavations were already under way in charge of Mr. Morris.

Through an arrangement with Dr. E. A. Hooton of the Bureau of International Research of Harvard Uni-

versity and Radcliffe College with a grant from the Laura Spelman Rockefeller Fund, Dr. and Mrs. G. D. Williams were sent to Chichén Itzá in February for a period of eight months to make anthropometric studies of the native Maya Indians of the region. In return for the facilities of the Institution's establishment at Chichén Itzá, laboratory, photographic services, field quarters, and board, Dr. Williams served as the physician of the Project, and also made basal metabolism tests both upon the Indians and the white staff, for the Department of Nutrition. It was agreed that both parties should have access to the results of the joint investigation, and the right to utilize them, giving proper acknowledgment in either case to the other party. In the metabolism tests, Dr. Williams used a Benedict Portable Student Apparatus and made an examination of 19 members of the staff and 36 natives. He found the natives running uniformly around 10 percent higher than the staff members, practically all of them on the plus side.

Through the generosity of two groups of friends of the Chichén Itzá Project, the excavation and repair of two smaller temples were made possible. Through funds provided by General William Barclay Parsons, Major L. G. Reed, Mr. W. C. Osborn and Dr. S. McCullough of New York City, the Temple of the Two Lintels at Old Chichén Itzá, was excavated and partially repaired; and through a gift from Dr. F. I. Proctor of Boston and Mrs. E. C. Ritchie of Baltimore, the Temple of the Wall Panels belonging to the Caracol Group was excavated and repaired.

Again the Project has benefited greatly from Dr. Proctor's skill in stereoscopic photography. During the two months he and Mrs. Ritchie were at Chichén Itzá, they exposed more than 500 stereoscopic negatives with highly satisfactory results. The peculiar perspective properties of stereoscopic photography make it the very best method of recording stone-carving. It renders the depth of the relief with a verisimilitude unattainable with any other type of camera.

In March Mr. Reygadas and Mr. Enrique Juan Palacios, of the Direction of Archaeology, and Mr. Frederico Mariscal, one of the leading architects of Mexico, visited Chichén Itzá on behalf of the Mexican government. Technical problems arising from the excavations and repair-work were discussed with Dr. Morley and Mr. Morris and, as a result of Mr. Reygadas' visit, it was decided that the Direction of Archaeology would continue the repair of the Castillo with the fund provided by the Ministry of Public Education.

Urgent repairs had been made to the Castillo proper in 1926 under the able supervision of Mr. Eduardo Martinez Canton and Mr. J. M. Erosa Peniché, the local representatives of the Direction of Archaeology, and during the current season this work was continued,

as well as the replacement of the facing of the north and east sides of the pyramid, an enormous undertaking. For close on to two centuries, the Castillo has served as a quarry for faced stone for the village of Pisté, a mile and a quarter [2 km] northeast of Chichén Itzá, with the result that much, if not most, of the original facing has been removed. Before leaving, Messrs. Reygadas, Palacios and Mariscal expressed themselves as highly satisfied with the work that had been done by the Institution at Chichén Itzá; and not a little astonished at the magnitude of the operations, and the amount accomplished since Mr. Reygadas' last visit in 1925.

Excavations at Chichén Itzá during the current year were carried on at eight stations as follows: Temple of the Warriors (Station 4). Northwest Colonnade (Station 10); North Colonnade (Station 8); West Colonnade (Station 9); Caracol (Station 5); Temple of the Wall Panels (Station 14); Temple of the Interior Atlantean Columns and the House of the Grinding Stones (Station 11); and, Temple of the Two Lintels (Station 7), Old Chichén Itzá.

Special reports covering the excavations at the Temple of the Warriors by E. H. Morris, at the Caracol and at the Temple of the Wall Panels by Karl Ruppert, and upon the art work by Mr. Charlott will [follow].

The outstanding accomplishment of the year at Chichén Itzá was the completion of work (both excavation and repair) at the Temple of the Warriors and the Northwest Colonnade in front of it, which has been the principal center of operations during the preceding two field seasons [Chapters 1.13 and 1.14 this volume].

When excavations were begun at the Temple of the Warriors in February 1925, it appeared to be little more than a forest-covered mound, some 50 feet [15.2 m] in height, its steep, even precipitous, sides showing loose stones lying here and there. Near the top at the east a cornice could be distinguished for a few feet; and on the very summit the tops of some square columns. For the rest it was a tangle of thick undergrowth with a respectable number of considerably higher trees. Little was it anticipated that this apparently plain and uninteresting mound represented all that was left of what had been the most elaborate and magnificent building in the city.

The excavation of the temple proper was completed in 1925. Its repair and that of the greater part of the supporting pyramid, including the replacement of fallen sculptured elements wherever possible, and the excavation of the Northwest Colonnade directly in front of it occupied the greater part of the 1926 season. Finally the excavation and the very extensive repair work upon the earlier temple buried in the northwestern corner of the supporting pyramid were the principal

activities of the current season. There has resulted from this great undertaking what is unquestionably the most impressive and beautifully decorated building at Chichén Itzá, if not indeed in the whole Maya area.

Another important center of investigation, where excavation and repair have been going on for three years, is the Caracol, or Astronomical Observatory. This massive round tower, rising from a double terraced platform, is unlike every other building in the city; and its function as being a place from which astronomical observations were made, early marked it for special study by the Institution. During the present year, the excavation of the interior and exterior corridors was completed, and the necessary repairs were carried to the point that it should be possible to finish the preservation of this highly important construction, perhaps the most important in the city from a purely scientific point of view, in another field season.

A third center of investigation has been the section known as Old Chichén Itzá, stretching from 0.5 to 2 miles [0.8–3.2 km] south and slightly west of the area included in the original base-map, surveyed by J. O. Kilmartin in 1924 [Chapter 38.2 this volume].

The discovery here of a re-used hieroglyphic lintel presenting a Baktun 10 Initial Series, not only the single Initial Series thus far found in the city, but also the earliest, contemporaneous date, suggested the name Old Chichén Itzá, by which this temple is known.¹ Excavations were commenced here in 1925 at the Temple of the Four Lintels (Station 7), and resulted in the discovery of two more hieroglyphic lintels [Chapter 38.7 this volume]. In 1926 excavations were carried on at several places in the Group of the Initial Series (Station 13) [Chapter 38.9 this volume]; and again during the current season in the Temple of the Two Lintels, and Temple of the Lintel (Station 7) where three new hieroglyphic lintels were discovered on May 6 and 19, respectively. These latest finds, together with the discovery of a fourth hieroglyphic lintel built into a stone water-trough at the old abandoned plantation of Jalacal, 3 miles [4.8 km] east of the center of the city make a total of 20 hieroglyphic lintels² now known at this site, distributed [in Table 1.14.1].

A comparative study of these 20 lintels made by Dr. Morley during the present season has yielded interesting results, among others the probable dedicatory date of the second story of the Monjas, one of the most important structures in the city from an architectural point of view, since it is the largest building now extant, dating from before the Toltec conquest in 1191 A.D.

With the single exception of the Initial Series lintel, the other 19 lintels present either Period Ending dates, tzolkin dates⁴ or no dates at all, at least not recognizable as such in the present state of knowledge.

Table 1.14.1. Distribution of Hieroglyphic Lintels, Chichén Itzá and Jalacal.

<i>N</i>	<i>Provenance</i>
2	Temple of the Two Lintels at Yulá, 4 miles [6.4 km] southeast of Old Chichén Itzá
2	Temple of the Two Lintels, Station 7, Old Chichén Itzá
4	Temple of the Four Lintels, Station 7, Old Chichén Itzá
1	Temple of the Lintel, Station 7, Old Chichén Itzá
1	Temple of the Initial Series, Station 13, Old Chichén Itzá
1	Akabtzip
7	Monjas
1	Water trough in front of the plantation house at Chichén Itzá ³
1	Water trough in front of the plantation house at Jalacal
20	Total

This leaves for chronological comparisons: one Initial Series date; 11 Period Ending dates; and five tzolkin dates. Three of the lintels are without recognizable dates.

The dedicatory date of the Initial Series lintel is 10.2.10.0.0, 2 Ahau 13 Chen. This and the accompanying Initial Series are the most accurately fixed dates in Yucatán, and may be utilized as such in any chronological investigations.

The 11 Period Ending dates are by no means equally clear. For example, owing to some sort of an error, apparently in the original inscription, it has been impossible to assign any satisfactory date to the lintel found in the water-trough at the plantation of Chichén Itzá, and this in spite of a close first-hand study of its inscription.

Again in the case of the lintel in the water-trough at the plantation of Jalacal, part of the upper row of hieroglyphs was battered off in reshaping it for this secondary use, so that the upper four-fifths of the Period hieroglyph are gone. The same condition, due in this case, however, to a natural break, has partially destroyed the Period hieroglyph on the south lintel of the Temple of the Two Lintels at Yulá. And, finally, although the reading suggested for the date of the lintel in the Akabtzip is probably correct, it is not certainly so. These last three dates, however, are probably correctly deciphered, as given [in Table 1.14.2].

Any one of these dates could, and did, recur at intervals of every 260 tuns or 256.25 years, but since all of these lintels may be assigned to a period before the Toltec conquest in 1191 A.D., on stylistic grounds, it has been possible in each case to fix the corresponding Initial Series date with a considerable degree of accuracy [Table 1.14.3].

An examination of the preceding table at once discloses one very suggestive point, that every one of these 10 Period Ending lintels, whatever may be the number

Table 1.14.2. Calendrical Decipherments, Lintel Inscriptions, Chichén Itzá, Jalacal, Yulá.

Temple of the Two Lintels at Yulá	2 lintels	Tun 13 ending on a day 1 Ahau
Temple of the Four Lintels, Old Chichén Itzá	4 lintels	Tun 13 ending on a day 1 Ahau
Water trough at Jalacal	1 lintel	Tun 13 ending on a day 1 Ahau
Temple of the Two Lintels, Old Chichén Itzá	1 lintel	Tun 10 ending on a day 1 Ahau
Temple of the Lintel, Old Chichén Itzá	1 lintel	Tun 1 ending on a day 1 Ahau
Akabtzip	1 lintel	Tun 1 ending on a day 1 Ahau

of the particular tun-ending, which was recorded (that is, in seven cases, a tun 13; in one case, a tun 10; and in two cases, a tun 1) ends on the same day, namely 1 Ahau).

It is, of course, true that all the tuns of Maya history ended on some one of the 13 days Ahau, as 1 Ahau, 2 Ahau, 3 Ahau, etc., but that these 10 lintels, the only 10 recording decipherable Period Ending dates thus far found at Chichén Itzá, representing six different buildings in four widely scattered sections of the city, should all end on the same day, when the chances are 13 to one against it, seems to place this phenomenon beyond the range of reasonable coincidence, and strongly suggests that for some esoteric reason, the priestly caste, which decided such matters, deliberately chose tuns ending upon the day 1 Ahau for the dedication of their temples, perhaps as being the most auspicious.⁵

The dating of the Temple of the Two Lintels (Station 7) at Old Chichén Itzá as 11.2.10.0.0, 1 Ahau 3 Uayeb (1014 A.D.) has probably made possible the correct dating of the second story of the Monjas, which has long been a matter of considerable importance, because of the key position occupied by this building in the architectural sequence at Chichén Itzá.

The excavation of the Temple of the Two Lintels at Old Chichén Itzá carried out this season very clearly established its close stylistic relationship with the Monjas Group, many of the decorative elements in the former building being duplicated in different units of the latter.

Take, for example, the lattice-work motif composed of X-shaped elements, which also occurs in the East and Southeast Annexes of the Monjas, the Iglesia and the Red House; or again a highly specialized dentated motif, found also in the second story of the Monjas, and in the Iglesia even as a cornice, exactly as in the Temple of the Two Lintels; a grecque motif found in the foundation platform of the East Annex of the Monjas, and in an identical position in the Temple of the Two

Table 1.14.3. Calendrical Decipherments, Initial Series Dates, Yulá, Chichén Itzá, Jalacal.

Temple of the Two Lintels, Yulá	2 lintels	11.9.13.0.0	1 Ahau 13 Pop	1155 A.D.
Temple of the Four Lintels, Old Chichén Itzá	4 lintels	11.9.13.0.0	1 Ahau 13 Pop	1155 A.D.
Water trough, Jalacal	1 lintel	11.9.13.0.0	1 Ahau 13 Pop	1155 A.D.
Temple of the Two Lintels, Old Chichén Itzá	1 lintel	11.2.10.0.0	1 Ahau 3 Uayeb	1014 A.D.
Temple of the Lintel, Old Chichén Itzá	1 lintel	11.7.1.0.0	1 Ahau 13 Kankin	1014 A.D.
Akabtzip	1 lintel	11.7.1.0.0	1 Ahau 13 Kankin	1014 A.D.

Lintels. Indeed, it is not overstating the case to say that the stylistic affinities between this temple and the Monjas Group are closer than are the stylistic affinities of either to any third building or group of buildings in the city. *A priori* this would indicate that they both probably date from approximately the same period.

It has been explained above that five of the seven hieroglyphic lintels in the second story of the Monjas commence with the same day, namely 8 Manik, but as there are no other recognizable calendric hieroglyphs either on these six lintels, or on the remaining two, and as this day 8 Manik or any other day of the tzolkin could, and did, recur after intervals of every 260 days, the resulting accuracy in any period of time above a year is negligible.

The day Manik, or to be more exact the 13 different days Manik, are among the only 52 days of the tzolkin, with which the Maya New Year (0 Pop) could begin, and the not unreasonable assumption was made that the day 8 Manik, recorded five times in the second story of the Monjas without its corresponding month positions, was in reality a Maya New Year's Day, written 8 Manik 0 Pop, which at once reduced the possible occurrences of this date from once or even twice in the same year to but once every 52 years.

Nor is this assumption especially far fetched, since all the original sources the inscriptions on stone, the codices, the Books of Chilam Balam and the early Spanish authorities, agree that the Maya New Year began with the first day of the month Pop, written in Old Empire times and probably far down into New Empire times as 0 Pop.⁶

It must be borne in mind in this connection, that the Calendar Round Date 8 Manik 0 Pop, or any other in fact, recurred throughout Maya history at 52-year intervals, and that therefore the maximum distance this date could be from any other date was only 26 years, since any distance over 26 years would bring it that much nearer its next recurrence, as for example 30 years after one occurrence would bring it within 22 years, that is, 22 years, before its next occurrence.

The next problem was to ascertain how near the date of the Temple of the Two Lintels at Old Chichén Itzá, that is, 11.2.10.0.0, 1 Ahau 3 Uayeb,⁷ this Calendar Round date 8 Manik 0 Pop could occur. This was found to be exactly five true solar years later with an error of less than one day (Table 1.14.3).

Table 1.14.4. Calendrical Decipherments, Temple of the Two Lintels Calendar Round Date, Chichén Itzá.

11.2.10.0.0	1 Ahau 3 Uayeb	1014 A.D.
11.2.15.1.7.8	8 Manik 0 Pop	1019 A.D.

But the Maya number, five tuns (5 x 360), one uinal (1 x 20) and seven kins (7 x 1), equals 1,827 days, which in turn equals five years of 365.25 days each, and a remainder of 0.75 of a day; but, since the ancient Maya did not know the use of fractions, this was as near as they could come in their arithmetical notation to recording five true years. Had the ancient Itzán priests used 1,826 days instead of 1,827 here, the count would have fallen one-fourth of a day short of five true years, and one day short of a Maya New Year's Day, reaching instead the day 11.2.15.1.6, 7 Cimi 4 Uayeb.

The Temple of the Two Lintels at Old Chichén Itzá was probably erected to commemorate the *lahuntun* ending 11.2.10.0.0 as we have seen, and the second story of the Monjas, the most beautiful unit of the whole Monjas Group, was dedicated on a Maya New Year's Day, exactly five true years later.

The larger significance of these new discoveries lies in the light that they throw upon the chronological sequence of architecture at Chichén Itzá.

With the help of an increasing number of fixed dates recorded in a chronological system, which is one of the most beautiful and accurate time counts ever devised by the human mind, and with the help of our increasing knowledge of the stylistic characteristics of Maya arithmetic, it is becoming possible to assign the more important buildings to their proper positions in the chronological sequence.

No structures have yet been found at Chichén Itzá which may be referred with any degree of certainty to the first period of the city's occupancy, the so-called Colonization Period from 531 to 699 A.D.; indeed but one datable object has been recovered, assignable thereto, namely the Initial Series lintel, which had been re-used, possibly in the walls of the Temple of the Initial Series⁸ at Old Chichén Itzá, a structure surely dating from late Toltec times.

Thanks to these recent chronological discoveries and to a utilization of the stylistic criteria present in the buildings themselves, it has been possible to assign a number of different structures to the second, or Renaissance, Period as follows: the Temples of the Lintel, the Two Lintels and the Four Lintels at Old Chichén Itzá; the Temple of the Two Lintels at Yulá; the Temple of the Lintel at Jalacal; the Akabtzip; the Iglesia, the East Annex of the Monjas, the Red House and the House of the Deer, in the central part of the city. All these buildings date from a period prior to the Toltec conquest, when Maya architecture still retained its original flavor, unmodified by alien influence; and before the influx of Toltecan ideas and building practices from the highlands of central Mexico had produced the Toltec-Maya hybrid, which is the Chichén Itzá of the third and greatest period.

From this third, or Toltec Period, 1191 to 1448 A.D., date the Caracol, the Temple of the Wall Panels, the Temple of the Xtoloc Cenote, the High Priest's Grave and adjoining structures, the Castillo, the Ball Court, the Temple of the Cones, the Temple of the Eagles, the Via Sacra, most if not all of the Group of the Initial Series, and the vast architectural complex called the Group of the Thousand Columns, and all of its associated structures, as well as many other smaller groups.

Previous to the present season 9 Chac Mool statues had been found at Chichén Itzá, distributed as follows: 1. At the point where the Via Sacra leaves the Great Terrace; 2. Just east of the Temple of the Eagles; 3. Buried in the substructure of the Temple of the Eagles (now in the National Museum at Mexico City); 4. Probably found in the same place as no. 3 and removed thence by Augustus Le Plongeon, and abandoned by the roadside just west of the southern open end of the Ball Court (now in the Museum of Archaeology and History at Mérida); 5. Just east of the Temple of the Cones, probably the largest; 6. In front of the Temple of the Warriors; 7. In front of the temple on the east side of the Court of the Thousand Columns; 8. In the bush about 200 yards [182.9 m] west of the Monjas; and, 9. In front of the Temple of the Initial Series at Old Chichén Itzá.

In addition to these, three others were found during the current season as follows: 10. In the North Colonnade in front of the sculptured and painted dais; 11.

In the temple buried in the northwestern corner of the pyramid supporting the Temple of the Warriors, that is, the Temple of the Chac Mool; and, 12. At the western side of the Group of the Initial Series at Old Chichén Itzá.

With the possible exception of no. 3, the newly discovered no. 11 is the best preserved of this type of statues thus far recovered.

An increasing efficiency on the part of the native laborers has been noted during the current year. The Chichén Itzá Project has now completed four field seasons; some of the laborers have been with the Project since its first year, and the great majority have served for at least two seasons. This is particularly noticeable among the masons, who have grown to understand the peculiar demands of the repair-work, and who, in some cases, have developed a real appreciation of, and feeling for, the "old" quality of the stone work. Even the shovel, pick and wheel-barrow men have become more proficient in handling these implements, so that the excavations have proceeded not only more smoothly, but more rapidly. To this increased efficiency of the native labor is due in no small part the greater amount of work accomplished in the 1927 field season as compared with any one of the preceding three seasons.

Through an arrangement reached with Mr. Reygadas during his visit to Chichén Itzá in March, it was decided to turn over to the Mexican government at the end of the season (May 28), the material excavated during the first year (1924) and also the great bulk of the stones from the Temple of the Warriors showing fragments of the original frescoes, which Mrs. Morris had either copied or rejected as too incomplete and fragmentary for record.⁹ Thirty-eight stones only were reserved for further study. In addition to the foregoing material, custody was released of a number of sculptures, loose pieces, statues, Atlantean figures, carved panels and lintels, elements which would never be replaced in their original positions in the façades.

Mr. Reygadas has decided to deposit the greater part of the portable material resulting from the Institution's excavations at Chichén Itzá in the Museum of Archaeology and History at Mérida, an organization supported by the State of Yucatán, the Director of which is Mr. Luis Rosados Vega. Mr. Rosados visited Chichén Itzá at the beginning of June when Dr. Morley relinquished custody of this material to Mr. Eduardo Martínez Canton, the local representative of the Direction of Archaeology, who in turn gave it to Mr. Rosados Vega. A special exhibition hall, called the "Salón Carnegie," has been opened in the Museum in Mérida for the display of the material and proper credit given the Institution for having been responsible for its acquisition.

The principal additions to the staff-quarters at Chichén Itzá during the year were the erection of a house for Dr. Morley, on the hill just east of and adjoining the former chapel of the plantation, and the conversion of the building formerly used as a school-house into a four-car garage.

Larger operations closed at Chichén Itzá on May 28, at the end of the ninth fortnight of excavations. Minor excavation and repair-work continued at the Temple of the Warriors and the Temple of the Two Lintels at old Chichén Itzá for another month, until June 25, and repair-work at the Temple of the Wall Panels for still another month, or until July 23.

Just after the close of larger operations, on June 4 and 5, Dr. Morley and Messrs. Ruppert and Charlott visited the ruins of Yaxuná, 15 miles [24.2 km] south and slightly west of Chichén Itzá. This site, according to the accounts of Indians of the region, is the western terminus of the stone causeway, which starts at Cobá, 75 miles [120.8 km] east of Yaxuná. The eastern terminus was explored last year for a distance of nine miles [14.5 km] west from Cobá, but without reaching its end; and during the intermediate season (July to December 1926), Juan Olalde, the head foreman at Chichén Itzá, had pushed eastward from Yaxuná for a distance of 15 miles [24.2 km], also without coming to its end. Finally since 12 sculptured stelae had been found at Cobá, the eastern terminus last year [Chapter 34.1 this volume], it was hoped that others might be found at the western terminus this year, which was the immediate object of this visit.

No sculptured stones of any sort were found, and only a few dressed blocks. Only one building is standing, and its masonry is altogether different from that of Chichén Itzá and more like the remains at Cobá, great masses, composed of roughly shaped, undressed stones or even more like the buildings at Edzná on the other side of the peninsula, where the dressed blocks are small in size and comparatively few in number. This is very different from conditions at Chichén Itzá, where there is a wealth of dressed blocks, standing in walls, lying strewn about through the bush near every fallen building, and even built into masonry fills. Yaxuná has a very large Acropolis surmounted by two lofty pyramid-temples, standing side by side, both facing north. It is obviously of much earlier date than Chichén Itzá.

Its proximity to Chichén Itzá, on the other hand, being only 12 or 14 miles [19.3–22.5 km] distant in an air-line, as well as the fact that it stands at the western end of the great Cobá-Yaxuná highway, strongly suggests that it was an important center, and possibly may have been the one from which Chichén Itzá was first colonized.¹⁰

NOTES

1. This lintel was discovered by E. H. Thompson in 1900 (Morley 1920:500).

2. The Temple of the Xtoloc Cenote (Station 3) has a carved lintel but no hieroglyphs.

3. This lintel is now in the Museum of Archaeology and History at Mérida.

4. Five of the seven hieroglyphic lintels in the Monjas commence with the same day, 8 Manik, one of the 260 different days of the tzolkin or "count of days," used by the ancient Maya priests in casting horoscopes and making divinations. Since any given day of the tzolkin, for example 8 Manik, recurred at intervals of every 260 days, this type of date, without additional chronological data, is practically useless for fixing the age either buildings or monuments.

5. These 10 examples may be increased to 11 by the addition of a painted capstone found by Dr. Morley in the Temple of the Owl at the Group of the Initial Series (Station 13) at Old Chichén Itzá in 1913. The painted inscription on this capstone began with the day 1 Ahau, ending on a Tun 13. But since the Temple of the Owl very surely dates from the Toltec Period (that is, after 1191 A.D.) the corresponding structural position of this particular day 1 Ahau ending a Tun 13 is in all probability 12.2.13.0.0, 1 Ahau 13 Chen, or 1411 A.D. Unfortunately this beautifully painted capstone was destroyed in a fire at the plantation house at Chichén Itzá in 1922.

6. An extensive treatment of the shift of the positions of the days in the Maya months will be found in Morley (1920:512–524) and *Year Book* 17 [Chapter 1.6 this volume]. As there pointed out, this shift does not appear to have taken place until toward the close of the New Empire. Indeed the very day when it may have occurred may be commemorated on rings of the Ball Court at Uxmal, as having been 11.15.16.12.14, 10 Ix 17 Pop, 1277 A.D.

7. This lahuntun ending itself fell only two days before another Maya New Year's Day, viz. 11.2.10.0.2, 3 Ik 0 Pop, the single intervening day being; 11.2.10.0.1, 2 Imix 4 Uayeb.

8. Dr. A. M. Tozzer has recently suggested that, when this lintel was re-used in the Temple of the Initial Series at Old Chichén Itzá, it was utilized not as a lintel but simply as a wall-stone. There is much in support of this contention. The earliest photograph of the Temple of the Initial Series shows this lintel on the ground partly in front of the front doorway. The second drums of the pair of Atlantean columns, which are supposed to have supported it, were found at the base of the pyramid and since this lintel was not found *in situ* on top of these columns, there is at least as much evidence that it had formed part of the wall, as that it had been the lintel over the front doorway. No other stone slabs were found which could have been the lintels for the north and south doorways, which would rather indicate that in cases of the other two doorways, at least, the lintels had been of wood.

No arch-stones have ever been found around this building, and it appears highly probable that it had a flat roof like those seen at Tulum. This fact alone fixes the Temple of the Initial Series as very late, and it appears more than probable that Dr. Tozzer is correct in suggesting that this lintel may never have stood over the front doorway of the

temple, but that it may have formed part of its walls instead. However, whether it served as a door-lintel or simply as a plain wall-stone matters little, since in either case it was a reused element as employed in the Temple of the Initial Series, and its original position is unknown.

9. In a final classification of the stones from the Temple of the Warriors, showing fragments of the mural frescoes, Mrs. Morris listed 80 as of sufficient excellence for use as museum specimens; 400 as showing features of minor importance, and thus of greater service to the specialist than to the general public; and 170 as too fragmentary to be of further use.

10. Dr. Morley has discussed this question of the colonization of Yucatán and the first settlement of Chichén Itzá by groups proceeding from the Old Empire region northward along the east coast of the peninsula by way of Chetumal Bay, Tulúm and Cobá, in a recent article (Morley 1927), and it is not improbable that Yaxuná may be the last link in the chain connecting Chichén Itzá with the Old Empire habitat.

I.15.

SYLVANUS G. MORLEY

Archaeology

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There were two principal investigations in Middle American Archaeological Research in 1928 as follows: 1. The Chichén Itzá Project; and, 2. The Uaxactún Project.

Two subsidiary expeditions were also made, one from Chichén Itzá, Yucatán, Mexico, and the other from Belize, British Honduras: 3. The Ek Balam Expedition; and, 4. The Pusilhá Expedition.

The Chichén Itzá Project completed its fifth field season on June 2 with the conclusion of excavation and repairs at the Temple of the Warriors.

The staff for 1928 consisted of Sylvanus G. Morley, in charge; Karl Ruppert, administrative assistant; E. H. Morris, archaeologist in charge of excavations; P. S. Martin, assistant archaeologist; Jean Charlot, Mrs. E. H. Morris and Lowell Houser, artists; Thomas R. Johnson, surveyor and draftsman; Miss Kathryn MacKay, housekeeper and trained nurse; Miss N. E. Piatt, secretary and bookkeeper; Gustav Strömsvik, carpenter; and Ira Guillot, mechanic.

On December 26, Dr. Morley delivered a lecture entitled "Recent Excavations of the Carnegie Institu-

tion of Washington at Chichén Itzá, Yucatán, and at Uaxactún in Guatemala," at the opening General Session of the American Association for the Advancement of Science at Nashville, TN, in place of Dr. L. H. Bailey, the retiring President, who was prevented by illness from giving the customary principal address; and on January 6, another lecture, at Mexico City, entitled "The Excavations of the Carnegie Institution of Washington in 1927 at Chichén Itzá, the Holy City of the Mayas," under the auspices of Dr. J. M. Puig y Casauranc, the Minister of Public Education.

Mr. Morris with most of the other staff members reached Yucatán on January 3 by way of New Orleans, and work on the Temple of the Warriors was resumed on January 11.

Excavations at Chichén Itzá during the 1928 field season were carried on at two centers: the Group of the Thousand Columns and the Temple of the Two Lintels at Old Chichén Itzá; work being done at five stations as follows: Temple of the Warriors (Station 4); The Northwest Colonnade (Station 10); The North Colonnade (Station 8); The West Colonnade (Station 9); and, Temple of the Two Lintels (Station 7), Old Chichén Itzá.

Again, as in 1927, the principal center investigation at Chichén Itzá was again the Temple of the Warriors and contiguous structures, the North, West, and Northwest Colonnades. The current year witnessed the completion of excavation and repair work at the Temple of the Warriors, and the preparation of the final report thereupon. Special reports covering different phases of this work by E. H. Morris, Jean Charlot and Mrs. Morris will be found in *Year Book 27* [Chapters 38.15 and 38.17 this volume].

Easily the outstanding event of the year at Chichén Itzá was the discovery on March 6 by E. H. Morris, of a turquoise mosaic disk in a sealed stone urn, buried beneath the floor of the sanctuary of the Temple of the Chac Mool, the earlier temple enclosed by and incorporated in the pyramid supporting the later Temple of the Warriors. This is probably the most important single object ever found *in situ* in the Maya area.

This magnificent specimen, 8.75 inches [22.2 cm] in diameter and comprising more than 3,000 pieces of cut and polished turquoise, was unfortunately in very poor condition when found, owing to the decay of the wooden plaque to which the elements of the mosaic had been fastened, and highly skilled technical attention was immediately necessary if it were to be preserved. The President of the Institution recommended to the Executive Committee an additional allotment to meet this emergency, and through the cooperation of Dr. Clark Wissler, Curator of the Department of Anthropology at the American Museum of Natural History, New York City, the services of Mr. Schouchi

Ichikawa, the Museum's most skilled preparator, were secured. Mr. Ichikawa reached Chichén Itzá on April 12 and, in addition to resetting the mosaic on a new base, he painted a water color reproduction of it for use in the forthcoming report upon the Temple of the Warriors. He returned to New York on June 11.

The President of the Institution and Dr. A. V. Kidder, Associate in charge of investigations in Early American History, visited Chichén Itzá from, March 1 to 12.

On March 10 exercises were held at the Temple of the Warriors marking a stage in the development of the Institution's archaeological program at Chichén Itzá. A special train from Mérida brought the Governor, Dr. Alvaro Torre Diaz, General Federico Verlanga, Chief of Military Operations in the State of Yucatán, and other prominent, officials. There were addresses by Dr. Merriam, Governor Torre Diaz, Mr. Eduardo Martínez Cantón, Inspector of Archaeological Monuments for the State of Yucatán, who had been designated the special representative of the Department of Archaeology of the Ministry of Public Education for the occasion, and Dr. Morley. A luncheon was served to 60 invited guests on the corridor of the *Casa Principal*, and the day closed, with a *baile regional*, or native dance, in which some 200 Maya Indians and Yucatecans from the neighboring villages of Pisté, Xochenpich and Dzitas took part.

Before leaving Yucatán, Dr. Merriam, accompanied by Mr. J. Reygadas Vertiz, the Director of Archaeology, Messrs. Eduardo Noguera and Eduardo Martínez Cantón of the Department of Archaeology, Dr. Kidder and Dr. Morley, visited Uxmal, where the Mexican government has carrying on urgently needed repairs at the House of the Governor.

On March 15, Doctors Merriam, Kidder and Morley left Progreso for Mexico City, where several days were passed in conferences with the Minister of Public Education, and other officials.

The practically complete restoration of the Temple of the Two Lintels at Old Chichén Itzá under the direction of Paul Martin was brought to a successful termination on April 28. The excavation and repair of this structure was commenced last year, and its esthetic as well as scientific importance [Chapter 1.14 this volume] indicated the advisability of complete restoration. Although the roof and most of the exterior walls had collapsed, practically all of the building stones were either lying where they had fallen, or were found built into later dry-laid walls in the immediate vicinity. A single section of the rear façade was standing to within two courses of its original height, and furnished the pattern for the arrangement of the elements of the design. The combination of these several factors made possible practically a complete restoration of this beautiful example of Maya architecture, even to the reconstruction

of the corbel arched roof, the first attempt of this kind ever made. While the cost in time of technical supervision, as well as in money, and the comparative scarcity of architectural units, where complete restoration may be carried out with such a high degree of accuracy, render it inadvisable, as indeed it is unnecessary, to do much work of this kind; nevertheless, the various operations involved in rebuilding this temple from the ground up, and the replacement of the decorative elements in their original positions in the façades have shed much light on ancient Maya architectural practices.

In addition to these more intensive investigations, involving excavation and repair, it has been thought advisable to carry on simultaneously further exploration of the outlying sections of Chichén Itzá, which stretch in some directions, particularly to the southeast, south and southwest, for several miles beyond the religious and civic center of the city. This work has been in charge of Karl Ruppert and has had most gratifying results. At least 12 groups of major importance were discovered, distant from half a mile to two miles [0.8–3.2 km] from the center of the city; several containing hitherto unknown types of buildings. The most important single construction found was a walled enclosure, 50 feet square. The wall surrounding this, although much demolished, had originally stood about 8 feet high, and was 4.26 feet in thickness. The enclosure has never been roofed and the only entrance is a doorway, 8 feet wide, in the middle of the north side. This doorway had had its jambs carved with panels of hieroglyphs, three columns of 19 glyphs each, 27 in each panel, or 54 in all. Notwithstanding the fact that all these glyphs are practically in perfect condition, no calendric or chronological signs, have been identified, and it has been impossible to date this interesting construction.

An extension of this exploratory work, specifically as applied to securing approximate ground-plans of structures without excavation, other than few pits to expose a wall or develop a corner, has led to most satisfactory results. The Market Place, an imposing construction, 245 feet [74.7 m] long and 22 feet [6.7 m] in depth, occupying the entire south side of the Court of the Columns, has been fairly accurately measured and plans have been laid for its excavation and repair. It was a matter of surprise that such accurate ground plans could be secured without extensive excavations, and application of this technique to other structures is recommended. Indeed further exploration of the outlying sections of the city must be made. As yet no single construction of the first period of the city's history, 531 to 669 A.D., has been identified, the single dated object there from being the re-used door lintel in the Temple of the Initial Series at Old Chichén Itzá. Perhaps a dozen buildings are surely referable, on stylistic grounds, as

well as because of the dates actually inscribed upon their door lintels, to the second period, 965 to 1191 A.D. While there are literally several hundred constructions temples, colonnades, ball-courts, domiciliary buildings, quadrangles, towers, platforms, causeways, etc., which may be ascribed to the third and closing period, 1191 to 1445 A.D., until now, not a single building has been found which is surely referable to the earliest, period. Exploration should be extended even beyond the limits of the city, as far as Yaxuná¹ for example, and even farther if necessary, in order to locate if possible the earliest Chichén Itzá and establish the site of the original city of this name.

A fourth activity at Chichén Itzá during the current season has been Miss MacKay's clinical work among the Maya Indians of the region. Free weekly clinics have been held, not only at Chichén Itzá but also at the neighboring villages of Pisté and Xochenchich, from which the labor of the Project is almost exclusively derived. These clinics were well attended. Simple talks on sanitation, and on the extermination of flies and mosquitoes were given, and the natives eagerly absorbed the information imparted. Miss MacKay finds the commonest illnesses from which the Maya of the region suffer are malaria-present rather in chronic than malignant form intestinal and digestive disorders, colds, anemia, and malnutrition. A continuous diet of corn, beans, salt pork, very little fresh meat and practically no green vegetables, probably causes most of their maladies, and malaria and its sequela are responsible for the rest. Bad colds and catarrhal affections are common and develop frequently into bronchial pneumonia and pleurisy, running extremely high temperatures, but in spite of this susceptibility to infections of the respiratory system there is almost no tuberculosis. The number of cases examined at the staff quarters during the current season was in the neighborhood of 250, many walking more than 25 miles [40.2 km] for treatment. Some 130 cases were treated at the clinics in outside villages, and 18 cases at the Mexican Government quarters at Chichén Itzá a total of about 400.

On March 25, Dr. Kidder and Dr. Morley and Dr. G. C. Vaillant of the American Museum of Natural History left Mexico City for Guatemala City. During the course of a fortnight's stay in Guatemala, Dr. Kidder and Dr. Vaillant visited some sites near, Lake Atitlán, in company with Dr. S. K. Lothrop of the Museum of the American Indian, Heye Foundation; later spent two days with Dr. Morley at Quiriguá. In Guatemala City several calls were made upon Mr. J. A. Villacorta C., Minister of Public Education, and the Institution's program of archaeological investigations in the Middle American field was considered with him. On March 30 Dr. Morley gave a lecture in Spanish be-

fore the Society of Geography and History of Guatemala, of which he is an Honorary Member, on the work of the Institution both at Chichén Itzá and at Uaxactún. On April 13, Doctors Kidder, Morley and Vaillant left Puerto Barrios, Guatemala, for Belize, British Honduras; and on April 15, Mr. Amsden, in charge of the Uaxactún Project, met them at Belize and took them up the Belize River to the head of navigation, and thence by mule-train to Uaxactún, 50 miles [80.5 km] westward in the northern central part of the Department of Petén, Guatemala.

The most important contribution at Uaxactún during the current season was the excavation of Pyramid E-VII, the key structure of the astronomically significant Group E. The discovery of a stucco mask buried under an outer covering of rough masonry and crumbling plaster was reported last year [Chapter 1.14], and during the present season three-fourths of this later and much cruder outer layer was removed, the remaining quarter, the southwest corner, being left as found for a control section. There stood revealed what is unquestionably one of the finest examples of ancient American architecture extant, a terraced pyramid with stairways on all four sides, two pairs of great stucco masks flanking each stairway. The summit had never supported a masonry superstructure, as the original and unbroken plaster floor clearly shows.

This buried pyramid must have been constructed at a very early date. Dr. Vaillant's excavations in the floor of the plaza of Group E, and around the foundations of Stelae 18, 19 and 20, the first two of which date from 97 A.D., clearly show that these monuments were erected subsequent to the latest floor level, which was in turn associated with the rough masonry covering, which had been built around Pyramid E-VII.

Stylistically considered, this stucco-covered pyramid is pre-Mayan. Its decorative motives are like nothing else known in the Old Empire region. They have a flavor of the Archaic, without being of the Archaic. Esthetically they are pre-Maya, but not necessarily un-Mayan. At the very early date when this pyramid was constructed, probably well before the beginning of Baktun 9, it is strongly to be doubted that Maya art and architecture had developed the essential qualities which became so diagnostically characteristic of it in later Old Empire times.

Dr. Vaillant's excavations in the plaza of Group E satisfactorily substantiate the indications afforded by the stylistic evidence. He found three earlier plastered floor levels below the last floor level, and 8 feet of debris between this last floor and the undisturbed humus soil. This debris was filled with potsherds, ash and small anthropomorphic figurines of baked clay, including two whistles, one modeled like the head of a man, the other a bat. Some of these clay figurines

strongly resemble similar Archaic figurines from the highlands of Guatemala and, without being identical, suggest some as yet undetermined relationship therewith, possibly not remote. Indeed the scientific importance of the results at Uaxactún this season lies in the possibility that the stratified meeting-ground of the Archaic and Maya cultures, so long sought, may at last have been found in this very group.

Aside from its indubitable scientific significance, which may have a fundamental bearing on the relative ages of the Archaic and Maya horizons, Pyramid E-VII is, esthetically considered, scarcely of less importance. Buried beneath a subsequent construction at a very early date, it has been preserved for us, 98 percent as it was 18 or more centuries ago. Of extraordinarily satisfying proportions and harmonious silhouette, this pyramid rises in dazzling silver-white brilliance against the somber green background of the Petén forest and the vivid cloud-flecked blue of the Petén skies, an architectural masterpiece of rare beauty.

While at Uaxactún, Dr. Morley visited Tikal for the purpose of examining the plain stelae in the northern part of the city. Opportunity was also taken to check his new reading of Stela 18, that is, 8.19.0.0.0. Stylistically considered, Stela 18 is the earliest monument at Tikal, indeed its only other stylistic analogues known anywhere being Stelae 9, 18, and 19 at Uaxactún, and Stela 1 at Uolantún, all dating from before the beginning of Baktun 9. The inscription unfortunately is not only fragmentary but also extremely weathered; the uinal and kin coefficients appear to be 0, and the day of the Initial Series terminal date is pretty surely 10 Ahau. If the tun coefficient is also 0, as is probable, then the only reading within the limits fixed by the stylistic criteria is 8.19.0.0.0 10, Ahau 13 Kayab. A new plain stela (D8) and a beautifully sculptured altar (II) accompanying it were found in front of the stairway leading to Temple III; another plain stela (D9) was found 100 yards [91.4 m] north of the northwest corner of the pyramid supporting Temple III.

Dr. Kidder and Dr. Morley returned to Belize on April 30, and the former returned to the United States on May 5. On May 2, Dr. Morley left Belize for Punta Gorda to visit a site named Pusilhá in southern British Honduras, about a mile [1.6 km] east of the western boundary of the Colony. Dr. Morley left Belize on May 12 and reached Chichén Itzá again on May 24, after an absence of two and a half months.

Mr. Martin returned to the United States on May 9, Mr. Ichikawa on June 11, Mr. and Mrs. Morris and Miss Piatt on June 12, Messrs. Strömsvik and Houser on June 14, Miss MacKay to Mexico City on June 1, and Mr. Charlot to Mexico City on June 16.

At the invitation of the Rotary Club of Mérida, Dr. Morley gave an illustrated lecture in Spanish at the

Peón Contreras Theatre in Mérida of the evening of July 3, describing the results of the 1928 field season at Uaxactún and at Chichén Itzá. The turquoise mosaic disk was on exhibition in the foyer of the theatre after the lecture and also at the newly inaugurated Casa del Pueblo, or People's House, during the evening of July 2. Dr. Morley left for Mexico City on July 4.

On July 7, Dr. Morley delivered to Professor Moise Saenz, the Under-Secretary of Public Education, the turquoise mosaic disk, the stone urn in which it was found, and the associated material, a carved jadeite pendant, two jadeite beads and a conjuring stone of the same material.²

At the invitation of Dr. Alfredo Pruneda, Rector of the University of Mexico, Dr. Morley gave three lectures before the Summer School of the University as follows: July 9. Origin of the Maya Civilization, and the Old Maya Empire; July 11. Decline of the Maya Civilization and the New Maya Empire; and July 13. Maya Hieroglyphic Writing.

He returned to the United States on July 14.

The appointment of Mr. Ruppert as administrative assistant of the Chichén Itzá Project has relieved Dr. Morley of the routine of administration at Chichén Itzá, and his time has been devoted to the preparation of his report on the *Inscriptions of Petén*. As originally contemplated in 1914 this work was to have contained "descriptions and decipherments of all known Maya texts, which will be so arranged as to be a ready and standard book of reference on Maya chronology" (YB 14). It soon became apparent, however, that further field work would be necessary before such a book could be written (YB 14), and as early as 1915 so many texts had been transcribed at Copán alone (YB 15), that it was decided to bring out the Copán texts in a volume by themselves. The World War intervened just as the first chapter of this book had gone to press (YB 16), and the first volume of this work (Morley 1920) was not published until the spring of 1920 (YB 19).

During Dr. Morley's seven trips to the Department of Petén in 1914, 1915, 1916, 1920, 1921, 1922, and 1928 (YB 14, 15, 19, 20, 21) he has collected material for the second volume of this work on the Maya inscriptions, to be entitled *The Inscriptions of Petén*, and he is now engaged upon its preparation.

NOTES

1. Yaxuná is located about 15 miles [24.1 km] south and slightly west of Chichén Itzá, and is the western terminus of the Cobá-Yaxuná *sacbe* or highway (YB 26).

2. When this ball of jadeite was first shown to the Maya laborers, they unanimously identified it as a *sastún* or conjuring stone, which the ancient Maya priests are said to have used in malting incantations.

1.16.

SYLVANUS G. MORLEY

Archaeology

YB 28:299–301, 1929

The two principal investigations in Middle American Archaeological Research, the Chichén Itzá Project and the Uaxactún Project, completed their sixth and fourth seasons, respectively, during the current year. As in former years, subsidiary expeditions were sent out to other sites, one to the Old Empire city of Piedras Negras in the northwestern corner of the Department of Petén Guatemala, the other to the New Empire center at Macanxoc-Cobá in northeastern Yucatán, Mexico.

The staff for 1929 consisted of the following members: At Chichén Itzá, Sylvanus G. Morley, Associate in charge; J. O. Kilmartin, engineer and administrative assistant; Karl Ruppert, archaeologist in charge of excavations; H.E.D. Pollock, assistant archaeologist; Miss Katheryn I. MacKay, housekeeper and trained nurse; Miss Bess L. Holbrook, secretary and bookkeeper; A. J. Kerr, mechanic; at Uaxactún: O. G. Ricketson, Jr., in charge; A. L. Smith, assistant archaeologist, Mrs. O. G. Ricketson, Jr., and E. Shufeldt, field assistants; and in Washington, E. H. Morris, archaeologist; Mrs. E. H. Morris and Jean Charlot, artists, who were engaged in preparation of the final report upon the excavation of the Temple of the Warriors. In the group at Chichén Itzá there should be included the personnel of the Yucatán Medical Expedition of the Department of Tropical Medicine, School of Public Health, Harvard University: G. O. Shattuck, director; J. C. Bequaert, entomologist; J. Sandground, helminthologist; K. Goodner, bacteriologist; and B. L. Bennett, laboratory technician.

Dr. Morley reached Mexico City on January 1, and after conferences with Lic. Ezequiel Padilla, the new Minister of Public Education, and Mr. José Reygadas y Vertiz, the Director of Archaeology, proceeded to Yucatán. The other members of the staff reached Yucatán on December 31, by way of New Orleans, and work was resumed at the Caracol, or Astronomical Observatory, on January 23. Pursuant to the policy of commencing no new unit of excavation until work already under way should be completed and published, excavations at Chichén Itzá during the current season were restricted to the Caracol (Station 5), study of which was begun in 1925, continued in 1926 and 1927, but suspended in 1928, and supplementary studies at the Casa Redonda (Station 15).

The most important discovery at the Caracol during the current season was the finding of an earlier

circular substructure, buried within the upper, rectangular platform, from which the tower proper rises. This circular substructure is in perfect condition, still retaining its original plaster finish, but as yet no stairway has been found connected with it, by which access could have been gained to the tower on the summit. This discovery has made necessary further excavation, in order to determine the constructional details involved, as well as extensive repairs to preserve and at the same time expose the buried substructure, so that another season's work will be required to complete the study and repair of this architectural unit. Another major activity at Chichén Itzá during 1929 was a continuation of the survey of the site by J. O. Kilmartin, Assistant Topographical Engineer, U. S. Geological Survey. In 1923, Mr. Kilmartin surveyed the central area comprising the larger and better-known architectural units, using a scale of 1:200,000 and 5 foot [1.5 m] contour intervals. This year an even larger tract (nearly a mile square) lying immediately south and southwest of the central area was surveyed, and all constructions noted thereupon. The same scale and contour interval were employed in each case, and it is proposed to republish the two maps as one. Several important and previously unreported architectural groups were located by this survey and a number of stone causeways were found connecting them, the most important being the one running from the Monjas in the middle city to the Group of the Hieroglyphic Lintels at the south end, almost a mile [1.6 km] in length.

A third major activity at Chichén Itzá during the present year was the medical survey of the surrounding region by the Yucatán Medical Expedition of the Department of Tropical Medicine, School of Public Health, Harvard University, under Dr. G. C. Shattuck, undertaken as a cooperative project with the Carnegie Institution. Three different groups of Maya and mixed-bloods were examined: 1. The laborers at Chichén Itzá, largely drawn from the neighboring villages of Pisté and Kaúa; 2. The inhabitants of Dzitas, the nearest railway point to Chichén Itzá; and 3. The inhabitants of Chan Kom, an Indian village lying 14 miles [22.5 km] southeast of Chichén Itzá. Surveyed maps of the last two villages were made by Mr. Kilmartin, giving location of houses, wells, latrines, corrals, pigsties, etc. Vital statistics, sanitary conditions and prevalent diseases were tabulated for all three groups, and blood and fecal specimens secured from several hundred individuals. The most surprising feature of the survey seems to be the almost complete absence among the Maya either of syphilis or the probably related yaws so prevalent in other tropical countries.

A fourth activity at Chichén Itzá during the current season was the free clinic conducted by Miss

MacKay. The clinic is now in its third year and has been steadily growing; 624 cases were treated at Chichén Itzá, Pisté, Xochenpich, Dzitas, Kaúa, Yulá, Nictchá and Chan Kom this year, in some cases patients walking as far as 30 miles [48.3 km] for treatment. Medicines are distributed *gratis*, and this feature of the Project, so ably conducted by Miss MacKay, has had an important part in creating the very friendly relations existing between the Indians of the surrounding region and the members of the Institution's staff at Chichén Itzá.

Excavations were closed at Chichén Itzá on June 15, and the members of the staff returned to the United States shortly thereafter, Dr. Morley and Messrs. Kilmartin, Ruppert, and Pollock by way of Mexico City; Miss Holbrook and Mr. Kerr by way of New Orleans. Miss MacKay returned to her home in Mexico City.

Through the courtesy of Dr. E. L. Hewett, Director of the School of American Research and the Museum of New Mexico, Dr. Morley has occupied offices in the Palace of the Governors, at Santa Fe, New Mexico, for the past three years. Summer quarters were opened here on July 1, and Dr. Morley, Messrs. Kilmartin and Ruppert, and Miss Holbrook spent parts of the summer and fall there. Mr. Kerr returned to Chichén Itzá, to take care of the hacienda early in August.

1.17.

SYLVANUS G. MORLEY

Report on the General Status of Middle American Archaeological Research

YB 28:329–333, 1929

The moment is perhaps not inopportune to review briefly the general status of Middle American archaeological research, and to indicate promising lines for early investigation.

The Institution has maintained for the past six years two principal centers of study in the Maya area, one at the Old Empire site of Uaxactún, in northern Guatemala, the other at the New Empire site of Chichén Itzá, in northeastern Yucatán, Mexico. Since the former is the oldest Maya city yet known, on the basis of the dated remains and since Chichén Itzá was easily the most important city of the New Empire, and especially, since the excavations of the past six years have yielded

results of great, not to say fundamental scientific importance at each, it appears advisable that investigations should be continued at these two centers.

The Government of Mexico, in addition to very considerable excavation projects just north of the Maya area (that is, in central Mexico), and extensive explorations in the extreme southern part of the Republic, has carried on excavation and repair work at both Chichén Itzá and Uxmal in the northern Maya region.

The British Museum and the Field Museum of Natural History have excavated at various sites in western and southern British Honduras during the past three years, Lubaantún, Pusilhá, Hatzcap Ceel, Cahal Pichik, etc. The foregoing about exhaust the list of major excavation projects in the Maya field during the past six years.

During this same period there have been several expeditions, more exploratory in nature, which have visited the region, for different purposes, in behalf of other scientific institutions.

Tulane University has had two expeditions in the field, in 1927 and again in 1928, which visited the little-known southwestern part of the area, bringing back a large amount of new material, ethnological, linguistic, geographical, climatological, as well as archaeological, especially from the highlands of Guatemala and southern Mexico.

The Field Museum of Natural History, in addition to its archaeological investigations, has carried on ethnological studies, not only at various points in British Honduras, but also in the highlands of Guatemala; considerable vestiges of the ancient culture were found, myths, traditions, prayers, etc., which indicate that further work along these lines would yield important results.

The Peabody Museum of Harvard University has had expeditions in southern Mexico (Veracruz coast plain), Guatemala (highlands), and Honduras (Ulloa [Ulúa] Valley) which have shed light upon these outlying, but strategically important, and, certainly culturally, related areas.

The Museum of the American Indian, Heye Foundation, has sent several expeditions to Guatemala, which have brought back valuable archaeological and ethnological collections. This institution has laid special emphasis on the region south of the Maya field, especially Costa Rica, from which it probably has the largest ceramic collection in the world.

The American Museum of Natural History has confined its investigations more particularly to the highlands of central Mexico, where much progress has been made in classifying the complex but fundamentally important ceramic types of that region.

Finally, the Government of Guatemala, through the quasi-governmental Sociedad de Geografía é

Historia has published a series of illustrated pamphlets on the archaeological sites of the republic, written in a popular vein, for the public schools, which has aroused widespread interest in the archaeology of the country.

In addition to the foregoing activities of governmental and institutional agencies, Middle American archaeological research has profited during the past six years by the investigations of several independent students. The fundamental studies of Dr. John E. Teeple on the Maya hieroglyphic writing merit special mention in this group. He has proved conclusively that Glyphs D and E of the Supplementary Series indicate in each case the age of the moon number of days since new moon on the date of the corresponding Initial Series. In order to bring Dr. Teeple's work into closer relation with that of Dr. Morley, in the same field, the former has, recently been appointed a Research Associate of the Institution.

The translations of Post-Conquest Maya manuscripts by Ralph Roys and those of Nahuatl manuscripts of the same period by B. L. Whorf are outstanding contributions to the study of Early American History.

During the past six years more than half a hundred investigators in archaeology, ethnology, physical anthropology, linguistics and history, representing a dozen different scientific agencies, governmental as well as private, have carried on studies in the Maya field, and a very considerable amount of information and material has been accumulated.

Expeditions involving enormous personal effort, prodigious hardship and costing, in the aggregate, hundreds of thousands of dollars have been carried through to brilliant conclusions. Many gaps in the body of existing knowledge have been filled many blind spots in the picture of ancient Maya times have been painted in. The ground, it would seem, has been sufficiently covered for a restatement, a closer definition of the major problems of Middle American archaeological research, and the way cleared for a general attack.

It appears to the writer that the most pressing need of the moment is the organization of an informal Committee on Mayan Research, composed of members from the different institutions actively engaged in carrying on investigations in this field.

Some of the duties of such a committee would appear to be: 1. A careful re-examination of the results of previous investigations, and, in the light of these data, a restatement of the major research problems presented; 2. The organization of future investigations in such a way as to avoid duplication of effort; 3. The allocation of research problems and areas of exploration to the institutions and individuals best equipped to handle them, so that the maximum efficiency in research may be secured and, at the same time, concerted and correlated attacks made at the most strategic points; 4. Fi-

nally, the establishment of a system of interchange, of results, even of personnel in special cases, so that each problem may be served by the specialist best fitted to cope with it, and all institutions and individuals have the immediate advantage of the latest results of all investigations.

Such a condition as the foregoing is not a scientific Utopia impossible of achievement; rather, it would be the almost certain resultant of the formation of such a committee. Closer cooperation, direction of research, freer interchange of material and personnel would inevitably result in swifter and more effective solution of the problems presented, and a clearer picture of the ancient Mayan contribution to the development of mankind—the ultimate goal.

The specific problems suggested are some of those which the writer believes should receive priority of attention; they do not include, however, any outside the field of anthropology, important as are some of the allied problems in geology, climatology, biology, epidemiology, etc.

1. GENERAL PROJECTS

1. A survey of the Maya linguistic stock, especially along philological lines. This is recommended particularly as offering a proven means of approach for establishing the sequence in the separation of the various dialectic groups from the parent stock, and the reconstruction of the parent language.

2. A survey of Maya architecture. The frequent association of dated monuments with architectural remains, to say nothing of dated lintels, steps, jambs, cornices, wall-panels, etc., gives support to the belief that an extensive comparative study of all known Maya buildings would establish their chronological sequence, and would permit the relative dating of otherwise undateable buildings by means of stylistic criteria such as type of ground-plan, façade decoration, roof-ornamentation, etc.

3. A survey of Maya ceramics. The enormous bulk of Maya ceramic material, the complexity of wares, and multiplicity of shapes and designs, its occasional association with definitely dated monuments, and its very general occurrence at dated sites, render it extremely probable, if not indeed certain, that an extensive comparative study would establish the definite chronologic sequence of the various wares found, as well as their foci of distribution, and time relations with extra-Maya ceramic types.

4. The compilation of a Maya hieroglyphic dictionary. It is now possible to decipher the meanings of about one-third of the individual glyphs, and the publication of all known examples of certain signs will soon be feasible.

5. A translation and publication of post-Conquest Mayan and Nahuatl manuscripts. There exists a not inconsiderable body of unpublished and untranslated manuscript material, written in the Maya and Nahuatl languages with the characters of the Spanish script. As these manuscripts constitute practically the only documentary source for the ancient history of Middle America, their complete translation and publication has become a pressing need. Fortunately, in spite of the highly specialized character of this work, there are a few students' sufficiently equipped to undertake it.

2. SPECIFIC EXPLORATION PROJECTS

6. The exploration of southern Yucatán and northern Guatemala. This is one of the least explored areas in the Maya field, and is, at the same time, scientifically, the most important, since in this region are located the transitional sites between the Old and New Empires. Expeditions from the Peabody Museum of Harvard University have penetrated the northern part of this region, and expeditions from the Carnegie Institution have worked in from the south. There still remains, however, a large intermediate section which has never adequately been explored, and which should contain sites of the Transitional or Colonization Period, 460 to 690 A.D. circa.

7. The exploration of the region lying west of the Usumacinta River, more especially the southern part between the upper reaches of the Usumacinta and Chiapas Rivers, comprising the entire Lacantún Valley and the great forests to the north, sometimes called El Desierto. This is the eastern half of the State of Chiapas in Mexico. Expeditions from the Ministry of Agriculture of the Mexican government and from Tulane University have partially explored this region, but there are almost certainly unknown sites still hidden in these vast, practically trackless forests.

8. The exploration of the Territory of Quintana Roo, Mexico. The expeditions of the Carnegie Institution to the east coast of the Yucatán peninsula, and more recently to the Old Empire site of Macanxoc-Cobá, in northern Quintana Roo, have developed the fact that this region was occupied as early as the Early Period of the Old Empire. A network of stone causeways traverse the section, and it is confidently anticipated that further exploration will bring to light other dated sites.

3. SPECIFIC EXCAVATION PROJECTS

9. The excavation of some site in the southern Veracruz coast plain. This region is the no man's land between the Maya and Nahuatl cultures, a meeting ground which has been strongly influenced by each. From this region comes the famous Tuxtla Statuette,

the earliest dated object in the Maya hieroglyphic writing, 98 BC circa. Recent expeditions from the Peabody Museum of Harvard University have discovered highly important transitional material here.

10. The excavation of some western Old Empire site, preferably on the Usumacinta River. The east, north and south sections of the Old Empire have had considerable excavation, going-back more than 40 years, but the west has been entirely neglected. An intensive excavation project in the Usumacinta Valley, where Maya art attained its most brilliant, development, is greatly needed.

11. The excavation of some western New Empire site, preferably in the State of Campeche, Mexico. The archaeological remains of the eastern half of the Yucatán peninsula are much better known than those of the western half, and yet, the early explorations of Teobert Maler in this region and the more recent expeditions of the Ministry of Public Education of the Mexican Government and of the Carnegie Institution clearly indicate its archaeological importance. The selection of a type site for intensive study would shed much light on the archaeology of this little known region, and at the same time supplement excavations now being carried on elsewhere in the Yucatán peninsula.

12. The excavation of some site in the highlands of Guatemala. In ancient times the Pacific coast plain of Guatemala was a main thoroughfare for north and south migrations. Along this great natural highway, the only feasible land route between North and South America, there must have been constant shift of population in very early times. Some of these groups penetrated the highlands of Guatemala and occupied different parts of the high central valleys. Here, perhaps, next to Uaxactún, is the most likely place to find the meeting ground of the Archaic and Maya cultures. The establishment of the relationship between these two great composite cultural groups would constitute one of the most fundamental contributions that could be made to the field of Middle American archaeology.

1.18.

ALFRED V. KIDDER

Division of Historical Research

YB 29:91-119, 1930

This Division, which was created by Act of the Board of Trustees of the Institution in December 1929, com-

prises a Section of Early American History, a Section of Modern American History, and a Section of the History of Science. Working in collaboration with one or other of the Sections are certain investigators from other institutions. The Division has both administrative and coordinative functions. As an administrative unit it serves those groups within the Institution which are engaged in the study of man's history, in the broadest sense of that word. In its less formal capacity it is designed to promote intercourse between the Institution's workers in the humanistic field; to direct attention to and integrate research upon problems which are of fundamental importance for all students of man's career, but which, are too complex and too ramified for successful attack by any single specialized discipline; and, finally, it aims to facilitate cooperation between the Sections and other scientific agencies.

The present report is devoted largely to the work of the Section of Early American History because the problems of that group have been such as to require particularly careful consideration during the past year. They also well exemplify the type of coordinated research which the Division hopes to sponsor.

SECTION OF EARLY AMERICAN HISTORY

In designating the group engaged in studies of the pre-Columbian career of the American Indians, the term history has been used as symbolic of a desire to do away with the somewhat rigid distinction, which has generally been drawn between archaeology and history. The work of the Section is, of course, archaeological in that it deals with material remains rather than with written records. But archaeologists seek to gather from ruined buildings and potsherds the same sort of knowledge that historians derive from books and manuscripts, and while the subject matter and, therefore, the primary methods of the two disciplines are naturally unlike, their ultimate aims are identical, for both archaeology and history strive to recover and to interpret the story of man's past. Archaeology, however, has all too generally been prosecuted as if the excavation of specimens were an end in itself. Antiquities have, as a rule, been collected more for their rarity or, their beauty than for what they might tell of the doings and the thoughts of the human beings who made them. Emphasis in archaeology is gradually shifting, however, from things to what things mean; and archaeological finds are fortunately coming more and more to be considered as historical documents.

In its work in the Maya field of Middle America and in Southwestern United States, the Section is exceptionally well placed to aid in further development of the modern conception of archaeological research. The Maya represent perhaps the highest peak of Na-

tive American civilization; the ancient Southwesterners were laying the foundations of communal agricultural existence. Each people, therefore, illustrate a most significant stage in human progress. And their remains cover such long periods of time and embrace such remarkable growths of culture that they force upon the student a keen realization of the deep perspectives of history. Finally, the problems raised by excavation, both in the Maya country and in the Southwest, are so obviously insoluble without help from many other branches of science, that the archaeologist is impressed by the very necessary truth that his work is merely one small part of the single great investigation of man's evolution.

MAYA STUDIES

The Maya, as has been intimated, were the most brilliant people of the aboriginal New World. Their civilization had its roots in the primitive farming culture, which originated well before the birth of Christ, somewhere in the Middle American highlands or in the Andean region, and which through ramification and diffusion ultimately gave birth to all the higher pre-Columbian developments in the Western Hemisphere. The Maya, whose earliest known remains lie in the forested plains at the base of the Yucatán peninsula, took over or brought with them from the highlands the elements of this primitive culture: corn growing, pottery making and presumably also the rudiments of their later artistic, religious and social systems. In the low country they flourished like a tropical flower. Their glyph-recorded history begins at about the time of Christ (according to Dr. Morley's correlation of Maya and Christian chronology), but before then they must already have spent many centuries in perfecting the material arts, and particularly the extraordinary astronomical and calendrical knowledge of which we find them possessed even at that remote period. The great epoch of Maya history, the Old Empire, saw the building of Tikal, Copán and many other magnificent and temple-adorned cities. The causes for the eventual break-up of the Old Empire are as yet unknown, but decay it did, and the formerly populous southern region reverted to jungle. The Maya, however, had already been pushing northward into Yucatán, and there, during the New Empire at such cities as Chichén Itzá and Uxmal, they enjoyed a remarkable renaissance. Ultimately they fell under dominance of the rising Nahuatl powers of Central Mexico and, at the time of the Conquest, were once more undergoing a period of decadence. What would have happened if the Spanish had not come; whether they would again have rallied and pushed on to still further heights; or whether they, like the ancient Greeks, whom in many ways they

so closely resembled, had finally expended all vital and creative energy, are questions of more than merely academic interest, for the Maya still form the bulk of the population of Yucatán and of Guatemala, and the future of those countries therefore depends to a large degree upon the ability of these Indians to receive European culture, to adapt it to their needs and to develop it in such a way as to permit them to play a worthy role in the modern world.

Even so brief a resumé indicates the importance of research upon the Maya. To the New World historian it is naturally of paramount significance, for the Maya were leaders in the cultural development of Middle America, influencing directly or indirectly all other groups in that entire area. The Maya, too, were the only people who consistently and accurately recorded dates, thus providing a starting point from which to work out the chronology of all the other high pre-Columbian cultures. For the student of more general problems, the Maya also provide invaluable data. Their history involves the rise, spread, efflorescence and decline of an agricultural civilization. It gives splendid opportunities for evaluating the influence of those racial and environmental factors which have been, so potent in shaping the destinies of all peoples, but whose action has been so little understood.

Carnegie Institution entered the Maya field in 1914 when Dr. S. G. Morley was appointed Research Associate. The activities of Dr. Morley and his staff fall into sequent periods of exploration and excavation.

The soundest method for attacking any archaeological problem is to conduct a preliminary survey of the area concerned in order to determine the general distribution of its remains, to sense the broader aspects of historical trends, to identify the lines of evidence which will best repay close study, and finally to select for intensive excavation the key sites which, will yield the fullest information upon the customs and the career of the people who are being studied. Pursuing the above principles, Dr. Morley devoted approximately 10 years to exploring the Maya area from end to end. He visited practically all previously known sites and discovered many new ones, the most important being Uaxactún, Xultún and Naachtún. Accounts of his very difficult journeys may be found in the *Year Books* of the Institution. Their result was a much more definite knowledge than had hitherto existed of the territory occupied by the Maya at different periods of their career; and an evaluation, based on the abundance and quality of remains, of the significance of each of those periods. In other words, a definite historical outline was achieved. Dates, hieroglyphically inscribed, formed the primary evidence for Dr. Morley's determinations. At the same time by deciphering cryptic inscriptions and by finding and reading many new

ones, he much more than doubled the known number of these invaluable glyphic time-markers.

For intensive excavation were selected Chichén Itzá in northern Yucatán, Mexico, and Uaxactún in the Department of the Petén, Guatemala; reconnaissance digging was also to be done at Tayasal on Lake Petén Itzá. These three sites cover the entire range of Maya history: Uaxactún is, on the basis of recorded dates, the oldest Maya city; Chichén Itzá was founded before the abandonment of Uaxactún and was occupied until shortly before the coming of the Spaniards; Tayasal, the last independent stronghold of the Maya, did not fall until the close of the seventeenth century.

THE UAXACTÚN PROJECT

From the time of its discovery in 1916, Dr. Morley felt that Uaxactún merited thorough investigation. It was not only the oldest Maya city known, but its inscriptions indicated that it had been inhabited for upwards of 5.5 centuries. It gave promise, therefore, of throwing light on the whole period of the Old Empire, and he believed it possible that it might even yield data upon the formative stages of Maya culture. Uaxactún was surveyed and mapped for the Institution by Mr. Frans Blom in 1923. In 1925 a contract was entered into with the Government of Guatemala for a 5-year project, with privilege of renewal; and in the same year the Institution's work there began under direction of Mr. Ricketson. Five field-seasons have now been devoted to excavations. They have centered about one of the large temple-surrounded plazas of the city, attention having originally been directed to this particular quarter by the fact that certain of its monuments and buildings gave evidence of being so placed as to produce lines of sight of astronomical significance. The question as to whether or not Plaza E was in reality an observatory involves complex and still unsolved problems of Maya astronomy and the Maya calendrical system. But the excavations of Mr. Ricketson, undertaken to establish the exact orientation of building units thought to be involved in the observatory complex, have produced purely archaeological data of the greatest interest and importance. The western side of the plaza was fronted by a large pyramid, worn by time and the inroads of the jungle to a peaked mass of crumbling stone. Work on its eastern face, in an attempt to locate remains of a stairway, disclosed underneath the debris a grotesquely modeled mask of heroic proportions, which further digging showed to be part of the adornment of an earlier structure, entirely covered by and embalmed in perfect preservation within the later pyramid. To bring it fully to light required part of the season of 1927 and the entire season of 1928, when it stood revealed as a beautifully proportioned truncated

pyramid, its flat top approached by four stairways flanked by series of great masks. Its terminal platform bore no temple, and it therefore seems likely that it served in itself as a huge altar, or elevated place for holding important ceremonies.

The construction is lime stucco over a core of crude masonry. Had it not been sealed in and protected from the elements, the plaster shell, including the stairways and masks, would quickly have disintegrated. Such has, indeed, apparently been the fate of all unprotected early Maya buildings. This example, therefore, stands as our only illustration of the architecture of its period. It differs strongly from anything heretofore known, but it exhibits an astonishing sophistication of line and mass, a feeling for the subtleties of contour and the play of light and shade, which can only be interpreted as the result of long practice in the designing and erection of this type of structure. It is certainly very old. Its exact age still remains to be determined, and for this purpose Mr. Ricketson is making studies of the levels of the plaza fronting it and of their relation to dated stelae.

As soon as the pyramid was cleared it was realized that most careful record must be made of its appearance, for it could not be expected long to withstand the ravages of a tropical climate and the inevitable encroachments of the jungle. It was photographed in the large and in all detail, planned and sectioned in every aspect. The mapping was a most difficult task, for the thing was, so to speak, a gigantic piece of sculpture, no two of its lines being parallel, no two angles the same. But from the data brought back it has been possible during the present year for Mr. S. J. Guernsey to prepare an accurate model which will be shown for the first time at the annual exhibit of the Institution in December 1930.

When the buried pyramid had been uncovered, pits were sunk in front of it which showed that, old as it doubtless is, there exist below it and also under the plaza to the east deposits of even greater antiquity, consisting of layers of refuse, presumably village debris, which contain abundant fragments of pottery and figurines distinctly un-Maya, as that term is generally understood, but obviously resembling the so-called archaic remains of the Guatemala highlands. This was a discovery of the very greatest value. Up to 1928, when the find was made, no definite evidence was in our possession for connecting the Maya civilization with the early cultures from which it was theoretically supposed to have sprung. But here, lying directly below the most ancient known specimen of Maya architecture, itself presumably dating from the very first part of the Old Empire, were materials in undoubted stratigraphic position because sealed in by subsequent constructions, which will make it possible to judge the

quality of the transition between the ancestral plateau culture and that of the nascent Maya.

Because of the great importance of the remains beneath the plaza, the seasons of 1929 and 1930 were devoted to a painstaking dissection of the underlying strata. It proved to be a heart-breaking complex undertaking as the whole place was leaved and inter-leaved with floor levels and living surfaces, each one of which had to be followed to its ultimate termination over or under or against some unit of construction or some significant bed of debris. Much was learned as to the habits of the Maya city planners in the laying out of their temple-surrounded courts. The large collections of pottery, clay figurines and other artifacts from the different levels have now been moved to Guatemala City, where they are under study by Mr. and Mrs. Ricketson and Mr. Smith.

While the plaza excavations were going on, Smith carried out a series of detailed studies on the relation between dated monuments and plaza floors in an attempt to determine their chronological relation to the buildings near them. As result, he believes that stelae were at least occasionally moved from the position of their original erection. The investigation ties in very closely with that of Dr. Morley on the growth, and meaning of Maya ceremonial centers. Another research by Mr. Smith concerned itself with the density of population within the city limits, so to speak, of Uaxactún. The work was based upon a careful count of the house mounds in a surveyed area and estimates of the number of persons per family. Several unknown quantities are naturally involved; such as the likelihood that not all the houses represented by the mounds were occupied at the same time, but his general conclusion is that the immediate vicinity of the temple groups was very thickly populated.

Dr. Morley's selection of Uaxactún for excavation has already amply been justified, but it is a question whether or not work at so inaccessible a site should go forward indefinitely. It lies in the heart of the Petén jungle. Supplies and staff must be transported from the coast up the shallow and winding Belize River in dugout canoes towed by motor launches, a journey of from two days upward, depending on the stage of the water. From the head of navigation at El Cayo, four days on mule-back over very bad trails are required to make the 55 miles [88.5 km] to Uaxactún. There the water supply is extremely precarious. Added to such difficulties are swarms of insects and a debilitating tropical climate. Hence the cost, both in money and in human effort, of excavating at Uaxactún is necessarily extremely heavy, and while the city still has without question much to yield, it is possible that the work already done has skimmed the cream, as it were, from the site; and it might perhaps in the long run be more

efficient to postpone further investigation until such time as the inevitable opening up of the country will render work there more easy of accomplishment.

The check-up of the Uaxactún results now being made by Mr. Ricketson and his staff should go far toward answering the question. Should it be decided to go elsewhere, two obvious follow-ups present themselves. On the one hand, it would be of great value to excavate in the highlands in order to collect archaic material for comparison with the subplaza pottery and figurines, thus approaching the problem of origins from the lower end; on the other, one might attempt to trace the Old Empire culture, as made known by the excavations at Uaxactún, northward and eastward into the peninsula of Yucatán. At all events, work will be continued until the deposits and structures now under investigation have been completed. Decision must also depend upon the development, during the next few years, of the Section's general program, and upon the plans of other agencies in the Maya field.

THE CHICHÉN ITZÁ PROJECT

Its outstanding importance in the New Empire and, indeed, until very shortly before the Spanish Conquest, induced Dr. Morley to select Chichén Itzá as the site for the major effort of the Institution's campaign of excavation. The city was founded before the close of the Old Empire, and can therefore be expected to throw light on the earliest developmental phases of the New. During the latter period it was a leader both politically and ceremonially. Better than any other, it illustrates the influence of the Nahua cultures, of Mexico upon the Yucatecan Maya. It contains more hieroglyphic inscriptions than any of the late centers. The great length of its occupancy gives opportunity for determination, on the sound basis of stratigraphic observation, of the trends of artistic and material development through many centuries. Its remains are abundant, culturally significant and well preserved. And, finally, it possesses the practical advantages of accessibility, abundant labor supply and healthful climate. Under contract with the Government of Mexico, which from the beginning has been consistently and effectively helpful, excavations were started in 1924 and have continued to date.

The Chichén Itzá project has differed from most archaeological undertakings in the New World in that from its inception Dr. Morley has striven for three definite objectives over and above the usual single one of recovering specimens and information. These may be stated as follows: to conduct the work in a manner calculated to create a feeling of confidence by the Mexican government and people in the good faith of foreign scientific agencies; to handle the site in such a

way as to make it a permanent record of the artistic achievement of the Maya; and to develop Chichén Itzá as a focal point for correlated researches.

The first of the above mentioned extra-archaeological objectives is that of fostering international scientific good will. In some ways this is the most important, single aspect of the Institution's work in Middle America; it certainly has been the least understood. To make clear the situation which the Institution is attempting to do its bit to remedy, it is necessary to revert to the statement made at the beginning of the Section report that the older archaeology considered the acquirement of specimens an end in itself. The retarding effect of this upon the development of archaeology as a science need not here be discussed beyond saying that for many years it kept archaeology at about the intellectual level of stamp collecting. Its practical results have been almost equally disastrous. For over a century there has been a steady flow of artistic and antiquarian treasures from the countries of their origin to museums of a few of the larger and richer nations. Much that would otherwise have been lost has of course thus been saved for posterity. But the smaller countries are now coming to appreciate the historic and educational value of such materials, while foreign museums still wish to carry on in the traditional Lord Elgin manner. There has accordingly been a world-wide tightening of laws governing excavation and in many regions it is now impossible for an outside agency to prosecute any archaeological work whatever, while in others it can be done only under conditions regarding disposition of specimens which are so confiscatory that backing for expeditions can not be procured.

The situation as it exists today is very bad and is growing worse. It can only be rectified by concessions on both sides, which in turn must be the result of a new conception of the purpose of archaeological work and the meaning of archaeological materials. Foreign agencies should realize that the relics of a country's past not only belong rightfully to that country, but that in the long run they are most useful there, always granted that they are adequately protected and are at all times available for study. Foreign agencies should also realize that the primary purpose of their expeditions is study of the history of man rather than the amassing of collections. If these points of view be held they will naturally be content with a fair division of representative material and will not demand all. The home governments, on the other hand, while they are, of course, masters by possession of everything within their borders, should understand that prehistoric man was not bound by modern political limits, that his history is part of a common heritage, and that there is at least an ethical right for all mankind to profit from its

study. They should, moreover, take into consideration the fact that, both practically and intellectually, it is to their advantage that their antiquities be known in other lands.

For the purpose of helping to bring about such understandings Carnegie Institution of Washington, in its negotiations with governments and its prosecution of field investigations, has steadily striven to overcome the feeling that the entry of a foreign scientific agency necessarily means wholesale looting of archaeological remains. It has frankly stated its adherence to the proposition that title to all antiquities rests in the country of their origin. It has, therefore, exported nothing directly. But it has insisted upon proper care for the materials it has excavated. It has at the same time urged the great desirability of sending representative collections abroad and has recommended gifts by the countries concerned of certain specimens to leading museums. As result, the Mexican government has already placed in the national museums of England, Germany, Peru and the United States series of the beautiful painted stones which emanated from the Temple of the Chac Mool. Although the Institution would not advocate the exportation of unique type material or unduplicable objects of pre-eminent importance, it hopes that governments of countries in which it works will continue to deposit specimens from its excavations in such outside institutions as can best profit by them.

The attitude of the Institution has rather generally been misunderstood. It has been felt that because it supports no museum it can afford to work without acquiring collections, and that by so doing it has spoiled the field for those who must produce tangible results in objects for museum display. Persons taking this attitude have not realized that it would be infinitely easier for the Institution to remove the product of its excavations to the United States for study and for deposition in places accessible to its workers; or that by direct gifts to museums and by home exhibition of its more spectacular finds it could much more easily than is now the case secure financial backing for its projects. It is probable that, although the policy of the Institution may indeed make things difficult for agencies whose sole desire is to acquire collections, it will in the long run prove distinctly beneficial to those whose primary objective is recovery of historical information and which are willing to share equitably with countries whose ruins they investigate. It seems not unreasonable to believe that the satisfactory relations established between the American Museum of Natural History and the Government of Mexico, both for exploration and the exportation of materials, and the concession recently granted to the University of Pennsylvania by the Government of Guatemala for work at

Piedras Negras, have to some degree, been facilitated by the manner in which Carnegie Institution has carried on its own researches in those countries.

A second aim of Dr. Morley, in his administration of the Chichén Itzá project, has been so to handle the site as to make it an enduring monument to the genius of the ancient Maya. Chichén Itzá of all great Maya cities is the most accessible and the most healthy. And, with the possible exception of Uxmal, it is without a rival in the number, beauty and architectural distinction of its buildings; What Luxor is to Egypt, or Athens to Greece, Chichén Itzá is to Yucatán. A heavy responsibility, therefore, rests upon him who excavates there.

To derive bare archaeological facts would be simple enough. Plazas could be trenched, pyramids torn open and the still standing parts of ruined temples stripped of the mounds which now protect them. These undertakings would be speedy and relatively cheap. But they would pave the way for destruction by weather and vegetation which would very shortly reduce the city to a meaningless jumble of stone. Both the Mexican government and Carnegie Institution have appreciated from the beginning the necessity for care in digging and for leaving all cleared structures in shape to resist further deterioration. It has been a costly business, for it has necessitated time-consuming and expensive methods of reaching objectives and has also involved much strengthening and repair of structures in imminent danger of collapse and the replacement of fallen elements which, if left scattered on the ground, would be meaningless and would also be exposed to eventual destruction.

Preservation has not been the only concern. It has been desired that when cleared all buildings should be both understandable and beautiful. Comprehension of an ancient structure demands knowledge of its relation to others, of the methods employed in its erection, of alterations made during its occupancy, and of the factors responsible for the condition in which it was found when excavated. The mere uncovering of an architectural unit will therefore not suffice. Openings must be left to expose earlier remains; sometimes, as in the case of the Temple of the Warriors, large parts of deeply buried pre-existing buildings must be kept intact and rendered accessible. There should be opportunity to examine the interior, even of solid construction, to make plain the methods of the ancient mason. Careful planning permits details of wall and column, vault and roof to be easily seen and studied. And, as at the Caracol, where a section of a great fallen cornice has been held in the exact position of its devastating collapse, there may vividly be illustrated the tremendous forces of destruction.

Intelligent understanding of a building and of what it signifies is made possible by such practical

means. But subjective values must not be overlooked. Beauty, in detail and in mass, must be striven for intelligent restoration, no matter how accurate, destroys beauty. and so robs ancient structures of their most important psychological effect. The mere fact, of ruin induces realization of the inevitable and relentless erosion of time and brings the beholder to the proper frame of mind for grasping, the deeper significance of what he sees. Hence repair must not only be meticulously correct but must be limited to essentials and never be blatantly evident.

Different methods are required for each unit undertaken. Archaeological knowledge, engineering skill and a keen sense of esthetic values must go to produce the result which it is hoped ultimately to obtain. The cost has been and will continue to be great; but the obligation both in funds and in time is deliberately assumed. In the first place Chichén Itzá, because of its outstanding scientific and artistic importance, deserves our best efforts. Second, it is thought that if the project is handled in a manner so obviously altruistic it cannot fail to produce a feeling on the part of the Mexican government and the Mexican people that American agencies can be trusted within their borders; and, third, if Chichén Itzá can be kept both interesting and beautiful, it will without question become a Mecca of travel, and, incidentally, a most valuable asset, for archaeology which, like every other science, needs its show-windows. Its more recondite aims the public cannot, in the beginning, be expected to grasp; but public interest must be roused and eventual public understanding must be achieved if archaeology is to go forward; for from the public comes, in the last analysis, all support for scientific endeavor.

Adherence to the above policies shaped from the first the course of work at Chichén Itzá and dictated the selection for study of the Temple of the Warriors and the Caracol, the two principal buildings which have been excavated to date.

The Temple of the Warriors was chosen for first attack because it was the largest example of a type of late structure of which no well-preserved specimen remained, and so might be expected to yield architectural information not to be had from any standing temple in the city. It was also badly, apparently almost hopelessly, ruined, thus giving opportunity to find out what facts could be learned and what materials could be rescued from such a mound, of which literally hundreds exist at Chichén Itzá and other Yucatecan cities. Work at the Temple of the Warriors occupied the four seasons from 1924 to 1928 inclusive. Mr. Morris, who was in charge throughout, has transformed this most unpromising pile of stone into an impressive and lasting monument. Every phase of its long structural history has been elucidated, and every succes-

sive increment has been left in such condition as readily to be understandable by the visitor. The finds of sculpture and fresco were abundant beyond all expectation. The final report upon the Warriors by Mr. Morris and his collaborators is now in press.

A second major undertaking has been the excavation and repair of the Caracol, a building of unusual interest in that it is by far the finest and best preserved of the very few round structures in the Maya area, and because there are good grounds for believing it to have served as an astronomical observatory. The Caracol is a great circular tower surmounting a massive rectangular substructure. It possesses many unique architectural features—curved vault, central stem, spiral staircase, and tremendously heavy cornices both on the base and the tower. When work started, the Caracol resembled a jagged tooth of gray stonework protruding from heaped piles of fallen masonry which almost completely masked the contours of the lower part of the tower and of the platform. First attention was devoted to tying into place and so preserving the tottering remains at the top which contained all that was left of the supposed observational passages and their openings. Mr. Ricketson had charge of this greatly needed bit of salvage. The subsequent extensive clearing and rehabilitation have been carried out by Mr. Ruppert. The entire building has been freed of debris, the walls of the tower strengthened and all the great upper cornice replaced, except for a single section which has been left as it originally fell. The platform has proved a mine of information. First one and then a second earlier substructure have come to light, each circular and each enclosed in perfect preservation within later accretions.

Work on the Caracol proper was finished at the end of the present season, but the digging about its base has disclosed a maze of smaller ruins and plaza levels whose relations to it and to adjacent buildings will eventually have to be the subject of careful study. As it now stands, the Caracol, like the Temple of the Warriors, is both understandable and rarely beautiful. Progress reports on the excavations here, at the Temple of the Wall Panels, the Temple of the Lintels, the Temple of the Initial Series, the Temple of the Phalli, and upon the many other smaller undertakings carried on between 1924 and the present may be found in the *Year Books*.

With completion of the excavation and repair of the Temple of the Warriors and the Caracol, the first phase of the purely archaeological work of the Chichén Itzá Project has reached a satisfactory conclusion. There must now ensue a period of pause for the digestion and publication of results and the formulation of plans for the future. Digging, as is always the case has progressed more rapidly than study; and the preparation of reports, which are of course the ultimate and deter-

minative product of all scientific work, has lagged even further behind. The Temple of the Warriors volume is in press, but the Caracol has not yet been described; nor have 10 or more smaller excavated buildings, all of much interest and some of great importance, been treated save in summary articles in the *Year Book*. To get all this material into print and available to the archaeological world now becomes the principal task of the Chichén Itzá staff. The papers will be descriptive, but Dr. Morley plans to take advantage of their preparation to begin a thorough study of the details of Maya architecture as manifested at Chichén Itzá.

Information upon the gross aspects of architecture, such as the grouping, orientation, size, ground plan and ornamentation of structures, has been a natural product of the investigation; but close comparative scrutiny of the minutiae of building practice, the tricks, so to speak, of the mason's trade, has not yet been made; and there is every reason to suppose that intimate knowledge of them will provide an extremely significant criterion for further work.

To make the above statement clear it is necessary to say a word in regard to the handling of specific archaeological problems. To begin with, one is dealing with large amounts of undocumented and therefore, at first contact, updateable material which must be ordered chronologically before they can be interpreted in terms of cultural trends or historical events. To make headway with so great a mass, one must select, for preliminary study, certain phenomena or groups of objects which, more clearly or more easily than others, will serve to block out the investigation. These may be called preliminary criteria.

In the Maya field the best and most obvious criterion for determining the relative age of remains is supplied by the hieroglyphs, and Dr. Morley and other students of the Maya were of course prompt to seize upon and exploit this line of research. Their work upon the glyphs, as has already been said, has served to define the main currents of Maya history and to place in their relative order the principal groups of cities. The hieroglyphic record, however, is fragmentary and it has already been rather thoroughly searched. More dates will doubtless be found, but for further advance we must fill in the picture in greater detail; we must not only, assign to their proper period the many cities which contain no dates, but we must do the same for individual buildings in the cities, for their chronological ranking will supply us with knowledge of the age and therefore of the meaning of the things they contain.

Success depends upon intelligent selection of the above-mentioned preliminary criteria. The best clues are provided, by materials, which are abundant and easily acquired, which readily and accurately reflect cultural change, and which are of such a nature that

their chronological position, may readily be determined. Pottery most ideally, fulfills these requirements and ceramic study is now going forward actively. Pottery, however, not superficially common in the Maya region, and many years must elapse before enough excavation can be done to supply us with sufficient specimens for valid sequences covering all periods and all parts of the area. Manifestations of the graphic arts, particularly sculpture, are also, as Spinden has demonstrated, a highly useful means of working out chronologies, but much Maya sculpture was in stucco and has either perished or, if preserved, still awaits excavation, and stone stelae, bas-reliefs and carved ornaments are relatively rare. Our best criterion, at least at the present time, appears therefore to be the details of architecture. The Maya were incredibly diligent builders; the mere act of building would, in fact, appear to have been an integral part of their very coercive religious system. Maya buildings are therefore abundant, and although most of them are in an extreme state of dilapidation, careful study, as has often been proved, will reveal much precise information as to cornices and moldings, stone-cutting and laying, vault construction, frescos, bas-reliefs, etc. Such features are, by and large, probably the most easily studied manifestations of Maya culture; and, because of the frequent additions that the Maya made to their structures, because of their habit of piling platform on platform and temple on temple, it should not be difficult to determine the chronological relations of much material; and to establish, on the sure basis of stratigraphic evidence, the principal trends of architectural development. Dr. Morley, in his conduct of the excavations at Chichén Itzá, has accordingly laid special stress upon the uncovering of buildings, and Mr. Ruppert and Mr. Pollock are now engaged in careful comparative studies of constructional and ornamental detail. When the architecture and art of Chichén Itzá are intimately known, the work will be extended to other cities of the late period in northern Yucatán, and eventually to the east coast and southward. To aid in the research, Mr. Bolles, a student of architecture with experience in the Gothic and Near Eastern fields, has been added to the staff for the coming year.

The studies of buildings will beyond question prove of great value. But they must be accompanied and supplemented by investigation of other categories of material, of which pottery is by far the most important. The usefulness of pottery as an archaeological criterion needs no stressing. It has again and again shown itself to be the single most reliable and most accurate means for establishing the sequence of cultural periods. The prehistory of Egypt, of the Near East, of the American Southwest, of the Valley of Mexico, has been, or is being, outlined on the basis of

ceramic evidence. The reason for this, as has often been pointed out, lies in the plasticity of the potters' art and in the fragility of its products, the former quality permitting constant change, the latter insuring both opportunity for modification and abundance of remains in the form of sherds.

Research upon Maya pottery presents many difficulties. To begin with, the mere acquiring of material is a slow and arduous process. Potsherds, so common and so easily collected from the surface in and regions where the ground surrounding ancient sites is bare, are, in the Maya country, hidden by tangled undergrowth. Even when, after clearing, the earth is laid bare, the fragments are all too often found to be rotted by the corrosive acids of jungle humus. Hence usable specimens must be sought by slow and expensive excavation. Another difficulty is caused by the fact that the Maya had advanced to that stage of development where vessels for everyday use were turned out wholesale and were either undecorated or ornamented conventionally. Fine pieces were, of course, also made, and the evidence provided by these is more easily read; but they are rare, and the run of sherds, the great body of material with which the ceramicist must necessarily deal, can only tell its story after there have been worked out very unobtrusive changes in clay and finish, and very subtle differences in vessel shapes. Lastly, there seem to be several major divisions of Maya ceramics, perhaps of differing origin, certainly more or less independent in development. Some of them are allied to one non-Maya group, some to another, others have no readily perceived affiliations. For their ultimate comprehension there will be required an extremely wide comparative knowledge of Central American pottery from the earliest times onward. So bafflingly complex and yet so urgently necessary a research can not successfully be prosecuted as a sideline of excavation; it demands the best energies of specialists. In this capacity, Mr. H. B. Roberts has joined the staff of the Section.

Ceramic work for the Institution was started in 1926 by Dr. George C. Vaillant, who, on the basis of materials then available from the excavations at Chichén Itzá and of collections in Yucatán and the United States, made a basic classification of the wares of northern Yucatán. He was also able, as result of excavations in the courtyard of the Temple of the Phalli, to suggest a chronological sequence for the majority of the types established by his classification. Continuance of the research was prevented by Dr. Vaillant undertaking, for the American Museum of Natural History, a study of the immensely important archaic remains of the Valley of Mexico, but he has kept intimate touch with the Institution's program; he carried on the first stratigraphic excavations at Uaxactún in

1928; and during the past winter he came to Yucatán to confer with Mr. Roberts upon, the development of the latter's investigations.

Mr. Roberts began his work by reviewing thoroughly with Dr. Vaillant the collections in storage at field headquarters. He then searched for places at Chichén Itzá where rubbish would most likely have accumulated, selecting for trial excavation the deep depression of a dead cenote, or natural sink-hole, which lies close to the Monjas and several other important buildings. In the bottom of the cenote there was located and sectioned with trenches a deposit of from 7 to 12 feet [2.1–3.7 m] in depth. The strata were not always clearly marked, but it was possible to determine four certain and three probable layers of superimposition, and to collect, from them a large amount of sherd material for type studies and statistical analysis.

Although the data have not as yet been thoroughly digested, certain important results are already apparent. The dead cenotes were repositories for rubbish; the deposits in them accumulated with sufficient slowness to insure their reliability in determining sequence of wares and styles; and the tentative classification worked out by Dr. Vaillant has been proved valid.

Both Dr. Vaillant and Mr. Roberts believe that the objectives of future work should be specific rather than general. The subject is an enormous one. Museum materials are scanty and, as a rule, poorly identified as to place of origin. Dr. Vaillant has already derived about as much information as can now be gathered from study of existing collections, and his conclusions, although unpublished, have most generously been placed at Mr. Roberts' disposal. They therefore advocate a series of intensive field investigations in certain regions which appear to have been centers of pottery development. Stratigraphic excavation at sites in such areas should provide both new data and a knowledge of the sequence of styles which will render understandable many now practically valueless museum specimens. Northern Yucatán is recommended for prior consideration and Chichén Itzá as point of first attack, thus permitting close correlation between the ceramic, architectural and other researches. In addition to excavation, Mr. Roberts will continue studies begun in 1930 of local clays, and of modern Yucatecan methods of pottery making. He hopes also to supplement observation of the more obvious characteristics of ancient and modern pottery by chemical and microscopic analyses similar to those used with such success in South America by Dr. Linné of Sweden.

Dr. Morley's work on the hieroglyphs has progressed steadily; the second section of his compendious presentation of all known dated monuments is approaching completion. The first, under the title *The Inscriptions at Copán*, appeared in 1920. The present

book covers the Petén; and the third number of the trilogy will include the dates from the rest of the Maya area. These volumes contain exhaustive analytical and comparative descriptions of texts and discussion of their bearing upon all aspects of Maya history. The fact that they also bring together the entire corpus of data now available gives them rank as prime sources for all future work in the field of Maya epigraphy.

Closely allied with Dr. Morley's work is that of Dr. John Teeple on the hieroglyphic inscriptions. For the past two years Dr. Teeple has been a Research Associate of the Institution in Middle American Archaeology and the results of his studies have been published during the current year under title of *Maya Astronomy* (Teeple 1931). He has shown conclusively that lunar phenomena form a large part of the record in the Maya inscriptions and that the age of the moon, that is, distance from the new moon at any given moment, was always a matter of great importance. The different methods of numbering the lunar months, while at first numerous, suddenly crystallized in 9.12.15.0.0 of the Maya Chronological Era (428 AD in Dr. Morley's correlation of Maya and Christian chronology) into a uniform system which was used throughout the Old Empire. Seventy years later astronomer-priests at the city of Copán discovered the eclipse syzygy, and from this time on, one by one the cities of the Old Empire gradually fell away from the Uniform System, each adopting a system of its own, which resulted in general confusion. Important as are Dr. Teeple's contributions to the more restricted field of Maya astronomy, they are already overshadowed by their larger historical implications, as indicating the diverse cultural elements at work within the Old Empire. It is confidently to be anticipated that further investigations along the same line will shed additional light on the Old Empire period, the Golden Age of the Maya civilization.

An offshoot of the Chichén Itzá project has been the exploration of Cobá, a ruined city in the eastern part of northern Yucatán. Cobá was heard of by the American explorer, John L. Stephens, in 1841, but was not visited by him. Later, presumably in the 1890s, Teobert Maler was at Cobá, as is evidenced by some photographs by him of its buildings preserved in the museum at Mérida. He made no report, however, and the actual opening up of the city was only accomplished in 1925, when Dr. Morley organized a series of expeditions for its exploration and study. These proved Cobá to have been not only a very large and important center in late times, but to contain hieroglyphic inscriptions indicating its occupancy at an unexpectedly early period of the Old Empire. Further work, therefore, promises to throw light on the whole problem of the colonization of Yucatán from the Petén, and data may well be recovered upon the still very imperfectly

understood era between the break-up of the Old Empire and the Renaissance.

Mr. Eric Thompson, of the Field Museum, who as a member of the Chichén Itzá staff took part in the 1925 expeditions, offered during his vacation in the winter of 1930 to conduct new explorations for the Institution at Cobá. With Mr. Pollock he spent several weeks there. Materials for a map were gathered, architecture was studied, and particular attention was devoted to a remarkable series of paved roads or causeways which radiate from Cobá in all directions.

Mr. Thompson reports as salient discoveries a number of carved and plain stelae, several: new causeways, three of which were found to have actually crossed Lake Macanxoc, and two ball-courts of Old Empire type with sloping walls, but provided with stone rings, an interesting link between Old and New Empire courts.

The architecture of Cobá presents problems difficult of solution. There are many similarities to the Old Empire cities of northern Petén, but in some respects, notably the length and width of the rooms, certain of the structures are in advance of those of Petén. In addition, there are several buildings which undoubtedly belong to the late East Coast or Tulúm style.

Mr. Thompson believes that Cobá, as a possible link between the cities of northern Petén on the one hand and Chichén Itzá and other sites of northwest Yucatán on the other, demands investigation. Comparative studies of pottery and of architecture would appear to offer the readiest means of approach to the problem. At a moderate cost it should not be difficult to obtain information on the pottery types, and possibly their sequence, at Cobá; and at the same time clear up certain outstanding architectural puzzles. Such work should be possible without large expense for plant, as it would not involve extensive excavation. Buildings need only be investigated sufficiently to settle definite architectural points, and no great outlay on repair would be required. Seaplanes, once the trees at the end of Lake Cobá had been cut down, should prove the best means of transport.

Mr. Thompson believes that when Cobá has yielded its quota of information on ceramics and architecture, Yaxuná, the terminus of the great causeway which runs westward from Cobá, could be carefully worked. This city was undoubtedly closely connected with Cobá both culturally and commercially, but it is only a scant 12 miles [19.3 km] from Chichén Itzá. Some of the masonry of collapsed structures appears to be of early Cobá type, yet the only standing structure is built in the same style as the Monjas at Chichén Itzá. At Yaxuná, then, we should find Cobá ceramics, possibly merging into Chichén Itzá types, or even directly associated with Chichén Itzá types in circumstances that

would permit the Cobá wares to be linked chronologically with those of Chichén Itzá on the one hand and with those of Petén on the other. In such manner, certain Chichén Itzá potteries might be dated in terms of the Old Empire. This in turn would facilitate isolation of pure Maya types, and so place us in better position to decide what elements at Chichén Itzá are attributable to Mexican influence and what are due to the merging of Maya and Nahua cultures.

Mention has been made of reconnaissance digging at Tayasal on Lake Petén Itzá, the last independent Maya stronghold. During the field seasons of 1921 and 1922, Dr. Guthe, under an agreement with the Government of Guatemala, carried on excavations for the Institution at this site.

After the abandonment of Chichén Itzá about the middle of the fifteenth century, according to the early chroniclers, the Itzá, migrated southward from Yucatán and established their capital at Tayasal on the shores of Lake Petén Itzá. The immediate object of Dr. Guthe's excavations was to ascertain whether proof of direct contact could be established from the material culture. Two distinct periods of occupation were traced: the earlier giving back to Old Empire times and probably contemporaneous with other sites on the shores of the Lake Flores and Ixlú for example which flourished at the very close of the Old Empire, and the later Itzá reoccupation of the fifteenth, sixteenth and seventeenth centuries. While further work will have to be done at Tayasal before its connection with Chichén Itzá can be established by means of the excavated material, satisfactory corroboration of the Spanish descriptions of Tayasal at the time of the Conquest (1697) was obtained, and this project should be continued.

An important event of the year was Colonel Charles A. Lindbergh's cooperation with the Institution for reconnaissance of archaeological areas by airplane. Becoming interested as result of observation of ruins in Yucatán during flights made early in 1929, Colonel Lindbergh offered his assistance to the Institution, and during the summer, at President Merriam's suggestion, he spent several days at the chairman's archaeological camp at Pecos, New Mexico, making flights over the Canyon de Chelly, the Hopi country, Chaco Canyon, and the Pajarito Plateau. The photographs of ruins and of topographic features secured at that time by Colonel and Mrs. Lindbergh demonstrated the great utility of the airplane as an agency for locating sites, and for determining their relation to water supply and arable land.

While Colonel Lindbergh was in New Mexico he discussed with the chairman the possibility of air exploration in the Maya country, and in October 1929, through the good offices of Pan American Airways, which supplied the plane and furnished ground fa-

cilities, five days flying were carried out over British Honduras, Yucatán, Mexico, and the Department of the Petén, Guatemala. The primary purpose of the undertaking was to ascertain how much information as to a heavily forested region could be gathered from the air. The Central American jungles are so dense that not only is ground travel exceedingly slow and difficult, but ruins, even of largest cities, often remain unknown even when well-traveled trails pass in their immediate neighborhood. Furthermore, it is almost impossible from the ground to get any proper idea of the country one is traversing because one is literally so engulfed in vegetation that distant views can never be obtained. Hence we have lacked much archaeologically significant information as to the topography of the Maya area, its relief, its drainage systems and the distribution of swamp, savanna, and forest.

The flights took place from Belize, British Honduras, Mrs. Lindbergh acting as photographer, Mr. Ricketson and the chairman alternating as observers. The first day's flight led up the Belize River to El Cayo, thence to the ruins of Tikal whose high temples, standing clear of the jungle, served as orientation point for setting a northward course. Tikal to Uaxactún, a hard day's trip on mule-back, was made in six minutes. While over the latter place, photographs were taken of the Institution's camp and the ruins. North of Uaxactún and south of the Yucatecan settlements lies a long stretch of uninhabited and mostly unexplored forest. This was crossed, the party spending the night at Mérida. The following day, Colonel Lindbergh headed eastward to Chichén Itzá for photographs, then turned south and flew down the interior of the peninsula to Belize. The third day, Tikal and Uaxactún were revisited, a stop was made on Lake Petén Itzá, and the afternoon was devoted to a flight across the little known country behind the Cockscomb Mountains. On the fourth day there was explored the hinterland of the Yucatán east coast; and the morning of the fifth gave opportunity for study of the Cobá district.

Results were most satisfactory. Several hitherto unrecorded ruins were observed. It was found that after a little practice one was able to distinguish the mounds of the larger cities, even when they were covered with the heaviest sort of jungle. It was also possible to locate them with a fair degree of precision by such natural landmarks and, compass bearings as would enable ground parties to reach them with much less difficulty than if they were "going blind." Most important of all, it became clear that not only major geographic features, but the details of forest-type distribution can readily be made out and plotted from the air. As different sorts of vegetation reflect varying soil conditions and rainfall, and as the latter factors were naturally of great importance in determining the re-

gions best suited for occupancy by an agricultural race, such as the Maya, it may readily be seen how much valuable knowledge could quickly be gathered by an intensive air survey. Also, in prosecution of biological, geological and other investigations the plane would be of much service in transporting small parties to the interior where they could be landed on lakes or the larger rivers. It is hoped that the Institution may be able in the not too distant future to avail itself of this method of carrying forward its work in the Maya country.

Exploration by land or in the air, hieroglyphic research, excavation, the study of architecture and of pottery, all these activities are purely archaeological. No matter how carefully planned or how successfully carried out, they can only result in the attainment of limited objectives. For with the best of methods archaeology can recover no more than the bare skeleton of the past; a skeleton, too, which is both fragmentary and disarticulate.

The archaeologist in the field is primarily a fact-finder. In this he needs no help. When, however, he comes to interpret his discoveries, when he attempts to say what ruins and potsherds mean, he requires knowledge of all the multitudinous factors which through the ages have conditioned human existence and shaped human action. His case is like that of the paleontologist who would clothe with life the crushed bones from the fossil quarry. And, as does the paleontologist, he must infer from the effect that present environments and present happenings have on contemporary organisms, what he can of the action of similar phenomena in the past.

The archaeologist is thus abruptly hailed from the comforting shade of his trenches to the glare of the existing world, and there he stands bewildered. He surveys the environment of today to find that its complexities are utterly beyond his power to comprehend. He looks at the very simplest of modern peoples; their life proves unbelievably involved. But if he be willing to face the situation and not pop mole-like back into his burrow, he will find that other sciences are grappling with the problems of plants and animals, of weather and rocks, of living men and existing social orders; collecting, classifying, winnowing detail, and gradually formulating the basic laws which render this perplexing universe understandable. Beside them and with them the archaeologist must work if his results are to be more than the putterings of the antiquary.

All this is obvious enough; but surprisingly seldom have archaeologists made serious attempts to ally themselves with other scientific men. Dr. Morley from the beginning has realized that the unraveling of Maya history demands such cooperation. Hence his insistence that the work in Yucatán should become the nucleus of a group of correlated researches, and that

Chichén Itzá should be their first focal point. To make clear the bearings of studies now under way and to indicate what others should be added, it is necessary to list the outstanding categories of information that are needed.

In the first place, we should work from the present, which we know or can know, back to the as yet unknown past. Thus we are forced to examine the Maya of today, their physical structure, their psychology, their social and economic life, their language. We can also learn much of their career during the past 400 years from study of the documentary history of Yucatán. Of conditions existing at the Conquest the earlier historical sources tell us many things. Passing from the Maya themselves to the environment which has, as with all people, been so potent a molding influence, we find that we need knowledge of the physiography and geology of Yucatán and of its climate; also of its flora and fauna.

The list of the archaeologist's requirements reads like the contents table of an outline of science. And rightly so, for no single constituent of the cosmos fails to bear, in one way or another, upon human life. Some lines of investigation, however, are naturally of greater, or at least of more immediate, importance than others; and work along some of them already has begun. In the short descriptions which follow, the collateral researches are considered from the point of view of what they may be expected to reveal, directly or by inference, as to the history of the Maya. Each one, however, has extremely important problems of its own, and each bears significant upon and meshes closely with all the others. Discussion of these interrelations can not be undertaken in this very general preliminary statement, both for lack of space and because it is believed that in future *Year Book* reports special studies can be handled more fully and more authoritatively by the men in actual charge of them.

The initial group of investigations concerns the living Maya, and logically first comes consideration of who and what the Maya are. These questions lie in the province of physical anthropology, the science which deals with the bodily structure of mankind. Answers are needed by the historian in order that he may judge of the origin of the Maya and of the degree of their relationship to other aborigines of Middle America. He wishes to know, for example, whether or not they are, closely allied, to the highland peoples from whom they seem to have derived the germs of their culture; whether they give evidence of racial homogeneity or of extensive crossing. Also, it is necessary to learn what admixture of Caucasian blood has taken place since the Conquest.

In 1927, Dr. George Williams, under joint auspices of Harvard University and Carnegie Institution, inaugurated the work by examining some 1,800 Yucatecans.

He also conducted tests in basal metabolism and collected blood samples. The results are now being prepared for the press. It is obvious that the investigation should continue, and arrangements have been made with the Institution's Department of Genetics for Dr. Morris Steggerda to visit Yucatán the coming winter. Dr. Steggerda will make a preliminary survey of the field. He will also check, by remeasurement of some of the individuals originally examined, the work of Dr. Williams, in order to make sure that the methods of the two researches are similar and that their results will therefore be comparable.

Closely related to the researches in physical anthropology are those in medicine. No final appraisal of the bodily make-up of a people can be made without knowledge of the factors which control their health. Their material and intellectual accomplishment are presumably largely dependent upon their physical condition. The findings of medicine are essential for the study of modern social and economic conditions in Yucatán. Their value for the historical investigation, although less obvious, is also very great. It has, for example, been suggested by Spinden that the fall of the Old Empire may have been brought about by the wasting effect of endemic-yellow fever. Whether or not this was the case must be settled by medical evidence. And even if this devastating diseases should prove not to have been present in the New World in pre-Spanish times, other maladies, either virulent, such as syphilis, or subtle as are nutritional troubles, may have exercised deep influence upon the career of the Maya. Malaria, now the most harmful of all tropical diseases, may also have been present. To settle such points the archaeologist, historian must, have the cooperation of the student of medicine.

The original step in studying the health conditions of the modern Maya was the establishment at Chichén Itzá of a free clinic under the able direction of Miss Katherine MacKay, which for several years has served the towns supplying the project's workmen and which has come to be visited by Indians from all the surrounding country. The records of the clinic have provided a foundation for continued observation, and the friendly feeling inculcated among the natives has been of inestimable value in facilitating subsequent investigations, not only in medicine but in all lines requiring cooperation of the natives. The health survey of Yucatán was inaugurated in 1929 under joint auspices of the Department of Tropical Medicine of the School of Public Health of Harvard University and Carnegie Institution. It is under the direction of Dr. George C. Shattuck. Two winter seasons have been spent by Dr. Shattuck and his staff in the field.

They have made clinical examinations, have gathered statistics and have conducted specific studies of

certain prevalent diseases. They have found the country, for the tropics, unusually healthy, but intestinal and respiratory troubles prove to be extremely common. Yucatán, according to Dr. Shattuck, is admirable territory for studying the very important and little understood tropical anemias, because malaria which as a rule is so abundant and the symptoms of which overlie and becloud the more subtle manifestations of anemia in other regions, is here relatively rare and its effects can, in a general sense, be factored out. As a first step in this investigation, Dr. Shattuck has undertaken the determination of normal standards, to be followed by nutritional research, checks of the bacillary and amebic dysenteries and of other pertinent factors. Extension of the work will lead to consideration of the whole question of life in the tropics, involving the human geography of all tropical countries and the ability of various peoples to exist under conditions of heat and humidity. There are naturally involved matters of race, of climate, of food supply, of native and introduced diseases and of the physical properties of the sun and the atmosphere. So important does Dr. Shattuck regard this extension of the research that he is planning to devote the coming winter to a general study of what has been done by other investigators and to conferences with physicists, climatologists and nutritionists, whose present advice is essential and whose future cooperation must presumably be called for.

During the 1930 season the principal objectives of study were the basal metabolism of Maya Indians, their blood pressures and their blood pictures with special reference to anemia. This work was done at Chichén Itzá. In Valladolid, the relative prevalence of syphilis among Maya Indians and Yucatecans was the main objective. Data on blood pressure, anemia, malaria and other diseases were likewise obtained. Dr. Shattuck also demonstrated to Dr. Francis I. Procter at Chichén Itzá some cases of a chronic folliculitis which closely resembled trachoma, and which may ultimately prove to be a form of that disease. Dr. Procter is an oculist of large experience who has been actively interested for some years in trachoma among the Indians of the Southwestern United States. His interest in this eye disease of Yucatán resulted in the examination of school children and others in a number of places near Chichén Itzá. and at Valladolid, with the result that it proved to be very prevalent.

The data collected by Dr. Shattuck and his associates in 1929 and 1930 will be more fully presented in a report now being prepared for publication. From the beginning of the Chichén Itzá project it has been realized that studies would have to be made upon the social and economic life of the Maya of Yucatán. Only with thorough knowledge of the living people and of

modern conditions can one utilize understandingly the documentary records of the post-Conquest period, and from them work still farther backward into prehistoric times. But like research in pottery, or physical anthropology, or medicine, the task of analyzing an existing population can not even be begun as a sideline or by-product of any other investigation. It requires special abilities and specialized methods. But particularly does it require that its development be shaped by a person of broad experience and wide interests, a man who can formulate and direct attacks upon the many concrete objective elements inherent in the social complex, without losing sight of the deeper meanings which are masked under surface intricacies. Dr. Robert Redfield of the Department of Anthropology of the University of Chicago has been appointed leader of the survey, the University very generously allowing the Institution to avail itself of, his services during a certain part of each year.

In 1930, Dr. Redfield spent three months in Yucatán. It was not the purpose of the trip to collect materials on any special ethnological topic or in any particular local community. He desired to take such a rapid general view as would permit him, first, to determine some of the problems suitable for study, and, second, to prepare a program of research. No systematic study was therefore made of the ethnology or folklore of the Maya, but sufficient information was secured to permit a judgment as to the character and range of culture in Yucatán. His time was about equally divided between the city and the country, between the civilization of Mérida and that of the villages. About three weeks were spent in Mérida. A trip was made to Hunucmá, in the northwestern part of Yucatán, and another to Sotutá and its environs, in the south central part. Because of the fact that Chichén Itzá was a convenient point of departure, and because the southeastern part of the state is changing more rapidly than other regions and is therefore more interesting, special attention was given to the Chichén Itzá district. Preliminary information was secured from the two villages most accessible to Chichén Itzá: Pisté and Xochenpich. About 10 days were spent in Chan Kom, south of Chichén Itzá. In Tekom contact was made with Filomeno Pat, Indian leader, who offered to help representatives of the Carnegie Institution in making contact with the uncivilized Maya of the Territory of Quintana Roo.

As result of his observations, Dr. Redfield proposes that there be made a well-rounded study leading to a description, of contemporary society in the peninsula. The inhabitants are not the representatives of a single simple culture, for in Yucatán there is to be found the entire range of sophistication from primitive tribesmen to Méridanos educated in Paris or New York.

Therefore the methods ordinarily employed by an ethnologist working among a primitive people are not alone adequate. The ethnologist may justly assume that the group he studies is a fair sample of a larger tribal culture. But in present-day Yucatán the community units are not self sufficient. The institutions that control each community are in part shaped from without, and at the same time bound up within a larger, more inclusive society. It is this larger society which must be the object of study. A description of the folkways characterizing some selected village will not adequately describe Yucatecan life; it must be studied as a thing in itself. It is not suggested, however, that the community survey of the ethnological sort be abandoned. The mere study of the formal political or social institution from the point of view of a student working in Mérida would fail to take into account the unwritten ways of the folk which still to a very great degree determine the behavior of the inhabitants of Yucatán. Community investigations must therefore be made. There will have to be more than one survey, because culture is not homogeneous in the peninsula. But they should be carried on with constant reference to the larger society with which the village life is now inseparably associated.

Briefly, it is proposed that the project include two closely interrelated divisions. The first is a study of Yucatecan society, regarded as a single entity. This would be carried on with Mérida as a base and would include within its consideration the life of that city, as well as the more explicit social, economic and political organization of the state. But one can not begin by grappling with the whole of Yucatán; the problem will have to be broken up into a series of special topics, each of which can be the object of research.

The second division of the program proposed by Dr. Redfield consists of several community studies, wherein attention will be directed to selected local communities. The studies will be year-round projects, of the sort commonly made by ethnologists, except that their purpose will be to record the culture of the community as it now is, not merely to report such unmodified native practices as remain. It is therefore proposed that in addition to the usual collection of folklore and items of local custom, the work comprise an accurate record of the round of life in its entire setting. This setting includes the larger Yucatecan society. It is therefore desirable that both divisions of the program be carried on at the same time, so that each, in referring to the other, may find, suggestion and explanation. In 1931, Dr. Redfield will spend six months in Yucatán, undertaking the first steps of the more general study and selecting the communities best suited for special investigation. At the same time he will be on the lookout for properly qualified individuals to carry on, in future

years, the unit studies. Linguistic research, an integral part of the study of the living Maya, remains to be considered. Thorough investigation of the large and territorially wide-spread group of tongues constituting the Maya stock may confidently be expected to throw much light upon the broader linguistic problems of aboriginal America. This, and its bearing upon linguistic science as a whole, need not concern us here, as at the moment we are primarily interested in its application to specific questions of Maya history. Seen from that point of view, the work is of undoubted significance. First, comparative analysis of the different Maya dialects should permit judgment as to the amount of time which has elapsed since they ceased to form part of a single parent language, and as to the order and antiquity of their separation. Second, the study of vocabularies might possibly indicate, by common possession of terms for objects not found, or activities no longer pursued in their present habitats, the nature of the country originally inhabited by the Maya. Third, knowledge of modern Maya is the first step toward ultimate reading of those parts of inscriptions which are not now decipherable. If Maya hieroglyphs had been pure picture-writing, language would, of course, not enter into attempts to read them. But there is every reason to suppose that they were partly phonetic, or at least that they expressed phonetic elements by a sort of rebus-writing. He who would decipher the glyphs must, therefore, necessarily know Maya; perhaps not the Maya of today, nor possibly even the colloquial speech of the Old Empire. The glyphs, it may be, record an archaic ceremonial language, as so many of our monuments perpetuate dead Latin. If so, the mere learning of modern Maya will not suffice, and the professional linguist will have to be called upon for reconstruction by comparative means of the Maya "Sanskrit."

What is hoped will be an intensive and long-time research upon the Maya languages was inaugurated during the past winter. Dr. Manuel J. Andrade came to Yucatán under the auspices of the Department of Anthropology of the University of Chicago, and using Chichén Itzá as headquarters devoted several months to Yucatecan Maya. Later in the season he visited the Huasteca, a tribe of northern Veracruz whose speech is Maya, but whose culture is un-Maya.

For the coming year the Department of Anthropology of the University of Chicago and Carnegie Institution are cooperating to enable Dr. Andrade to continue his investigation. He will go to British Honduras to study isolated Maya groups in that country and will later accompany Dr. Morley on an expedition to the Usumacinta River, where there are still living the Lacandonese, a small remnant of the last of the truly wild Maya.

There have now been considered the projects in physical anthropology, in medicine, in sociology and in linguistics which have been undertaken to enable us to understand the Maya of today, and so to permit us to judge more accurately than would otherwise be possible, of what the ancient Maya were and how they acted. The gap between the present and the prehistoric past must be bridged by study of the documentary history of the nearly 400 years which have elapsed since the Conquest. Its direct relations to archaeology are numerous and important. The accounts of the conquerors and early ecclesiastics contain much detailed information as to the aboriginal condition of the Maya. They also make clear the methods worked out by the incoming Spaniards for the government and control of the native population, and so explain the basis upon which modern society rests. To make an extended investigation of the history of Yucatán, Dr. France Scholes, Head of the Department of History of the University of New Mexico, will join the staff of the Institution in 1931 as a member of the Section of American History, giving, by arrangement with the University, half his time to the work.

Another documentary project shortly to be undertaken will go further into the past than does examination of the Spanish sources. It will consist of a collation of the Books of Chilam Balam. These were written by native Maya shortly after the Conquest. They are transcriptions in the Latin character, of pre-existing historic records kept in hieroglyphic writing. The Books of Chilam Balam are of the utmost value, for they give in outline the events of the pre-Columbian period. Their time counts also extend into the historic period, thus offering one category of evidence for correlating Maya and Christian chronology. The books have not fully been translated. This task will be completed and the various texts will be compared by Mr. Ralph Roys, who in 1931 will become a special investigator for the Section of American History.

It is important to know the racial makeup of the Maya, their present health, customs, and the events of their recent career. It is essential that we should learn from the ruins their distribution and their arts in the centuries before the Conquest. But the "hows" of all these things, to say nothing of the even more significant "whys," we can not grasp; in other words, we can not write history until we understand the environment which from the earliest times to the present day must have played so large a part in shaping the course of their existence.

Environmentally, the Maya country is far from uniform. The northern part of Yucatán is semi-arid subtropics, the Petén region is humid jungle, the highlands of Guatemala are temperate. There is almost every sort of country—desert, mountain, coastal swamp.

And yet before we are through we must know the topography of all these regions, their rocks, their soils, their weather and the plants and animals which inhabit them. Such data are gradually being acquired by many agencies, but to combine them into comprehensible form as a background for either the biologist or the student of man requires the synthesizing methods of ecology. The common desire for a broad yet accurate grasp of conditions in a large and significant area has led to consideration of plans for association, in Middle American research, of the Department of Biology of the University of Michigan and the Carnegie Institution. The University is tentatively contemplating a general biological survey starting in Yucatán and eventually extending to other districts. The Institution hopes to undertake studies in geology. And jointly the two would strive to interest other groups in such investigations in physical geography and meteorology as are necessary to round out the picture.

Through the good offices of President Ruthven of the University of Michigan, who from the beginning has taken the keenest and most helpful interest in the project, Dr. F. M. Gaige came to Yucatán in the winter of 1930 for several weeks of reconnaissance. He reports that not only is there a vast amount of valuable work to be done in the mere cataloging of species, both of plants and animals, but that intensive studies of local distributions and of life histories, if carried out in the light of geological and meteorological knowledge, would open avenues of approach to some of the most fundamental problems of biology. Needless to say, the Institution would welcome warmly the entry of the University into this field and would do everything in its power to be of service in forwarding its direct program and in stimulating any collateral researches which would render it more effective.

It will by now have become evident that to carry the investigation of Maya prehistory, or any similar project of serious and comprehensive nature, to a successful issue, one must build up a whole complex of associated researches. But this is not easily done. One can not employ first-rate authorities in every branch of science nor, even were that possible could one expect their best efforts if they considered their work a side-show, as it were, of archaeology. There has to be give as well as take; definite benefits, both practical and intellectual, must be offered in order to induce institutions and individuals to throw themselves wholeheartedly into the field. Such advantages are believed, in the present case, to exist.

On the practical side, the Institution is already operating both in Mexico and in Guatemala; it has established friendly relations with federal, state, and local authorities, and with the people. It has headquarters at Chichén Itzá, Uaxactún and Guatemala

City. The members of its staff are familiar with customs requirements, transportation facilities and bush conditions. Anyone who has operated off the beaten track in foreign countries can appreciate how such contacts and such sorts of information help in planning, budgeting, equipping and running an expedition.

Material considerations are, however, relatively much less important than the scientific profits which may be expected to accrue from cooperative endeavor. The botanist or the zoologist needs the data and the results of other workers fully as much as does the historian. No research can fail to go farther and to strike deeper if it be carried on in conjunction with other researches dealing with the same general body of facts. For example, the biologist studying the distribution of plants and animals in Yucatán should know the extent and approximate period of any wholesale deforestations which have occurred in the peninsula. These data the archaeologist working in connection with the agronomist will presumably be able to give him. The biologist, no less than the student of man, must understand, the climate of the region and its geological history and make-up. Research workers in medicine, to take another instance, find it necessary to call on the archaeologist for estimates of population density in former times; physical anthropologist for the racial constitution of the present population, on the biologist for the ranges, habits and life-histories of noxious organisms; upon the nutritionist for the nature of the food supply; upon meteorologist for statistics as to seasonal fluctuations of the weather, the ethnologist for information as to the social practices which form potent a factor in all problems of epidemiology. And so one might go on indefinitely, pointing out useful, even essential, interlockings between various sciences.

One other point. Field investigations as a rule lack continuity, particularly when prosecuted in foreign countries. Inaccessible regions are seen for brief periods; often they are visited but once. The result is that the student has the most fleeting glimpses of conditions which deserve long-continued observation; he acquires mere scraps of knowledge, when he should have full series of data. The all-important element of passing time can not properly be gauged, and so perspective is lost. Any opportunity, therefore, to work throughout the cycle of the seasons and to repeat and, check observations over a period of years should, if possible, be seized.

The stations of the Institution are always open; the work in Middle America is expected to continue indefinitely. The field is almost untouched; it comprises every sort of environment. Participation in the survey, either directly or indirectly, would accordingly seem to give promise of sound and significant results in any one of the biological or geographical sciences.

The survey would also appear to offer occasion for a new type of coordinated research in the humanistic disciplines. The living Maya exemplify in the clearest way a number of most important historic and social phenomena. They present, for instance, a splendid example of what occurs when a dense native population comes under the influence of a small intruding group of superior culture. The same sort of thing has happened again and again throughout the course of history and in all lands. And it has been perhaps the strongest single force in shaping the development of the Latin American nations.

Viewing the New World by and large, we find that at the Conquest one of two things usually took place. Either the Indians were exterminated or they were not. Where, as in most parts of the United States and of eastern South America, the aborigines were few and of rude culture they quickly disappeared. In Middle America and western South America, however, the native populations were dense and relatively civilized. What might have happened had the discovery been delayed but a few centuries, and the Aztec and Inca states been given time to expand, to stiffen, and to weld themselves together, forms fascinating food for speculation. The whole course of world events would doubtless have been changed. But the Spanish came, the flimsy political structures of Mexico and Peru fell apart, the nations were intellectually decapitated by the destruction of the small theocratic upper classes, in whom resided all power and all learning; and there were left the teeming millions which from the sixteenth century on have formed the body of the population. They have influenced the Caucasian immigrants quite as much as the latter have affected them. The social system and government of great areas in Latin America are the outcome of the blending of the two groups. Analysis of the interplay of racial and cultural forces, past and present, is essential to understand conditions in those countries; and knowledge of what has there occurred will supply invaluable material for the scientific study of often more complex, but fundamentally not dissimilar, conditions' produced by military adventure and colonization in other parts of the world.

This matter of racial and cultural adjustments is surely one of the most portentous which faces us today. We have abolished space and we are busily engaged in veneering western material civilization and ideas over the entire face of the globe. The resultant clash is responsible, at bottom, for much of what is now happening in China, in India, in Egypt, in South Africa, even in Russia. It appears, indeed, not unlikely that the historian of the future will see in these phenomena as great significance for the formation of his world as he can observe in the politics, say, of nine-

teenth century Europe. Yet to the details of that period a hundred scholars now devote their lives for every one who considers such fundamental ethnic relationships as are illustrated by the contact of the Indian and the Caucasian.

Research upon this particular phase of inter-racial contact lies, it is true, in the domain of the Americanist, and its immediate problems are essentially American. But it has worldwide implications, and it is of vital importance to the entire range of the sciences of man. The study is of appalling intricacy because it deals with human beings, and it is therefore beset with the multitudinous psychological bafflements, biological obscurities and gaps in the historic record which render the consideration of mankind so much more complex than any other research can possibly be.

Such inherent difficulties are, of course, largely responsible for the slow development of humanistic as compared to biological knowledge, and for its snail-like progress when contrasted with the rapid advance of the physical sciences. But students of man have also been culpable in failing to face the issue. Daunted by the awesome bulk of human history, or, human evolution, or the nature of man, or whatever one chooses to call it, and shrinking before the grievous magnitude and the seemingly endless ramifications of their task, they have buried their heads, ostrich-like, in the comfortable sand-heaps of specialization.

Specialization, of course, is necessary, for it is the splitting up of something too large for immediate comprehension in its entirety to permit intensive consideration of its parts. The process, however, implies eventual reassembly of those parts and ultimate visualization of the whole. But each of the many sections, the so-called disciplines, into which the study of man has perforce been subdivided pursues its own ends with almost deliberate disregard of the objectives of every other. And within the disciplines, each worker or group of workers does practically the same. We have, of course, realized the dangers of intellectual isolation, have attempted to counteract them by broadening the scope of graduate instruction, by holding mixed conventions, by establishing academies and research councils. Although such moves are certainly in the right direction, they are at best mechanistic set-ups rather than natural cooperations, and in our individual researches, our field, or laboratory, or archive investigations in those activities which are nearest our hearts and to which our best efforts inevitably are given, we have made few and but half-hearted attempts toward real association or mutual understanding.

Forced cooperation is certainly not desirable. At best it is pretty sure to be artificial and therefore unproductive. But some form of becomes essential as the humanistic sciences broaden their outlook and deepen

their researches, and there begin to be encountered phenomena too great for comprehension by any single group, yet involving principles of fundamental importance to all groups: race, for example; or environment versus heredity, or the inherent ability of mankind to increase its capacity for understanding. These things must be attacked and their underlying problems must be formulated if the study of man is to go forward.

But how? Every scholar is fully occupied with his own researches, every 'ology has its own preoccupations. In the few cases, however, where forces have been joined and the efforts of workers in several disciplines have, in one way or another been brought to bear upon a single body of significant data, or upon any one important general problem, it has always resulted that not only was the gathering and digestion of specialized information in no way retarded, but that there has come about an interchange of ideas, an intellectual cross-fertilization, immensely valuable for all participants. Such investigations have, however, been the exception rather than the rule, and for some reason, possibly from mere inertia, perhaps because certain enterprises have been over-organized or their programs too rigidly defined, they have not yet become by any means standard practice in the social sciences. Further experiment is necessary.

The survey of Yucatán is being planned with the above considerations in mind. It is based on the theory that we should concentrate, whenever we can, upon fields where specialized researches can be pursued in entire independence of each other, but where results will be cumulative and findings comparable; and where common interest, if nothing else, will foster intellectual and practical cooperation.

The general problem toward the solution of which the investigation is directed may be formulated as follows: What are the results of the meeting of two races of diverse physical make-up and differing culture? This, as has been intimated, is a matter of very great moment. No research in history, anthropology, sociology, government, religion, genetics, esthetics, can be pushed very extensively or very profoundly without encountering one aspect or another of race or culture crossing. It is a problem transcending adequate comprehension by any one group, therefore it is an ideal one for joint attack. Even so approached, however, it is still too great. One can not hope effectively to begin a study of ethnic contacts with the whole world as a field and throughout the millennia of history. We must pick a simple exemplification of the problem both in space and in time. The New World offers a splendid laboratory for the study of culture growth, and the post-Columbian period in Latin America illustrates particularly well all the phenomena incident to the meeting of diverse peoples. But Latin America, again,

is too big. We should still further reduce our preliminary objective; and so we come to Yucatán.

The area of Yucatán is small; its environment is uniform. Natural barriers isolate it from continental Mexico. For upwards of a thousand years the peninsula was the seat of a high aboriginal culture. The Spanish conquest resulted in obliteration of the externals of native civilization, in the catholicizing of the Maya, and the reduction of the dense native population to serfdom. There took place the inevitable hybridizations, racial, religious, social and economic; there were the same strifes, uprisings, readjustments, with far-reaching effects upon both elements, which have occurred wherever the Spanish found themselves overlords of crowded Indian nations. Yucatán presents an epitome of historical events and present-day conditions in much of Latin America; and, to a less precise but still significant degree, it exemplifies what has happened at all periods and in all parts of the world when, after military conquest, the will of a potent minority is enforced upon a race of lower culture.

It has seemed wise to formulate, at this early stage of the survey, only a few general principles. Each unit of research should be intensive, employing the technical methods and striving for the special aims of its proper discipline; but there should constantly be kept in mind its ultimate bearing upon the basic question of race-contacts; and there should also be fostered an historical point of view, in other words, a consciousness of the time relation of all phenomena. And, finally, by field conferences, such as the one held during the past winter at Chichén Itzá, and by meetings elsewhere, close personal and intellectual touch must be kept between all concerned.

There have already been discussed the archaeological, historical, sociological, and environmental units of the survey. And mention has been made of other desirable researches. The difficulty lies not in what to do, but in selecting what is most important to do, in deciding how best to do it, and in finding the men and the means with which to get it done. No one institution can possibly handle a project so large and so varied. Success is to be attained it must come through realization by many agencies that the field is a significant one, through confidence that it is being developed in the proper way and through belief that investment of effort in cooperative research will bring valuable scientific dividends.

1.19.

ALFRED V. KIDDER

Division of Historical Research

YB 30:101–104, 1931

The Division of Historical Research is dedicated to studies upon the social and intellectual, in so far as these may be distinguished from the biological, evolution of the human race. Its three sections devote their to various aspects of what is really a single endeavor, namely, the attempt to understand the whys and the wherefores of man's long struggle toward more perfect living. The Section of Aboriginal American History, considers the rise of civilization as exemplified by the career of the native races of the New World. The Section of United States History concerns itself with the development of a typical modern state as well as with the interactions between Western European and indigenous American cultures.

SECTION OF ABORIGINAL AMERICAN HISTORY

The two Americas form an ideal laboratory for studies upon the genetics of civilization. The Indians came into the New World as savages, bringing with them no more than the rudiments of culture; and they never, as we can now see, received any significant stimulus from outside until the arrival of the Europeans in the early sixteenth century. Hence their entire development was an autochthonous one, isolated, independent. Yet in major outline it was extraordinarily like that of the of Europe and Africa and Asia. But it seems to have been a some what more simple and more straightforward progress, evidently much less interrupted by the sweeps and counter sweeps of population which at times retarded and at times accelerated the march of civilization in the Eastern hemisphere here, and which render its story so exceedingly difficult to unravel. Furthermore, the archaeological remains of the Americas are younger, on the average by several thousand years, than those of the Old World; they are therefore in a generally better state of preservation, and they have been far less overlaid or destroyed by the activities of recent peoples. If, therefore, the archaeological investigation of the New World be intelligently conceived and vigorously prosecuted, the history of the Indian's rise from savagery can doubtless be reconstructed with a relatively high degree of accuracy. The resulting data will prove of much value for comparative purposes; the methods developed and the insight gained into the mechanics of culture growth will be

useful for attack upon the more complex problems of the Old World.

The field presented by the American continents is of course enormous. Some parts of it, however, are greater, or at least of more immediate, importance than others. These should naturally be attacked first. The Carnegie Institution, in joining itself to the many agencies engaged in researches upon New World prehistory, has concentrated its effort upon two areas: Middle America, where the Maya achieved one of the most brilliant and most widely influential of Indian civilizations; and Southwestern United States, where the career of the Pueblos exemplifies very clearly first steps in the organization of a communal society based on agriculture.

Dr. Morley and his associates have been at work on the Maya for nearly 20 years. After a preliminary period of exploration, resulting in formulation of certain definite historical problems, the Institution turned to the excavation of two sites which gave promise of yielding significant data for their solution: Uaxactún, the oldest known Maya city, and Chichén Itzá, an outstanding center of the New Empire.

The investigations at Uaxactún and Chichén Itzá have been recorded, from year to year, in the annual reports of the Institution. During period covered by the present *Year Book* the two projects have continued. At Chichén Itzá, Dr. Morley and his staff devoted their time to the study of buildings excavated in former seasons, to the writing of monographs upon them, and to the perfecting of plans for comparative analytical research upon Maya architecture. Dr. Morley also headed an expedition to the ruins of Yaxchilán, in the Usumacinta drainage, where a number of new calendrical inscriptions were discovered.

At Uaxactún, Mr. Smith carried forward the excavations with great success. He completed the examination of the very old deposits underlying one of the plazas of the city, accumulating pottery and other materials which will throw light upon the vexed question of Maya cultural origins. He also cleared an early temple enclosed within and preserved by later construction, wherein he found graves containing mortuary pottery of extraordinarily high artistic excellence.

Mr. Ricketson spent the winter in Guatemala City. With Mrs. Ricketson he studied the ceramic collections from Uaxactún, and worked on the report covering the earlier excavations there. He also made reconnaissance trips in the Guatemala highlands with a view to laying plans for future investigation of that very little known but archaeologically significant region. President Merriam, Mr. Roberts and the Chairman visited Guatemala in January to confer with members of the Government, to consult with Mr. Ricketson and to examine various archaeological sites. Mr. Roberts took

leave of absence in the latter part of the winter to excavate in Panama for the Peabody Museum of Harvard. His studies of Maya pottery continue.

The archaeological researches of the Institution in the Maya field have been prosecuted energetically. They have proved very fruitful. But from the time of their inauguration by Dr. Morley in 1914, it has been realized that the unsupported findings of archaeology could not be expected to result in more than an incomplete and one-sided picture of the career of the Maya; that they could not fully be interpreted save with knowledge of the manifold factors of environment and race which influenced and molded that career; and that no real history of the Maya could be written until full cooperation had been established with workers in other branches of science. These considerations were discussed in the *Year Book* for 1929-30. As was there stated, the necessity for assistance from non-archaeological disciplines has led to the organization of a general scientific survey of the region formerly inhabited by the Maya.

In Yucatán various survey projects have gone forward. Dr. Redfield, of the University of Chicago, has continued his sociological study of the living Maya. Dr. Steggerda, of the Institution's Department of Genetics, pursued the investigations in physical anthropology begun by Dr. Williams, checked former determinations of basal metabolism and inaugurated a research upon the growth of Indian children which it is hoped may be followed over a long term of years. Dr. Andrade, now jointly employed by University of Chicago and Carnegie Institution, carried forward his work on Maya linguistics. The medical survey of Yucatán, under Dr. Shattuck of Harvard, was not in the field, Dr. Shattuck having been engaged during the winter in preparing the report upon the first two years' investigation. In the summer of 1931, however, a party under Shattuck's direction will undertake a check of the present prevalence of malaria and the dysenteries among the population of the peninsula. Mr. Scholes has begun work on the documentary history of Yucatán. Mr. Roys is engaged in translating and collating the Books of Chilam, which are very important early Maya documents written, in the Latin script.

All the above investigations concern themselves with the Maya people, their race, physical make-up, health, customs, language, recent history. No valid appraisal of the career of their ancestor's can be made without knowledge to be derived from such researches. No less imperative clear understanding of the land in which the Maya lived and still live. Environmental studies are therefore also being made. The much valued cooperation of the University of Michigan continues. During the winter Dr. Van Tyne, ornithologist; Dr. Murie, mammologist; and Dr. Bartlett, botanist, were sent by the University of Michigan to Uaxactún, where

they made the first series of biological observations and did the first thorough collecting in Petén, the center of the Maya Old Empire. The United States Geological Survey also cooperated most effectively by permitting Dr. Cooke to accompany the Uaxactún party for the purpose of gathering geological data. As result of his examination of the Petén, Dr. Cooke believes it possible that the bajos, or seasonal swamps, may have been lakes as recently as the time of occupancy of the Petén by the Maya. If this hypothesis be verified it will serve to explain many hitherto very puzzling aspects of Maya history.

The cooperation of scholars representing various disciplines is indispensable for the progress of archaeology; it is also of first-rate value to the other sciences themselves. The biologist of course needs the assistance the geologist; the medical man must have data which only the biologist can supply, and so on. Close touch should accordingly be kept between all participants, not only for the pooling of information, but for the formulation of broad problems underlying several or all of the unit researches, and for devising means for their solution. For this purpose annual conferences are held at Chichén Itzá. The meeting of the present year was attended by Mr. Morley, Mr. Ruppert, Mr. Pollock, Mr. Scholes, Mr. Bolles, Dr. Cole and Dr. Redfield of the University of Chicago, Dr. Andrade, Dr. Steggerda, Señor Juan Martínez Hernández and the Chairman.

At the close of the period under review there came from the press monograph of Mr. and Mrs. Morris and Mr. Charlott on the Temple the Warriors. This is the first definitive publication upon a unit of the Chichén Itzá project. In content and in illustration it sets a new standard in the presentation of results of excavation in the Maya field.

Other major publications of the Division now in preparation are: Morley's compendious work on the inscriptions of Petén, Mr. Ruppert's volume on the Caracol at Chichén Itzá; Messrs. Thompson and Pollock's paper describing the ruins of Cobá; Dr. Andrade's Maya grammar. Dr. Shattuck's medical report has already been mentioned.

The Division suffered a severe loss in the death, on March 22, 1931, of Dr. John E. Teeple, Research Associate, at the age of 57. Dr. Teeple a chemist by profession, having taken up the study of the Maya hieroglyphic inscriptions in 1924 as an avocation. His earliest contribution in this field were of such outstanding importance that he was appointed a Research Associate of the Institution in 1929, continuing as such until death. The results of his brief six years of investigation are embodied in his *Maya Astronomy*, published by the Institution last year (Teeple 1931). Dr. Teeple's untimely death has removed from Maya research one of its most productive contributors.

1.20.

ALFRED V. KIDDER

Division of Historical Research

YB 31: 89–91, 116, 117, 1932

The Division of Historical Research comprises three Sections. The Section of Aboriginal American History concerns itself with studies relating to the rise of native civilization in the New World, its two principal fields being the Maya area in Mexico and Central America and the Pueblo area of southwestern United States. The Section of United States History is devoted to research upon the growth of Western European institutions in the Americas. The Section of the History of Science strives to bring together and to make available for interpretation the at present widely scattered and uncoordinated data which bear upon the acquirement and transmission of ordered knowledge.

The two outstanding problems of pre-Columbian New World history are those of the peopling of the American continents and of the rise, in this hemisphere, of native civilization. The true position of the American Indian among the races of man can not be evaluated until we know who he was, and whence, why, when and how he came; nor can the significance of his career be understood unless we have information as to what elements of culture he brought with him, how much he developed independently, and how he managed to build up the complex social, religious and economic structures which he had possessed for centuries before the coming of Europeans. These two questions of origin and growth are naturally fundamental for Americanists; they are also of extreme importance for the study of anthropology in the broader sense, for the one strikes back to the primary diffusions of the human stock, while the second links into the vast riddle of man's perennial upward striving.

From the limitless range of possible activities in New World research this Section has elected to devote itself to the rise of native American civilization; and, within that field, on the principle of nuclear attack, to operate in two regions whose people were pre-eminent as builders of aboriginal culture, the Maya area of Middle America and the Pueblo country in the southwestern United States.

The Section's early work upon the Maya was purely archaeological. Its major efforts, indeed, still devoted to recovery, by exploration and excavation of factual data bearing upon the prehistoric period. But as such materials began to accumulate, and an attempt was made to interpret them in terms of history, it became clear that temples and pottery and ornaments,

even hieroglyphic dates, were, in themselves, relatively meaningless. It was perceived, as must inevitably occur in any archaeological research, that very little progress could be made toward an understanding of how these things came to be what they were and where they were, to say nothing of what they meant, without accurate knowledge of a host of environmental factors which the archaeologist has neither the ability nor the time to study: the geology of the region, for example, its flora and fauna, its climate. Furthermore, there are certain flank-attacks, so to speak, which may be made upon archaeological problems, advances along collateral lines which result in accumulation of data to supplement or to facilitate comprehension of the meager and fragmentary products of excavation. Documentary history offers one such approach by giving us, along with many other things, a picture of native life at the time of the conquest, which is indispensable for interpretation of ancient remains. Ethnologists, working on the present-day Maya, learn further facts useful for the same end. Linguistic study is an invaluable aid in that it permits deduction as to the specific and general relationships of groups, as well as concerning their contacts with people of other stocks. Racial questions must be considered in the light of data only to be gathered by the physical anthropologist. Medical research throws light upon the history of diseases. Agronomy tells us of the capabilities of the soil and the probable methods of its cultivation.

All this is obvious enough; or should be. But archaeologists, like many other specialized workers in the human field, have been so busy with their own absorbing tillage that they have generally failed to realize the urgent necessity of developing some method by which the results of other disciplines may be made available for their use.

In an attempt to work out such a method, the Division has sponsored a general scientific survey of the Maya area. Its scope and the financial and organizational difficulties encountered have been discussed in a previous report [Chapter 1.18]. The undertaking is still in the stage of experimentation. It has not been long enough under weigh to have permitted adequate testing of its more practical arrangements. One can not yet be sure of mustering the funds and the personnel which will be necessary to bring so many-sided a research to its logically full development. Mutually satisfactory relations must be established with a large number of cooperating agencies. The efforts of a very heterogeneous group of students must be coordinated and their diverse interests satisfactorily harmonized. But in spite of all uncertainties, in spite, too, of the briefness and inadequacy of the tryout, one may feel confidence in the soundness of this type of approach. For the activities of the collaborators, the historian, the

linguist, the ethnologist, the physical anthropologist, have not only helped the archaeologist, but have resulted in the formulation of a host of special problems of modern life which are themselves insoluble save on the evidence of what has gone before. Thus the present and the past have been firmly interlinked and the realization has been driven home that neither one can be understood save in the light of the other. So there has been a shift in emphasis, or rather a broadening of outlook; and what was originally the study of a single episode, the pre-Columbian era of Maya greatness, has become the envisagement of a continuously sweeping current of history. The biological, geological and climatological studies are likewise serving to spread an environmental screen upon which the moving picture of a people's fortunes may be thrown in clear focus.

Few more favorable fields than the Maya country could be found upon which to come to grips with the fundamentals of history and of anthropology, nor for bringing about the much-needed recognition of the essential unity of their aims. Study of the Maya from the earliest times to the present involves consideration of age-long and world-wide problems: the relation of man to his habitat, the spread and interaction of nascent cultures, the origin of higher civilization, the decay and fall of social orders, the clash of native and European races, the adjustments between conquerors and conquered, the impact of twentieth century ideas upon backward populations.

It is difficult to escape the conviction that only by coordinated research, involving the cooperation of all the disciplines devoted to the study of man, and the collateral support of many biological and physical sciences, can we attain understanding of any given episode in human history. But any such research is obviously costly, complex and long. And when the anthropologist surveys the entire potential range of his labors, and realizes how rapidly are passing unrecorded away the languages and customs which are the very fundamentals of his science, he must inevitably feel that the mere factor of time can not permit him to spend his precious years or his limited funds in detailed work with less hurried colleagues in what is, from the total point of view, a very small corner of the field. He must harvest his whole crop before the devastating flood of Western European culture shall have washed it completely away. But in spite of all this, indeed because of it, there is a very real reason for carrying, forward, concurrently with the essential salvage, a certain number of intensive projects in intimate association with other scholars. Anthropology, as a science, has not yet progressed sufficiently far to know just what facts are most essential for it to gather. Ideally, of course, everything should be observed and every thing recorded. Practically, this is impossible.

The ethnological field worker must pick and choose. He can not, however, at this stage of the game, collect selectively without danger, nay without certainty, of missing vital data, because their bearing is not obviously apparent. Hence, both for the well-rounded growth of anthropology and for the immediate purposes of the great amount of raw collecting which it is our absolute duty to carry forward during the next few decades, it is necessary to test our methods and interpret our findings as we go along by the selection of certain significant groups which shall be studied both in historical perspective and from the viewpoint of environmental relationships, as well as with regard to their functional response to the exigencies of the modern world. No plea of urgency should influence us to forsake this indispensable type of research. As a matter of fact, the extensive and the intensive should proceed concurrently. Neither, in the long run, can be of full value if the other has been slighted. It is a firm belief in the truth of this proposition that has induced the Section of Aboriginal American History to undertake its present work in the Maya field.

SUMMARY OF THE MAYA SURVEY

Archaeologically, this has been perhaps the most productive year of the Institution's nearly two decades in the Middle American field. At Chichén Itzá, the work at the Mercado has transformed a meaningless heap of tumbled stone into a beautiful and understandable example of Nahua-Maya architecture at its apogee; the investigation of the Monjas inaugurates a study which will surely throw much light on the earlier, purely Maya, period. The Calakmul expedition brought knowledge of a very large, strategically located and hieroglyphically very fully documented Old Empire city in a region whose further exploration promises much of vital interest. Uaxactún yielded a number of richly stocked tombs; the excavation of the "palace" throws light on an important type of building which, in the Petén, has not hitherto been examined; but probably most valuable of all was the discovery of the prolific and well-stratified rubbish deposit, the abundant sherd material from which will add greatly to our knowledge of Old Empire ceramics. The architectural-ceramic survey demonstrated, in northern Yucatán, the soundness of its methods and resulted in collection of data to found a truly scientific study of the archaeology of that area. In Guatemala, Dr. Lothrop's work constituted a start at unraveling the complex problems of the highlands.

The year's accumulation of data has been unusually great. The difficulty of making these data promptly and fully available remains acute. The published report, presenting both the facts and the investigator's

deductions there from, is the end-product of all research. In archaeology, however, materials pile up so rapidly, and their study is so long and so arduous a process, that writing proceeds very slowly. The result is that no member of the Section's archaeological staff, save Mr. Ricketson, is fully abreast, in the matter of publication of his fieldwork; some, indeed, are several years behind. It would seem obvious that field activity should, in each case, stop until the individual concerned has caught up. But many practical considerations, contracts with governments, the holding together of digging and transportation organizations, urge continuance. Very anxious thought is being given to this problem.

A number of non-archaeological researches have gone forward, with Guatemala the principal center of activity. There, geographical reconnaissances have been begun, medical studies inaugurated, as well as volcanological observations by Dr. Zies of the Institution's Geophysical Laboratory. A party from Duke University and the University of Michigan is, during the present summer, at work upon the biology of the inland waters of Yucatán; their results will be reported in the next *Year Book*. The ethnology of Yucatán continues under study by Dr. Redfield's group; Dr. Steggerda made his annual visit to Chichén Itzá for anthropometric purposes. Mr. Scholes is in Spain collecting archive materials bearing on the history of the Maya; Mr. Roys is translating and annotating the historical sources in the Maya idiom. All these projects are making satisfactory progress. There remain, however, a number of really essential additions to the list.

The need for a topographic survey of the Guatemala highlands has already been stressed. The geographic work in that region should also be supplemented by specific attention to geological and volcanological problems. The geology of the Petén and of northern Yucatán must eventually be carefully investigated. Nothing at all has as yet been done upon the basic environmental factor of climate. Agronomy clamors for attention. The biological field has hardly been scratched.

1.21.

ALFRED V. KIDDER

Division of Historical Research

YB 32:81-83, 1933

The Division of Historical Research comprises three Sections. The Section of Aboriginal American History concerns itself with studies relating to the rise of native civilization in the New World, its two principal fields being the Maya area in Mexico and Central America and the Pueblo area of southwestern United States. The Section of United States History conducts research upon the growth of Western European institutions in the Americas. The Section of the History of Science strives to bring together and to make available for interpretation the at present widely scattered and uncoordinated data which bear, upon the acquirement and transmission of ordered knowledge.

SECTION OF ABORIGINAL AMERICAN HISTORY

As has been stated in previous reports, the present major effort of the Section is the attempt to develop a many-sided attack upon the historical problems of those parts of Mexico and Central America which, in pre-Columbian times, were the seat of the Maya civilization.

Carnegie Institution's first work in the Maya field was purely archaeological. Through exploration, and subsequently by excavation, studies were made of the distribution of Maya remains, and information was gathered regarding the nature of Maya culture at various periods. Progress of the research brought increasing realization of the importance of the role played by the Maya in building up aboriginal civilization in Middle America; and it also became obvious that the career of the Maya, were it sufficiently well understood, could be counted upon to provide valuable materials for the comparative study of civilization as a social-evolutionary process. But at the same time it was evident that to be of maximum usefulness for Middle American culture history and particularly for broader comparative purposes, our knowledge of the Maya must be much more comprehensive than we could hope to make it by archaeological means alone. For, as was stressed in the above-mentioned reports, the spade of the excavator can recover only factual data, and the interpretation of those data, in terms of the factors motivating and directing human action, can only be accomplished in the light of information as to the physical environment in which the Maya lived, as to their racial and menial make-up, as to their recent history

and present, social practices. With none of these problems is the archaeologist fitted to deal. So assistance was solicited, from workers in many non-archaeological fields, and there has developed a program of investigation amounting to a general scientific survey of the Maya area.

Archaeological work and research in documentary history are going forward under the auspices of this Division; studies on physical anthropology are being prosecuted by the Institution's Department of Genetics; the food supply of the modern Maya and its effect upon basal metabolism are studied by the Nutrition Laboratory; cooperation with University of Chicago permits work on linguistics and social anthropology; with the School of Public Health of Harvard University upon tropical medicine; with Clark University and University of Florida upon geography; with University of Michigan upon botany and zoology; with Duke University upon the biology of the inland waters of Yucatán.

During the year under review, notable progress has been made along many lines. At Chichén Itzá the program of excavation and repair of outstandingly important structures has been advanced by completion of work upon the Monjas, the most complex and architecturally the most instructive building in the city. An expedition into Campeche resulted in discovery of several new sites, as well as in closing the gap which has hitherto existed between the territory explored from the north and that reached from the south. At Uaxactún the investigation of the so-called "Palace" was continued; and various smaller structures yielded materials for the ceramic studies which are proving so valuable for reconstruction of the cultural history of the Old Empire Maya. The ethnological survey of Yucatán has been forwarded by observations upon modern life in Mérida, the capital; in Dzitas, a large provincial town; and in the primitive communities in the forests of the former Territory of Quintana Roo. Anthropometric record of the development of Maya children has continued in certain villages near Chichén Itzá. There was begun a botanical survey of the grasslands of the Department of the Petén in northern Guatemala, a by-product of which was the finding of two large ruined cities, hitherto unknown; and, during the summer of 1932, a party investigated biological conditions in the cenotes, or natural wells, of Yucatán. Archive work in Spain and study of native Maya literature continued. The history of certain outstanding Maya families has been traced.

The above, and certain smaller but no less important, researches are reported upon in the body of this report. The mere listing of so considerable a group of activities implies the gathering of great amounts of information as to the past and present life of the Maya;

and as to the environments, both physical and social, in which they have pursued their career. All this work, much of it carried on under great hardship and no little menace to health; all the toilsome accumulation of facts; all the expenditure of energy and funds, has been undertaken in order to find out how and why the Maya raised themselves from savagery to civilization, how and why that civilization fell, and what has brought about the conditions under which the Maya exist today. Could such knowledge even partially be attained, a highly significant contribution would be made to our understanding of that baffling creature, man. For the more we learn of his past, the more closely we analyze his history throughout time and across the continents, the more clearly can it be seen that in spite of the multiplicity of blindly fortuitous circumstances which have shunted him in this or that direction, which have brought some groups to dominance and others to obliteration; that in spite of all this, man's destiny has been shaped by the possession of certain attributes, or potentialities, or urges, or whatever one chooses to call them, which have resulted in fundamental similarity of development among all peoples. So the story of such a group as the Maya, who have run the full gamut of success and vicissitude, cannot fail to be of deep significance for the synthesis of human history which must some day be attempted. However, and this is the crux of the whole matter, no amount of fact-gathering will by itself tell that, or any other, story. The raw data must not only be collected, they must also be correlated in such a way as to bring insight into the workings of those infinitely complex concatenations of exterior circumstance and inherent human qualities which have always directed and will ever continue to direct the course of history.

The task of correlation and interpretation is manifestly of a far higher magnitude of difficulty than the accumulation of materials. It may, indeed, well be doubted whether it is possible to perceive the nature and to evaluate the action of the forces which have governed the career of any ancient people. But if the attempt be not at least envisaged, archaeology becomes mere antiquarianism! This is so self-evident that its statement here would be unnecessary, were it not for the fact that our survey is a deliberately planned experiment, undertaken with the express purpose of determining whether such correlations and such interpretations are possible; whether, in short, archaeological studies can sufficiently be illuminated and vivified to render them productive of valid historical conclusions.

Results can not, in any case, be quickly achieved. Merely to assemble the requisite mass of raw data will require long effort. Much time and large funds will be needed for the many necessary investigations. But it is

not possible to begin too soon to look forward to the ultimate goal. Every worker can produce materials which will be more serviceable for his own purposes, and of much greater usefulness for the eventual synthesis, if he sees his activities in their relation to the whole project and keeps in mind the broader ends for which they are undertaken. To do this the members of the survey must know what is going on; the success of the program depends, indeed, upon close touch being kept between all participants. Current research can of course be followed in the *Year Book* and by reading the conclusions, at least, of all publications of the survey. Personal contacts are of even greater importance. By word of mouth one can learn most effectively what one's colleagues are thinking and deducing, what they really see in their work, what they are planning for the future. Through such intercourse comes the sympathetic understanding of others' problems, the appreciation of their difficulties, and the willingness to give as well as to get, which, alone can develop the team-play so essential for the success of our most difficult undertaking.

1.22.

ALFRED V. KIDDER

Division of Historical Research

YB 33:81-82, 1934

The Division of Historical Research comprises three Sections. The Section of Aboriginal American History concerns itself with studies relating to the of native civilization in the New World, its two principal fields being Maya area in Mexico and Central America and the Pueblo area of southern United States. The Section of United States History conducts research upon the growth of Western European institutions in the Americas. The Section of the History of Science strives to bring together and to make available for interpretation the at present widely scattered and uncoordinated data which bear upon the acquirement and transmission of ordered knowledge.

SECTION OF ABORIGINAL AMERICAN HISTORY

The Section is engaged in studying the career of the Maya Indians, from the earliest times to the present. Its primary objective is of course to learn the facts of Maya

history. As an aid, in this endeavor, it is also working on the language, ethnology and physical anthropology of the modern Maya. At the same time, attempt is being made to gather data regarding the environment in which these people have lived and are living, for without knowledge of this sort it is obviously impossible fully to understand why the pre-Columbian Maya achieved intellectual and artistic pre-eminence among the Central American aborigines; why their civilization fell; and how they have reacted to conditions forced upon them by the coming of European conquerors. The program of the Section therefore falls naturally into two parts, the one concerning itself with events and social conditions, the other with the ecology of the area in which those events took place and those conditions arose. The ultimate aim of the research is to paint, in the light of these two categories of information, a true historical picture.

The framework, so to speak, of the program is provided by the archaeological investigation, which covers the pre-Columbian period; and by documentary research, dealing with the four centuries that have elapsed since the discovery of Yucatán. Both endeavors have perfectly definite objectives, the reconstruction of sequent phases of Maya history. The simplicity of their aims and the fact that, as both are carried on by staff members of the Institution, their progress can be uninterrupted renders the planning and execution of the archaeological and documentary undertaking a relatively easy matter. The environmental studies, as well as those in linguistics, ethnology and physical anthropology, serve to illumine and render interpretable the findings of excavator and archivist. The direction which they must take is therefore to some extent dependent upon current needs of the central historical investigation. Furthermore, this group of projects is being carried out, for the most part, by associated or cooperating scholars, rather than by staff-members. Hence the men concerned with them can not usually devote full time to the work. Their field trips, too, must be made to fit in with other duties. This necessitates a certain degree of opportunism in developing the non-historical elements of the program. But it permits utilization, even if only intermittently, of the services of a great number of expert specialists than could well be mobilized by the Institution or any other single agency; and, most important of all, it insures a constant influx of fresh mental blood, new ideas, new methods of approach, new techniques. In spite, then, of its many administrative difficulties, and of the evident danger of diffusion of effort, it seems that a coordinated investigation of the sort which the Section is attempting to make is the most effective method for attacking with limited funds and personnel the problems of Maya history.

The most important event of the period under review was the granting by the Mexican government of a new contract to Carnegie Institution of Washington for scientific research in the Republic. Running for five years with option of renewal for an additional five years, this contract permits continuation of archaeological work at Chichén Itzá and also provides for pursuing, in other parts of the Republic, the investigation of problems in Maya history raised by the excavations in Yucatán. Throughout the 10 years during which the former agreement was in effect, the Institution has been accorded uniformly cordial and effective cooperation from all governmental authorities, both in Mexico City and in Yucatán. Thanks are especially due to Lic. Don Narciso Bassiols, Secretary of Public Education, and to Ing. Don José Reygadas y Vertiz, Director of the Department of Prehistoric Monuments, with whom Dr. Morley was in conference in December 1933. Both these gentlemen gave freely and courteously of their time to consideration of all questions involved in the renewal.

The arrangements now in force insure further prosecution, under the most favorable circumstances, of the Institution's program. Of even greater significance is the fact that the Institution is permitted to continue working side by side with Mexican scholars upon scientific problems of mutual interest, and thus to have a part, however small, in developing the close intellectual relations which are so essential for international amity. Similar opportunities are offered by the Institutions researches in the Republic of Guatemala.

1.23.

ALFRED V. KIDDER

Division of Historical Research

YB 33:91-93, 1934

PROBLEMS FORMULATED

At the beginning of this section, it was stated that various problems had as result of the 10 years of excavation at Chichén Itzá, whose solution, or perhaps better whose fuller formulation, requires investigation at other sites or in other regions. Although materials have of course been found at Chichén Itzá which bear on every possible phase of Maya history, certain of research seem of outstanding importance.

"NAHUA" ARCHITECTURE

Most structures at Chichén Itzá contain many features foreign to Classic Maya architecture and, indeed, to what seems to have been contemporary building practice in the northern part of Yucatán. Investigation has proved that all such structures are late. Their peculiarities have generally been ascribed to Nahua influence, because Nahuatl groups from continental Mexico are known to have entered Yucatán during the troublous centuries preceding the Spanish Conquest. Furthermore, certain elements of the so-called "Nahua" style (e.g. the serpent column, the vertically walled ball-court with rings, etc.) occur in the Mexican homeland of the Nahua peoples. But while presumption is very strong that the invaders were responsible for the development of the late architecture of Chichén, the extent of their contribution can not yet be gauged. It is possible, for example, that the peculiarities in question were of independent local origin and were subsequently copied in Mexico. A perhaps more plausible supposition is that the Nahua introduced a novel religious cult and a few more or less rudimentary architectural innovations; that headquarters of this cult were established at Chichén; and that Maya architects there brought the new architectural style to such full flower that it struck back, so to speak, into the region from which part of its stimulus originally came.

The above is no more than a theory. But it is susceptible of proof or disproof. Thanks to the work at Chichén, we are now thoroughly conversant with the details of the late buildings. We are therefore well equipped to begin search in the direction of Mexico for the prototypes, if such exist, of the elements which differentiate them from other Maya structures. This investigation promises much of interest, for the coast-plain of southern Veracruz, which is the logical point for first attack, is archaeologically next to unknown. It should yield valuable data not only on the question just discussed, but also upon the history of architecture in highland Mexico.

YUCATECAN ARCHITECTURE

A relatively few buildings at Chichén Itzá (e.g. Monjas, Akabzib, etc.) conform to the standards of what is called, "Renaissance" Maya architecture. Indubitable evidence shows them to antedate the "Nahua" structures. Their closest homologues seem to occur at the cities of the Puuc district to the south and west. It is therefore desirable carefully to compare the ground-plans, the masonry, and the ornamentation of the older Chichén Itzá temples and those of the Puuc, as the first step in the general survey which must be made of New Empire Maya architecture. At present our knowledge

of this subject is woefully meager. Chichén, Uxmal, Cobá, a few sites on the East Coast, and Labná in the Puuc, are the only cities which have undergone effective investigation. The study of the Puuc area should be completed, as it contains many ruins representing what is probably to be regarded as the norm of the Yucatecan renaissance. The known ruins of northern Yucatán ought also to be worked and exploration made of considerable archaeologically virgin territory which still exists in that part of the peninsula. Edzná, Holactún, Jaina and other sites in the west should next be examined because, upon stylistic grounds and in the possession of early dates, they appear to offer specially favorable opportunities for gathering information as to the arrival of southern Maya culture in Yucatán. With the above projects completed, one would be in position to attack the extremely important Chenes and Río Bec areas which, geographically at least, connect the New Empire field with the Old Empire regions of the Petén, the Usumacinta and Chiapas.

During the past year Mr. Pollock, who with Mr. Roberts is engaged in a joint architectural-ceramic study of the Maya, has been digesting the literature in preparation for carrying out the above-described program. Both it and the search for the origins of the Nahua style would strike backward from the known to the unknown, the former toward the beginnings of purely Maya architecture; the latter toward the sources of the mixed architecture of the late Chichén Itzá temples.

CERAMIC PROBLEMS

Knowledge of the Maya has been on the one hand greatly advanced and on the other hand seriously retarded by the fact that many ruins can be dated by means of the hieroglyphic inscriptions. These records provide so quick and easy a method for recovering the main outlines of Maya history that they have received the lion's share of attention, to the very unfortunate neglect of such less spectacular but more abundant, and in some ways more reliable, criteria as architecture and ceramics. An example of the results of this tendency is provided by our present inability to bring archaeological evidence effectively to bear upon the problem of the correlation of Maya and Christian chronology, because we do not know sufficiently well the "dirt" archaeology of the Maya. It has therefore been a constant aim of the Section to foster this side of Maya research, particularly in the field of ceramics. The promising results obtained at Uaxactún have already been mentioned. Equally significant materials have been gathered at Chichén Itzá.

Mr. Roberts has devoted much time to stratigraphic and analytical work upon the wares of Chichén Itzá.

He has identified a pre-Nahua period, characterized by wares similar to those of the Puuc region; a period corresponding to the time of the Nahua influence in architecture; and a late period during which certain earlier Maya forms returned to favor. His excavations at other sites in northern Yucatán have shown that there exists a still earlier type of pottery, akin to that of the Old Empire cities of the Petén. The historical implications of such findings are obvious. But the investigation has hardly gone beyond the stage of providing hints and indicating hopeful leads for further research. The ceramic study will be continued in conjunction with Mr. Pollock's work on the architecture. For the time being, at least, it will follow the same program. The linked enterprises should yield much information as to the cultural trends and the ethnic movements that led to the establishment of the New Empire cities; and they should also throw light upon the very vexed question of the cultural, and even, by implication, upon the political, relationship between Chichén and other great centers which existed in the peninsula during the centuries immediately preceding the Spanish Conquest. If this can be done, we shall have an invaluable means of checking the accuracy of the Chilam Balam records and of determining how much reliance should be placed upon them as evidence for the correlation of Maya and Christian chronology.

HOUSE-MOUND STUDY

The history of "Nahua" architecture, of Yucatecan architecture, and Yucatecan ceramics are the three most obvious archaeological problems arising from the excavations at Chichén. There are, of course, many others. For example, we know next to nothing as to what Maya "cities" really were. We do not know whether or not they were, in our sense of the word, cities at all. The great groups of religious structures may or may not have been centers of correspondingly large urban populations. Our ignorance of the distribution and the daily life of the common people is abysmal. Much information upon these most important matters can be had from post-Conquest documents, but it should be verified and amplified by study of house, as distinguished from temple, remains. Excavations are needed in the inconspicuous little mounds so abundant at Chichén Itzá, which presumably cover whatever is left of the domestic structures. Intensive surveys of selected areas, such as have been carried out by Mr. Smith at Uaxactún, should also be undertaken at Chichén and elsewhere in the north to determine the density and the distribution of house mounds. As a start toward such a project, Mr. Wauchope has undertaken a study of modern domestic structures in Yucatán and Guatemala.

1.24.

ALFRED V. KIDDER

Division of Historical Research

YB 34:113–115, 1935

The Division of Historical Research comprises three Sections. The Section of Aboriginal American History concerns itself with studies relating the rise of native civilization in the New World, its two principal fields being the Maya area in Mexico and Central America and the Pueblo area of southwestern United States. The Section of United States History conducts research upon the growth of Western European institutions in the Americas. The Section of the History of Science strives to bring together and to make available for interpretation the at present widely scattered and coordinated data which bear upon the acquirement and transmission of ordered knowledge.

SECTION OF ABORIGINAL AMERICAN HISTORY

To the panscientific survey which the Section is carrying on in the Maya field there have been added, during the past year, two important new activities, the Copán Project and the Maize Survey.

The Copán Project, under the direction of Mr. Strömsvik, is a joint undertaking of the Government of Honduras and Carnegie Institution, the Institution's share of the expense being covered by a grant from Carnegie Corporation. At Copán, one of the greatest centers of Old Empire culture, the Institution is continuing its effort to conserve and make available for scientific study and lay observation outstanding examples of the architectural and sculptural art of the ancient Maya. The repair of the Temples at Chichén Itzá was done for the same purpose, as was the mending and re-erection, in 1934, of the stelae at Quiriguá. Copán fits well into this program, for its sculptures are not only among the finest ever produced by the Maya, but were also in urgent need of attention, many of them lying so broken and scattered by earthquakes and the impact of falling trees that their beauty could not be appreciated, nor could it be hoped that their fragments would long survive the destructive effects of brush fires and exposure to the weather. Results of Mr. Strömsvik's very effective work during the past season are presented in a later section. Here should most warmly be acknowledged, the invaluable cooperation of the Honduran government, which has provided all labor and free transportation from the border of all equipment and supplies. Furthermore, the Min-

ister of Education, Dr. S. Rodríguez, and President Carias' personal representative, Sr. Carlos Izaguirre, repeatedly visited Copán during the season to confer with Mr. Strömsvik and to see that everything was being done to facilitate the work.

The second new development was establishment of cooperation with the United States Department of Agriculture. Through the good offices of Secretary Wallace and of Mr. Knowles A. Ryerson and Mr. Frederick D. Richey, former and present Chiefs of the Bureau of Plant Industry, the Institution is privileged to have the assistance of Messrs. Collins and Kempton for attack upon the fundamentally important question of the origin of maize and to make studies of the maize agronomy of the Maya area. Maize was the cereal which made possible the rise of pre-Columbian American civilization, but its ancestry is problematical and we do not certainly know where, nor even approximately when, it was first brought under cultivation. Thus we can do little more than theorize regarding the place or the time of the beginnings of the higher New World cultures, including, of course, that of the Maya. And the whole career of the Maya, like that of any farming people, must have been most potently influenced by the agronomic possibilities of the lands they cultivated and by the methods which they worked out for growing their staple crop. Without data upon these subjects, gathered by experts, it is impossible to make reliable estimates of size and distribution of population, or to understand the probable way of life of the ancient people.

The Copán Project and the Maize Survey add to a group of researches which was already extensive. The Division is now active archaeologically in the Mexican states of Yucatán and Campeche; in Guatemala in the highlands of Petén; in Honduras. It has also, in cooperation with Field Museum, been conducting excavations in British Honduras. In addition, it is carrying on, independently or with other institutions, studies of the documentary history of the Maya, ethnological and linguistic investigations in Yucatán and Guatemala, work in human geography in the same regions; as well as gathering data, whenever opportunity permits, upon the climate, geology, health conditions and the botany and zoology of the Maya area.

This heavy and varied program has been undertaken with belief that in any historical study one must utilize the resources of many disciplines and take advantage of all possible side-lights. Our investigation, however, is frankly experimental, in that it still remains to be determined whether or not the practical, and intellectual difficulties of a coordinated panscientific survey can successfully be overcome. Facts, of course, will accrue in abundance. If they be intelligently gathered and clearly set forth, we shall have added significantly

to the sum of recorded knowledge. But shall we be able to digest our masses of raw data in such a way as to reach understanding of the all important whys and wherefores of Maya history, and by so doing contribute toward comprehension of the infinitely complex interaction of those biological, environmental and social forces which govern the evolution of man?

Obviously, synthesis and interpretation should be the ultimate goals of all historical research. Particularly must they be held as objectives during prosecution of such a program as ours. For each investigator is brought so quickly into virgin fields, is confronted with so great a body of intensely interesting and puzzling new material that he runs the constant danger of immersing himself in blindly intensive specialization. And in the same way that the individual worker risks entanglement in detail, with indefinite postponement of the essential process of reaching conclusions, so the program as a whole may easily expand and ramify to such an extent that correlation becomes impossible.

The element of time must also be taken into account. The materials of Maya archaeology are practically inexhaustible. Profitable excavation could go on for a century. Environmental studies, in a region of such diverse topography and climate, might be continued without limit. Furthermore, one of our principal tasks is the gathering of information as to present-day conditions in Central America. This is undertaken to throw light upon the past, and also because the region forms an ideal field for research upon problems of racial and cultural contacts which are of fundamental importance for the modern world. And here again one sees no place to halt our researches, for the present is always with us, change is constantly going on, significant new phenomena develop from year to year.

There is, then, no clearly discernible stopping place for our work, either in space or in time. Certainly the project should be continued for a number of years. There are certain known gaps in our knowledge which must be filled. Many data have to be accumulated before synthesis can become worth while. A considerable period is required to assemble a group whose members can, by practical experience, be brought to see the benefits of close intellectual cooperation and the pooling of information. So, there being no natural termination for our program, it seems necessary to set an arbitrary time limit by establishing a date when each investigation shall come to a close, all findings be recorded, definite conclusions be stated, and formulation be made of problems for future research. Ten years are believed sufficient to permit current researches to be carried to this stage. New projects will only be undertaken if they can be completed within that time. The arrangement will insure that the older

members of the Section's staff shall have completed their work at retirement. And for the younger men it should also be of benefit, for it is good for any student periodically to bring his research to a head, check up, draw conclusions, and make a fresh start.

The above decision implies no doubt on the part of the Chairman regarding the value of the Section's program, nor any feeling that it should be discontinued at the close of the ten-year period. The pause is designed to permit ourselves and our colleagues to judge whether or not the project is so conceived and so prosecuted as to give promise of attaining the historical results for which it was undertaken. The conclusions which we present should also enable the Trustees of the Institution to reach decision as to the nature and scope, of future activities in aboriginal American history.

1.25.

ALFRED V. KIDDER

Division of Historical Research

YB35:111-115, 1936

The Division of Historical Research comprises three Sections. The Section of Aboriginal American History concerns itself with studies relating to the rise of native civilization in the New World, its two principal fields being the Maya area in Mexico and Central America and the Pueblo area of southwestern United States. The Section of United States History conducts research upon the growth of Western European institutions in the Americas. The Section of the History of Science strives to bring together and to make available for interpretation the at present widely scattered and uncoordinated data which bear upon the acquirement and transmission of ordered knowledge.

The setting up of the Division in 1929 resulted in simplification of administrative procedure and in the achievement of certain economies. The fundamental purpose of the reorganization was, however, to promote intellectual intercourse between all Institution workers concerned with man's career; and through study of topics of common interest to foster attitude of mind which, it was thought, should lead to clearer formulation of and more effective attack upon the excessively complex problems of social and evolution.

The three groups now functioning as sections of the Division were originally formed for the exploita-

tion of limited and, at first sight, more or less, unrelated fields. The groups, for the most part, are still actively pursuing their own special objectives: But certain elements of the sections' researches are gradually being reshaped or reorientated in such a way as to approach fulfillment of the Trustees' desire for more closely integrated, Divisional program. Thus, the study of the Maya, inaugurated as a purely archaeological project, has been broadened to include consideration of the post-Spanish period, thereby bringing it into direct touch with documentary history. At the same time there have been added to the historical group men with interests in Latin America, whose work serves further to bridge the gap between documentary history and archaeology. Lastly, the Section of the History of Science has assigned one of its members to studies bearing upon the vexed question of the correlation of Maya and Christian chronologies. It is hoped that the above modifications will tend "to widen points of view" and, more specifically, that they may produce a nearer alliance between documentary history and archaeology. The latter end is unquestionably most desirable. Both groups are attempting to reconstruct and to interpret the past of the human race. But history deals with peoples whose stories have been perpetuated by the written word; archaeology with those who have left few or, in most cases, no documentary records. This difference in source materials has led to wide divergence of interest. Historians, because their documents, save those of the last few centuries treat largely of wars and doings of rulers, have perforce concerned themselves for the most part with military and political events. They have accordingly been able to gather relatively little significant information regarding cultural and economic settings. Archaeological evidence, on the other hand, consists exclusively of material remains. Hence archaeologists have become primarily students of culture and are unable, as a rule, even to speculate to the enormously important roles played by individuals, dynasties, national groupings.

Another factor which has hindered association between history and archaeology is the mutual exclusiveness, both geographically and chronologically, of their respective fields of endeavor. Historians devote the lion's share of their attention to recent events in the Mediterranean basin and in West Europe and to happenings still more recent in regions which West European civilization has of late invaded; whereas archaeologists have to do only with the pre-literate past of the Mediterranean and of Europe, with the story of other lands prior to the great European outflow. The historians consider in great detail (because their materials are abundant) a short period and a small area; archaeologists treat more broadly (because evidence is both scanty and expensive to gather) enormous

spans of time and huge terrains. The two disciplines have naturally developed different viewpoints and different methodologies; nor are their findings often readily comparable.

Actual fact-finding as well as judgment regarding the bearing of data upon specific situations must always remain the primary duty of the two specialized groups. But for the carrying out of even such preliminary process as these, both history and archaeology might well profit by association. Archaeology needs the aid of the more mature and experienced historic disciplines in development of better methods for the collection, the ordering, and particularly for the evaluation of evidence. The archaeological record is still so fragmentary that archaeologists, striving to read meaning into it, have tended to reach the stage of reconstructive hypothesis too early. Hypotheses not immediately found fallacious have also too readily been accepted as proven, and search for further pertinent facts has not always been prosecuted with sufficient determination.

While archaeological thinking has doubtless been over-loose, historical reasoning has perhaps gone to the other extreme through reliance so implicit upon the written-word that nothing is taken into account which is not to be found in documentary sources. Furthermore, the average historian has so strong a predilection for what might be called the narrative aspects of his study that he too often neglects the precious incidental fragments of cultural, racial, or environmental information, the historical potsherds, so to speak, that are tucked away in books and manuscripts.

It seems certain that both disciplines could profit from rapprochement not only in the matter of mental attitudes and methodologies, but also through better acquaintance with each other's results. Archaeology can not interpret its findings save in the light of what history shows that men have done under given conditions; history must turn to archaeology for understanding of the prehistoric peoples who laid the foundations of the cultures with which they are concerned.

So while the autonomy of the disciplines should without question be preserved, it is equally clear that mutual understanding and mutual respect should be fostered. And a start toward this highly desirable end can probably most effectively be made by the prosecution of researches in the many fields where history and archaeology overlap and where problems of common interest can be made the object of joint attack.

Such cooperative studies have not often been attempted. The Division's program is therefore to a certain extent experimental. One difficulty which can be readily be foreseen is that of synthesis. Final summation can certainly never be achieved, even in so relatively small an investigation as that of Maya history.

New materials will indefinitely continue to come to light and history is being made from day to day. Events of the coming years may alter radically our interpretation of evidence now in our hands. But correlation of accruing data should nevertheless be a constant and continuing process; and from our facts we should strive to draw inferences which, as President Merriam has indicated, may perhaps serve to sharpen and strengthen contemporary social judgment.

The Division has assumed a heavy task. Consideration of any aspect of man's career brings difficulties of an order far greater than are inherent in any other research. And in organization of such a project one encounters a strange paradox. On the one hand, the vast increase of knowledge, and its inevitable compartmenting by specialized sciences, seems to render reassembly and comprehension well-nigh hopeless. But on the other hand, there is evident throughout the intellectual world a general trend toward unification. Synthesis is becoming, in a way, more readily attainable than ever before. In the past facts appeared to be mutually contradictory. Modern learning, however, shows that all truths are interrelated. Chemistry and physics are striking downward to common fundamentals; zoology and botany are rapidly merging with the resultant newer biology is joining hands with the physical sciences. Similar tendencies are becoming manifest in the human field, where geography, ethnography, sociology, and psychology are constantly drawing more closely together. History and archaeology, although they should more definitely be conjoined than perhaps any two of the above, have not as yet achieved a working alliance. They are not only interdependent, but both can contribute to, and learn from all other groups. If the Division can, by bringing history and archaeology together in a single field, serve to further in any way the development of a better integrated science of man, it will most amply have justified its existence.

SECTION OF ABORIGINAL AMERICAN HISTORY

The archaeological investigations which constitute the Section's major activity are being supplemented, according to a carefully worked-out program, by studies of the environment in which the Maya lived, by researches upon the modern Maya, and upon the documentary history of the post-Columbian period, all of which are designed to render more readily interpretable the necessarily fragmentary archaeological record.

In the correlated undertakings just mentioned, the section has received invaluable cooperation from other departments of Carnegie Institution from many outside agencies, and from individuals. The Department

of Genetics has supported the extremely significant work of its staff member, Dr. Steggerda, on physical anthropology of the living Maya, on Yucatecan agronomy, and on various aspects of present-day Maya life; the experts of the Geophysical Laboratory have given generously of their time to forward Miss Shepard's technological studies of Southwestern and Maya ceramics; the Department of Terrestrial Magnetism has trained the Section's field men in the taking of astronomical observations for determination of the geographical location of ruins, has loaned equipment, and has checked results; the Nutrition Laboratory has made many analyses of Maya foods and Dr. Benedict has collaborated with Dr. Steggerda in publications upon the basal metabolism and the diet of the Maya; the Division of Plant Biology, by kindness of Dr. Shreve of the Desert Laboratory, has made identifications for the Chairman of plant products from ancient dwellings in Arizona and New Mexico.

The University of Michigan biological survey of Central America, carried on at its own expense, is resulting in acquirement of a great mass of information upon the zoology and botany of the Maya area. One result of this investigation is a series of botanical papers, published by the Institution under the editorship of Messrs. Bartlett and Lundell. Duke University, through Dr. Pearse and Dr. Hall, is contributing to knowledge of environment through researches upon the fauna of the inland waters of Yucatán. The United States Bureau of Plant Industry has supplied the services of Messrs. Collins and Kempton, and the United Fruit Company those of Dr. Popenoe, for the investigations upon Maya agronomy and the genetics of maize.

With the University of Chicago there has for some years been in effect an arrangement whereby members of its staff have served as half or part-time employees of the Institution. In this way the Division has benefited by the wise and energetic direction of its ethnological program by Dr. Redfield, Dean of Social Sciences in the University; and has been able to carry on a survey of the Mayan linguistic stock by Dr. Andrade. Also by a part-time arrangement, Miss Shepard, of the Laboratory of Anthropology, has worked on ceramic technology. The Peabody Museum of Harvard University and the Laboratory of Anthropology have supplied quarters to many Division investigators; and the splendid Maya libraries of the Peabody Museum and the Department of Middle American Research of Tulane University have been placed unreservedly at our disposition. Both the last-named institutions and the Museum of the University of Pennsylvania have permitted study and even publication of unique manuscripts.

Contributions by individuals have been of equal importance. Dr. G. C. Shattuck of the Harvard School of Public Health has not only donated his time for

field work bearing upon problems of disease, but has assumed the expense of preparing his medical monographs on Yucatán and Guatemala for the press. Mr. Lawrence Roys has personally defrayed the cost of several trips to Yucatán to study the structural features of Maya architecture; Mr. Ralph L. Roys and Mr. Robert E. Smith, who receive purely nominal salaries, are carrying on key investigations of post-Conquest Maya documents and of Uaxactún pottery, respectively. Lastly, Miss Lila O'Neale, of the University of California, has devoted her sabbatical year research upon Guatemalan textiles.

Scientific activity in foreign countries naturally requires cooperation of governments concerned. In Mexico, Guatemala, and Honduras the Institution has received most effective aid from the authorities: Lic. Toro, Director of the Department of Monuments of Mexico, and Ing. Ignacio Marquina, of the Section of Pre-Hispanic Monuments; Lic. Antonio Villacorta, Secretary of Public Education of Guatemala and Sr. Carlos Villacorta, Director of the Guatemala National Museum; Dr. Jesus Rodríguez, Secretary of Public Education of Honduras, have all striven to facilitate the work of the Institution. The government of Honduras has participated actively in the excavations at Copán, defraying all costs of labor and of the transportation of supplies.

This lengthy statement of cooperations is presented here not only to express the Division's deep gratitude for effective assistance, but also to make clear the many types of relationship, both practical and intellectual, involved in prosecution of so many-faceted a program.

1.26.

ALFRED V. KIDDER
Division of Historical Research
YB 36:135, 1937

The Division of Historical Research comprises three Sections. The Section of Aboriginal American History concerns itself with studies relating the rise of native civilization in the New World, its two principal fields being the Maya area in Mexico and Central America and the Pueblo area of southwestern United States. The Section of United States History conducts research upon the growth of Western European institutions in the Americas. The Section of the History of Science

strives to bring together and to make available for interpretation the at present widely scattered and coordinated data which bear upon the acquirement and transmission of ordered knowledge.

SECTION OF ABORIGINAL AMERICAN HISTORY

The year's investigations have yielded an unusual amount of valuable material. Of outstanding archaeological importance were data upon ballcourts and upon the great Hieroglyphic Stairway gathered by Mr. Strömsvik and Dr. Morley at Copán; a remarkable fresco and hieroglyphic inscription were found by Mr. A. L. Smith at Uaxactún; from the Chairman's excavations near Guatemala City came a large collection of pottery, jades, and other mortuary objects from an area hitherto little known. Work upon the living Maya under direction of Dr. Redfield resulted in the rescuing, by Sr. Villa, of much knowledge regarding the fast-fading native culture of the Indians of eastern Yucatán. The historical research was rewarded by discovery of unsuspected documentary riches in the archives of Guatemala.

1.27.

ALFRED V. KIDDER
Division of Historical Research
YB 37:137-141, 1938

The Division of Historical Research comprises three Sections. The Section of Aboriginal American History concerns itself with studies relating to the rise of native civilization in the New World, its two principal fields being the Maya area in Mexico and Central America, and the Pueblo area of southwestern United States. The Section of Post-Columbian American History conducts research upon the growth of Western European institutions in the Americas. The Section of the History of Science strives to bring together and to make available for interpretation that present widely, scattered and uncoordinated data which bear upon the acquirement and transmission of ordered knowledge.

It is the policy of the Division that no new unit of research shall be undertaken until at least the factual results of previous activities in the field concerned have been made of record. A large share of the Division's

energies, during the past year, has accordingly been devoted to the working up of accumulated data and the writing of reports. This has served to direct special attention to problems of publication.

In general, first class factual literature in the social sciences and the humanities is pitifully scanty. In these, as in the natural sciences, the collection and the setting forth of data must precede synthesis and the drawing of conclusions. And because of the bewilderingly faceted life of man and the infinitely wide range of man's doings throughout the ages, in every conceivable type of historical setting, and in all possible sorts of physical environments, the human record must, for the present at least, be largely descriptive. Expression by formula is not feasible, nor can there often be used the condensed forms appropriate for exposition of the regularly repeating phenomena of biology. Publication, therefore, even in the case of the relatively small group of studies with which the Division is occupied, is inevitably voluminous; archaeological papers must carry great amount of illustration. Costs, accordingly, are bound to be heavy; but, on the other hand, it is only fair to point out that acquisition of most anthropological and historical materials is relatively inexpensive, there being little or no call for physical equipment, for laboratories or instruments. However, neither need for much publication nor cheapness of fact finding justifies waste. Also, from the point of view of utility, it is essential that results be thoroughly digested and succinctly stated.

Because of the vast increase in scientific writing of all sorts, as well as because of the rapidly mounting costs of printing, it is certain that present methods for dissemination of knowledge will have to be rather drastically overhauled, those of the disciplines concerning man perhaps most severely of all. How this may be brought about, in the case of its own product, is being given anxious consideration by the Division. Those of its reports which are now well along in preparation will be submitted in forms sanctioned by previous practice. But it is probable that current studies of the situation will result in recommendations looking toward much simplified presentations and considerable reduction in manufacturing costs.

SECTION OF ABORIGINAL AMERICAN HISTORY

The work of the Section in the Maya field consists of archaeological excavation, exploration, and the comparative study of certain particularly important aspects of Maya culture, such as the hieroglyphs, architecture, sculpture, and pottery. The Section also sponsors research in ethnology and linguistics, and cooperates with other agencies in biological, geological, and other

studies designed to throw light on the environment in which the pre-Columbian Maya developed their remarkable civilization, and in which their descendants live today side by side with their Spanish conquerors. Workers in the Sections of Post-Columbian American History and the History of Science, carrying forward investigations in their own fields add to the large body of information being accumulated in regard to the Maya.

As has already been stated, much of the time of the Division staff has, during the period under review, been spent in making the above information available through the writing of reports. Outstanding among several manuscripts so brought to completion are those of Dr. Morley, who has in press his compendious monograph on the hieroglyphic inscriptions of the ruined Maya cities of Petén, the fruit of over 20 years of study; and of Mr. Morris, whose report, embodying the results of his equally long-continued investigations in the very important Basket Maker and Pueblo sites of northern New Mexico and adjacent regions, is ready for the printer. These two monographs will always rank as fundamentally significant contributions to the literature of their respective fields. Progress in working up the results of other activities is noted below.

UAXACTÚN.

Excavation at Uaxactún, in the Department of the Petén, Guatemala, was discontinued in the spring of 1937. This apparently oldest of First Empire Maya cities was under investigation for no less than 11 seasons. Findings of the first years have been recorded by Dr. and Mrs. Ricketson in a volume recently issued (Ricketson and Ricketson 1937). The six years 1932-37 were largely devoted to study of the so-called "Palace," a multi-chambered structure which grew by accretion through a long period of time, and whose thorough dissection by A. L. Smith yielded extremely valuable data upon architectural development and the succession of pottery types. Mr. Smith and E. M. Shook, his associate during most of the work on the Palace, have been engaged, since the close of work at Uaxactún, in preparing the final report upon the general archaeology of the site; while R. E. Smith, assisted by Mrs. Smith, has been studying and writing up, at the Institution's laboratory in Guatemala City, the enormous ceramic collections made at Uaxactún. It is believed that at least 18 months more will be required for completion of these two papers.

KAMINALJUYÚ.

The Chairman's excavations in the mounds and tombs of Kaminaljuyú, near Guatemala City, were also dis-

continued in 1937. The collections, particularly the pottery, throw much light upon the chronological relations between the cultures of the Guatemala highlands, those of the Maya First Empire in Petén, and those of central Mexico. Owing to collapse of the roofs of the tombs, the pottery accompanying the interments was badly broken and crushed. The difficult task of repairing the more than 200 vessels, many of great beauty, and for the most part of types hitherto unknown, was carried out by Mr. Paul Richard of the American Museum of Natural History and Mrs. Harriet S. Cosgrove of the Peabody Museum of Harvard University, whose invaluable services were most generously made available to Carnegie Institution by Dr. Clark Wissler, and Mr. Donald Scott, directors of the above museums. The skill of Mr. Richard and Mrs. Cosgrove served to put the pottery in shape for study, and for permanent exhibition in the National Museum of Guatemala, where it has now been deposited. Each piece was photographed by Miss Barbara Kidder and all outstanding pieces were reproduced in black and white or in water color by the Section's artists, Señores Antonio Tejeda and Victor Lucas. The Chairman spent the winter at the Guatemala laboratory, making notes on the pottery and other artifacts and on the specimens, other than ceramic, from Uaxactún. Mrs. Kidder, who, from the beginning of the Kaminaljuyú operations in 1935, has cared for and catalogued the collections, made, this year, a special study of the large number of jades found in the tombs.

GUATEMALA OFFICE.

In addition to routine archaeological activities, the Guatemala Office, under direction of R. E. Smith, has continued to serve as local headquarters for research workers and visitors from several other institutions: Jeffries Wyman, biologist of the Museum of Comparative Zoology at Harvard; Linton Satterthwaite and J. Alden Mason, archaeologists of the University of Pennsylvania Museum; Theodor Dobzhansky, geneticist of the California Institute of Technology and Carnegie Institution; J. Andrews King, ornithologist of the Field Museum of Natural History; and L. C. Stuart, herpetologist of the University of Michigan. By supplying information, making advance arrangements, securing necessary permits, and attending to the importation of supplies and the exportation of collections, the office is in position greatly to facilitate the work of the scientists who come to Guatemala for special investigations. The Division and Guatemala offices have also made available to the Shell Oil Company and the Fairchild Company all data in their possession regarding the Department of the Petén, where those organizations are carrying on geological and, air-photographic sur-

veys, the results of which will be of much value for the study of Maya archaeology.

ARCHITECTURAL SURVEY.

During the past several years, Dr. H.E.D. Pollock has been engaged in architectural research in northern Yucatán, a field so large and so rich in remains that it has seemed best to treat it by chronological and topographic units. The important area of the Puuc, containing the most abundant and most representative ruins of the so-called "Maya renaissance," has now been explored and Dr. Pollock, has devoted as much time as could be spared from his organization of the Section's photographic files to preparing a report upon them. It is hoped that in this paper methods can be developed for a briefer and more effective presentation of architectural data than has hitherto been attained.

Archaeology of British Honduras.

Mr. J. E. Thompson's work at ruins of San José was begun as a joint project with Field Museum and completed by Carnegie Institution in 1936. San José, a small site, occupied from before the rise of the First Empire to a period apparently only shortly antedating the advent of Mexican influence in Yucatán, is important because it well exemplifies the minor communities, of which great numbers existed, and which must have formed the backbone, so to speak, of the Maya commonwealth, but which have hitherto largely been neglected by archaeologists in favor of the larger, more spectacular cities. Its long occupation also rendered it an unusually favorable place for study of ceramic development. Mr. Thompson has divided his time during the past 18 months between glyphic research and the study and preparation for publication of the archaeological materials from San José. His report on the latter is now in press. He also made a short field trip to British Honduras during the winter of 1938.

GEOGRAPHICAL STUDY.

Information regarding the physical features of the Maya area, its geology, topography, climate, is scattered through a great number of publications: narratives of the Conquest, books of travel, scientific periodicals, government reports. In order to render this indispensable but now relatively inaccessible material available, Dr. O. G. Ricketson, Jr., is making a thorough search of the literature, is preparing an annotated bibliography, and is gathering notes for a general work upon the geography of southern Mexico and northern Central America, suitable for the use of the archaeologist, the ethnologist, and the historian.

PHOTOGRAPHIC FILES.

During the quarter century of the Institution's work in the Maya field there have been accumulated more than 20,000 photographic negatives. These constitute the basic record of every excavation and exploration carried out by the Section. In the early years each investigator assumed charge of the photographs dealing with his own branch of the work. As the Maya project grew, however, it became obvious that a central repository must be established for the safe-keeping and adequate cataloguing of these pictures. A consolidated file was begun at the Section's former administrative office in Washington, but not until general headquarters were established did it become possible to assemble all the material and to secure from the hitherto scattered members of the staff the identifications necessary for accurate labeling.

In 1935 a new uniform system of field recording of photographs was put into operation by Dr. Pollock and during the past two years he has brought order into the great mass of older pictures. With the help of Miss Ritchie his reorganization of the file is now approaching completion. Negatives, contained in fire-proof cases, are arranged serially by years; prints, mounted on cards and bearing negative number and identifying description, constitute a second series in which the photographs are grouped for ready reference by sites and subgrouped in such a way as to bring together all data upon individual buildings, stelae, pottery, etc.

The foregoing activities indicate how large a proportion of the time of the Section's staff was spent, in 1937 and 1938, in laboratory work and in writing. In spite of this several field projects were undertaken. Summary accounts are appended.

1.28.

ALFRED V. KIDDER

Division of Historical Research

YB 38:235-241, 1939

The Division this year completes its first decade. It therefore seems appropriate briefly to review its activities during that period, and to consider the problems, scientific and administrative, which now confront it.

Three groups were brought together in 1929 to form the Division: archaeologists, students of United States history, and investigators of the history of science. As the latter, under leadership Dr. Sarton, were engaged upon the definite task of producing the introduction to the history of science, their activities continued unchanged. The staff of United States historians had been much depleted by retirements; further retirements were imminent. It having been at that time the Institution's policy to concentrate whenever possible upon researches of a type requiring cooperative effort, decision was made to combine resources available for documentary history with those of the archaeological group for a joint investigation in the Maya field.

The Maya Indians of Middle America developed the most brilliant culture of the pre-Columbian New World. Their achievements in sculpture, architecture, economy, mathematics, and hieroglyphic writing rivaled those of the great early civilizations of the Mediterranean, although they had passed their peak before the coming of the Spaniards, they were still a numerous people. Today they form a majority of the population of Yucatán and of Guatemala. The career of the Maya thus offers opportunity for study of several outstandingly interesting phenomena: the rise of a civilization, the growth of a rich complex of the arts, the decay and fall of a culture, the impact of European conquerors of a native people, and the development of biracial communities typical of much of present-day Latin America. These are all of great significance, not only for the understanding of events in this hemisphere but for the light they can shed upon some of the most fundamentally important problems of anthropology and history.

The Institution entered the Maya field in 1914, through support of explorations by S. G. Morley, which during the next few years resulted in discovery of many new sites and in trebling the corpus of Maya hieroglyphic texts. On the basis of the dates contained in the inscriptions, Morley for the first time clearly delineated the major phases of Maya history: the Old Empire, during which Maya culture came into being and spread widely through the southern part of the Yucatán peninsula and adjacent regions; the New Empire, centering in northern Yucatán, where an active renaissance resulted in the erection of such great cities as Chichén Itzá and Uxmal; and finally, the period of invasion, civil war, and consequent decline which took place before the European Conquest.

Being largely based upon a series of bare dates and, for its later parts, upon more or less contradictory legend contained in native and Spanish chronicles, Morley's reconstruction of Maya history needed, he felt, to be checked by the shovel. Furthermore, only by archaeological means could a start be made toward

clothing the chronological skeleton with the flesh of knowledge regarding the ancient life and the arts of the Maya. He therefore selected for excavation three key sites. One of these was Uaxactún, a large ruined city in the Petén jungle of northern Guatemala, discovered by him in 1916; it was, on the basis of the hieroglyphic dates, the oldest and longest-inhabited Old Empire center. The second was Chichén Itzá in northern Yucatán, settled about the close of the Old Empire, occupied through the renaissance, and a leading community, politically as well as ceremonially, during the latter part of the New Empire. The third, Tayasal on Lake Petén, also in northern Guatemala, saw the last stand of a Maya group against European encroachment. This city, founded toward the end of the New Empire by immigrants from northern Yucatán, remained unconquered until after 1690. Investigation of the three sites was designed to provide information regarding the Maya from the dawn to the final fall of their culture.

Work at Tayasal was carried on in 1920 and 1921 with satisfactory results; and in 1924 all available finances and personnel were concentrated upon excavations at Uaxactún and Chichén Itzá.

Chichén Itzá, because of its fine climate and ready accessibility, was made headquarters for research in Yucatán; and until 1935 excavations under Dr. Morley's direction were prosecuted there by E. H. Morris, K. Ruppert, J. S. Bolles, and others. The Temple of the Warriors was cleared, as well as the Caracol, Monjas, Mercado, House of the Phalli, and a number of smaller structures. These yielded a mass of data regarding the architecture, sculpture, fresco painting, and minor arts of the renaissance and the succeeding period when invasions from continental Mexico brought marked religious and cultural changes. All buildings investigated at Chichén were repaired, strengthened, and in some cases partially restored, in order that they might stand as examples of the remarkable architectural achievements of the New Empire Maya.

At Uaxactún the work of O. G. Ricketson, Jr., and A. L. Smith, between 1924 and 1937, produced even more valuable results because, owing to the enormous difficulties presented by the Petén jungles, and the great dilapidation of the ruins, relatively little had previously been learned of Old Empire archaeology. The first important discovery was of a very early building elaborately decorated with colossal grotesque masks in stucco, buried under and perfectly preserved by a later pyramid. After this had been cleared, there were located below and in front of it still older deposits representing hitherto unknown formative stages of Maya civilization which had preceded the Old Empire and which exhibited suggestive relationships with the Archaic cultures of the Guatemalan and Mexican high-

lands. In 1931 A. L. Smith began his seven-year dissection of Structure A-V, which proved to have grown by successive additions and through seven centuries from a group of small units to a great multi-chambered building of the "palace" type. In it were found tombs of various periods; from these and from the buried rooms and courts were collected vessels and potsherds exemplifying the entire course of Old Empire ceramic development, while study of the structure itself brought to light many facts regarding growth of and changes in architectural practice.

Uaxactún and Chichén Itzá were richly productive of materials illustrating the arts and crafts of the Old and New Empires. Study of these materials raised, however, a host of new problems for the most part concerning the chronological and spatial distribution, in other parts of the Maya area, of various cultural and esthetic traits made known by the two excavations. It thus became more and more clearly evident that the archaeological findings, interesting as they were, could not be of maximum usefulness for the reconstruction of Maya history until they could be interpreted in the light of knowledge regarding such environmental factors as geology, climate, water supply, and the faunal and floral resources of the country in which the Maya lived. Nor could ancient life or the ancient religion clearly be visualized solely on the basis of pottery and stone implements, sculptures, and the ruins of temples.

For the desired vitalization of the Maya's past, several non-archaeological sources were available. One of these consisted of the Books of Chilam Balam, writings in the Maya language but in Spanish script, produced by native priests. They embodied histories, prayers, folk stories, medical lore; and they were, at least in part, translations of pre-Columbian hieroglyphic texts. Another rich store of information upon aboriginal conditions was contained in the eyewitness accounts of the conquerors, priests, and earlier colonial administrators. A third and extremely important body of information was to be had from the study of the several million Maya still living in Yucatán and Guatemala, speaking their old tongue, and practicing many of their former arts and even some of their aboriginal religious rites.

So when, in 1929, the organization of the Division led to review of its previous activities and to the making of plans for the future, it was decided to attempt a broader-gauge investigation in the Maya field. The first step in this direction was the addition to the staff of F. V. Scholes, to head a group for research upon the documentary history of the Maya; and of R. L. Roys, for the translation and interpretation of the Books of Chilam and other native literature. At the same time, arrangements were made with the University of Chicago which

permitted the cooperation of R. Redfield for investigations among the present-day Maya.

Thus there were focused upon study of a single people the efforts of workers in the three major disciplines which deal with cultural and social evolution. Although such a joint attack by archaeologists, historians, and ethnologists had long been recognized as desirable, Carnegie Institution was the first to put it into effect with adequate resources and with prospect of being able to carry it forward for a sufficiently long period to determine whether or not it could produce the hoped for results in factual knowledge, in historical interpretations, and, perhaps most important of all, in bringing about the close integration of the social sciences that is essential for real understanding of man's career.

Inaugurated in 1929, the cooperative research upon the Maya was broadened during the next few years in various ways. Study of the Maya group of languages was undertaken by M. J. Andrade; the Institution's Department of Genetics assigned M. Steggerda for work in physical anthropology, human geography, and nutrition; G. C. Shattuck of the Department of Tropical Medicine, Harvard School of Public Health, collected data upon health conditions in Yucatán and Guatemala; J. H. Kempton and the late G. W. Collins of the Bureau of Plant Industry, U. S. Department of Agriculture, R. A. Emerson of Cornell University, and W. Popenoe of the United Fruit Company have made explorations and laboratory studies bearing on the difficult problem of maize origins, as well as agronomic observations in highland and lowland regions. In the all important matter of physical and biological environment much research has been done: in geology by C. W. Cooke of the U. S. Geological Survey; in climatology by R. G. Stone of Harvard's Blue Hill Observatory; in geography by W. and R. A. Atwood of Clark University and the University of Florida; and the University of Michigan has cooperated most effectively by sending to Central America many specialists in zoology, botany, and tropical ecology. A. S. Pearse of Duke University has studied the fauna of the inland waters of Yucatán.

The above researches have been carried on through the thirties. During that period the Division's archaeological activities have to a certain extent been reoriented, in that emphasis has shifted from large-scale excavations at single sites to surveys designed to extend knowledge of the development and distribution of various elements of Maya culture. Thus, K. Ruppert and J.E.S. Thompson have gathered architectural data and hieroglyphic material from hitherto unknown areas lying between Petén and northern Yucatán; H.E.D. Pollock and H. B. Roberts devoted several seasons to New Empire ruins other than Chichén

Itzá, working on architecture and ceramics; R. E. Smith studied the pottery of Uaxactún; and Anna O. Shepard was added to the Division staff for work upon the physical and chemical properties of Maya pottery. F. B. Richardson undertook a comparative survey of sculpture in stone.

Digging, however, continued: at Chichén Itzá until 1935, and at Uaxactún until 1937; and at Copán in Honduras, one of the greatest of Old Empire cities, G. Strömsvik has directed the excavations and the repairs of temples and monuments made possible by the aid of the Carnegie Corporation and the Honduran government. J.E.S. Thompson has excavated in British Honduras; S. K. Lothrop, R. Wauchope, and A. V. Kidder in the highlands of Guatemala.

The above activities have resulted in such a flood of new information that field work, during the past two or three years, has had to be curtailed to allow time for its digestion and for the preparation of reports. This pause has also given opportunity for review and appraisal of the program as a whole. Attempt has been made not only to judge the effectiveness of the Division as a fact-finding agency, but to determine to what extent its work in the Maya field is serving to develop methods for that coordination of the social, biological, and physical sciences without which it seems impossible to reach valid conclusions regarding the history of any people.

In the gathering of data the Division has been without question successful; and such study of results as has so far been possible indicates the direction in which various branches of the investigation should trend. In archaeology, for example, we must still further decentralize devoting less of our resources to large excavations and more to small reconnaissance digs which will aid in delimiting the range of Maya culture and in determining its chronological and cultural relations with other Middle American civilizations. These minor excavations should be supplemented by comparative studies of certain categories evidence which earlier work has shown to be of outstanding significance: pottery, architecture, sculpture, and the hieroglyphic record. In documentary history we should attempt to fill the gap between the relatively well-understood conquest and early Colonial periods and the present, because knowledge of what occurred during the eighteenth and nineteenth centuries is necessary as background for the ethnologists' studies of the modern Maya, and equally essential for the historian who wishes to utilize the ethnologists' results for understanding of times more remote. In ethnology, too, some decentralization would seem desirable, particularly in Guatemala, where conditions being less uniform than in Yucatán, a wider sampling would be profitable.

The enormous field of environmental studies has hardly been touched. On the biological side it is already clear that from the point of view of Maya history the botanical work is of great significance; and that more intimate knowledge of Middle American geology is needed for solution of many problems in ceramic technology, agronomy, water supply, and, in Guatemala, in the relation between volcanic activity and the ancient habitability of large sections of the country.

Materials are pouring in. We are learning what sorts of facts are of most immediate value. We are finding out where and how to get them. These are the easiest parts of the Division's task. Far harder is the interpretive synthesis which is the ultimate goal of the Division's researches, for each investigator is brought go quickly into virgin fields, is confronted with so great a body of intensely interesting and puzzling new material that he runs the constant danger of immersing himself in blindly intensive specialization. In the same way that the individual worker risks entanglement in detail, with indefinite postponement of the essential process of reaching conclusions, so the program as a whole may easily expand and ramify to such an extent that correlation becomes impossible.

The element of time must also be taken into account. The materials of Maya archaeology are practically inexhaustible. Profitable excavation could on for a century. Environmental studies, in a region of such diverse topography and climate, might be continued indefinitely. Furthermore, one of our principal tasks is the gathering of information as to present-day conditions in Central America, undertaken to throw light upon the past and also because the region forms an ideal field for research upon problems of racial and cultural contacts which are of fundamental importance for the modern world. Here again, one perceives no halting place, for the present is always with us, change is constantly going on, significant new phenomena develop from year to year.

Our researches, accordingly, have no clearly discernible limit, either in space or in time. Certainly the project should be continued for several years. There are, as has been shown, certain known gaps in our knowledge which must be filled. However, there being no natural termination for our program, it has seemed desirable to adopt a policy of limited or, perhaps better, stated objectives and to establish approximate time schedules for the various units of research. When each investigation is brought to a close, all findings will be recorded, definite conclusions stated, and formulation made of problems for future attack. This arrangement should ensure that the older members of the staff will not reach retirement with unfinished work on their hands. For the younger men it should also be of ben-

efit, as it is good for any student periodically to bring his research to a head, check up, draw conclusions, and make a fresh start. It is further believed that it would be well for the Division, toward the end of the coming decade, to attempt synthesis of the whole program by producing a history of the Maya based upon a correlation of all branches of the investigation.

The above proposed general stock-taking would permit ourselves and our colleagues to judge whether or not the project is so conceived and so prosecuted as to give promise of attaining the historical results for which it was undertaken. The conclusions which we then present should also enable the President and Trustees of the Institution to reach decision as to the nature and scope of future activities in aboriginal American history.

ARCHAEOLOGY

As was the case in 1937-38, field work in archaeology has been held to a minimum, in order that materials gathered in former seasons may be digested and reports upon them made ready for the press. During the year two of the Division's most important projects have thus been brought to completion: S. G. Morley's many years of research upon the hieroglyphic texts of the nuclear area of the Maya Old Empire through publication of his monumental work *The Inscriptions of Petén*; and E. H. Morris' equally long-continued studies of ancient Pueblo culture, which have resulted in the monograph *Archaeological Studies in the La Plata District, Southwestern Colorado and Northwestern New Mexico*, now in press. As was stated in the last *Year Book*, these two works will always rank as fundamentally significant contributions to the literature of their respective fields.

Notable progress has been made upon the reports dealing with the excavations carried on at Uaxactún between 1931 and 1937 (Ricketson and Ricketson 1937). A. L. Smith, in charge of the Uaxactún Project, devoted the year to correlating the field notes, plans, and photographs, and to writing. In the task of presenting the extremely important results obtained in the complex of superimposed buildings constituting the "Palace," Mr. Smith has been most ably assisted by E. M. Shook, who worked with him throughout this difficult excavation. Mr. Shook is preparing the elaborate plans and sections necessary to make clear the growth of the "Palace."

R. E. Smith worked at the Guatemala office, where the specimens from Uaxactún are being studied prior to their deposition in the Guatemala National Museum. He has nearly completed the classification and description of the enormous and stratigraphically most valuable collection of pottery. He returned to Cambridge

in the autumn to join A. L. Smith in assembling the final report upon Uaxactún. Miss Shepard, also, spent some months in Guatemala making technological observations upon the scores of thousands of sherds recovered at Uaxactún. Her collaboration with Mr. Smith not only has resulted in discovery of many significant facts regarding the pottery itself, but has made possible the development of methods for more effective cooperation between the field archaeologist and the ceramic technologist. The drawings and paintings of Uaxactún pottery have been made by Sr. A. Tejeda, staff artist, and Sr. Victor Lucas.

Dr. Pollock and Messrs. Thompson and Richardson spent the period under review in Cambridge, and Mr. Ruppert was there until he took the field in Mexico in the early winter of 1939.

Dr. Pollock worked on materials gathered during his architectural survey of the Puuc ruins of northern Yucatán. He has superintended Miss Ritchie's work in cataloguing and filing the Division's enormous collection of photographs; and while the Chairman was in the field, he administered the Division office.

Mr. Thompson completed and saw through the press a report upon the excavations at San José, British Honduras, and is now engaged upon a manuscript dealing with the ruins of Benque Viejo, British Honduras. The technological aspects of the San José and Benque Viejo pottery have been studied by Miss Shepard.

Mr. Richardson, who is working on the stone sculpture of Middle America, has finished a paper based on his 1938 reconnaissance in Nicaragua, Salvador, Honduras, and Guatemala. He is at present preparing a summary of what little is known regarding the archaeology of western Honduras.

Mr. Ruppert made progress in assembling the data gathered during his several exploring expeditions to archaeologically unknown areas in Campeche, and also has under way reports on the Mercado, Sweatbath, and other structures at Chichén Itzá which were excavated by him.

Mr. Ricketson has also been at Cambridge throughout the year, continuing his examination of the scattered literature dealing with the geography of Middle America, and preparing a general work upon the physical and biological environment of the Maya area.

The above time-consuming but essential tasks have kept most of the archaeologists at their desks. A certain amount of field activity was nevertheless carried on, the most important of which was the work of Mr. Strömsvik and his assistants at the ruins of the Old Empire city of Copán in southwestern Honduras.

1.29.

ALFRED V. KIDDER

Division of Historical Research

YB 39: 261-264, 1940

The major activities of the Division during the past decade have been study of Maya history and of the history of science, both backward-looking researches the utility of which, in these cataclysmic days, cannot fail to be questioned, both by the men engaged upon them and by those responsible for their administration. Just as we of the staff have been asking ourselves why we are counting prehistoric potsherds, or wrestling with the problem of forced labor in sixteenth century Yucatán, or striving to gauge the influence of Aristotle on medieval physics, so the officers of the Institution must have been wondering whether they are justified in continuing to sponsor the investigation of scientific theories long since outmoded and, even more, why they should promote study of an Indian people whose glory had faded some centuries before Columbus landed and who today are but humble soil-tillers ruled by the descendants of their European conquerors.

Such doubts must trouble all who are now concerning themselves with any but the most urgently practical affairs. Nevertheless, if civilization is to persist, it seems essential that the study of man should go forward and should be broadened and deepened and rendered more precise.

We need, as never before, to know the capabilities and the weaknesses of the human race and to understand the fundamentals of the man-culture relationship, because the mighty machine which science's control of the physical world has permitted us to build exercises its unlimited power for good or for evil only as it is directed by man. That machine, however, now seems in danger of being run for wholly destructive purposes. We are given to thinking of this as something new, but every major invention from the Paleolithic hand ax to the airplane, though at first bringing material benefit has sooner or later created social and economic problems so complex that, lacking sufficient understanding of ourselves, we have, as a rule, been able to solve them only by repeated resorts to the brutalizing and cruelly wasteful expedients of war.

Knowledge of the history of science will certainly not enable us to combat the immediate dangers which menace us. But if the present storm be weathered, how can we hope to build soundly for the future of a world in which the products of science will inevitably play so great a part, if we do not understand their develop-

ment and the effect they have had in the past upon philosophies of life and upon governmental practices? Likewise, though the career of the Maya has even less bearing upon the problems of the moment it gives opportunity for study of the rise and spread of a culture, the dominance of absolute rulers, political rivalries and civil wars, the decline and eventual fall of a virile civilization, submission to foreign military conquest, adjustments between a dense native population and a small class of alien overlords. Such events and such situations have shaped the course of history at all times and throughout the world.

One does not, of course, pursue researches upon the nature of combustion while the house is burning over one's head—one runs for a fire extinguisher. That essential instrument, however, was developed on the basis of physical and chemical knowledge, whereas our comprehension of the physics of the human atom and the chemistry of social and political reactions is so pitifully limited that, in our ignorance, we can do no better than tear apart with war the painfully erected structure of our civilization.

It seems, then, to the historian and the anthropologist that the study of man must at all costs be continued, even though it be long and slow. It cannot be otherwise, because man is so complex a creature, because so much of significance regarding his past can only with the greatest difficulty be recovered, and because the fundamental aims of humanistic research have not generally been grasped nor have the most effective methods for attaining them been worked out. The development of methods has, indeed, always constituted a primary objective of the Institution's historical activities. Dr. Jameson and his colleagues, through their insistence upon thorough and accurate utilization of documentary materials and their rendering available of such materials by publication of archival guides, played an outstanding role in the establishment of sound historical scholarship in the United States. Dr. Sarton has devoted his entire career to the collection and interpretation of data upon the lives of scientific leaders and upon the spiritual and intellectual environments which conditioned their activities. He has put into practice a firmly held belief that the history of science is more than the sum of the histories of individual sciences and that only through synthesis of all positively determinable and pertinent facts can valid conclusions be drawn regarding the all important matter of the growth of scientific thought and as to its effect upon the course of history.

Most recently, the Institution has sponsored a survey of the entire range of Maya history, study supplemented by research upon the varied, environmental factors which throughout the centuries have influenced the career of the Maya and their Spanish conquerors.

This investigation throws light upon events in the pre-Columbian New World. It has even wider bearings upon general anthropological theory. It is also of immediate practical service in bringing greatly needed understanding of present-day conditions in the large parts of Latin America where dense Indian populations have been brought under European control. Yet its greatest value should accrue from the development of methods for comprehensive, coordinated, cooperative research which, if successful in the relatively simple case of the Maya can be perfected and broadened for attack upon the vastly greater and far more complex historical problems which must eventually be solved if we are to attain real knowledge of man in the modern world.

The foregoing is, of course, the special pleading of anthropologists and historians for opportunity, in these rapidly changing and materially minded times, to continue their researches. Research, however, is more than the gathering and recording of facts in the hope that some day someone will be able to make use of them. Synthesis of raw data, the erection and testing of hypotheses should constantly go on, not only in order to avoid useless exploration of blind alleys and to indicate new means of approach, but also to permit the generalizations which are the only form in which the results of specialized investigation can be made really effective through their dissemination to workers in allied disciplines and to the intelligent layman.

The preparation of their product for the essential markets is a matter which should be of special concern to members of an agency, such as this Division, which is devoted to pure research in the humanities. The university historian or anthropologist must put his findings into coherent form, draw conclusions there from, and hand on both summarized facts and conclusions to his students. The museum curator, if he be more than a mere hoarder, does the same in the selection and display of his specimens. But the man who has no stated duties, beyond research is less urgently moved to marshal his materials and has no obvious public beyond a small group of fellow specialists. Yet the data at his command are abundant, fresh, and often highly significant; there is no call upon his time or his energies for routine teaching or museum administration. It would therefore seem that one of the definite objectives of every research man should be the writing of books or articles for a wider audience than is reached by his scientific reports.

ARCHAEOLOGY

The past 12 months have been devoted largely to digestion of the great amounts of new information gathered during the intensive field investigations of the

middle and late thirties. Completion of the resultant reports and work involved in their passage through the press will continue to occupy a considerable amount of staff time during the coming year. Nevertheless, a number of important projects have gone forward. Archaeological explorations in Yucatán were resumed, Dr. Pollock and Mr. Shook spending three months among the little-known ruins of the western part of the peninsula, and Mr. Andrews making a reconnaissance, under very adverse conditions, of an area in Campeche and Tabasco which has hitherto constituted a blank space on the archaeological map. In Guatemala, Mr. A. L. Smith conducted excavations at San Agustín Acasaguastlán in the Motagua valley, discovering two vaulted tombs containing fine examples of the beautiful pottery of the late Old Empire. He also worked out the range of what he has called the Middle Motagua culture, listing well over a thousand mounds of the peculiar San Agustín type. Mr. Strömsvik, assisted by Mr. Lee, continued the excavations and repairs at Copán which Carnegie Institution, with the aid of the Honduran government, has been engaged upon since 1936. During the past year, Mr. Strömsvik completed resetting of the great Hieroglyphic Stairway and cleared of debris and consolidated the walls of two temples flanking the ballcourt. Mr. Shook, in addition to his work with Dr. Pollock in Yucatán and with Mr. Strömsvik at Copán, accompanied Mr. A. L. Smith to Uaxactún to make observations needed for completion of the report upon that site. He also surveyed a previously unmapped section of the Kaminaljuyú ruins and made a brief reconnaissance of the ruins of Rabinal. Dr. Brainerd has been working upon the collections of Yucatecan pottery in storage at Chichén Itzá, and Miss Shepard has continued her researches in ceramic technology.

Progress upon reports has been notable. Dr. Morley and Mr. Roys have brought nearly to completion their study of the Xiu family, rulers of Uxmal, and of their descendants to the present day. Messrs. A. L. and R. E. Smith have continued work upon a large monograph dealing with the excavations at Uaxactún. Other monographs are in preparation by Dr. Pollock on the architecture of the Puuc region of Yucatán, by Mr. Ruppert on explorations in Campeche, by Mr. Richardson on the antiquities of Honduras, by Mr. Thompson upon excavations in British Honduras and upon a study of prehistoric Middle American deities, and by the Chairman upon the Kaminaljuyú mounds near Guatemala City.

During the year the Institution's field station at Chichén Itzá, occupied since 1923, has been given up and Dr. Morley has established headquarters in the outskirts of Mérida, where space is available for storage of Division equipment and the ceramic collections.

In January President Bush, President Keppel of Carnegie Corporation, Mr. Shepley, Chairman of the Trustees' Committee on the Division of Historical Research, and Dr. Jewett and Senator Walcott of the Institution's Board of Trustees visited Guatemala and Honduras. The work done by the Institution at Quiriguá was inspected, and two days were spent at Mr. Strömsvik's excavations at Copán, where a conference was held with Dr. Rodriguez, Minister of Public Education of Honduras. The party then proceeded to Guatemala City, saw the Division's laboratory there, and made a tour of the highlands to acquaint themselves with the Indian towns being studied by Drs. Redfield and Tax. With Dr. L. H. Adams, Director of the Geophysical Laboratory, and Dr. F. E. Wright, a journey was made to the camp on the young volcano, Santiaguito, where Dr. Zies is directing research upon volcanological and magnetic problems. After the return of Drs. Bush, Keppel, and Jewett to the United States, Senator Walcott, Mr. Shepley, and the Chairman went to Yucatán and visited Dr. Morley at Chichén Itzá.

I.30.

ALFRED V. KIDDER

Division of Historical Research

YB 40:289-292, 1941

The devastating ill wind which the present international situation has set blowing across the world has had at least one happy result in bringing the nations of the Western Hemisphere closer together. We of the United States and the peoples of Latin America, being equally the cultural offspring of the Old World, have naturally sought overseas for intellectual, spiritual, and artistic contacts; both we and they have confined our foreign travel almost exclusively to Europe. The result has been a most lamentable ignorance of each other's countries and of each other's ways of living and thinking. Americans (to use, for want of any other, a term whose calm assumption of sole occupancy of two continents is quite reasonably distasteful to our southern neighbors) are even more remiss in this regard than citizens of the Latin republics. So it is well that, albeit tardily, there have come realization that we share with them a common destiny, and recognition of the fact that only through fuller knowledge can there

be achieved the mutual understanding and mutual respect necessary for a united stand in defense of New World ideals.

Scientific institutions can play a most effective part in fostering friendship between the Americas. They have no political objectives, they seek no commercial advantage. Their research workers import nothing but a great curiosity about nature and man, they export only facts. Their findings are given freely to all who wish to make use of them. And, most important of all, they are coming to cooperate more and more closely with governments and universities for attack on problems of common interest. It is impossible to exaggerate, to cite the most outstanding example, the contribution to good will toward the United States that has been made by the Rockefeller Foundation through its medical researches.

The Carnegie Institution of Washington has, for many years sponsored studies in Latin America dealing with almost every major branch of the physical, biological, and social sciences. The Institution's Division of Historical Research has, during the past two decades, devoted its major effort to work in Middle America. As stated more fully in earlier reports, its aim has been to gain knowledge of the pre-Columbian civilizations, of colonial and republican history, and of life in the modern societies formed by the welding together of Indian and European elements. Only by thus combining researches in archaeology, documentary history, and ethnology, together with supplementary studies of the environment, can adequate understanding, it is felt, be had of present-day conditions.

In its work in the Middle American republics, the Division has operated under governmental contracts, and has cooperated actively with native scholars. Two of its investigators are Mexican citizens; another is a Guatemalan, as is its staff artist. In Honduras, the Division has been entrusted with the expenditure of the funds, which, dollar for dollar, the government of that country has matched with those of the Institution, for the excavations at Copán.

In addition to, its purely scientific objectives, the Division has striven to preserve and make permanently available for scholars, students of art, and the native and traveling public the most important architectural and sculptural remains of the ancient Maya. At Chichén Itzá in Yucatán, at Quiriguá in Guatemala, and at Copán in Honduras, work of this type has been carried on, generously aided by grants from the Carnegie Corporation of New York.

During the period covered by the present report (July 1, 1940 to June 30, 1941) archaeological investigations went forward in Mexico, Guatemala, Honduras, Salvador, and Nicaragua. Drs. Redfield and Tax continued the ethnological survey of highland Guate-

mala; Sr. Villa, that of Maya-speaking tribes in Mexico. Mr. Scholes and his associates of the Section of Post-Columbian American History worked in Washington on materials gathered during former years.

The Division and American scholarship suffered an irreparable loss in the death, on January 26, of Dr. Manuel J. Andrade. Born in Spain in 1885, Dr. Andrade was educated at the Instituto Regional of Coruña, and came as a young man to the United States, where he held various positions as a teacher of Romance languages. Becoming interested in the scientific aspects of linguistics, he studied under Dr. Franz Boas and received the doctorate from Columbia University in 1929. In the following year, he accepted a joint appointment as Associate Professor at the University of Chicago and Staff Investigator of Carnegie Institution. Half Dr. Andrade's time was devoted to teaching advanced students in linguistics and half field work and research on the languages of the Maya stock. He made many trips to Mexico and Guatemala, amassing enormous amounts of material concerning Yucatecan Maya, Huastec, Quiché, Tzutujil, Cakchiquel, Pokoman, Mam, and other tongues. In the course of this work he developed remarkably effective means for the mechanical recording of speech. At the time of his death a compendious monograph on Yucatec was nearly complete. In this work, which is being made ready for publication by his former secretary, Mr. S. L. Bradshaw, Dr. Andrade utilizes new methods of linguistic analysis. It is believed that the work will not only be of great value to Maya students, but will also constitute a highly significant contribution to linguistic science. Dr. Andrade's materials on the other Maya languages were collected with such painstaking accuracy and recorded with such characteristically meticulous care that they can readily be utilized for continuance of the research which he so brilliantly inaugurated.

The only change in the personnel the Division has been caused by the much regretted resignation of Mrs. Walter Edwards, who since 1931 served faithfully and efficiently as Division Accountant. She has been succeeded by Mrs. Douglas Tepper.

ARCHAEOLOGY

As stated above, archaeological work has been done during the past year in five Middle American republics. In Yucatán, Dr. Sylvanus G. Morley excavated at the ruins of Uxmal, clearing a masonry platform on which were fragmentary remains of a number of stelae and assembling the pieces for study and photography. He also recovered several hitherto missing bits of two large stone rings (comparable in function to basketball goal rings) which had fallen from composite walls of a ballcourt. The special interest attaching to

these rings, parts of which have been known for many years, is due to their bearing very important calendrical inscriptions.

Mr. Joseph Lindon Smith, outstanding painter of ancient sculptures, particularly those of Egypt, repeated his visit of 1940 to Yucatán, where he produced a further series of canvases of reliefs and carvings in the round. As in 1940, Mr. Smith presented these invaluable records of Maya art to the Carnegie Institution, which, in turn, will distribute certain of them to museums in Mexico and the United States.

Dr. George Brainerd was in Yucatán until February, finishing his observations on the pottery collected during past years from various parts of the peninsula. Since then, he has been at Division headquarters in Cambridge, preparing a report on Yucatecan ceramics.

In Guatemala, Mr. A. Ledyard Smith excavated in one of several narrow, rectangular, earth-walled enclosures occurring at the Kaminaljuyú site. Although their function was unknown, it was suspected that they might be remains of ballcourts. Trenches dug by Mr. Smith proved this to have been the case. The Chairman also worked at Kaminaljuyú, making a surface study of its nearly 200 mounds. Mr. Robert E. Smith was in Cambridge for about half the year, preparing the final report on the pottery of Uaxactún. On his return south in January, he resumed direction of the Guatemala office and laboratory.

In Honduras, Mr. Gustav Strömsvik, assisted by Mr. Robert F. Burgh, Mr. Arthur W. Wheelwright, and, as a volunteer, Mr. Leonard J. Currie, Fellow of the Harvard Architectural School, completed the excavation and repair of the temples adjoining the Copán Ball Court. He also reset the displaced elements of the so-called Venus mask panel, which surmounts the Jaguar Stairway. During the season, Mr. Strömsvik continued the installation of specimens in the Copán Museum; and Mr. Burgh aided the local authorities in completing an aqueduct which will, for the first time, provide the town with a supply of running water.

During the year, the Division has extended its archaeological investigations to Salvador and Nicaragua. In the former country, excavations west of the city of San Salvador were inaugurated in 1940 by Mr. John M. Dimick under the auspices of the Middle American Research Institute of Tulane University. At the close of that season, the Division was invited by the University, at Mr. Dimick's suggestion, to cooperate; and when reorganization of the Middle American Research Institute compelled its withdrawal from active field work, Mr. Dimick, who finances and directs the undertaking, requested the Division to continue its association therewith. This offer, giving opportunity to keep in close touch with research in a highly important and hitherto next to unknown area, was gladly accepted, and

all members of the Division staff who were in Central America profited by visits to the excavations and by discussion of the problems involved. The work has revealed a most interesting sequence of unexpectedly large buried structures, study of which is yielding invaluable information as to architectural and ceramic developments.

In Nicaragua the season's activities demonstrated anew the fact that, in archaeology, the unforeseen always happens. Mr. Francis B. Richardson went to Nicaragua to examine, as part of his study of Middle American sculpture, certain carved monuments mentioned in the literature. In preparation for his visit he had read all available accounts of previous exploration and he noted references to human footprints found many years ago in a deeply buried volcanic stratum just west of Managua. On arrival at Managua, Mr. Richardson made inquiries regarding the foot prints, and learned that quarrymen had recently uncovered new examples. He was taken to the site, recognized the importance of the tracks, and undertook a series of excavations which, occupying the entire season, effectually prevented any attention's being given to the sculptured monuments.

1.31.

ALFRED V. KIDDER

Division of Historical Research

YB 41:247-248, 1942

Well before the entry of the United States into the war it had become evident that the general financial situation along with the rapidly expanding defense activities of the Institution would sooner or later necessitate curtailment or deferment of customary and normal research programs. The Division's 1941-42 program was accordingly formulated with a view to gathering as great an amount of raw data as possible in order that members of the staff not in war service might be able profitably to pursue their studies, for a relatively extended period, with a minimum of expense for field work. The season therefore opened earlier than usual, and when hostilities broke out, several parties were already in Central America and others were on the point of departure. Inquiry as to further procedure brought instructions from the Institution headquarters that original plans should be followed; and, later, the United

States legations in the countries concerned requested that undertakings having value in supplementing the Government's program of Inter-American cultural relations be continued. All scheduled explorations and excavations could thus be carried to completion. When the Axis submarine campaign was extended to the Gulf of Mexico and the Caribbean, however, it was decided that irreplaceable specimens and notes should not be exposed to the risks of ocean transportation. Hence Messrs. R. E. and A. L. Smith, Strömsvik, Shook, Ruppert, and Richardson are remaining in Central America to work up their materials.

An unusually large number of excavations were undertaken. In Yucatán, Dr. Morley cleared the elaborately decorated façade of a buried temple at Uxmal; Messrs. Brainerd and Andrews worked at Mayapán, Acanceh, and other ruins in the northern part of the peninsula, gathering ceramic and architectural data which will be of much value in interpreting the later prehistory of that region. In Guatemala, the investigation of the great archaeological site of Kaminaljuyú in the outskirts of Guatemala City was continued. Mr. Shook completely excavated a large mound, which proved to contain a superposition of four structures, and three tombs, one of them the richest in pottery and jades so far found at Kaminaljuyú. Mr. A. L. Smith worked on three of the several rectangular courts in which the ancient ceremonial ball game was played. These yielded a number of fine stone sculptures, mostly serpent and parrot heads with human faces in their open mouths. The Chairman devoted the season to preliminary study of the great amounts of pottery recovered by Messrs. Shook and Smith.

In Honduras, Mr. Strömsvik carried into its eighth year the program of excavation and preservation of the ruins of Copán, sponsored jointly by the Government of Honduras and Carnegie Institution. He completed the repair of Temple II, now known, because of the long hieroglyphic texts adorning its walls, as the Temple of the Inscriptions. He also discovered south of the Acropolis an area containing numerous graves. As these held a great many mortuary vessels, representing several periods, his collections will throw much light on the local sequence of pottery types.

The excavations at San Andrés, El Salvador, directed by Mr. John Dimick were not pursued this year because of Mr. Dimick's entry into war service, his assistant, Mr. S. H. Boggs, remained in Salvador to make a photographic record of the many large private collections of archaeological specimens in that country. Correlated with the Division's program was a survey of eastern Salvador by Mr. John M. Longyear, of the Peabody Museum of Harvard University, a project carried out under the auspices of the Institute of Andean Research with funds provided by the Coordinator of

Inter-American Affairs. The Chairman served as director and visited Mr. Longyear several times in the field. The latter made a reconnaissance of the country east of the Lempa River, locating and mapping a large number of sites. He also excavated a small ruin at Los Llanitos, south of San Miguel, which proved to contain an interesting ballcourt, the southernmost yet recorded. Mr. Longyear's report will be issued by the Peabody Museum.

In Nicaragua, Messrs. F. B. Richardson and Karl Ruppert continued the investigation at El Cauce, near Managua, where in 1941 Mr. Richardson discovered human footprints in a deeply buried layer of consolidated volcanic mud [Chapter 32.1 this volume]. The footprints were followed for several meters farther and a protective structure was erected over them. Mr. Ruppert devoted the season to study of archaeological remains in the recent deposits overlying the volcanic strata. Final judgment as to the antiquity of the footprints must await the working-up of Mr. Ruppert's materials, further research on the volcanology of the region, and paleontological studies bearing on the age of certain animal tracks found by Mr. Richardson.

No field work in ethnology or linguistics was undertaken, as Drs. Redfield and Tax and Messrs. Villa and Rosales were engaged in preparing reports on earlier investigations, Dr. Abraham M. Halpern joined the staff in 1941 to continue the study of Maya languages which was interrupted by the death of Dr. Andrade. Dr. Halpern, however, has been granted leave of absence for war service.

Researches in the history of science and in documentary history have gone forward, Drs. Sarton and Pogo, working in Cambridge, Dr. Stock in Washington, and Scholes and Miss Adams in Albuquerque, where Mr. Scholes, also conducted a course in methods of archive study at the University of New Mexico. Dr. Chamberlain is on leave of absence, acting as Senior Cultural Assistant in the United States Legation at Guatemala City.

During the year the Division lost, through resignation, the services of Dr. Oliver G. Ricketson, Jr., a valued member of the staff since 1922. Dr. Ricketson accompanied Dr. Morley on several journeys of exploration in the Petén; he was in charge of the initial excavations in Northeast Colonnade and the Caracol at Chichén Itzá; he investigated the ruins of Baking Pot, British Honduras; he inaugurated and for several years directed the extremely important excavations at Uaxactún in the heart of the Petén jungle. Dr. Ricketson's ability as an organizer and leader of expeditions into difficult country and to his skill as a field archaeologist, is due a very large share of our present knowledge of the Maya Old Empire.

1.32.

ALFRED V. KIDDER

Division of Historical Research

YB 42:177–178, 1943

During the past year the Division has undertaken no archaeological exploration or excavation, nor is it probable that activities of this sort can be resumed for some years to come. Not only has field work been suspended, but many members of the staff—archaeologists, ethnologists, historians—are now, or soon will be, in the armed forces or engaged in other activities connected with the war. Hence no fresh archaeological data are coming in. Moreover, the men in service, are of course unable to complete reports on investigations in progress at the outbreak of hostilities. Among them are several of particular importance: H.E.D. Pollock's architectural survey of Yucatán; G. W. Brainerd's and J. M. Longyear's studies of the pottery of Yucatán and Copán; G. Strömsvik's excavations at Copán; and A. L. and R. E. Smith's work at Uaxactún. The research of A. M. Halpern on the Maya languages has also been interrupted, as have the studies by R. S. Chamberlain on the history of the conquest of Yucatán.

ACTIVITIES, 1942–43

During the period under review several members of the Staff and associates have entered war service. H.E.D. Pollock is an officer of the Army Air Corps on duty in North Africa. K. Ruppert is overseas with the American Field Service. R. E. Smith is working with the United States military attaché in Guatemala. G. Strömsvik is in the Norwegian Navy; G. W. Brainerd and E. W. Andrews are in that of the United States. R. S. Chamberlain is Senior Cultural Assistant in the United States Embassy in Guatemala. A. M. Halpern is giving instruction in Japanese at the University of Chicago. Others have been engaged in the writing of reports: S. G. Morley on the hieroglyphic inscriptions, A. L. Smith on the excavations at Uaxactún, J.E.S. Thompson on those at El Baúl, E. M. Shook and A. V. Kidder on those at Kaminaljuyú, Anna O. Shepard on Plumbate pottery, Tatiana Proskouriakoff on Maya architecture and sculpture, E. H. Morris on excavations in Colorado, F. V. Scholes and R. L. Roys on various aspects of Yucatecan history. S. L. Bradshaw has continued preparation for the press of the exhaustive study of Maya grammar left unfinished at the death of M. J. Andrade.

Before entering service, Mr. Strömsvik returned to Copán to make arrangements for storage of Institution

equipment and for supervision of the ruins and museum by the Government of Honduras. Mr. Shook, who is temporarily remaining in Guatemala, has had opportunity to carry out certain minor explorations. He has also studied local museum and private collections and has investigated several finds of archaeological material made in the course of road and airfield construction and by private individuals. Most notable of the latter was a cache of Plumbate vessels and a gold plaque unearthed near Quezaltenango by Sr. Vitalino Robles, who most generously made these very important specimens available for study.

F. B. Richardson was obliged, for reasons of health, to postpone further work on the problem of the deeply buried human footprints near Managua, Nicaragua. He is now in South America, making observations on monumental stone sculpture for comparison with that of the Maya area. S. H. Boggs completed the photographing of several large collections of pottery in Salvador and has also been preparing a final report on the excavations at Campaña San Andrés, which were financed and carried out by Mr. John Dimick under the auspices of Carnegie Institution.

1.33.

ALFRED V. KIDDER

Division of Historical Research

YB 43:167–169, 1944

Because several members of the staff are serving in the Army and Navy or are engaged in other activities connected with the war, and because those not so engaged have been occupied with the preparation of reports, little field work has been done in Middle America. The Division has therefore been unable to meet in full the terms of its contracts with the governments of Mexico, Guatemala, and Honduras, which call for the annual expenditure of stated sums. The authorities in those countries, however, in the fine spirit of cooperation they have shown in all dealings with the Institution, have agreed to waive all financial requirements for the period of the present emergency. In the meantime the limited amount of field work that it has been possible to carry on, together with results of laboratory and archive research and study of data accumulated in former years, has permitted clearer formulation of problems to be attacked when full-scale activity can be resumed.

ACTIVITIES, 1943-44

During the period under review the several members of the staff and associates engaged in the war effort have continued their service. Major H.E.D. Pollock, of the Army Air Corps, has been on duty in Italy since the invasion of that country. Mr. Gustav Strömshvik, of the Royal Norwegian Navy, after a year with the North Atlantic convoys, was transferred to an English base and took part in the original landings on the coast of Normandy. Lieutenants (j.g.) G. W. Brainerd and E. W. Andrews have been serving in the Navy overseas, the former in India. Mr. Karl Ruppert, a volunteer in the American Field Service, drove an ambulance with the British forces throughout the recent campaign in Burma. He has now been transferred to the Italian front, where during the last war he served with the United States Army Medical Corps. Miss Eleanor W. Ritchie, secretary of the Division, is an ensign in the WAVES, on duty in Washington.

In civilian capacities, Mr. R. E. Smith, after nearly two years as assistant to the United States military attaché in Guatemala, returned to the Division in June 1944. Mr. E. M. Shook has been engaged in the production of quinine in Guatemala. As his work took him to all parts of the Pacific slope of the Guatemala highlands, a region of great archaeological importance but one very little known, he was able to locate a large number of new sites, as well as to observe and photograph many private collections of antiquities. Dr. A. M. Halpern has continued as instructor in Japanese the University of Chicago, Dr. R. S. Chamberlain as senior cultural assistant in the United States Embassy in Guatemala. Mr. F. B. Richardson has been serving as legal attaché at the Embassy in Ecuador.

Dr. S. G. Morley spent part of the winter vacation compiling a card file of the Maya hieroglyphs carved on stone. In company with Mr. J.E.S. Thompson, he later visited archaeological sites in Chiapas, Mexico, returning to Yucatán by way of the Pasión and Usumacinta rivers. A report on these journeys appears below. Mr. Thompson, before and after the Chiapas trip, was in Mexico City studying the rich collections in the Mexico National Museum and conferring with the very active and able group of archaeologists headed by Dr. Alfonso Caso, of the Instituto Nacional de Antropología e Historia. The members of the Instituto have been most cordial and cooperative, sparing no pains to render visits of the Division staff to Mexico City pleasant and profitable. In particular, Professor I. Marquina, acting director of the Instituto during the service of Dr. Caso as Rector of the University of Mexico; and Professor E. Noguera, director of the National Museum, have been unremittingly helpful.

In September 1943 the Chairman attended the third round-table conference sponsored by the Anthropological Society of Mexico. These conferences, the first of which was devoted to the relationship of the Tula and Teotihuacán cultures, the second to the mysterious La Venta or Olmec culture of the Gulf Coast, have served not only for the exchange of information and the formulation of scientific problems, but also to promote close personal relations between the archaeologists of Mexico and the United States, many of the latter having attended each of the round tables. That of 1943 concerned the prehistoric relations between the cultures of Mexico and those of southwestern and southeastern United States. At its conclusion the Chairman, with Dr. Isabel T. Kelly and Dr. Emil Haury, visited museums and private collections in Morelia and Jalisco and conferred at her laboratory in Guadalajara, with Dr. Kelly, who, under a joint grant from the American Philosophical Society and Carnegie Institution, is devoting the current year to preparation of reports upon her very important excavations and surveys in Western Mexico.

In April and May 1944 the Chairman was in Central America, spending several weeks in Salvador studying collections in the National Museum and observing the excavation of Tazumal, which is being carried on by Mr. S. H. Boggs for the government of that country; and, in Guatemala, studying collections and conferring with Messrs. R. E. Smith and E. M. Shook. At that time there was planned an exhibit of the very beautiful paintings by Sr. Antonio Tejeda F. of pottery found by Mr. Strömshvik at Copán. This was later held at the Instituto de Bellas Artes in Guatemala City, was largely attended, and received much favorable comment in the press. Such exhibits, of which several have been held in former years, serve to arouse local interest in the preservation of antiquities and to promote understanding of the aims and methods of the Institution's work in Middle America. Similar results have been achieved by Dr. Morley's frequent lectures in Mexico and Guatemala and by those of Mr. Strömshvik in Honduras.

During the year Dr. Sol Tax directed the food survey of Guatemala and, in cooperation with the Instituto de Antropología e Historia, directed a cooperative ethnological project in Chiapas. He devoted a third of his time to teaching at the University of Chicago.

Sr. Alfonso Villa R. taught from March to November 1943, a course in ethnographic methods at the Escuela Nacional de Antropología e Historia (Mexico City), while gathering to together the materials obtained in the Tzeltal community of Oxchuc (Chiapas) the previous year. In December he returned to the same community for six months, accompanied for two months by four of his students in the Escuela. Upon

his return to Mexico City in June 1944, he began to bring together all his data of the two season (and those of his students) into a monograph on Oxchuc. He also accepted an invitation to resume teaching at the Escuela Nacional for four months of the year.

Advantage has been taken of the lull in field activities to make progress with the writing of reports and with their preparation for press by Mrs. M. W. Harrison, editor of the Division. Dr. F. V. Scholes and Mr. R. L. Roys have worked on their joint monograph on the history of the Acalán-Tixchel area, Mr. A. L. Smith on that concerning the excavations at Uaxactún. Mr. J.E.S. Thompson's report on El Baúl has been completed, and that of Miss A. O. Shepard on Plumbate pottery is nearing that stage, as are those of Mr. E. H. Morris on his work on the early cultures of northeastern Arizona, and of the Chairman in collaboration with Mr. E. M. Shook and Dr. J. D. Jennings on Kaminaljuyú, Guatemala. Miss T. Proskouriakoff's album of restored drawings of Maya temples and groups of buildings is now in press. It is believed that, in addition to its value to Middle Americanists, this work will be of much interest to students of Old World archaeology and to architects. During the year Dr. Tax continued preparation of his Panajachel (Guatemala) materials. Publication of his monograph on the economy of the Indians, now completed, was held in abeyance, and his comprehensive volume on the mental culture, which is nearly finished, was laid aside, while he worked on a short introductory volume about the community as a whole. This book should be near completion by the end of 1944.

writing of reports, As a result, the Division's investigations have been brought nearer to the stage of definitive publication than at any previous time.

With great regret we record the passing of two persons formerly connected with the Division, Ann Axtell Morris and George Clapp Vaillant.

Mrs. Morris, who possessed great abilities as a writer and an artist, was entrusted by her husband, Earl H. Morris, with the copying of the extremely important frescoes discovered by him during the excavation of the Temple of the Warriors at Chichén Itzá, and was co-author of the monograph on that building. In later years she assisted Dr. Morris on his many expeditions in Arizona and New Mexico, making a specialty of the recording and study of pictographs. Her two books, *Digging in the Southwest* and *Digging in Yucatán*, which have had a large sale that still continues, have done much to acquaint the public with the methods and aims of archaeology.

Dr. Vaillant, formerly with the American Museum of Natural History and at the time of his death Director of the Museum of the University of Pennsylvania, was a member of Dr. Morley's staff at Chichén Itzá in 1926. During that season he excavated the Temple of the Initial Series and, at the Temple of the Phalli and elsewhere, made stratigraphic studies which laid the foundation for subsequent ceramic research in Yucatán by H. B. Roberts and G. W. Brainerd. Dr. Vaillant's work for the American Museum on the early cultures of Mexico was a brilliant scientific achievement, and, like Mrs. Morris' books, his *Aztecs of Mexico* has done much to promote an intelligent interest in archaeology. Throughout his career he kept closely in touch with the Division's work, giving freely of his time to visit our excavations and advise with us as to problems of mutual interest.

L34.

ALFRED V. KIDDER

Division of Historical Research

YB 44:163-166, 1945

Now that the war is over, several members of the staff who have been serving in the armed services or in other forms of war work are expected soon to return, and it is hoped that in the near future some at least of the interrupted activities of the Division may be resumed. Indeed, during the past year it has been possible to undertake a limited amount of archaeological and ethnological field work. Most staff members not in service, however, have devoted themselves to the

ACTIVITIES, 1944-45

Major H.E.D. Pollock, after three years, with the photographic division of the Air Corps in North Africa and Italy, returned late in 1944 for duty in Washington, and has recently been accorded inactive status. He will resume his studies of Maya architecture in the autumn of 1945. Mr. Gustav Strömshvik enlisted in 1943 in the Royal Norwegian Navy. He served on the North Atlantic convoys, took part in the invasion of Normandy, and, since the landings there, has held an administrative position at Norwegian headquarters in Edinburgh. He has recently been discharged. Mr. Karl Ruppert, volunteer in the American Field Service, was with the British Army during the Burma campaign and later in Italy. In the spring of 1945 his unit was transferred to northern Europe, where it was engaged until the end of hostilities in the evacuation of

wounded and in helping to clear captured concentration camps. He has now resumed his position with the Division. Dr. G. W. Brainerd, who holds the rank of lieutenant in the Naval Reserve, is attached to the Special Services Division of the Office of Research and Invention. His duties have taken him to India, Ceylon, and China. Miss Eleanor W. Ritchie, secretary of the Division, is a lieutenant (j.g.) in the Naval Reserve, on duty in Washington.

In civilian capacities, several members have taken part in the war effort. Mr. E. M. Shook is in charge of the large quinine plantation of El Porvenir in Guatemala. In the course of this work he has been able, as in past years, to make valuable observations on sites in a region hitherto very little known archaeologically and to obtain photographs of monuments and of objects in private collections. Dr. A. M. Halpern has continued as director of the language program in the Civil Affairs Training School at the University of Chicago. Dr. R. S. Chamberlain, senior cultural assistant in the United States Embassy in Guatemala, has had opportunity, during his four years at that post, to foster the close international intellectual relations which, we believe, have been a not unimportant by-product of the Division's more than three decades of activity in Mexico and Central America. He expects to resume his historical studies in the near future. Mr. F. B. Richardson, in 1944 legal attaché at the Embassy in Ecuador, attended the conference at San Francisco as adviser on Latin American affairs.

Dr. S. G. Morley, spent the winter in Yucatán, continuing his research on the Maya hieroglyphs. He has been in constant touch with Sr. Alfredo Barrera Vásquez, whose translation and correlation of variant historical and ceremonial Maya texts, the so-called Books of Chilam Balam, were carried on in 1943-44 under a grant from the Rockefeller Foundation administered at the Foundation's request, by Carnegie Institution. Mr. R. E. Smith continues in charge of the Division's office in Guatemala City. During the past winter, he was informed that road work at Cobán in Alta Verapaz had exposed a prehistoric midden. This he excavated, recovering a large collection of clay figurines and pottery fragments, many of the latter of a very beautiful incised ware of which only a few pieces had previously been known. Mr. Smith has also devoted much time to the installation of the archaeological collections in the Guatemala National Museum, which, under the directorship of Sr. Flavio Rodas, is being transferred to new and larger quarters. As chairman of the advisory committee on the museum, he has been assisted by Sr. Antonio Tejeda, artist of the Division, and Sr. Antonio Goubaud.

Sr. Tejeda continues to produce meticulously accurate and beautiful paintings of Maya pottery. Al-

though only a relatively small proportion of these can at present be used as illustrations in the Division's publications, it has been our policy to have such reproductions made of all important pieces from our own excavations and of those in museums and in private hands. The archive thus being built up will be of very great value to students who cannot see the material itself. It also serves as insurance against loss of the originals through dispersal of private collections or, in the case of museums, through destruction by earthquake, an ever present danger in the Central American republics. This year Sr. Tejeda has been working on Mr. Smith's Alta Verapaz pottery; on pieces in the Dieseldorff Collection, now the property of the National Museum; and on vessels recovered by Mr. S. H. Boggs in El Salvador.

Sr. Tejeda's younger brother, César, first employed in 1942 as assistant to Mr. Shook at Kaminaljuyú, developed great ability in mending and restoring pottery. During his work as preparator and in the field with Mr. Shook and Mr. A. L. Smith, he showed outstanding promise as an archaeologist. When this was brought to the attention of the authorities, he was granted a government fellowship for attendance at the Escuela Nacional de Antropología in Mexico City, where he has now matriculated. A fellowship was also given to Sr. Juan de Dios Rosales, for several years assistant to the late Dr. Manuel Andrade and to Drs. Redfield and Tax in their respective linguistic and ethnological investigations and, more recently, to Sr. Goubaud in the food survey. Such field experience as the Division has been able to give Srs. Tejeda and Rosales and such aid in acquiring academic training as it has been able to procure for them and for Srs. Alfonso Villa and Antonio Goubaud, largely through the generous and ready cooperation of the Rockefeller Foundation, is believed to be a most valuable contribution to the development of anthropology in Latin America, for although North American students can accomplish a certain amount of useful research, the major work must eventually be done by natives of the countries themselves, as it now is in Mexico by the able group headed by Dr. Alfonso Caso.

During the past winter Mr. A. L. Smith and Sr. César Tejeda made a survey of sites in the northwestern Guatemala highlands that are thought to date from late prehistoric times. Srs. Goubaud and Rosales, in the early months of 1945, completed the collection of data regarding food habits and food consumption of the Guatemala Indians and Ladinos. Dr. Kirk Bryan, professor of geology at Harvard University, spent two weeks in Guatemala studying physiographic conditions bearing upon the antiquity of human occupancy of that country. Reports on these investigations and on the ethnological work are appended. The Chairman

was in Guatemala during January and February for consultation with government authorities as to future undertakings. He also had opportunity to work in the Division office on archaeological collections made in former years. Temporarily unsettled political conditions prevented his visiting Mr. S. H. Boggs' excavations at Tazumal in eastern El Salvador, which are being carried on by the Salvadoran government, and for which Carnegie Institution has provided modest financial aid for the prosecution of certain stratigraphic studies. The Chairman later went to Boulder, Colorado, to confer with Drs. E. H. Morris and Anna O. Shepard regarding their work on Southwestern archaeology and ceramic technology; and to Albuquerque, New Mexico, to confer with Dr. F. V. Scholes. In California, he studied collections at Los Angeles and Berkeley.

At Cambridge, Mr. J.E.S. Thompson has begun the preparation of a comprehensive monograph on the Maya hieroglyphic writing. A report on certain aspects of this study appears below. Mr. Thompson has been awarded the Rivers Memorial Medal by Cambridge University for his contributions to Maya research. Miss Tatiana Proskouriakoff has begun a detailed analysis of dated Maya sculptures. This will not only lay a foundation for studies of other aspects of Maya art, but provide more reliable stylistic criteria than have hitherto been available for the dating of the many monuments which bear either no dates or illegible ones. Mrs. W. H. Harrison, in addition to her manifold duties as editor of the Division, has been compiling a dictionary of terms applicable to Middle American archaeology. This should serve to standardize usage and clarify nomenclature. The report on Kaminaljuyú by the Chairman, Dr. J. D. Jennings, and Mr. Shook has been finished and is now in press. In the field of Maya history, Dr. Scholes and Mr. R. L. Roys have continued the writing of their report on the Acalán-Tixchel area. Dr. Scholes and Miss Eleanor B. Adams, who now make their headquarters at Albuquerque, have been provided with quarters and given every facility for the prosecution of their work by the University of New Mexico.

1.35.

ALFRED V. KIDDER

Division of Historical Research

YB 45:195-199, 1946

With the return of all but one of the members of the staff who were in the armed forces or other government service during the war, it has been possible to resume normal research activities. "Reconversion" could not be rapid, however, for in each instance work had been abruptly interrupted and the individuals concerned were intensely preoccupied for years with matters so far removed from their former interests that there has of necessity been a period of reorientation and review, both of their own materials and of data that accrued during their absence. Furthermore, the almost entire halting of field investigations and, in the case of those in service, the impossibility of completing reports have thrown the Division program badly off schedule.

As has been stated in previous *Year Books*, it was planned that by the late 1940s all projects should be brought to a stage at which results could be summarized, conclusions drawn, problems formulated, and recommendations for future research be presented to the President and Trustees. This will still be done, but, as certain undertakings will have to be curtailed and others abandoned, it has become evident that immediate plans and long-range objectives must be restudied. For this reason, and also because the war hiatus and changing conditions in the postwar world make such a review singularly opportune, the members of the archaeological staff will hold a conference in Cambridge in September.

One of the most important matters for consideration at the conference will be that of recommendations to be made to the Institution. Regarding the nature and the locus of archaeological activity after the current series of investigations has been completed. Until now the major effort of the Division has been confined to the area occupied by Maya-speaking peoples, the archaeological work being keyed with studies of linguistics, ethnology, documentary history, and environmental conditions, in an attempt to follow the career of the Maya from the earliest times to the present. It has become evident, however, that hereafter it will be necessary to confine attention to the prehistoric period. This alters the situation to the extent that, if it seems desirable, the field of work can be broadened.

The problem of whether or not it will be best to continue intensive research on the preconquest Maya is a difficult one. The Maya were artistically and

intellectually the foremost group of pre-Columbian Americans. Knowledge of the origin, spread, and decline of their remarkable culture—knowledge which, it might be hoped, would bring understanding of what caused its efflorescence and what led to its ultimate withering, would constitute a very great contribution to the biology, so to speak, of civilization itself. Carnegie Institution has specialized on the Maya for over 30 years: most of the members of its archaeological staff are authorities on one aspect or another of Maya research; the Institution's work has reached a point at which each new bit of information is of cumulative value. On the other hand, what the Institution and others have done has made clear that the Maya were not, as was once supposed, uniquely outstanding as leaders in development of higher aboriginal culture. It is true that they were in many ways its most brilliant exponents, but it is not realized that, like the Greeks, they built on foundations reared by earlier peoples and that they were but one of many groups in both North and South America all of which played parts of greater or less importance on the New World stage. Yet our knowledge of this great human drama is very uneven. As to what took place in certain areas of southwestern United States, the Valley of Mexico, parts of the Andean region, we have a great deal of information; as to others, possibly, no less important and without question of much significance in the total picture, we know next to nothing. It might therefore be argued that the Institution should set itself the task of filling some of the most obvious gaps.

Decision on this fundamental question involves consideration of the interests and the special abilities of various staff members, of facilities for work in other areas, and of the plans of other private and governmental agencies. No matter how it is resolved, certain investigations now in progress; should, of course, be brought to the already mentioned stage of summary and interim report. On some of these, considerable progress was made during the past season. One or two are here briefly described; fuller statements regarding these and others appear in the body of this report.

A. L. Smith carried forward the reconnaissance survey of ruins in the Guatemala highlands. This project, inaugurated in 1945, is designed as a preliminary "stocktaking" of ancient sites in a hitherto very little known area which was heavily occupied over a long period in prehistoric times and which lies athwart one of the principal north-south routes of aboriginal migration and trade. It also occupied a position between the fertile and formerly even more densely inhabited Pacific slope and the valleys leading downward to the lowlands of Petén, where Maya culture achieved its highest development. Particular attention

is being paid to the chronological relations of fortified hilltop and undefended valley sites. It is hoped eventually to excavate intensively at one of each type. In the period under review, work was confined to the Department of Quiché, most of the four months available having been spent in the Néabaj area.

At Néabaj was made one of those unforeseen discoveries which so often upset the advance plans for archaeological fieldwork. Mr. Smith aimed to locate ruins over an extensive area and to obtain descriptions and photographs of them. Excavation was to be limited to few pits for the recovery of potsherd samples. He expected, this year, to cover northern Quiché and perhaps the whole of Baja Verapaz. All went according to schedule until he reached Néabaj. There, at a large site, he found a funnel-shaped depression in the frontal platform of one of the principal mounds. Guessing correctly that this must have been caused by the collapse of a vaulted tomb, and believing that it must lie close below, he obtained permission from the landowner, engaged diggers, and started hopefully down. To make a very long story short, the tomb proved to be no less than 30 feet down. To reach its floor, clear and remove its rich contents, and pack for hauling over mountain roads to the laboratory in Guatemala City the scores of specimens recovered, required a full month, by the end of which the rains had begun and further exploration became impossible. But the dislocation of the timetable was amply justified, for the tomb yielded some 45 specimens of pottery representing a very little known period, and one of the most beautiful collections of jade ornaments that has yet come to light.

Mr. Ruppert spent two months in Yucatán on what might be called a "cleanup" job, made necessary by certain gaps in the Division's published record of its many years' work at Chichén Itzá. The principal undertakings at that great site, such as the excavation and repair of the Temple of the Warriors, the Caracol, the Mercado, and the Temple of the Wall Panels, have been reported upon; a manuscript on the Monjas awaits the press. But a number of smaller buildings that were wholly or partly excavated have not yet been described. There are still others, unexcavated but in sufficiently good preservation to yield valuable architectural information. On return from his overseas duty in the American Field Service, Mr. Ruppert devoted himself to checking the notes taken by himself and others on the cleared but unpublished structures, and his own notes on structures at which no digging had been done. As is always the case, he found that more data and additional photographs were needed to enable him to prepare an adequate report. During the past winter these materials were gathered and the nature of several hitherto unidentified ruins was determined.

Gustav Strömsvik, having received his discharge from the Norwegian Navy, resumed his work at Copán. The decade of his activities there has worked wonders in the development of that in many ways most remarkable of all Maya ruins. Its extraordinary monuments have been re-erected, several of the most important buildings repaired, the great hieroglyphic stairway restored to its full height. The Copán River, which was steadily eating its way into the massive acropolis, has been diverted into a new channel. Yet by the wise sparing of many of the noble trees from the tropical forest that once engulfed Copán, by leaving untouched large portions of the wrecked and tumbled masonry of its temples, and by skillful restraint in the repair of those that he excavated, Mr. Strömsvik has made evident the high achievements of the ancient architects and sculptors without destroying the powerful psychological effect of what time and the jungle have wrought. Copán symbolizes both the glory of the Maya and the completeness of their fall.

During the year, Sr. Jesus Núñez, curator of the museum that houses the specimens recovered in the excavations, has acted as guardian of the ruins. The government of Honduras will see to their preservation in their present state.

Mr. Strömsvik opened the past season by repairing two of the monuments at Quiriguá that had been damaged by an earthquake. At Copán he put finishing touches on his work of former years. He plans to maintain headquarters there, and to do reconnaissance in the valleys to the east in order to determine the extent to which Maya culture penetrated in that direction and to study its relations to those with which it came into contact.

Dr. John M. Longyear, of the Peabody Museum of Harvard, who before the war had worked for the Division on the pottery of Copán, returned for six weeks to gather further data from a series of stratigraphic trenches. By courtesy of the Honduran government, which has cooperated most effectively with Carnegie Institution since the beginning of the project, Dr. Longyear was able to bring a large and valuable series of potsherds to Cambridge for laboratory study. An interesting and probably very important byproduct of his work was the finding in the river bank of a deposit of charcoal and flint and obsidian chips below a layer of sterile alluvium that underlies the deepest pottery bearing stratum. As not a single potsherd came to light, it is possible that this may represent a pre-ceramic culture, a thing not hitherto discovered in Central America. Further investigation is called for.

In addition to the field work above noted, several other projects were pursued. Dr. H.E.D. Pollock resumed his study of the great mass of material gathered before the war on the architecture of northern Yucatán.

Dr. S. G. Morley and Mr. J.E.S. Thompson continued their research on the Maya hieroglyphs; Miss Tatiana Proskouriakoff, hers on Maya sculpture, with special reference to determination of artistic criteria for the dating of monuments which bear no inscription or whose inscriptions are illegible. Miss Anna O. Shepard has sent to press a monograph on Plumbate pottery, a ware widely disseminated throughout Mesoamerica and therefore of much significance for working out the chronological and trade relations of cultures during the period of its manufacture. She has also been occupied with a classification of pottery vessel forms and with a study of symmetry in pottery decoration.

Robert E. Smith, in charge of the Division's Guatemala office, has devoted a large share of his time to cooperating with representatives of the Guatemala government in the organization of the National Institute of Archaeology and History, a body designed to further studies of the republic's rich pre-Columbian and postconquest past, and to administer its native and colonial antiquities. He has also served as Executive Chairman of the committee on the splendid new museum now being readied to contain the state's priceless archaeological collections, many of which are the product of the Division's excavations at Uaxactún, Kaminaljuyú, and other sites in Guatemala. Sr. Antonio Tejada, a member of the Division staff and likewise of the committee, has prepared dioramas, based on drawings by Miss Proskouriakoff, of a series of outstanding Maya ruins.

Mrs. W. H. Harrison, in addition to her duties as Division editor, has been engaged in compiling a dictionary of archaeological terms. Because of conflicting usages, personal predilections for certain terms, and, in many cases, necessity for further research, this greatly needed standardization of nomenclature is proving a long and difficult task.

The Division Chairman spent the winter in Guatemala working on the pottery of Kaminaljuyú and other highland sites. He visited A. L. Smith's excavations at Nébaj, those of Mr. Strömsvik at Copán, and those of the United Fruit Company at Zaculeu under direction of Messrs. John M. Dimick and Stanley H. Boggs. The Chairman is serving as adviser on the latter project, designed by the Fruit Company to provide for Guatemala an excavated and as far as possible restored ruin which will be more accessible to the people of the country and to tourists than are the lowland sites. Zaculeu, capital of Mam Maya at the time of the conquest, is singularly well fitted for this purpose. Many of its buildings are in a good state of preservation; it is magnificently situated at the foot of the towering Cuchumatanes range, close to the city of Huehuetenango, and easily reached, by motor or airplane from other parts of the country. The only archaeo-

logical activity outside the Maya field has been that of Dr. E. H. Morris, who has continued his study of the early cultures of southwestern United States.

Researches in documentary history and ethnology also have gone forward. Dr. Scholes and Mr. Roys have sent to press their monograph on Acalán-Tixchel. Dr. Chamberlain, who during the war was Senior Cultural Attaché at the United States Embassy in Guatemala, has resumed the writing of histories of Montejo's conquests of Yucatán and Honduras. Dr. Robert Redfield, Dean of the Social Sciences at the University of Chicago, has been prevented by other duties from active participation in the ethnological work of the Division, but he has kept in close touch with that of Dr. Tax and Sr. Villa. Reports on the investigations by the latter two on the modern Maya of the Guatemala highlands and of eastern Chiapas respectively are approaching completion. Sr. Rosales' study of the town of San Pedro on Lake Atitlán, and that of Lic. Antonio Goubaud on food consumption and food habits of the Guatemala Indians and ladinos, will be published in Spanish by the Guatemala government. Lic. Goubaud has been made Director of the Instituto Indígenista Nacional, an agency set up by the new and very progressive government of Guatemala for research on the social and economic problems of the Indians who form so large a percentage of the republic's population.

I.36.

ALFRED V. KIDDER

Division of Historical Research

YB 46:173-177, 1947

Success in archaeology, as in war, depends to a large extent upon an effective intelligence service and readiness to seize upon and exploit the "breaks." This is strikingly illustrated by the events of the past season's field work, during which information given by friends of the Division and at once followed up led to two of the year's three most rewarding undertakings.

First among these, perhaps indeed the single most important discovery ever made in the Maya field, resulted from word sent in by Mr. Giles G. Healey, who has long been interested in the Division's activities. In the winter of 1946 Mr. Healey penetrated the rough and practically unexplored jungle west of the Río Usumacinta in Chiapas, Mexico, to photograph the

primitive Lacandon Maya for a documentary film on Maya antiquities and the present-day Indians, which he is making for the United Fruit Company. Having with difficulty gained the confidence of the Lacandon, who are suspicious of all whites and are particularly loath to have them see the ancient temples at which they still conduct ceremonies, he was led by them to a small group of ruins three days' journey from the river. On entering one of the buildings, he was astonished to see that its three vaulted rooms were covered from floor to capstones with brilliant mural paintings.

Mr. Healey notified the Division of his find as soon as he was out of the bush, and at our request returned in July, accompanied by the Division artist, Sr. Antonio Tejeda. On the latter's report that the paintings far surpassed anything hitherto known, a party fully staffed and equipped to make copies and photographs, financed by the United Fruit Company, and led by Mr. Karl Ruppert, spent six weeks at Bonampak (Maya for "Painted Walls"), as the site has been named by Dr. Morley.

The murals depict processions, ceremonies, warfare. The human figures, nearly life-size, are executed with extraordinary naturalism. Costumes, ornaments, weapons, and musical instruments are reproduced with remarkable fidelity and in great detail. There are long hieroglyphic texts. The walls of this forgotten little temple have yielded fuller data on many aspects of Maya civilization at the height of the Classic period than one had dared hope would ever be recovered. Mr. Ruppert's account of the expedition, with description of the paintings and of the very fine sculptures that also came to light at Bonampak, appears in the body of this report.

The second important find of the season can be traced back to the eruption of the volcano of Santa Maria in 1902, which covered the neighboring slopes from the highlands to the Pacific coastal plain with a meter of white ash. The region is one of the principal coffee-producing areas in Guatemala, but to set out the coffee trees it is necessary to dig through the ash and well down into the underlying soil. Sr. Vitalino Robles, of Quezaltenango, owns a plantation there, the Finca El Paraiso, which is indeed a veritable archaeologist's paradise. Several years ago, in the course of planting, his workmen uncovered a series of stone slabs. Sr. Robles, an ardent amateur archaeologist, had the area cleared of ash, and digging under the slabs, came upon a large cache of pottery. Always a most helpful co-operator with the Division, he halted work and sent word to our office in Guatemala City. Sr. César Tejeda went to El Paraiso and assisted in removing the vessels, many of which were of Plumbate pottery. This ware is of much archaeological significance because it was very widely disseminated in trade

throughout Mesoamerica. It has been the subject of intensive study by Miss Anna O. Shepard (1948). The El Paraiso Plumbate proved to be of a type not previously known. For this reason it was desirable to obtain more material; in February Mr. E. M. Shook and the Chairman, at Sr. Robles' invitation, carried on further excavations.

The digging revealed the fact that the pottery cache had been made in a large, low mound, its contours masked by the heavy layer of volcanic ash. On widening and deepening the original Robles pit, we encountered, a rectangular tomb, its closely fitted wall and floor slabs painted red. It held two skeletons accompanied by much Plumbate pottery and jade. In another part of the mound were burials in great pottery urns.

While work at the mound was in progress, Mr. Shook investigated another outcropping of stone slabs at a spring in a nearby ravine. These turned out to be the outer edge of an extensive pavement which, sloping upward, ended at a narrow masonry-walled, slab-roofed passage that led into the side of the ravine. It was at first believed that this must be the entrance to a tomb, but when it was followed to its end it proved to open into a round chamber, 8 m in diameter, with two encircling benches and a central pit full of ashes and burned stones, evidently a communal sweat bath. It is of an entirely new type and was probably of ceremonial significance, for in clearing the frontal pavement we found enormous quantities of fragments of fine Plumbate vessels doubtless ritually broken.

Also adding significantly to knowledge of Maya archaeology were several very important tombs opened by Mr. A. L. Smith in the Department of Quiché, Guatemala, where in 1946 he had excavated a tomb of the Early Classic period in one of a group of mounds in the outskirts of the highland Indian village of Néabaj. Facing that mound was another. Surmising that this might contain other interments, he returned to Néabaj in 1947 and became involved in a most difficult but most highly productive piece of excavation. The mound's frontal platform proved to hold a series of tombs, altars, and ceremonial caches so stratified that their age, relative to one another, could surely be determined. The pottery vessels, incense burners, alabaster and marble vases, pyrite mirrors, gold and copper ornaments, and magnificent carved jades recovered illustrate the development of local arts over a period of some seven centuries; they prove that Néabaj was long the seat of an unexpectedly rich and flourishing community; and they indicate that a lively trade was maintained with the great centers on the Río Usumacinta. Mr. Smith's report appears below.

The foregoing were the highlights of a most successful season, which included, various other field activities.

A. L. Smith, before going to Néabaj, continued his survey of the northern highlands, mapping, noting, and photographing ruins in the Department of Baja Verapaz. Later he visited a number of sites in the Néabaj-Aguacatán-Sacapulas area in the company of Miss Tatiana Proskouriakoff, who gathered material for reconstruction drawings of sites and buildings of the sort contained in her *Album of Maya Architecture* (Proskouriakoff 1946). At Néabaj, Miss Proskouriakoff undertook the essential and in this case particularly difficult task of recording, on plans and sections, the exact location of tombs, caches, and architectural features as they came to light in the excavation of the mound.

E. M. Shook inaugurated a southward-heading survey of archaeological sites on the Pacific slope and coastal plain. He commenced operations in January, excavating at mound groups near Ayutla, on the Mexican border. At the same time Dr. Philip Drucker, of the Smithsonian Institution, began a similar survey on the Mexican side and worked northward. Dr. Drucker and Mr. Shook are keeping in close touch with each other and their combined efforts will open up a region hitherto almost completely neglected and one which not only was densely populated in ancient times, but was certainly always a highway for migration and commerce. Very interesting finds are to be expected.

Shook's investigation at Ayutla was interrupted by the opportunity to dig at Finca El Paraiso, which is also in the zone of his projected survey; and just as that excavation was finished, the United Fruit Company sent word of discoveries at Tiquisate, still farther south on the coastal plain, which had been made in breaking new land for banana farms. Given every facility by the Company, Shook spent several weeks at Tiquisate putting in test trenches and studying material that had come to light during the developmental operations.

The Chairman, as stated, worked with Shook at El Paraiso. He visited A. L. Smith's diggings at Néabaj and made several trips to Huehuetenango, in western Guatemala, where the United Fruit Company is carrying on an extensive project of excavation and repair at the ruins of Zaculeu, the ancient capital of the Mam Maya. Close touch is being kept with this work, which is yielding much information that bears on architectural and ceramic problems of interest to the Division. The technical aspects of the project are being handled by Messrs. S. H. Boggs and A. S. Trik, both former members of the Division staff; this year Mr. Gustav Strömsvik of the present staff was given leave to supervise the restoration of the Zaculeu ballcourt.

Another archaeological undertaking that keys well with the Division's program is an examination by Dr. Robert Wauchope, also formerly with the Division, of

Guatemalan sites occupied at the time of the Spanish conquest. The work is being done by the Middle American Research Institute of Tulane University.

An interesting and important development has been the establishment in Guatemala City of a very fine new anthropological museum. Mr. R. E. Smith, the Division's local representative, has been acting as chairman of the government's committee on planning and installation. This has occupied a large share of his time during the year, an activity justified by the fact that the museum will house the Division's great collections from Uaxactún, Kaminaljuyú, Nébaj, and other sites, as well as by the fact that the ample storage space now become available will permit transference from our office to the museum of the large and extremely valuable lots of potsherds gathered by us from all parts of Guatemala. In order to have more ready access to these materials, the office of the Division has been moved from downtown Guatemala to a building close to the museum.

The Division office has continued to serve as headquarters in Guatemala City for scientific workers from other institutions. This year it has been so used by Dr. L. C. Stuart, of the University of Michigan, who is making a herpetological survey of the Republic; by Dr. Wauchope, of Tulane University; and by Dr. T. Dale Stewart, physical anthropologist, of the United States National Museum. Dr. Stewart's work, under a grant from the Department of State, has been of great value to us. In past years, abundant data have been gathered on the bodily make-up of the Yucatecan Maya, but no comparable information has been available regarding the various Maya speaking groups of the highlands. Dr. Stewart measured, photographed, and blood-tested series of men and women at Sololá and Patzún. He also studied the considerable amount of skeletal material accumulated by the Division in past years, as well as that found during the Zaculeu excavations. He was supplied with a Division car and greatly aided by native interpreters put at his disposal by Professor Antonio Goubaud, Director of the Instituto Indigenista Nacional. Professor Goubaud's assistance furnishes a further example of the hearty co-operation the Division has always received from the governments of Guatemala and Mexico, the latter having granted duty-free entry of the equipment and supplies necessary for the Bonampak expedition and having delegated a staff artist of the Instituto de Antropología e Historia, Sr. A. Villagra, to accompany the party and work with Sr. Tejeda. For these and many other favors throughout the years, the Division is under deep obligation to Dr. Alfonso Caso, former Director of the Instituto; to Arq. Ignacio Marquina, its present head; and to Dr. Eduardo Noguera, Director of the Instituto's Department of Pre-Hispanic Monuments.

In the field of Maya linguistics, Dr. Norman McQuown, by arrangement with the Department of Anthropology of the University of Chicago, is giving half his time to study of the great mass of material gathered by the late Dr. Manuel J. Andrade. In December 1946 he made a trip to the Huastec Indians, a tribe in the Mexican state of Veracruz, who, although speaking a Maya language, are now, and apparently long have been, culturally quite distinct from the main southern group of the Maya.

Desk activities of the Division staff have also gone forward. Dr. S. G. Morley been engaged in preparation of guidebooks to Chichén Itzá and Uxmal, and has made further progress on a dictionary of Maya hieroglyphs. His large and fully illustrated book, *The Ancient Maya*, was published during the year (1946) in English by the Stanford University Press and in Spanish by the Fondo de Cultura Económica in Mexico. Its wide sale, calling at once for a second printing, indicates how satisfactorily it fills the long-felt need for a work on the Maya suitable for the general reader. Dr. H.E.D. Pollock continued working up the great amount of data on the architecture of the Puuc area in Yucatán gathered by him and Mr. Shook in the years before the war; Mr. Karl Ruppert, before leaving for Bonampak, was occupied with architectural materials collected last year at Chichén Itzá. Miss Tatiana Proskouriakoff devoted herself to the intensive study of Maya sculptural art; Mr. J.E.S. Thompson, to that of Maya hieroglyphic writing. Under part-time arrangements, with the Peabody Museum of Harvard University and the United Fruit Company's Zaculeu Project, Dr. J. M. Longyear worked on the pottery he obtained at Copán in the winter of 1946; Mr. Stanley H. Boggs, on that from his excavations for the government of Salvador at Tazumal. Mr. E. H. Morris continued preparation of reports on finds of former years made in Arizona caves occupied by early Southwestern agricultural peoples. Miss Anna O. Shepard completed a monograph on Plumbate pottery and a paper on symmetry in ceramic decoration, both of which are now in press.

Mr. R. L. Roys continued his research on Maya-language documents of the early colonial period. Dr. F. V. Scholes' work on Yucatán in the sixteenth century goes forward, with the assistance of Miss Eleanor B. Adams, at the University of New Mexico, where he is now Dean of the Graduate School. Dr. Robert S. Chamberlain has completed monographs on the conquest of Yucatán and of Honduras. He has accepted a post as Associate Professor of History at the University of Miami. Dr. Sol Tax, of the University of Chicago, has given half time to preparation of reports on the Quiché and Cakchiquel Indians of Guatemala; Sr. Alfonso Villa R., full time to data gathered in former years on the Maya-speaking tribes of Chiapas. The completion of

the foregoing historical and ethnological researches will bring to a close the activities of the Division in these fields. Under the respective direction of Dr. Scholes and Dr. Redfield, they have done much to throw light upon the findings of the archaeologists and to render understandable the conditions existing today in Mexico and Guatemala.

As of June 1, 1947, Miss Eleanor W. Ritchie resigned to be married, thus terminating her long, faithful, and effective service as Division secretary.

L37.

ALFRED V. KIDDER

Division of Historical Research

YB 47: 207–211, 1948

The work of the Division during the past year has to a considerable extent had direct bearing on aspects of Middle American research yet to be performed. Consequently, although the progress and results of current investigations are customarily the subject matter of the *Year Book*, something should be said in this report concerning plans for the future as they have taken shape during the two years since *Year Book* 45 set out the desirability of review and analysis. Interruption of the normal activities of the Division by the war, conclusion of certain non-archaeological elements of the Maya program, as well as approaching retirements made it opportune to assess past efforts, restudy the aims and methods of research, and consider most effective orientation for the Division's future effort in that field. General staff conferences consolidated divisional thinking, which benefited greatly also from informal discussion with representatives of other institutions engaged in studies of the Maya and related pre-Columbian civilizations.

For many years the Division has concerned itself with Maya history from the earliest times and over the entire area occupied by Maya-speaking peoples. Much attention has also been given to the conquest and colonial periods, to the life and customs of the present-day Maya, and to environmental conditions in the Maya country, studies designed to aid in the interpretation of the archaeological findings.

The review of what has been done to date in archaeology and allied fields has indicated that although many interesting problems remain unsolved and many

regions are still inadequately explored, a general outline of the Maya's career has been obtained. It was also indicated that indefinite continuance along the lines formerly pursued might lead to over-concentration on detail and narrowing of outlook. There seemed to be danger that, in attempting to go farther with a program covering so long a span of time and so large an area, the interests of individual workers might become so channeled and specialized that the manifest advantages of team work might be lost. For these reasons and also because of the greatly increased cost of field work, it appeared that there should be a quantitative reduction in objectives and a shift from a general study of the Maya past to an attack upon some specific phase thereof. This, it was thought, should be a period already shown to be particularly significant; one on which the attention of the entire staff could profitably be focused; and one promising to yield, within a predictable time, results of both historical and methodological importance. These considerations led to the recommendation, for inauguration in 1951, of an intensive study of the protohistoric period of northern Yucatán.

The four or five centuries preceding the Spanish conquest of Yucatán were times of stress and change. The great southern cities had been abandoned. Maya culture, however, had persisted in the north. But whereas the Maya of classic days had apparently been free to develop their remarkable civilization without foreign interference, their Yucatecan successors became increasingly affected by influences and by actual migrations from highland Mexico and the Gulf Coast. New artistic, and governmental ideas surely made themselves felt. But as these are as yet only imperfectly understood, we do not know to what degree they were instrumental in bringing about the political alliances, the inter-group rivalries, and, finally, the open conflicts which seem to have caused the general decadence of the sixteenth century.

For attack on this interesting and, from the point of view of historical theory, very important period we fortunately have large amount of information regarding preconquest times in the form of chronicles, some written by native scholars, some, at second hand, by Spaniards. The checking of these accounts is one of the most promising aspects of the proposed research. Certain students have taken them at face value; others are of the opinion that although the events recorded doubtless took place, their sequence may have been seriously garbled. The principal points at issue concern the times of founding, length, of occupancy, and dates of abandonment of various cities whose ruins are identifiable. As the problems have to do with relative chronology, they can, in most cases at least, be settled by excavations at the sites in question. It is most

desirable that this be done, not only to permit accurate reconstruction of what actually took place in Yucatán, but also in order that methods may be worked out for testing, by archaeological evidence, the reliability of these, and of similar traditional narratives bearing on the history of other New World civilizations in Mexico and the Andean region.

The activities of the past year were a start toward clearing the decks for the proposed new program. This entails completion of all current field investigations and the making of certain surveys needed to round out the former general study to determine the most favorable sites for intensive investigation. The major task of most staff members, however, has been, and for the next two years will continue to be, the writing and seeing through the press of final reports on all work accomplished under the old program.

The most important field operation of the past season was a second expedition to Bonampak, a Maya city of the Classic Period recently discovered in the densely jungled country west of the Usumacinta River in the Mexican state of Chiapas. As reported in the last *Year Book* [Chapter 19.1 this volume], one of the temples at Bonampak contains mural paintings, remarkable for elaborateness and skill of execution, for variety and interest of subject matter and for the splendid state of their preservation. The recording of these unique paintings has been a major undertaking of the Institute of Anthropology and History of the Mexican government and, Carnegie Institution, most generously financed by the United Fruit Company. In 1947 the murals of the first of the temple's three chambers were copied in water color and photographed with panchromatic and infrared film. The 1948 party consisted of Mr. Gustav Strömsvik, archaeologist, and Sr. Antonio Tejada F., artist, both of the Division's staff and Srs. Agustín Villagra and Hipólito Sánchez, artists of the Institute of Anthropology and History. Working long hours under most difficult and trying conditions the artists succeeded, before the onset of the rains made withdrawal from the bush necessary, in completing the copies of the murals in the second and third rooms. An account of the work and a description of the newly recorded paintings are contained in Mr. Strömsvik's and Sr. Tejada's reports below.

This second and final Bonampak expedition was the only major piece of field work that had been planned for the winter of 1948. But as so often happens in archaeology, an accidental discovery necessitated an entirely unforeseen, and in this case most profitable, excavation.

A building boom at present going on in Guatemala City has called for the manufacture of great quantities of adobes, tiles, and bricks. The best material for these is clay which has already been mixed, tempered,

and puddled, a requirement perfectly fulfilled by the fill of ancient earth mounds. As a result, a number of brickworks have been set up at the great archaeological site of Kaminaljuyú in the outskirts of the city, and many mounds are being destroyed. At the largest of all the Kaminaljuyú mounds, the workmen of a government brickworks cut into a tomb. When this was brought to the attention of the superintendent, the digging was stopped, the Division's Guatemala office was notified, and Mr. E. M. Shook made a preliminary examination. He found that the tomb lay in the center of the mound, about 13 m above ground level and about 7 m down from the summit. The chamber, filled with earth following the ancient collapse of its log roof, had been broken into on one side; the fragments of many vessels were scattered below. The pottery was of the Miraflores Phase, confirming an earlier suspicion that, in spite of its great size, the mound had been erected during that very early period.

As the only Miraflores tomb previously known had been opened by an amateur, and as the present one was obviously very rich, Mr. Shook dropped all other work and undertook its excavation, a long and difficult piece of work because of the necessity of removing a tremendous overburden and because of the masses of crushed vessels it was found to contain. Of these there were probably over 300 (an exact count awaits their restoration). There were also very beautiful small stone and jade containers, little stone mortars in the form of frogs, a large eccentric flint, and a so-called "mushroom stone." Neither of the latter types had been thought to have been produced at so early a date.

Important finds did not end with the tomb, for as the cutting by the government's workmen progressed, it was seen that the mound had grown by accretion and, that it contains well preserved remains of a sequence of several adobe structures, the tomb having been dug into the summit platform of the next to latest. It is quite possible that others will be found below, and certain that much valuable information as to Miraflores ceremonial architecture, about which we have hitherto known nothing, will be gained as the work progresses. We are greatly indebted to the officials of the Department of Public Works, who have co-operated to the fullest extent by supplying workmen at no expense to us and by sparing uncovered structures until they can be carefully cleared, studied, and recorded. Thus we shall have opportunity to gather data on a most instructive and perhaps unique architectural complex, and one whose excavation would have been far too costly for us to undertake. Mr. Shook's report on the mound appears below.

During the season, data have also accrued as to the representation at Kaminaljuyú and vicinity of the

Las Charcas and Sacatepéquez; phases, now proved to be even older than Miraflores. To date these are known only from their pottery and a single Sacatepéquez grave found by Mr. Shook in a road-cut west of Guatemala City. Ceramically, both are as highly developed as Miraflores. The more primitive phases which must have preceded them still elude discovery.

So much for field work. Most members of the staff have been engaged in laboratory and library studies, and in writing reports, activities necessary for bringing the old program to completion and preparing for the Yucatán project.

Dr. Pollock, who is carrying the principal load of the internal administration of the Division, has also continued work on his report on the architecture of the Puuc cities of Yucatán, which contain, some of the finest and best-preserved buildings ever erected by the Maya. They are believed by some students to have been products of a renaissance that took place after the abandonment of the Classic southern centers, and by others to date from the latter part of the Classic Period. Solution of this very important problem is one of the objectives of the proposed new program. During the winter, Dr. Pollock visited Yucatán to check certain earlier observations on the ruins and to examine sites which are under consideration for future study. His report appears below.

Mr. Karl Ruppert, who was in charge of the expedition to Bonampak in 1947, has written a report on the architecture of that site. Further observations on some of the buildings, made in 1948 by Mr. Strömsvik, have been incorporated. The greater part of Mr. Ruppert's time has been devoted to study of the notes on, and the photographs and plans of buildings excavated in past years at Chichén Itzá that have not been published. The resultant report will complete the record of the Division's work at Chichén Itzá and will form one of the bases for continued research on the architecture of northern Yucatán.

Mr. A. L. Smith has devoted the period under review to materials gathered during his survey of archaeological sites in the Guatemala highlands and in his excavation of the very rich tombs discovered by him at Nébaj. He has completed the final report on the Division's work at Uaxactún.

Mr. R. E. Smith, who makes his residence in Guatemala and is in charge of the Division office there, has given much time to the new Guatemala National Museum of Archaeology and Ethnology. As chairman of the National Institute of Anthropology and History's committee on the museum, he has been active in the planning of the museum and, with Dr. Paul H. Nesbitt, in the installation of its magnificent Maya collections. Dr. Nesbitt's invaluable services were, through the efforts of Mr. Smith, made available to the Rockefeller

Foundation. Mr. Smith's monograph on the pottery of Uaxactún is approaching completion.

Miss Tatiana Proskouriakoff has continued work on Maya sculptural art with special attention to the stelae of the Classic Period. The methods employed in her analytical study of these monuments were described in the last *Year Book*. It has the double aim of tracing the development of Maya stone carving, an art in which that people led all others in the pre-Columbian New World, and of determining objective criteria which will permit the dating of stelae and other sculptures that bear no inscriptions or inscriptions that have been so damaged as to resist decipherment. Miss Proskouriakoff has also made a series of restoration drawings, similar to those in her *Album of Maya Architecture*, of sites and buildings in the Guatemala highlands. The necessary architectural data were gathered by A. L. Smith; field sketches of the often very spectacular setting of the groups were made by Miss Proskouriakoff.

The late Dr. Sylvanus G. Morley spent the season from November 1947 to May 1948 in Yucatán carrying forward his epigraphic researches. Although Dr. Morley's death in Santa Fe on September 2, 1948, occurred after the close of the period covered by this report, there must here be voiced the deep personal grief of his colleagues of the Division, and their sense of the irreparable loss to Maya research in the passing of its most devoted and most eminent student. A statement regarding his great contribution to knowledge of the Maya will be prepared for the next *Year Book*.

Mr. Thompson has continued his studies of Maya hieroglyphic writing. The introductory volume to this work is virtually completed, and it is anticipated that the book will be ready for the publishers next year. Mr. Thompson also has given his time as editor of the Division's series of *Notes on Middle American Archaeology and Ethnology*.

The Chairman spent the winter in Guatemala working on the collections of potsherds made by A. L. Smith during his highland survey. He also made notes on, and photographed the pottery and artifacts from the Nébaj tombs for a joint paper with Mr. Smith. The Nébaj materials are of much interest, not only for the fine preservation of the pottery and the outstanding beauty of the jade carvings, but also because both pottery and jades, evidence active trade relations between Nébaj and Classic centers in the lowlands. The Chairman has continued to act as archaeological adviser to the United Fruit Company, which is engaged in the excavation and restoration of the important ruins of Zaculeu in western Guatemala.

In the field of history and native Maya literature, Mr. R. L. Roys spent a considerable part of the year in proofreading and indexing the monograph on the

Chontal Indians of Acalán-Tixchel by himself and Dr. F. V. Scholes, now in press. He also made an intensive study of Maya prophecies to investigate the meaning of various obscure phrases and mythological references. For this purpose he was obliged to make a further study of the Ritual of the Bacabs, a book of medical incantations. The results of his research may form an extensive appendix to Mr. J.E.S. Thompson's work on the Maya glyphs, as it is possible that certain of the stock phrases of the prophecies and incantations also formed parts of the hieroglyphic inscriptions and that cross-identification may throw light on the meaning of glyph groups not now decipherable. Mr. Roys has been made Honorary Research Professor of Anthropology at the University of Washington.

Dr. Scholes, now Dean of the Graduate School and Vice-President of the University of New Mexico, continues, for the Division, his research and writing on the history of Yucatán, assisted by Miss Eleanor B. Adams. In addition to work on the above-mentioned joint monograph with Mr. Roys on Acalán-Tixchel, he has been engaged in several studies preliminary to, and laying foundations for his *Yucatán in the Sixteenth Century*, which will form the fourth and final volume of a series on the early history of the peninsula, the first being Mr. Roys' *Indian Background of Colonial Yucatán*, already published; the second and third, Dr. Scholes' and Mr. Roys' *The Maya Chontal Indians of Acalán-Tixchel*, and Dr. Robert S. Chamberlain's *Conquest of Yucatán*, both in press.

L.38.

ALFRED V. KIDDER

Division of Historical Research

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In archaeology it is always difficult, often impossible, to adhere to a prearranged schedule of field work. The archaeologist never knows what lies underground: its quantity, the state of its preservation, or the often entirely unexpected leads and problems it may open up. Also, he must be prepared temporarily to abandon any given undertaking because of some reported discovery which, for one reason or another, must at once be exploited. This is particularly true of work in the Maya area, in which so little actual excavation has been done that one can seldom predict what or how much or

how little one is going to find; there is so great an amount of unexplored country that at any time may come word of a ruin of such obvious importance that it must immediately be given at least preliminary investigation.

The finding of the unique wall paintings at Bonampak, described in the last two *Year Book* reports, was a case in point. Another was the discovery, in 1948, of the extraordinarily rich tomb of the Miraflores Phase at Kaminaljuyú, in the outskirts of Guatemala City. The clearing of this tomb not only took the time of two staff members for many weeks and further required many months for the study of the specimens recovered, but also proved that native Middle American culture had reached so high a state of both technological and social advancement at what had formerly been believed to be a still formative period that future investigation of the origin of Middle American civilization will have to be rather radically reoriented.

The Division's troubles at Kaminaljuyú did not end with 1948. The upper benches of the tomb, which lay several meters down from the top of a 20 m mound, could not be entirely excavated during that year without burrowing too deeply for safety into a tremendous overburden of hardpacked earth. So, with labor kindly supplied by the Government of Guatemala, the off season was employed in cutting it away, with the result that a second tomb, set somewhat higher, came to light. The extremely difficult task of its excavation and the recovery of its many mortuary offerings was carried out by Mr. Shook.

To Mr. Shook also belongs the credit for identification of a hitherto unrecognized stage of culture older than Miraflores but younger than one we have called Las Charcas. The original find, a burial accompanied by much pottery, was made in the side of a road-cut west of Guatemala City in the Department of Sacatepéquez; this name has been assigned to the phase. Subsequently, excavation for the storage tank of a gasoline station near Chimaltenango yielded a further large Sacatepéquez collection.

Study of the enormous amount of Miraflores material from Kaminaljuyú, of the Sacatepéquez specimens, and of a rich new Las Charcas find has shown that these three phases were sequent stages in the (we believe very long) development of an important Preclassic highland culture that culminated in Miraflores. The forerunners of that culture, even in Las Charcas times far from primitive, are still unknown, and we cannot as yet explain the apparently abrupt and certainly very great change marked by the opening of the Classic Esperanza Phase at some time during the early centuries of the Christian era.

Establishment of the Las Charcas-Sacatepéquez-Miraflores sequence contributes significantly to knowledge of Guatemala highland prehistory. From the

broader view of the history of art and technology, its potential value is great, for it provides a large and fully documented body of data to supplement our, scanty knowledge concerning such aspects of cultural growth as developments in the techniques of pottery making and the life histories of decorative styles. Much of our theorizing on these matters has been highly speculative, because based on series of specimens whose relative ages are uncertain. The only weakness of the present sequence, and it is of course a very serious one, is due to our ignorance of the amount of time that elapsed between earliest Las Charcas and latest Miraflores. For all we now know, it may have been 200 or a thousand years. But there is hope that further perfection of methods for employment of radioactive elements for determination of the age of archaeological specimens may eventually permit reasonably accurate dating.

A second unplanned investigation was made necessary by road work at Asunción Mitá in eastern Guatemala, where in the elimination of a curve some large mounds were being cut down. In one of these, previous digging by pot hunters had exposed an earlier structure containing vaulted chambers. Mr. Strömsvik accordingly went to Asunción Mitá in April to make record of such parts of the building as had been exposed. Both architecture and pottery seem to indicate connections with Copán during the so-called Acropolis Period. During his visit, Mr. Strömsvik took opportunity to reconnoiter the region, mapping and collecting potsherds from a number of other sites.

The final season of Mr. A. L. Smith's survey of the Guatemala highlands was devoted to the Departments of Quiché, Alta Verapaz, and Chimaltenango. Mr. Smith revisited Néabaj, Quiché, where he made remarkable finds in 1946 and 1947. This year a tomb, located in 1947, was excavated. Among the mortuary offerings of pottery and jade was a vessel, apparently a trade piece from Alta Verapaz, which is believed to date from the early years of the Late Classic Period. If this is confirmed, will show that, part at least of what have considered the Early Classic period of Néabaj was contemporaneous with the beginning of the Late Classic of Petén; in other words, that we must recognize a certain amount of cultural lag in the highlands.

After a survey of the San Andrés Sajcabajá region of Quiché, where a number of large sites were mapped, Mr. A. L. Smith, accompanied by Mr. R. E. Smith and Dr. Stephen de Borhegyi, proceeded to Alta Verapaz. Sites in the neighborhood of Cobán and in the upper and middle drainage of the Río Polochic were examined. Some of these contain remarkably fine construction in which very large and accurately cut stone slabs were used. Potsherds were scarce, but those that were recovered and certain vessels from a tomb make it evi-

dent that the ruins in question date from the Late Classic Period.

Finally, A. L. Smith visited the ruins of Mixco Viejo in the drainage of the Río Grande. From this extensive site, known to have been occupied at the time of the Spanish conquest, he recovered a large collection of potsherds illustrating the hitherto little-known wares of the sixteenth century.

Mr. E. M. Shook, as already stated, excavated a second rich tomb in the great Miraflores phase mound at Kaminaljuyú. The specimens from the tomb, hundreds of thousands of potsherds from the fill of the mound, more thousands from various other mounds at Kaminaljuyú that are being cut down for brick making, and still others from road operations to the west, are being classified and studied by Mr. Shook and the Chairman.

The most important field operation of the period under review was the Campeche expedition of Dr. George W. Brainerd and Mr. Karl Ruppert. Past work of the Division had developed a sound framework of knowledge relative to much of the southern area of the Maya and to northern Yucatán. There existed, however, an intervening area that was but sketchily known and little understood, our lack of knowledge being particularly acute in respect to ceramics. Although this little-known area stretches across the peninsula from coast to coast, it seemed of particular importance to gain knowledge of the so-called Río Bec and Chenes areas of eastern Campeche. By making a survey of the pottery of these areas it was hoped that relationships might be established with the Petén region to the south and Yucatán to the north, and that the cultural development of Yucatán might thus be anchored more firmly to the relatively well dated cultures of the south. Such linking up of southern and northern areas seemed of particular importance, before embarking upon any new operations in Yucatán.

By arrangement with the University of California at Los Angeles and the Southwest Museum, Dr. Brainerd obtained leave from those institutions for a period of six months to carry on this work for the Division. He was assisted by Mr. Ruppert. During the winter and spring they conducted excavations at the Chenes sites of Santa Rosa Xtampak and Dzibilnucac, and at a number of Río Bec locations centering about the site of Xpuhil. At the time of writing this report we record that the materials collected are being analyzed; the study has progressed far enough, however, to indicate that the Chenes-Río Bec architectural styles and the associated pottery are in part contemporaneous with the Puuc remains in Yucatán and with the Late Classic (Tepeu) in the Petén. The Petén association should provide approximate dating, in terms of the Maya calendar, of Chenes-Río Bec and Puuc remains,

a dating that has at times been hotly debated. There is every reason to hope that the work of Brainerd and Ruppert has made an important advance toward solving the relative chronology of the northern, intermediate, and southern areas, and that the work also will throw light on cultural influences between areas.

Laboratory and desk work again occupied a large proportion of the efforts of the staff. Miss Shepard has continued her work in ceramic technology. A special project dealing with pottery of the southwestern United States and designed to acquaint archaeologists more generally with the applications and significance of ceramic technological data is nearing completion.

Miss Shepard has also given time to the preparation of a ceramic handbook for the use of archaeologists. Miss Proskouriakoff has brought to completion her initial studies of Maya sculpture. It is anticipated that this work will go to press by the end of this year. During the period under review Mr. Thompson completed and submitted the manuscript of the introductory volume of his studies of Maya hieroglyphic writing. This volume is now in press. Similarly completed and in press is Mr. A. L. Smith's work on the excavations at Uaxactún. Prior to entering the field with Dr. Brainerd, Mr. Ruppert continued his study, preparation, and arrangement of unpublished materials dealing with earlier activities of the Institution at Chichén Itzá. Dr. Morris made further progress toward the publication of his researches in Southwestern archaeology. Although by far the greater portion of his efforts was devoted to administrative duties, Dr. Pollock gave some time to his study of Yucatán architecture.

Dr. Norman A. McQuown, by arrangement with the Department of Anthropology of the University of Chicago, again gave part of his time to the Institution for researches in Maya linguistics. Dr. McQuown spent five months in Guatemala, working mainly on the Mam language, but giving some attention to other highland Maya languages, to Xinca, and to arranging for collaboration with a number of individuals in the field. Dr. McQuown's field trip marks the end of active participation by the Institution in the field of Maya linguistics. It is hoped, however, that the work will continue under the auspices of the Department of Anthropology of the University of Chicago.

Mr. Roys spent two months in Yucatán in continuance of his studies of native Maya literature and the history of the Maya area. As in the past, he devoted much of his time to field research bearing upon the political geography of the region at the time of the Spanish conquest. He also gave special attention to the search for conquest-period sites that might merit particular attention under the Division's proposed program of operations in Yucatán.

Most of the above-noted activities have been devoted to winding up the over-all study of the Maya and to clearing the deck for intensive research on the archaeology and history of northern Yucatán. In focusing its attention on this field, the Division is returning to the area in which, over 40 years ago, opened the long and fruitful career of Sylvanus Griswold Morley as a Mayanist.

With Morley's death on September 2, 1948, the Maya, ancient and modern, lost their most tireless and effective advocate. His whole adult life was dedicated to the furtherance of Maya research. That he was able to accomplish so much was due to a unique combination of scholarly ability, skill as a promoter, unbounded energy and limitless persistence. His firsthand contributions as explorer, recorder of texts, and student of the hieroglyphs were outstanding. His driving enthusiasm resulted in the entrance of Carnegie Institution into the Maya field. He lost no opportunity to induce agencies to cooperate or to undertake independent investigations. He was thus largely responsible for the fact that so many persons have been to devote themselves to Maya studies.

Morley early realized that in the last analysis any branch of research is made possible only by popular understanding of its aims and appreciation of its value. He was therefore tireless in publicizing the Maya by lectures and writings. With the same end in view, and also to preserve for the future the finest examples of Maya architecture and sculpture, he inaugurated at Chichén Itzá and continued at Quiriguá and Copán the custom of stabilizing and repairing excavated buildings and re-erecting fallen monuments. This has greatly helped to stimulate interest in their antiquities on the part of the governments of the countries in which these ruins situated, and has led to the preservation of much that might otherwise have been lost.

Morley's scientific, practical and promotional accomplishments were many. But, in the long run, undoubtedly the greatest was his success in inculcating confidence in the good faith of American scientific agencies and in bringing about the close and cordial relations, both personal and intellectual, that now exists between those scholars of the United States and of Latin America whose common interest is in the prehistoric past of the New World.

On June 11, 1949, the Chairman received the honorary degree of Doctor of Science from the University of Michigan.

1.39.

ALFRED V. KIDDER

Division of Historical Research

YB 49:191–194, 1950

During the period under review all members of the Division staff were engaged in preparing reports on work done on part of the inclusive program of Maya research that is being brought to conclusion at the end of the present calendar year. By that time there will have been published or made ready for the press, or be close to completion, papers covering all the Division's major archaeological investigations in the Maya field.

This has been a long and arduous undertaking. It is not generally realized, outside the profession, how great a disproportion exists between the time spent in excavation or survey and that required to digest the results, to make the relevant comparative studies of the literature and of museum collections, and finally to combine and present the information gained in such form as to be of maximum value to other students; to say nothing of the reading of proof. In the case of most archaeological enterprises, the ratio of desk to field work must be at least as 3 or 4 to 1; when finds are unusually numerous, or when particularly far-reaching problems are involved, it may be much greater.

Yet this task must always be carried through. The duty to record their findings fully and accurately rests more heavily on archaeologists than on workers in any other discipline. Should a biologist or a student of the physical sciences fail to report on his research, it is unfortunate; in most cases, however, only to the extent that effort and funds have been wasted. There will always be a continuing supply of the same raw data for the use of other observers. But materials for the study of man's past are not only limited, but also expendable. Excavation, even if structures and monuments can be preserved and if specimens are housed in a museum, inevitably leads to removal of graves, refuse deposits, and invaluable stratigraphic evidence as to the relative age of objects. Once cleared, a prehistoric site loses much, often all, meaning, and if the results obtained have not been adequately recorded, another page will have been ripped from the already time-mutilated volume of human history.

The members of the Division staff have been under special obligation in this respect because of the unique facilities they have enjoyed. Nearly all other archaeologists are employed either by universities or by museums; many of them hold positions in both. They carry heavy loads of teaching and curatorial duties. Time for field work is limited. Under the exist-

ing academic setup, in addition, anyone who attains distinction in his field is almost certain to be hampered by administrative assignments that have little or no bearing on his intellectual interests. We are freed from all the above burdens. Furthermore, it has been made possible for us to publish promptly.

Thanks to these exceptional opportunities, the Division has been able to accomplish a great deal of research and to produce a large number of reports thereon. The value of its work has lain, we believe, in the bringing to bear upon the problems of Maya history the resources and the viewpoints of many different disciplines. And, on the strictly archaeological side, the Division has applied to Maya sites, for the first time on any considerable scale, methods of stratigraphic excavation with intensive study of the specimens recovered. This "dirt" archaeology, largely the dissection of refuse middens has thrown light on the humbler aspects of ancient Maya life, has permitted the dating, relative to one another, of many of the more spectacular remains, and has thus rendered more meaningful, in terms of the evolution of Maya material and aesthetic culture, the temples and sculptures and hieroglyphic inscriptions to which the lion's share of attention had previously been given.

The program of Maya research inaugurated with the establishment of the Division in 1929 was a very ambitious one. It could not be carried through as originally planned in the hopeful days before the depression and the war. There is not space here to review its objective's, to summarize its results, or to consider the reasons for its successes and its failures. This will be done in a forthcoming report. But, to anticipate, it may be stated that attempt was made to cover too great a range of time and too extensive an area. The work envisaged for the immediate future, which will be restricted to the later prehistoric career of the Maya in northern Yucatán, will not suffer from these errors.

Active field work in preparation for the Yucatán program was begun in November 1949, with the mapping of the ruins of Mayapán by Mr. Morris R. Jones, of the U. S. Geological Survey, who was kindly given leave of absence by the Survey to undertake this long and difficult task. An accurate map of Mayapán was needed, as intensive study of that site will commence during the coming winter. Mayapán has been chosen for primary attention because of its great importance as a political center during the troublous centuries before the Spanish conquest. It was a member of the so-called League of Mayapán when its rulers gained ascendancy, heads of other groups were required to maintain residence there. It is frequently mentioned in the native chronicles and Spanish accounts based on native legend histories. It is hoped that its excavation

will yield information as to the later prehistoric cultures and also provide archaeological checks on the reliability of the chronicles. As Mr. Jones states in the report that appears below, the dense bush that covers the site conceals an extraordinarily great number of remains.

In Guatemala no new investigation initiated, but both Mr. Shook and the Chairman from time to time found it imperative temporarily to abandon their desks in the Guatemala office to record finds made at the nearby site of Kaminaljuyú and elsewhere in the course of road building and other public and commercial undertakings. At Kaminaljuyú, Mr. Shook salvaged materials that would otherwise have been destroyed, which add enormously to knowledge of the earliest highland culture now known. During the year he has been engaged in preparing reports on this and other early cultures and on his very prolific former excavations at later sites on the Pacific slope.

Mr. R. E. Smith continued the writing of his monograph on the pottery of Uaxactún, now approaching completion. In addition to this and his duties as the Division's representative in Guatemala and those connected with his effective chairmanship of the Guatemala National Museum's Committee on Archaeology, Mr. Smith found time for a short trip to the Department of El Petén to procure samples of the few wooden beams still remaining in the ruins of Uaxactún. These, it is hoped, may be dated by means of the newly developed carbon 14 method for determining the age of organic materials. Other specimens that can be used for this potentially most important type of research were recovered by Mr. Shook. These consist of charcoal and wood from several sequent early horizons at Kaminaljuyú. As their age, relative to one another, is known from their stratigraphic relations, they should provide, when dates in terms of years have been assigned to them by the above-mentioned method, a very valuable check on its reliability. Because of this, because of their archaeological importance, and also because it is unlikely that they can be duplicated, it has been decided not to submit any of these specimens for analysis until the laboratory techniques involved have been further perfected and tested.

Dr. Howel Williams, of the University of California, who was carrying on volcanological research in Central America during the past winter, spent some weeks at Managua, Nicaragua, studying the past eruptive conditions that led to an outflow of now consolidated mud in which footprints of men and animals were impressed. Dr. Williams' hopes of finding organic substances for Carbon 14 age determination in the deeply buried footprint stratum were disappointed. His examination of the sources and the nature of the various deposits overlying that stratum leads him to

believe that, although it is of considerable antiquity, it was probably laid down not more than 5,000 years ago.

During the year there was published the monograph of Mr. J.E.S. Thompson on Maya hieroglyphic writing; that of Miss Tatiana Proskouriakoff on the sculptured Maya monuments of the Classic period was completed and sent to press. They are comprehensive studies of intellectual and artistic activities in which the Maya surpassed all other peoples of the New World. Each serves to round out the more general study of the Maya on which the Division has so long been engaged, and each lays firm foundations for work on these important aspects of Maya culture during the later stages that will be under investigation by the Division in future years.

Mr. A. L. Smith's monograph on Uaxactún has been issued. It is a detailed account of the longest and most thorough excavation of a Classic Maya city that has yet been made. Like the above-mentioned works by Mr. Thompson and Miss Proskouriakoff, it is of value in completing the old program and provides a basis, in this case for studies of later architectural developments, for researches in northern Yucatán. Mr. Smith is now engaged on a final report on his archaeological survey of the Guatemala highlands. Another publication of much importance will be that of Mr. Karl Ruppert, on the several buildings, not previously reported upon, that were excavated during the Division's many years of activity at Chichén Itzá.

Dr. Anna O. Shepard has been preparing a book on ceramic technology for the use of archaeologists. It should perhaps be called a ceramic primer, because in spite of the fact that archaeologists constantly employ the evidence of pottery for determining changes in, and contacts between, cultures, they know far too little of the fundamentals of pottery making, of the nature of clays and tempering materials, and of the behavior of clays under varying methods of firing. Dr. Shepard has also been applying the methods of ceramic technology to a problem that has arisen in regard to the relationship of two important prehistoric cultures of the southwestern United States. Her interim report, which appears below, shows how greatly laboratory techniques can contribute to solution of such problems.

Mr. Gustav Strömsvik has closed the headquarters that the Division has maintained since 1936 at the ruins of Copán, Honduras, and has been engaged in writing reports on structures excavated at that site. Dr. J. M. Longyear, now of Colgate University, has completed a monograph on the pottery of Copán.

The Chairman, thanks to Dr. Pollock's having assumed all administrative duties, has been able to make progress on joint reports with A. L. Smith on excava-

tions at Nébaj, in the Guatemala highlands, and with E. M. Shook on those of the rich Preclassic tombs discovered in 1947 and 1948 at Kaminaljuyú, in the outskirts of Guatemala City.

During the year Mr. Raymond H. Thompson has been appointed a Carnegie Institution Fellow for Ceramic Studies, and Mr. Robert H. Barlow a part-time Fellow for research on the Documentary History of the Maya.

The meeting of the 29th International Congress of Americanists in New York in September 1949 led a large number of the Division staff to take advantage of its accessibility. The Chairman of the Division served as Secretary of the Committee on Organization and later as Secretary General of the Congress. Papers were presented by Proskouriakoff, "Non-Classic traits of Maya sculpture in Yucatán," by Shook, "Present status of knowledge on the Preclassic horizons in Guatemala," and by J.E.S. Thompson, "Some pluvial symbols and glyphic elements common to Teotihuacán and the classical Maya." In May 1950 Mr. Shook lectured at the Guatemalan-American Institute, Guatemala City, on the "Development of Maya architecture."

I.40.

H.E.D. POLLOCK

Department of Archaeology

YB 50:221–229, 1951

The period covered by this report was a notable one in the affairs of the Department. It marked the completion of a program of investigations that had been under way for over 20 years, and saw the official beginning of new researches with different orientation, with new aims and objectives. On November 1, 1950, A. V. Kidder retired as Chairman of the Division of Historical Research. On January 1, 1951, by action of the Trustees of the Institution, the Division of Historical Research became the Department of Archaeology, a designation more accurately describing our area of operation.

Changes of this magnitude obviously were not accomplished without much planning. As long as five years ago staff discussions were initiated in anticipation of the course that our work should follow on completion of the then current program. From time to time the results of such discussions were gathered together in the form of memoranda for the use of the

President and the Trustees. Some of the planning and thought on this subject has been referred to in previous annual reports, notably in *Year Book* 47, where the future work of the Department and some of the reasons for the selection of the field of study are briefly outlined. That work is now fairly under way, and as this report covers the official beginning of a new program of operations, it appears desirable to state in somewhat more detail the areas in which we expect to work, our interests and our objectives.

The broad field of interest of the Department has for many years been aboriginal American history. Owing to its apparent isolation from the Old World before Columbus, America has long been recognized as a field of outstanding importance for the study of primitive peoples and their cultures. It is probable that greater opportunities for significant accomplishment occur nowhere in the world.

History is a term that may be used in a variety of senses, often being limited as to subject matter. As is suggested by the use of the word aboriginal, what is meant here is human history. This can be defined as the relation of man to nature and of man to man. Man is the protagonist, but his actions are intelligible only against the background of nature and society. Indeed, the very essence of the drama is the interplay of man and his environment, of man and the rest of his kind. The complete story of aboriginal man in America is, then, our wide field of interest, and our broad objective is to contribute as much as possible to the unfolding, the understanding and the telling, of that story.

It is quite obvious that so vast a field is subject to attack by no single discipline, much less by any one institution. It is nevertheless felt that our interests should not further be limited. Even though we deal directly with but one section of one small chapter, we are concerned with the entire story, and the section with which we deal is significant only as a part of the whole. Only by having such wide objectives in mind are our researches, often highly specialized, kept in proper focus.

As our ultimate concern is with the whole range of aboriginal American history, we naturally look, in selecting problems of the first importance, to those areas that seem to have been of most effect in shaping the course of history, and culture. These are the areas of high civilization, the two principal foci of which are the Andean and the Mesoamerican. There flowed the main currents of history, currents that exerted far-reaching influences. In each of these regions there seems to be a richer continuous column of cultural stratigraphy than anywhere else. Either area constitutes a very large field of interest, far too large for attack by any single institution; but before proceeding to the specific program of researches to be undertaken by the De-

partment, we may first give some attention to the aims and methods of archaeology.

Archaeology is primarily a study which extends our knowledge of human history into periods with little or no documentation by written records. Though it contributes to many disciplines which are concerned in social and humanistic studies, it is not itself committed to any specific approach to the solution of problems of human behavior, and its relevance to these problems is limited by the nature of its material, chiefly the physical remains of man's past activities. From time to time, workers in other disciplines have attempted to direct the attention of archaeologists specifically to their problems and to shape archaeological methods to their objectives. Such efforts on the whole have not been successful; it is the nature and distribution of archaeological remains which determines sound procedure, and the concentration on a single objective, or the sole pursuance of a given hypothesis, results inevitably either in wasteful destruction of evidence pertinent to other subjects, evidence which may never be duplicated, or in the incidental and time-consuming accumulation of a vast body of irrelevant material, which must in any case be dealt with in some way. Since an archaeologist cannot eliminate or ignore irrelevant material and his selection of evidence is limited to the location of his excavations, he is constrained to pursue simultaneously a wide variety of problems. The directing aims of his programs must be founded on broad considerations than are programs in disciplines which can proceed by successive establishment of specific propositions.

Archaeology, then, cannot and should not direct its methods specifically toward obtaining material for the use of certain other disciplines. Its direct obligation is the study of human history in the widest sense. It has nevertheless the contingent obligation of making available to other studies material that may be of value to them, and of making it available in the fullest form possible, without loss or destruction of material germane to archaeology and to still other disciplines. In point of fact, the two obligations seem to run parallel, for in fullness of detail and in complete interpretation of materials both purposes are served and the eventual aims of archaeology are attained.

It is quite obvious that the chronological and geographical ordering of the bare bones of a bygone culture does not complete our obligation toward the study of human history. Nor does the discovery of the fact that this or that culture was in contact with its neighbor or some distant culture. This sort of information articulates the skeleton, but it remains a skeleton. Inferences that may be gained in regard to social and political structure are valuable. Such knowledge begins to explain how the skeleton was put together and

how the joints worked. We cannot stop there, however, for our objectives are not attained by knowing how man did things; we wish know why he did them. We are concerned with the flesh that clothed the skeleton, the blood that kept it alive, the nervous system and brain that directed it. We wish to know culture as a living, functioning entity, and to do so we must know something of its intellectual content.

So complete an understanding of a past civilization is most likely to be attainable when a certain amount of written record has survived. This is well exemplified in the Classical and the Egyptian areas in the Old World. In America no comparable body of written record exists. Such material is not wholly lacking, however, the hieroglyphic texts and codices of Mesoamerica being examples.

The Department has selected the later stages of the preconquest history of Yucatán as the most fruitful area for our researches. The existence of a native literature in the form of the Books of Chilam Balam, the Ritual of the Bacabs, and the Maya codices, a literature that concerns the period in question and that will supplement the findings of field archaeology and the historical records of the conquest, is a large factor in making this choice. In selecting this field there is the further advantage of tying our problems in with those of the Mexican mainland, for there is every indication that the late history of Yucatán was deeply affected by invading peoples and cultures from highland Mexico.

The foregoing gives a general picture of the area in which the Department plans to work. Let us be more specific. Our immediate field, as was stated, is the later stages, roughly five centuries, of the preconquest history of Yucatán. We propose to bring to bear on a group of related problems the combined evidence of historical records, native literature, and field archaeology, and to test historical, literary, and archaeological evidence against one another and thus contribute a critique of basic methods and interpretations.

The major aspect of the program is the archaeological field work. Present knowledge allows us to postulate three periods in the later stages of Yucatecan history. These may be termed, in chronological order, 1. Period of Foreign Domination, 2. Period of Maya Resurgence, and, 3. Period of Disintegration. We possess considerable knowledge of the archaeology of the first period, but very little of the last two. Our field efforts at the outset, therefore, will primarily be concerned with the later periods. In describing the work contemplated, it will of course be understood, we are presenting no more than a blueprint, to be changed and corrected as the results of research dictate.

Historical and literary sources and superficial archaeological information all indicate that the city of Mayapán was the dominating influence in Yucatán

during the second period enumerated above. It is the logical place to search for information concerning that period, and the major weight of our effort will at first be there. What is known of the site suggests that excavation and above-ground survey be directed more toward secular aspects of life, types and arrangement of dwellings, household equipment, settlement patterns, and the like, than toward a study of the ceremonial remains that have received so much attention at other Maya centers. It is desirable, however, that all aspects of the life of the community be kept in mind.

Certain coastal areas of Yucatán were of importance at the time of the conquest, and it is believed they were important during the period of domination by Mayapán. The remains of these regions should bridge the two periods with which our field work is primarily concerned and should give breadth and depth to our findings. As these areas are archaeologically little known, exploration and superficial testing are needed: first, to provide a composite picture of the region; second, to determine the locations for any further testing that may be advisable.

Historical records and the native literature provide us with a large list of centers of native population of varying importance at the time of the conquest, and with considerable information concerning the location and extent of, and conditions in, the various native provinces. We thus are able to select several sites which were important during the final period of the preconquest history of Yucatán and which at the same time have a representative distribution among the native provinces. Excavations at such sites should throw light on the final period of preconquest history and should establish contact with matters of historical record.

In the preceding pages we have outlined the areas in which we expect to work. Let us now turn to a review of the recent activities of the Department. As noted at the beginning of this report, the period under consideration witnessed the official start of our new program of researches. It might be thought that the period was divided into distinct parts, the first concerned with the work of the old program, the second with that of the new. That is in a sense true; for after January 1 emphasis clearly shifted. On the other hand, any such change of direction is not entirely abrupt. It is rather a wide swing around the marker, a transition rather than a complete cessation followed by new beginnings. All projects do not end on the same day, nor would it be orderly or profitable for everyone to initiate new researches at the same moment. For some time past the work of the Department has been moving little by little into channels leading to new objectives. At the same time the gradual completion of activities initiated under the earlier program has been going on. This latter phase of the work may be covered briefly.

Certain administrative matters merit recording. It was noted in the last annual report that the headquarters we had maintained at Copán, Honduras, had closed. This terminated for the time, and it is hoped only temporarily, a fruitful and cordial relationship with the government of that country. Our most sincere thanks are due to the Minister of Education of Honduras and to the many officials of that country who cooperated so wholeheartedly with the Institution.

The end of 1950 saw the termination of our contract with the Government of Guatemala, a move made necessary by the change in scene of our activities. It is with honest regret that we end for the time being an extremely productive and friendly relationship with that government, and is our hope that we may at some future time resume our work there. Our sincere thanks are due to the Minister of Education of Guatemala, to the Director and staff of the Institute of Anthropology and History, and to the many officials and civilians who collaborated so effectively with the Institution. R. E. Smith was in charge of closing the headquarters maintained by the Department in Guatemala since 1926. By the end of December 1 all archaeological materials in our possession had been turned over to the National Museum of Archaeology and Ethnology, equipment that was not of further use had been disposed of, and useful equipment and records had been shipped to Cambridge or to Mérida, Yucatán.

As has been noted in recent annual reports, the staff has for several years been concerned primarily with the preparation of reports covering the results of earlier work. These activities have resulted in a large number of manuscripts in various stages along the way to publication. This has placed a heavy burden upon the editor of the Department, and the process of preparing this material for the press will continue for some months in the future. A detailed report by Margaret W. Harrison covering publications by the staff will be found in succeeding pages.

An activity of the past season, in part assignable to earlier work, in part to current work, was the ordering and disposal of large archaeological collections from Yucatán, collections that had accumulated over many years. This task was directed by Shook and is described below in a report by him and Proskouriakoff. Though much of the material had previously been recorded, a considerable amount of photographing and drawing of specimens remained to be done, and all the material had to be sorted and arranged for eventual disposition. That this was no small task is witnessed by the fact that it occupied most of the time of two members of the staff and part of the time of two others. By the end of the season all objects suitable for museum use had been turned over to the Mérida Museum, a collection of skeletal remains had been depos-

ited with the local office of the National Institute of Anthropology and History, and the extensive sherd collections had been arranged and stored so as to be easily accessible for study purposes. A type collection of sherds has been sorted out by R. H. Thompson, and all that remains in the handling of this earlier material is the matching of this collection in sufficient lots to provide sherd samples for various museums in Mexico, Guatemala, and the United States, a relatively short task.

We may now turn to activities concerning our new researches. Again let us note certain administrative matters. In July 1950, the staff of the Department met in Cambridge to discuss the work of the following field season. Although the broad outlines of our future work were by then well understood, decisions concerning location and type of facilities, priority and personnel of projects needed to be reached. At the same time, certain specific historical problems that seemed to offer good hope of solution through field work were outlined, the result being a most interesting and helpful document for staff use. In regard to facilities, it was decided that office, laboratory, and storage space should be established in Mérida, and that field quarters should be constructed at the village of Telchaquillo, close by the ruins of Mayapán. Strömsvik was put in charge of these operations, as well as of arrangements for the purchase and shipment of the not inconsiderable quantity of supplies and equipment needed.

Prior to this meeting of the staff, negotiations had been entered into with the Secretariat of Public Education of the Government of Mexico, through the National Institute of Anthropology and History, leading to a 5-year contract under which the Institution might operate. This contract reached final form and was executed near the end of October. Shortly thereafter Strömsvik proceeded to New Orleans, arranged for the purchase of supplies and equipment, and then continued to Yucatán. It at once became apparent that office facilities of the right type were not easily obtainable in Mérida, but by December Strömsvik was able to report that suitable quarters had been found, both in Mérida and in Telchaquillo, and that general terms of leases had been arranged. Pollock consequently flew to Yucatán early in January, examined the properties in question, and took steps to conclude leases.

At this point our operations became handicapped by the difficulty of obtaining many of the items of supplies and equipment on order in New Orleans. Although such delays resulted in our not receiving the major part of our shipment until near the end of the field season, Strömsvik proceeded with construction at Telchaquillo, carrying that work as far as possible with the resources at hand. Shook, who had taken charge of the Mérida office shortly after the lease was concluded, made steady headway with the installa-

tion of facilities there. This work was virtually completed by the end of the season. Strömsvik, with necessary supplies in hand, is continuing operations during the summer and autumn of 1951, and there is little question but that by the beginning of next field season the quarters will be in readiness.

In last year's annual report it was noted that the Department had undertaken the mapping of the ruins of Mayapán. This project was brought to completion by midwinter, and a preliminary edition of the map is now in process of publication. During the past season photographic copies of these sheets were available to the staff and were an important aid in the archaeological work carried on at the site. The information provided by this map already has affected our thinking relative to the character of the ruins, problems presented, and procedures leading to the solution of problems. A report by Morris R. Jones on the survey and base map at Mayapán will be found below. The Department wishes to express its thanks to the U. S. Geological Survey for its co-operation in this project.

The major effort in the field last season was Ruppert's and A. L. Smith's archaeological survey of Mayapán. The portion of the map that had been completed the previous year had brought out the fact that here, for the first time at any Maya site explored, was a wealth of what appeared to be the remains of dwellings. Jones had estimated 3500 structures within the walled area, and there was reason to believe that the greater proportion consisted of dwellings proper or auxiliary structures. So little is known of the humbler aspects of Maya life and society, the great weight of previous research having gone into the public, religious, and in general hierarchic and frequently esoteric expressions of that culture, that the existence in such number of these relatively simple structures immediately pointed up an interesting and important area of research.

Ruppert and Smith devoted virtually the entire season to an above-ground survey of building remains at Mayapán. The number of remains and the variations in plan and arrangement, variations that may prove to be significant, introduced a problem not only in recording but in the subsequent handling of the recorded material. A system of cards showing scale drawings of plans and carrying other relevant information was adopted. It is thought that as the work progresses and material accumulates, these loose cards can be sorted and arranged to follow any desired scheme in the process of analysis.

An interesting allied research is a study of the numerous stone walls that run through the site. These suggest boundaries of properties, but their function will remain in doubt until the relation of walls to house structures and terraces, and of one wall to another, is

brought out by careful plotting. The study is important because it has a bearing on systems of land tenure, population estimates, and other such problems fundamental to an understanding of the life of the people. Our work at Mayapán is fairly begun, and interesting problems, only a few of which are touched upon here, are unfolding rapidly. We may now review our researches in a different area in time and space.

The city of Mayapán is thought to have been abandoned, or at least to have ceased to function as a governmental and administrative center, around the middle of the fifteenth century. Less than a century later, during the two decades lasting approximately from 1520 to 1540, the invasion and final conquest of Yucatán by the Spanish took place. Roys has assembled much documentary material dealing with this period, but little attention has been paid to the material remains. Working closely with Roys, R. H. Thompson carried on investigations concerning the archaeology of this immediately preconquest and early postconquest period. Brainerd's work of a decade ago, not directed primarily to this problem, had produced relatively few remains from these cultural horizons, and he was unable to identify what might be the typical ceramics. The work of the past season again met with negative results. In his detailed report below [Chapter 6.11 this volume], Thompson offers a tentative explanation for our failure in this search. We shall continue our efforts toward a solution of the problem.

It is vexing to have this short span of time that bridges the gap between a purely native cultural tradition and the beginning of a mixed Old World-New World tradition virtually unrepresented by cultural remains. Until we have a better understanding of this final episode of native history in Yucatán, we cannot hope clearly to comprehend the impact of European civilization upon the aboriginal culture, to know what traditions persisted, what were displaced, what blended. Knowledge of this sort should, moreover, enable us better to visualize the similar process occasioned by the inroads into Yucatán of foreign ideas, if not actual populations, from the Mexican mainland, a process that apparently had been going on for centuries prior to the arrival of the Spanish. We are here dealing with the dynamics of culture; it presents intriguing problems.

As noted on an earlier page, Shook and Proskouriakoff were primarily engaged in the putting in order of archaeological collections that had resulted from past work of the Institution in Yucatán. They did, however, find time to carry on some reconnaissance in areas which either from documentary information or from superficial archaeological knowledge were thought to hold promise of providing information important to the central researches of the Department. Their trip

along the west coast of the peninsula is of special interest because this is a region that seems almost surely to have been traversed by any route carrying contacts between Yucatán and the mainland to the south and west. Proskouriakoff was also able to look into the problem of improving our photographic record of the sculpture, mostly bas-relief, at Chichén Itzá. The greater part of this sculpture is architectural, and it frequently occurs in locations that place difficulties in the way of field photography. The sculpture is important in being the one considerable body, so far known, of art of the period of foreign influence in Yucatán. There is a striking opportunity here for differentiating between Maya and foreign cultural traits, as depicted in the sculpture, and there is the hope of tracing the foreign elements to their source or sources.

During the earlier part of the period under review, and before we had officially ceased operations in Guatemala, Shook was able to advise and assist the Institute of Anthropology and History of that country in a most interesting discovery at the ruins of Kaminaljuyú. His report brings out the fact that we must revise our ideas as to the beginnings of formal architecture in that area.

Shepard devoted part of her time to the preparation and virtual completion of a book on ceramics for the use of archaeologists. The purpose and plan of this book is outlined in *Year Book* 46 [Chapter 4.15]. It is awaited with keen expectation by archaeologists. On the research side, Shepard undertook a review of our present knowledge of Yucatán ceramics. Her report discusses certain technological aspects of the pottery. She has particularly concerned herself with the recognition through laboratory analysis of ceramic samples as products of local specialization, or of intra- or extra-regional trade. In an area where much of the pottery is macroscopically similar, this approach is of great importance. There is also the problem of tracing imported pieces to their sources, thus drawing lines of trade and giving information on relative chronology. Shepard has not yet had available collections of pottery sufficient to furnish more than an outline of the problem. As our work progresses, there is good reason to hope this line of research will be highly informative.

J.E.S. Thompson has begun the compilation of a dictionary of noncalendrical Maya hieroglyphs, and in doing so has stepped where others feared to tread. It is a huge task, not immediately rewarding, but the result should constitute a tool of immense value not only for Thompson's studies, but for all studies concerned with the interpretation of Maya hieroglyphic writing. Thompson also has served as assistant editor of *American Antiquity*, writing the "Notes and news" sections dealing with Middle America, preparing lists of new

publications on that area, and acting as consultant on articles and reviews submitted for publication.

Roys, who is engaged in post-retirement studies, has completed a manuscript dealing with settlements in Yucatán at the time of the Spanish conquest and the subsequent destruction of the native architecture. This work is now in press. As previously noted, Roys has co-operated with R. H. Thompson in his researches dealing with the conquest period. A third activity is concerned with the historical content of the katun prophecies in the Books of Chilam Balam. These form part of our none too abundant documentary sources for the preconquest history of Yucatán. The present report is, of course much abbreviated. It is hoped that further research will result in a critical text with translation, notes, and an essay.

In this period of exceptional administrative activity, the Director has been forced to spend most of the time at his desk. His brief trip to Yucatán early in January 1951, previously referred to, was devoted almost entirely to business matters. Later in the season, from the middle of April until the end of May, Pollock was again in Yucatán and was able to give part of the time to a study of the ruins of Mayapán. One of the purposes of this work was to gather material to serve as background for staff discussions, held in Mérida the end of May concerning operations for the next field season. In his survey of the ruins, Pollock was struck with the amount of information available from surface examination or relatively minor excavation. He was also impressed with the apparent opportunity to learn something of the humbler aspects of aboriginal culture in contrast with the ceremonial, a situation that has been referred to several times in this report. These conditions are important in planning future work. It would seem that at the outset of full-scale operations at Mayapán we should avoid excavation of large structures, confining ourselves to above-ground survey and to relatively small excavations in a number of promising locations. Much of our thinking, moreover, should be directed toward family husbandry, land tenure, settlement pattern, trade, and other such fundamental economic and social aspects of the aboriginal community. This is not to say that the religious and political life of the people is not interesting and important. It of course is; but the city of Mayapán seems to offer exceptional opportunity for a study of the less spectacular phenomena of native culture as it existed shortly before the impingement of European civilization.

It is with deepest regret that we report the death on January 1, 1951, of Robert Hayward Barlow, a Carnegie Institution Fellow working with this Department. In his thirty-third year when he died, Barlow had made a contribution to our knowledge of Mesoamerican prehistory that already was impressive.

There have been few scholars, if any, who have commanded such knowledge of the protohistoric period of the native civilizations of Mexico. At the time of his death he was extending his mastery of the subject to include the Maya. Brilliant, with an insatiable thirst for knowledge, he drove himself beyond the limits of a none too robust physique. His death is a signal loss to the whole field of Mesoamerican prehistory and is a blow to the researches of this Department that ill can be afforded.

The retirement of A. V. Kidder on November 1, 1950, as Chairman of the Division of Historical Research terminated an association with Carnegie Institution of over 25 years. Coming to the Institution in an advisory capacity in 1924, he was appointed Research Associate in 1926, Associate in charge of archaeology in 1927, and two years later Chairman of the newly created Division of Historical Research. As might be surmised from this administrative grouping of the various historical activities of the Institution, it was Kidder's guiding principle that any true understanding of human history can come about only by the coordinated efforts of numerous disciplines. He promptly put this principle into practice by organizing a program of allied researches. As time passed, economic pressures forced the Institution to look more to co-operation with other agencies than to direct financing of so broad a program; but Kidder's advocacy of a multi-sided approach to the solution of historical problems remained a potent stimulus to the many researches, both within and outside the Institution, that have gone forward in Mesoamerica over the past 20 years. This is not the place to review Kidder's many and brilliant accomplishments. Indeed, it would be premature to do so in any place, for we have every expectation that his new status will little alter the course or effectiveness of his researches. From the point of view of the Department, our regret at his official departure is tempered only by the hope that his sage counsel and sound advice will continue to be available to us.

1.41.

H.E.D. POLLOCK

Department of Archaeology

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In the previous annual report we noted the beginning of a new program of researches. It will be recalled that

the locus of our studies, in time and space, was the later stages of the pre-conquest history of Yucatán. Of the several approaches to be employed, archaeological field work was the central one. It was further noted that the ruins of Mayapán would be the scene of our initial efforts.

During the past season these plans were rather closely followed. Most of the staff of the Department were stationed at our base camp at Telchaquillo, adjacent to the Mayapán ruins. In this first period of full-scale operation it was felt that excavation should progress with caution, and that our procedure should be one of intensive archaeological survey using the topographic map of the site that had been completed the previous year as a means to that end. A broad picture of the problems that face us and of the critical areas for investigation has emerged from this study. It will come as no surprise that this exploratory work has raised more questions than it has solved. In the succeeding paragraphs we shall touch upon the wider aspects of our findings and point to some of the problems.

Reconstructions of Maya history have, of course, changed over the years. Such shifting and sifting and rearrangement of ideas is of the very essence of research. It is further true that at no particular time in the course of our studies will there be unanimity of opinion in these matters. At the present stage of thought, nevertheless, few people will differ with the broad chronological and cultural division of the history of the Maya peoples into the Preclassic, Classic, and Postclassic Periods, although the divisions will be differently named by different students. There will also be general agreement that we are dealing with a span of time that at least covers the Christian Era up to the European conquest of the New World and that may extend an indeterminate distance into times before Christ. There will be wide differences of opinion as to subdivisions of the larger periods, as to association of cultural periods in different geographical areas, and as to any precise chronology. Concerning no period probably is there greater diversity in our ideas than concerning what we have termed the Postclassic. This was the era that followed the apparent breakdown of the early system of exact dating in the Maya calendar. It is the period with which our present studies are directly concerned.

At this point it seems well to outline, as basis for discussion, a widely accepted reconstruction of Yucatán history during Postclassic times. In our previous report [Chapter 1.40] we referred to a Period of Foreign Domination, a Period of Maya Resurgence, and a Period of Disintegration. These three divisions, in the order given, constitute the Postclassic Period in Yucatán. Although he uses a different terminology, the scheme in general follows the ideas of J.E.S. Thompson

(1945). His chronology, in round figures, is Foreign Domination A.D. 1000–1200, Maya Resurgence A.D. 1200–1450, Disintegration A.D. 1450–1540. The Period of Foreign Domination represents the time when invaders of Toltec culture from highland Mexico presumably held sway over Yucatán, their personal base being Chichén Itzá. The Period of Maya Resurgence was that during which older, native ideas were supposedly reasserting themselves over the foreign practices of the Toltec, Mayapán reportedly being the governmental center of the northern part of the peninsula. The Period of Disintegration followed the overthrow of Mayapán, involving the end of central authority and the breakup into numerous warring states. This last period was in a sense an extension of the preceding one in that the resurgence of Maya ideas and customs is presumed to have continued. Theoretically, principal settlements of the time should have been the capitals, several of which are known today, of the various states, but up to the present the remains of this particular period have not been identified at those sites or elsewhere in Yucatán.

We may now turn to our findings of the past season and focus these findings against the background sketched above.

It is already clear from our relatively small sampling of the pottery of Mayapán that people lived in or around this site from Preclassic times, through the Classic Period, and into the Postclassic at least through the Period of Maya Resurgence; as was noted above, the final Period of Disintegration remains archaeologically unknown. This evidence of a long span of occupation agrees with Brainerd's findings of a decade ago [Chapter 4.10]. Pottery of Preclassic times occurs as little more than a trace, and pottery that might date from the early part of the Classic Period is relatively rare. No remains of buildings recognizable as belonging to either epoch have been found.

It was during the later phases of the Classic Period that Mayapán seems first to have become a center of any importance. In Yucatán this period is known as that of the Puuc, taking its name from the hill area along the border of the States of Yucatán and Campeche, in which the greatest concentration of remains of the time is found. It was a time of great vitality, and architectural remains of characteristic Puuc style occur in huge numbers in that area and sporadically throughout the northwest part of the peninsula. The period might be, dated from A.D. 700 to A.D. 1000, although there is little basis for any exactitude in chronology. The era comes to a close with the supposed abandonment of the hill area and the end of the Puuc architectural style. At Mayapán we find Puuc Period pottery, little in proportion to that of the later, great period of the site, but nevertheless in appreciable amounts. Pos-

sibly more striking are the widespread building remains. Not a single standing structure of the period has so far been found, but building stones, both carved and plain, fashioned in the typical Puuc manner occur all over the ruins, lying individually and in groups, and re-used in later construction. Fortunately, in many cases the stone work of the period unmistakable and can be identified with little hesitation. There is also the possibility that some of the stelae and both pieces of sculpture at Mayapán may be of this time.

We find the opening phase of the Postclassic Period, what has been termed the Period of Foreign Domination, the Toltec Period at Chichén Itzá, virtually unrepresented, or at best but slightly represented at Mayapán. This is surprising, not only because historical sources suggest that the city was then of some consequence, but because the site so clearly had been occupied in the immediately previous period. Nevertheless, no example of architecture or of sculpture can surely be assigned to this epoch. A few such remains are reminiscent of Chichén Itzá, the type site of the period, but even in these cases there is sufficient difference in execution to question their being products of the time. Unfortunately, we are unable to present a clear picture of the evidence regarding pottery. Two imported types that presumably are indicators of this period occur, or at least are recognizable, in trace amounts. They are conspicuous more by their absence than by their presence. No ceramic stratigraphy has thus far developed at Mayapán, and in our present state of knowledge we are unable to sort out the local Yucatán pottery that might be assigned to the period.

Our next division in time, the Period of Maya Resurgence, seems quite-clearly to include the rise to power and greatness of Mayapán. Most, if not all, of the standing or partly standing architectural remains, much of the sculpture, and the vast preponderance of the pottery belong to this time. There are faint indications at Mayapán that this was not an altogether static period, that culture was undergoing changes reflected in the remains, and that we may be able to divide the period into phases. Little, however, can be said at present on this subject.

Let us summarize in a few sentences the picture we have sketched of our preliminary findings, and then turn our attention to a broader scene. The peoples of the Preclassic and Early Classic Periods left but a trace of their handiwork at Mayapán. The Puuc culture, presumably of Late Classic Period, is clearly represented in architecture and pottery. This seems to have been the time when Mayapán first became a center of any importance. During the first stage of the succeeding Postclassic Period, the Period of Foreign Domination in Yucatán, Mayapán appears to have been of little or no importance; indeed, there is even the sug-

gestion of a break in 'cultural continuity at this time. The Period of Maya Resurgence, possibly divisible into phases, witnessed the greatness of Mayapán. This is attested by the building remains and by the wealth of pottery recovered. It has been noted earlier that no archaeological remains, at Mayapán or elsewhere in Yucatán, have surely been recognized as belonging to the final Period of Disintegration.

Turning to the wider scene, the history of northern Yucatán, we shall confine ourselves primarily to the later stages that together form the Postclassic Period, the times with which our studies are directly concerned. We have already described briefly the immediately preceding, presumably late Classic, Puuc Period, and pointed out that, although the home area of this culture contains by far the greatest concentration of remains of the period, traces of the characteristic architectural style occur well to the north and in general may be said to be spread over the northwest quadrant of the peninsula. In the region north of the hills, there also occur architectural forms strikingly different from those of the Puuc. In certain instances these underlie the Puuc remains. There is some reason to believe on stylistic grounds that these ruins are of the Early Classic Period, but their date is by no means certain, and there is the possibility that they are Late Classic, conceivably contemporaneous, or in part contemporaneous, with some of the Puuc ruins in the hill region.

The eastern extension of the Puuc culture is not well known. Architectural forms that vary from a general similarity to those of the Puuc to virtual replication occur at Chichén Itzá. This is the approximate eastern boundary of this architecture as now known, but the characteristic pottery has been found farther east. The northeastern part of the Yucatán peninsula is not well explored, and there is ample room for future discovery. Should present indications that Puuc styles of architecture do not occur in the area the confirmed, we hope to learn what building forms were being used at this time, and what are the stylistic affiliations to other areas.

It will be remembered that the Early Postclassic was the Period of Foreign Domination, according to the scheme we have been following; it has also been called the Mexican Period and the Toltec Period. It was at this time that Chichén Itzá seems to have reached its apogee the greatest structures there being assigned to this epoch. Although the concept of a foreign element in Yucatán arises in part from documentary and historical sources, the primary evidence pertaining to the period under discussion consists of the architectural and sculptural remains at Chichén Itzá. These exotic forms suggest ideas, religious beliefs, and social organization that are not Maya. The amazing similarities

to the art and architecture of Tula, Hidalgo, moreover, leave little doubt as to, the identity of the invading culture.

The archaeological evidence is bolstered by documentary and historical references associating Chichén Itzá with what seem to have been non-native peoples, although the time of the association is open to doubt. There remains the question of how thoroughly the foreign culture penetrated the social fabric of the city and its environs, and whether the non-Maya elements affected only the priestly and ruling group or were taken over by the commoners as well; but the presence of a foreign culture at Chichén Itzá seems indisputable.

In northern Yucatán, we find no such evidence. On the contrary, we are presented with a situation closely parallel to that at Mayapán. Outside the immediate area of Chichén Itzá, with the exception of a few traces, and those of questionable identification, there is not a single ruin so far as we know that exhibits architectural or sculptural remains that can be identified as like those of the type site or as being of this period. We do not know at present what is the pattern of distribution of pottery. As a result of his work of some years ago, Dr. Brainerd seems to think that the typical pottery of Chichén Itzá of this period is by no means confined to that site [Chapter 4.7 this volume].

We have, then, a most puzzling picture of a single great city I that appears to have exerted little or no influence on the arts and handicrafts, with the possible exception of pottery, outside its immediate neighborhood. The situation becomes no less puzzling when we consider the vitality of the Chichén Itzá culture of this time. Taking our evidence at face value, we are forced to picture a great, thriving city existing in a sort of cultural vacuum. Whether this be interpreted as meaning that human effort from all parts of Yucatán went into the building of Chichén Itzá, to the exclusion of local works, or that the dominance of that city over the peninsula was so great that nowhere else were people allowed or able to express themselves in the new architectural forms, we are presented with a picture that lacks reality. The presence elsewhere in Yucatán of pottery of a sort made at Chichén Itzá at this time, moreover, would not alter the situation. This fundamental and simple handicraft presumably would continue no matter what was taking place in the higher expressions of art and architecture.

Here is an interesting problem. The nature of the question and its answer hinge upon our chronological framework and how we interpret events during the Period of Foreign Domination. How widespread in Yucatán, and of what effect upon the social structure was foreign influence? How rapidly did the conquest, if in fact there was a conquest, proceed? Are we correct in assigning the foreign penetration to a period

following that of the Puuc? The greatness of Chichén Itzá, expressed in its architectural remains, and certain historical references to the dominant role of that city at a certain period in history have led many people to believe that a great part of the peninsula was under the sway of the foreigner. Yet we have just noted that the archaeological remains, as known today, do not bear this out, unless we think of the invasion as a military conquest of such intensity that virtually all important effort in architecture and sculpture ceased outside Chichén Itzá. It should be remembered that we are not dealing with a period of a decade or of a generation, but with one of approximately 200 years.

There are, of course, a number of ways in which we can modify our ideas in respect to the political and cultural events of the time. We might suppose that the conquest of Yucatán was relatively benign, a supposition that has little basis in the light of the militaristic character of the Chichén Itzá sculptures. We might assume that the invader exerted political control over the country but had little effect on the native culture. This also is difficult to believe because of the warlike character of the foreigner and the length of time involved. In the case of either of the above suppositions, we are plagued with the riddle of no material remains, except possibly of pottery.

A position that seems more tenable is to assume that the invader and his culture were confined to the Chichén Itzá area or possibly the eastern part of the peninsula. This would not be unlikely if the foreign elements entered Yucatán when the Puuc culture was still vital. In any event, the older forms of art and architecture might have continued in use in the west. We then become involved, however, in further questions: Precisely what, for example, in time and culture, does the Puuc Period represent? When did it terminate? When was the Puuc area abandoned? Did the characteristic architectural style continue in use elsewhere, particularly in the north? These questions, and many more could be formulated, are subject to answer only by further exploration, excavation, and study of existing data. Our purpose here is simply to note that the apparent absence at Mayapán of the remains of an important and critical period has led us to look further and, in so doing, to question the time and the nature of certain events in the history of Yucatán.

The next division in the chronological framework we have been using, the Period of Maya Resurgence, presumably saw the rise to power of Mayapán. It is often referred to as the Mayapán Period, that city being the type site. Elsewhere in Yucatán, notably along the eastern coast, there occur architectural remains that stylistically and in method of construction are very similar to those of Mayapán. Certain presumably late constructions at Chichén Itzá may well belong to this

period, particularly to its earlier part. What little is known of the pottery seems to confirm the placing of the East Coast and late Chichén Itzá remains in this general period. Other occurrences in Yucatán of constructions and pottery of Mayapán type are sporadic and often questionable as to identification.

Although one might expect more numerous traces of the culture of these times, the lack of evidence does not appear comparable to that concerning the preceding period. Structural design of buildings was inferior to that of earlier times; disintegration undoubtedly proceeded rapidly, and little was left comparable to the earlier distinctive stone cutting and typical architectural elements. There is also the suggestion that sizable ceremonial structures were not being built in any numbers, and small constructions, domestic or religious, are not readily spotted in the course of exploration. Possibly of even more significance in this connection is the fact that we are dealing with a period of cultural decadence. It would not be unexpected that in such times the effort that went into religious or public monuments might largely be confined to the central seat of authority or, at most include a few of the larger provincial centers.

There has been a tendency among Mayanists in recent years to divide what we have called the Period of Maya Resurgence into two subperiods, the division falling around the middle of the fourteenth century. It has been mentioned that at Mayapán there are faint indications that the remains of the principal occupation of the site may reflect two cultural phases. Such a division would seem better to suit possible ceramic and architectural relationships between Chichén Itzá and Mayapán. Our evidence at the moment is much too fragmentary to draw conclusions, but it is an idea with sufficient basis to merit attention.

A matter of equal importance with chronology is the character of the culture at any time. The two periods we have primarily been discussing have been labeled Foreign Domination and Maya Resurgence. Though these terms are in a sense no more than convenient tags, they carry cultural or political connotations and deserve examination in that light. The Period of Foreign Domination has been discussed, and the appropriateness of the term has been brought into question. The designation of the second period, Maya Resurgence, is a sequel to the first, the implication being that foreign forms and practices gave way to older, native ideas. This has also been called the Period of Mexican Absorption, with much the same implication. Some students have preferred to label both periods simply, as Mexican, not recognizing at least in designation, the idea of a return to native Maya traditions.

The concept of a Period of Maya Resurgence or Mexican Absorption is based on historical, ethnologi-

cal, and linguistic evidence at the time of the Spanish conquest and on the absence of art, particularly sculpture, like that which flourished at Chichén Itzá in the preceding period. There is also the evidence of presumably late art at Chichén Itzá, and possibly in the East Coast ruins, showing more Maya elements than the Toltec art of that city. On the other hand, the great preponderance of building remains assigned to this late period are not of Maya, but of so-called Mexican, style. Though the architecture differs from that of Chichén Itzá of the preceding period, the style could well be a degeneration of those forms and certainly is more foreign than Maya. Indeed, in respect construction this late architecture is farther from the Maya than are the earlier Chichén Itzá forms. The question arises, then, Are we correct in thinking of this period as time of general resurgence of Maya culture throughout Yucatán?

The answer is clearly affected by our ideas concerning the preceding period. If the foreign culture was not generally accepted in Yucatán but was confined to the Chichén Itzá region, we can hardly speak of a Maya resurgence except as applied to that city. Even if the invaders controlled a larger area, there is considerable question how much of their culture was taken over by the Maya, and whether the civilization of Yucatán was more foreign then than in later times. Indeed, one can take the position that foreign cultural elements more common in the later period than the earlier. These questions are not now answerable with any certainty. The problem of relative chronology, raised above, is of paramount importance. The conclusion we reach is simply that, taking the hardcore of evidence now available, one well can question certain widely accepted beliefs concerning the late preconquest history of Yucatán.

Our idea in the foregoing discussion has not been to sketch the history of those times or to present all arguments and each alternative. The intent has been to indicate on a broad scene some of the problems with which we have to deal and the status of those problems at the beginning of our present program of research. We now may turn to a review of certain staff activities of the past year. Detailed reports by members of the staff will be found following the present section.

The off-season period, July through December, was used by Strömsvik for the construction of our base camp at Telchaquillo. The essential work was accomplished by the first of the year, but throughout the winter and spring Strömsvik was engaged in adding minor conveniences, in adjustment and maintenance of machinery, and in the supply of special equipment for the need of the moment. Experience of a season indicates that the camp is comfortable, convenient, and well adapted to our needs.

In the latter part of November, Strömsvik flew to Honduras to confer with governmental authorities relative to problems concerning the antiquities of that country. He participated in discussions leading to the establishment of an Instituto de Antropología e Historia similar to such bodies in Guatemala and Mexico. Strömsvik has been named Technical Adviser to the Institute, a position involving voluntary services.

It was noted in our previous annual report that the ordering and disposal of large archaeological collections from earlier years had virtually been completed, and that all suitable objects had been put into the hands of the Instituto de Antropología e Historia de México for display in their National Museum or the Mérida Museum, or for study purposes. During the past season R. E. Smith completed the assembling of 10 collections of sherds, each collection indicating, as far as possible, the known types and range of Yucatán pottery. This work had been started the previous season by R. H. Thompson. Three of the collections were made available to the Institute, one to be sent to the National Museum of Guatemala, the other two for use in the National Museum of Mexico and the Mérida Museum. The remaining collections were sent to museums in the United States. With the exception of sherds kept for study purposes, the Department has now turned over to the Mexican Government all archaeological material collected prior to 1951.

During the 1951 field season the work of Ruppert and A. L. Smith on the house platforms at Mayapán [Chapter 40.3 this volume] developed the fact that these dwellings were strikingly similar to the native houses described by the sixteenth century historian Landa. Further confirmation of such historical record occurred this year. Landa observes that the people buried their dead in, or at the rear of, their houses. Excavations of Smith and Ruppert have uncovered several cists or chambers below the floors of dwellings. Interestingly enough, these "graves" were built at the time of the construction of the house, apparently in anticipation of the death and burial of the occupants. That the "graves" were not always used, however, is shown by the fact that in only three of seven examples uncovered were human remains found.

Landa also mentions that "the nobles and persons of high esteem" were cremated rather than interred. Although little work has so far been done at Mayapán in connection with ceremonial or public buildings, Shook discovered below the floor of what apparently was a temple a repository containing the charred bones of adults, children, and animals. This evidence, and that developed by Ruppert and Smith, is suggestive, but at present our knowledge of the burial customs of the inhabitants of Mayapán is fragmentary, much too meager to warrant any general conclusions.

The mapping operations of Jones in 1950 and the archaeological survey of Ruppert and Smith in 1951 disclosed the existence at Mayapán of numerous rough stone walls that may have marked the boundaries of properties surrounding dwellings [Chapter 40.3 this volume]. W. R. Bullard, Jr., a graduate student in anthropology at Harvard University, working with this Department, began a study of these walls during the past season. Preliminary results indicate that the walls occur in residential but not in public areas, and that they may indeed form the boundaries of house lots. Information relative to the pattern of these walls, of passages between properties, and of streets or lanes is beginning to emerge. Fulfillment of the underlying objective of this research, an understanding of city planning, land tenure, density of population, and similar problems, must await further studies.

Proskouriakoff has undertaken the recording and study of the not inconsiderable body of sculptural material found at Mayapán. This has proved to be a disheartening task because of the lamentable condition of most of the sculpture so far discovered. An interesting possibility is that stone figures found in some numbers can be identified as the "idols" reputedly introduced into Yucatán in late times as part of the foreign culture mentioned earlier in this report. The practice of "idolatry" apparently was deeply resented by the older Maya. Proskouriakoff has also begun the study of the artifacts, implements, weapons, minor carvings and the like, of Yucatán.

The existence of another walled city in Yucatán, reported a century ago by an anonymous antiquarian of that country but never visited, so far as we know, by archaeologists, was confirmed by the explorations of Strömsvik and Pollock. Walled cities, few of which are known the lowland Maya area, are important because of certain implications as to the civilization of the builders. The wall at Chacchob, as the site is known, is very similar to that of Mayapán, but the architectural remains and a small sample of pottery seem to antedate the great period of the larger city. This is surprising, walled cities have been thought to phenomena of later times. Further exploration and testing at Chacchob needed to ascertain the period of occupation of the site.

Though Shepard gave a great part of her time to the completion of a book on ceramics for the use of archaeologists, she also was able to continue her researches on the technology of Yucatán pottery. This work has been broadened in scope by the examination of collections of pottery from areas outside the peninsula that may have exported pottery to Yucatán, and by studies of present-day native pottery and pottery methods in Yucatán and Campeche. The possibility that there may be relatively usable sources of clay in

northern Yucatán suggests that the region is particularly suitable to technological research. Certain peculiarities of Yucatán ceramics, such as the high proportion of macroscopically distinguishable wares and the frequent difficulty of obtaining adequate stratigraphy combined with indications of distinctive but little understood regional developments, make the technological studies of special value to our present work.

The large undertaking of compiling a Maya hieroglyphic dictionary, described in last year's annual report [Chapter 6.11 this volume], was continued by J.E.S. Thompson. Work on texts at Yaxchilán, a large site on the Usumacinta River, brought to light interesting material on the brief adoption by that city of the so-called Puuc style of recording dates, a method known to occur elsewhere only in Campeche and Yucatán. During the summer of 1951 Thompson visited Yucatán, Tabasco, and the famous ruins of Palenque in Chiapas. At the latter site he recorded a group of magnificent hieroglyphs in stucco, discovered many years ago in Temple 18 but never previously photographed. Thompson is now engaged in writing a popular book on Maya civilization.

Continuing his researches on the historical geography of Yucatán at the time of the conquest, Roys, operating under a post-retirement grant, spent two months in the field. Of particular note is his identification of what probably was the site of Sinsimato, a large and important town in northeastern Yucatán at the time of Montejó's first expedition early in the sixteenth century.

During the year Joseph A. Hester, Jr., has been appointed a Carnegie Institution Fellow for studies of geographical conditions, with particular reference to agricultural potentials, that may have affected the economy of the ancient Maya. A report on his work, as well as a report by R. H. Thompson, whose fellowship has now terminated, will be found in succeeding sections.

The Mesa Redonda sessions of the Sociedad Mexicana de Antropología, held in Jalapa, Veracruz, the latter part of July 1951, were attended by several members of the staff. Papers were presented by Proskouriakoff, "Scroll patterns (entrelaces) of Veracruz," and by J.E.S. Thompson, "Relaciones entre Veracruz y la region Maya." Shook presented information covering the distribution and chronology of yokes and thin stone heads in areas southeast of the Isthmus of Tehuantepec; R. E. Smith discussed certain similarities between the pottery of Veracruz and that of the Maya area. Shepard presented an exhibit showing the effect of different firing temperatures on different clays, a matter of importance in connection with the classification of pottery.

1.42.

H.E.D. POLLOCK

Department of Archaeology

YB 52:249-256, 1953

In our annual report of two years ago we noted the beginning of a new program of research and outlined the areas in which we expected to work as well as our interests and our objectives. Last year we discussed some of the problems to be met and certain areas that particularly merited investigation. We have now moved into a period of intensive fact-gathering, carried on within the framework of our objectives and directed toward the problems previously formulated. This stage in our researches will undoubtedly continue for several years. It is a period not immediately productive of sweeping conclusions or broad statements of theory, but characterized by the careful ordering, piece by piece, of evidence that through further study and analysis will yield, we hope, the solutions to some of our problems, will on the one hand satisfy, on the other hand stimulate, our interests.

In archaeology the transition from the outlining of problems to the amassing of data relative to those problems frequently means a shift in emphasis from reconnaissance and survey toward excavation. Such was the case in our work of the past season. Intensive excavations were initiated at Mayapán, the focal point of our operations. At the same time, as earlier envisaged, a beginning was made of expanding our researches into areas outside that city. The range of our work, in respect to both character and location, was appreciably greater than in the two preceding seasons.

It has been felt for some time that one of the most promising areas of study at Mayapán is the domestic economy, the way of life, of its ancient inhabitants. At no other Maya site has there been observed such a wealth of remains of simple dwellings. It is natural to believe that other large Maya cities had sizable populations, presumably living in proximity to the ceremonial centers, but the urban character of Mayapán, its population crowded into the area surrounded by the great city wall, and the relatively good state of preservation of the houses make this site particularly suitable for such study.

The work of Ruppert and A. L. Smith has specifically dealt with the above problem. Their survey of building remains in Mayapán is nearing completion. It is now clear that within the urban area of the city, approximately 5 sq km, lie over 4,000 structures, the vast majority of them dwellings and their associated buildings.

Three houses of the larger type were excavated this season. Within the shrine room at the rear of one of the houses were found many fragments of human-effigy incense burners of a type thought to be very late in Mayapán history. Early historical sources contain numerous references suggesting the use of household idols, with the implication that in late preconquest times there had been a trend away from worship in the temples, conducted by the priests, to a more private religion. More excavation is needed before conclusions are drawn, but this evidence is indicative of what we may find.

During the season Ruppert and Smith were able to extend their survey to a study, for comparative purposes, of dwelling-type structures at three of the large centers in the Puuc, or hill, region of Yucatán. This is an area that presumably was occupied and abandoned before the great period of Mayapán. Some 60 examples of houses were studied and plotted at Uxmal, Kabah, and Sayil. As at Mayapán, simple dwellings occur within groups of ceremonial buildings as well as away from them. With the exception of a single type of house at Uxmal, dwellings at these sites do not resemble the typical houses of Mayapán. One may hazard the guess that the vast majority of these Puuc structures are of a different period from that of the Mayapán examples.

Closely allied to the work of Ruppert and Smith was that of Bullard, a graduate student in anthropology at Harvard University, spending his second season with this Department. His project, initiated in 1952, consisted in the study and plotting of the intricate system of ancient property walls that intersect the city of Mayapán. These rough stone walls, which for the most part surround house properties, are in all states of disrepair, frequently are hidden beneath the thorny bush that covers the site, and are easily confused with colonial and modern field walls. The task of following and plotting these boundary markers requires judgment and no small physical effort.

Experience gained during the preceding season made it possible to select an area of the city that held promise of a minimum of destruction of the ancient walls. This was in the eastern part of the site near the small ceremonial center known as Itzmal Ch'en. The area offered the additional attraction of containing several long, narrow lanes, apparently not duplicated elsewhere in the city, formed by parallel walls.

Bullard found that virtually every house or house group had been surrounded by its property wall. This arrangement was so consistent in the area under study that he usually could predict from the topographic map of the site the unit surrounded. There is, every reason to believe that the walls did in fact mark the boundaries of the properties belonging to the houses.

In study of the long lanes, which have a generally east-west direction through this part of the city, it was found that they tended to follow low areas and to avoid house properties. There is thus the suggestion that the lanes are a later work than the houses. The course of these roads indicates that they served as through routes from the more populous central and western sections of the city to the cenote and ceremonial center of Itzmal Ch'en. A test trench across one lane, where it crosses a low area, disclosed the existence of stone paving. As such territory would be muddy in wet weather, the paving was presumably to provide dry footing for the traveler.

Special attention was given by Bullard to the main ceremonial center and the around that center at Mayapán. It is clear that property walls were not a part of the ceremonial architecture. It was further noted that, although there was a dense concentration of residential and residence-like buildings on the fringes of the ceremonial center, fewer walls occurred. These findings were in the main duplicated the smaller ceremonial group of Itzmal Ch'en. The suggestion is that the pattern of property walls and the function of apparently residential structures near ceremonial centers may have been different from that found elsewhere in the city.

The work of Ruppert and Smith, of Bullard, and of Proskouriakoff combined to show that a certain number of dwelling-type structures occur within the main ceremonial center. Some of these buildings are so placed as to indicate that they housed attendants and caretakers of the colonnaded halls and temples; others are so located as to suggest a late encroachment of this kind of structure into ceremonial areas.

Excavations by Bullard determined that in at least one instance a house and its property wall were built later than an adjacent colonnaded hall. One wonders if the building of residential structures in the ceremonial area was a consequence of the decline in importance of a public and priestly religion, with lessening use of the large temples, and the turn to private religious practices involving the worship of household idols.

Bullard also gave attention to problems of settlement pattern on the outskirts of Mayapán. He found that the concentration of dwellings fell sharply outside the city wall. East and west of the city houses occurred in some number for about 0.5 km beyond the wall; at the north and south they dropped off more quickly. Houses outside the city wall had the typical property wall pattern with yards no larger than those of dwellings inside the city, in spite of ample space. Exploration between Mayapán and the village of Telchaquillo, also an ancient site, revealed a pattern of dwelling remains that indicated Telchaquillo to have been a separate settlement.

Reconnaissance by Bullard at the sites of Uxmal, Kabah, and Sayil showed that property walls were not a feature of dwellings in the Puuc region. Evidence at Chichén Itzá was inconclusive.

As a basis for comparative architectural studies, a large-scale (1:200) plan of the main ceremonial center of Mayapán was undertaken by Proskouriakoff. Only half the area was surveyed this season, but some typical plans and assemblages already are evident. By and large the architecture, both in plans of buildings and in assemblage, more closely resembles the architecture of the East Coast than that of Chichén Itzá or other sites in Yucatán. Particularly numerous are colonnaded halls, buildings complete in themselves and unlike the so-called colonnades at Chichén Itzá. Also numerous are small single-room buildings at present called "shrines." Although temples occur at Mayapán in fair number, one again wonders if the emphasis on the "shrine" is not a step away from the presumably more elaborate ceremonies performed in the temples, and a move toward the private religious practices mentioned above in connection with dwellings. However this be interpreted, the number of shrines at Mayapán and in the east-coast sites indicates a cultural change of more than local significance.

So far we have little evidence bearing on the growth and development of the city plan. All constructions observed seem to belong to one cultural period and to represent a single technique of building. Numerous alterations of buildings, courts, and plazas suggest a considerable span of time and hold promise eventually of offering a sequence of changes in architectural style and construction practices. An earlier period, tentatively identified with the time of presumably late Puuc-style structures at Uxmal and Kabah, is represented by many re-used, dressed, and sculptured stones, but no continuity between these two phases has been established. The chronological relation between structures at Mayapán and those of the Toltec style at Chichén Itzá also remains in question. It is clear that building practices at Mayapán form a distinct complex, drawing on various sources. Certain features probably survive from the Classic period of Maya architecture; others mark the influence of Toltec culture. In general, similarities to the Toltec phase of Chichén Itzá architecture are less numerous than analogies with East Coast practices.

Major excavations were carried on by Shook, Strömsvik, and Adams, the last a graduate student in anthropology at the University of Chicago, working with this Department. Most of this work was done in the main ceremonial center at Mayapán. A systematic plan of operation calls for the thorough investigation of one or more examples of each seemingly important type of building. The character of many of the special-

ized units may be determined by this study and light be cast on their functions. Such excavation, moreover, frequently yields more than architectural data. Below the surface lie the bits of evidence that must be pieced together to obtain some small reflection of ancient life in Mayapán. This is a long, careful, and arduous process. Character, number, disposition, presence or absence of the imperishable, or relatively imperishable, remains of human activity are the data that must provide whatever we are to know of this bygone civilization.

Aside from the excavations of Ruppert and Smith in house mounds, the smaller exploratory operations of Bullard, Pollock, and Proskouriakoff, and the pottery trenching of R. E. Smith, sizable excavations involved 12 structures or building complexes, all but one in the main ceremonial center. It was satisfying, and somewhat surprising, to discover that we were dealing with a long sequence of building activity, although all construction apparently occurred within a single cultural period. The latter conclusion is of course tentative and yet to be tested. Aside from making a start in the definition of types of structures, and acquiring some information relative to the functions of buildings, we learned a good deal of burial practices so far as they pertain to the ceremonial center. Two shaft graves, several cists, and one simple, uncontained multiple burial were explored. The human remains found in each location varied from a single skeleton to literally dozens in one shaft grave. There is much to indicate that many, probably most, of these interments were of sacrificial victims. The implication is that human sacrifice was practiced on no small scale during this late period of Maya history, an inference confirmed by the early Spanish historians.

Grave furniture, or cache material, is disappointingly meager. Worthy of note because of its usefulness for dating, was the occurrence of metal, a tiny flake of gold and an even smaller fragment of copper from the shaft grave that yielded many human bones. Even pottery, however, found in abundance in surface deposits and in building debris, was scarce in association with burials.

One may speculate on the apparent poverty of the material belongings of the people. Judging from experience in other parts of the Maya area, one should expect to find the finest art objects of the culture in locations such as we have explored. It is of course possible that we have not looked in the right spots, that it is not in places of sacrifice but in the tombs of the rich and the exalted, of which we have little knowledge as yet, that the "treasures" will be found. There is also the matter of the cenote cult, the throwing of people and objects into cenotes, which some believe was flourishing at this time. No spectacular finds in cenotes have so far occurred Mayapán, but a wealth of material was

dredged many years ago from the Sacred Cenote at Chichén Itzá. As Chichén was reputedly a shrine center for all of Yucatán, it is possible that much of the wealth that went into sacrifice was directed there. These are possibilities to be considered, but one wonders if the evidence of human sacrifice on a large scale is not the important aspect of the problem. Had custom turned, at this late stage of Maya civilization, from the sacrifice of personal and ceremonial valuables to the sacrifice of human beings? In a waning and impoverished cult had human life, often in the form of slaves and captives, become cheaper than material belongings? Men held in bondage might frequently be foreigners and of different physical type, a fact sometimes determinable from skeletal remains. We hope that explorations will throw light on these questions.

Although the contract with the Government of Mexico under which we carry on our field researches does not require the restoration or solidification of excavated buildings and monuments beyond the point of assuring that they will suffer no further deterioration, it has been recognized that the interests of that government involve a certain amount of work of the sort that will leave on view to the public the results of archaeological researches. A limited program of solidification and restoration of buildings, designed to show representative examples of the architecture and methods of construction at Mayapán, has therefore been started. During the past season, two medium-sized structures, a temple and a shrine, and three lesser constructions were completed. This work was directed by Strömsvik.

The return of pottery, that supremely important indicator of change in time and culture, was on a considerably greater scale this season than had been anticipated. Well over 100,000 sherds were cleaned, labeled, and sorted. This work was under the care of Shook and R. E. Smith, the former handling material primarily from ceremonial constructions, the latter from cenotes, dumps, and refuse deposits. A characteristic of the pottery of the principal period of occupation of Mayapán is its simplicity, an exception being the effigy incense burners. This makes the task of detecting significant changes in the pottery, changes that indicate lapse of time and may indicate variation in custom, all the more difficult. It is nevertheless believed minor modifications of form and surface treatment of the dominant style of the time will submit to chronological ordering.

A few highly tentative conclusions from the study of the pottery are beginning to emerge. The apparent absence from dwelling-type structures of a kind of pottery (Black on Cream) associated with the apparent beginning of building activity in the ceremonial center suggests that the growth of the residential part of the

city followed the founding of the ceremonial center. Our excavations in house mounds are not sufficient to permit laying stress on the mere absence of a certain type of pottery, but future developments in this matter are worth watching. A finding that already seems firmly established is the late appearance, toward the end of the occupation of the city, of tremendous quantities of human-effigy incense burners. As might be expected, these incensarios are found in greatest concentration in connection with ceremonial buildings. Here would appear to be a new element in the local culture, a deep urge to appease the gods through the burning of copal, the native incense, in censers decorated with human figures applied to the exteriors.

The important trade ware (pottery imported from another area) at Mayapán is Fine Orange. Trade wares are often significant indicators of time-space relations. Most of the Fine Orange pottery at Mayapán seems to be of a late type associated with the principal period of occupation of the site, although rare examples of earlier types (X and Z) have been found. The history of Fine Orange, which is widespread in Middle America, is not well known. The littoral plains of Tabasco and Campeche have been thought by some to be the place of origin of the pottery. Heinrich Berlin, working with this Department under a Carnegie Institution Fellowship, has been carrying on archaeological reconnaissance in that territory. Preliminary indications are that this is indeed the home area of Fine Orange, a finding foreshadowed by Dr. Alberto Ruz Lhuillier's work in Campeche some years ago. Should the efforts of Berlin lead to the establishment of a sound stratigraphic sequence of defined types of this ware, it would be a boon not only to our researches in Yucatán, but to Middle American archaeology in general.

Berlin's reconnaissance included dozens of archaeological sites and traversed some of the most difficult country in Mexico. Highlights of his work are the beginnings of the definition of the home area of Fine Orange pottery; a start at charting the occurrence of the use of burned brick and mortar for building, a Maya custom apparently peculiar to the Tabasco area; the locating of a region that holds promise of yielding a full stratigraphic sequence, from Preclassic times to the conquest, of ceramics of the Tabasco plain; and the discovery at the ruins of Tortuguero of a fragment of a new monument bearing an Initial Series date (9.14.10.0.0?) in the Maya calendar.

In addition to her comparative architectural studies, referred to above, Proskouriakoff continued the recording and ordering for future study of the artifacts that have come from our excavations and from surface finds at Mayapán. Notable acquisitions this season were five arrowheads, rarely found elsewhere in Yucatán. Also of interest were several finely chipped,

large thin blades, and three knives or points, similar in form to the sacrificial knives of Chichén Itzá, found by Adams in association with human skeletons, two of the knives lying within the rib cases of the deceased individuals. Probably the most interesting piece in the Mayapán collection is a small head, or "mask," of dark igneous stone carved in Olmec style. Found by Ruppert and Smith in a house-mound excavation, the sculpture depicts in very simple form the typical features of an Olmec face. It is hard to judge whether this piece survives from the classic period of Olmec art or is a later imitation. Last may be mentioned a fragment of a shell ring or "collar," incised with hieroglyphs. Although the glyphs look Maya, they cannot be identified with any known characters, and they may conceivably represent a variant of Maya calligraphy or a system of writing yet unknown.

A long-overdue project of acquiring as complete a photographic record as practicable of the bas-relief sculpture of Chichén Itzá was carried out this season by DeHarport, a graduate student in anthropology at Harvard University, working with the Department. Although, the sculpture at Chichén is probably better known than that of any other site in Yucatán, many difficult subjects had never been photographed and some of the material was inadequately recorded. Approximately, 1,800 negatives were made and were developed in the field. It is thought that the record of this interesting and important body of sculpture is now virtually complete but for material that will be exposed by future excavation.

The hieroglyphic researches of J.E.S. Thompson are centered at present in the collecting of material for a catalogue of noncalendrical Maya hieroglyphs. An interesting aspect of this work is the promise it holds of shedding some light on unity or the local independence of centers in the southern Maya area and of assessing intercultural relations.

Hester, working under a Carnegie Institution Fellowship, has continued his studies of conditions bearing on the agriculture, economy, and population densities of the ancient Maya. Experiments were conducted in the clearing of Yucatán forest, without the aid of metal implements. Observations were made on the variety of cultivated plants, and soil samples were collected for analysis.

Roy has been engaged in compiling a historical geography of Yucatán as it was at the time of the Spanish conquest. This book will represent the fruits of many years' labor. Under the sponsorship of this Department, Pedro Carrasco, of the Department of Anthropology, University of Washington, made a trip to Mexico in order to survey the possibilities for research on the ethnohistory of the Yucatán Maya in pre-conquest and colonial times.

Shepard has given most of her time to the preparation of a book tentatively entitled *Ceramics for the Archaeologist*. Her laboratory work in ceramic technology has been divided between problems concerning the archaeology of Middle America and that of southwestern United States. As in the past, Shepard has aided archaeologists of other institutions as well as members of our staff.

A promising effort in the field of Yucatán ceramics has been a study of the occurrence of dolomitic limestone in pottery. Because of the extensive use by the lowland Maya of tempers from carbonate rock, it is important to follow in detail any characteristics that may differentiate such rock coming from different sources. A geological map covering the Maya area shows dolomite in the valley of the Usumacinta River and in southern Petén. It was one of the most distinctive varieties of carbonate rock found in the analysis of pottery from the well known sites of Uaxactún in northern Petén and San José in British Honduras, with implications that it was not of local origin. All Yucatán sherds for which microscopic examination had indicated the possibility of the presence of dolomite were tested. Although it was detected in relatively few sherds, most of them probably intrusive, ancient Yucatán sources of this rock cannot be ruled out, because dolomite was found to occur in certain local tempers collected several years ago by R. H. Thompson from modern pottery-making centers.

Thermal experiments made during the year included some basic work. Rate and temperature of oxidation of various types of gray and black wares were studied to test the possibilities of distinguishing effects of smudging, failure to oxidize carbon derived from carbonaceous matter in the clay, and reduction of ferric oxide. Tests have also been made of various types of clay to compare colors resulting from original oxidation and from oxidation following original reduction. The importance of these experiments lies in the fact that the color of sherds refired in air is used as a means of comparing pastes and judging the class of clay from which pottery was made. Results have shown that sintering and the reaction of iron oxide with constituents in the clay will cause irreversible color changes in some Yucatecan clays even within the ancient potter's temperature range. These studies are still in progress, and the control of firing atmosphere by the use of tank gas, now possible in Shepard's laboratory, gives promise of far more significant results than could be obtained before.

The Director, has been assisted in his administrative duties by Miss Lillian E. Lawrence, administrative secretary of the Department. Besides participating in the field activities of several members of the staff, the Director has given a large part of his time to the

review and preliminary editing of manuscripts from the staff. Final editing remains, as in the past, in the hands of Margaret W. Harrison. During the year a new series of papers, *Current Reports*, was inaugurated as a publication of the Department under the editorship of H.E.D. Pollock. The purpose of this series is to make available as promptly as possible the results of work in progress.

As was indicated in a preceding paragraph, the Department has taken into consideration the interests of the Mexican Government in the matter of the preservation of archaeological remains for public view. Early in the field season the Director opened this question with the Instituto Nacional de Antropología e Historia, the governmental organization under which we operate. It is pleasant to report that negotiations were conducted in a most cordial atmosphere and with a sincere desire for mutual understanding. The Instituto Nacional readily recognized our limitations in time and funds available for work of this sort. The result of these discussions was a program of solidification and restoration of buildings that is entirely practicable within the resources of the Department but at the same time will present a good range of examples of architecture and construction practices at Mayapán.

Early in February we were visited at our field headquarters near Mayapán by Dr. James B. Griffin, of the Museum of Anthropology, University of Michigan; Dr. Linton Satterthwaite, of the University Museum, University of Pennsylvania; and Dr. Gordon R. Willey, of the Peabody Museum, Harvard University. Bullard, a temporary member of our staff, journeyed with Dr. Willey at this time to British Honduras, where they spent several weeks in archaeological reconnaissance in the Cayo District, giving particular attention to the examination of house mounds. In June a number of the staff of the Department had the pleasure of conferring with Dr. Arnold J. Toynbee, of the Royal Institute of International Affairs and the University of London. Although the primary purpose of the conference was to supply Dr. Toynbee with current information relative to the pre-Columbian civilizations of America, problems were frequently approached from a somewhat different point of view from that usual to archaeologists, and the discussion was most stimulating to members of our staff. Dr. A. V. Kidder, retired Chairman of the Division of Historical Research, and Dr. Philip Phillips and Dr. Gordon R. Willey, both of the Peabody Museum, Harvard University, participated in this meeting.

In August 1952, the 30th International Congress of Americanists met at Cambridge, England. Thompson, who represented this Department at the meetings, was elected president of the Congress. During the year Pollock

was appointed Research Fellow in Middle American Archaeology, Peabody Museum, Harvard University.

I.43.
H.E.D. POLLOCK
<i>Department of Archaeology</i>
YB 53:263–267, 1954

Field work, which is principally the gathering of raw data, in archaeology is both a fascinating and a worrisome task. The removal of any shovelful of earth, the turning of a seemingly casual stone may lead one into work involving considerable time and effort, the significance of which can often be assessed only after the work is completed. The mass of material available to the excavator of any sizable archaeological site is so great that he cannot hope to handle all of it. He is constantly faced with decisions of what to exploit, what to by-pass; and he must weigh the whole effort at any site or in any region against other work in the larger area of his researches. Not only must he thus select with care the locations of his excavations, regretfully turning his back on situations that he would like to explore further or that hold tantalizing promise of worth-while results, but he also must look forward to the less exciting task of painstakingly labeling and recording the numerous small objects and the wealth of larger remains that emerge as the products of his digging. It is at this stage of his work that the archaeologist, half smothered under the weight of his accumulations, strives hard to see the forest from the trees and sometimes wonders if his methods are not open to improvement.

With these thoughts in mind it is heartening to be able to report that the results of the past field season, which involved sizable excavations at the large ruins of Mayapán, and survey combined with lesser digging elsewhere in the peninsula of Yucatán, have been most satisfying. Discoveries that first appeared as isolated phenomena are falling into place and forming a pattern that portrays interesting aspects of the life and times of the last important era of the prehistoric Maya, the subject of our present program of research. These findings range all the way from discoveries that throw light on the religious and aesthetic concepts of the people to the more conventional archaeological recon-

structions concerning the distribution of cultures and phases of culture in time and space.

Early in the course of our work at Mayapán it was realized that one of the outstanding opportunities offered at the site was a study of the remains of houses, for the most part presumably the dwellings of ordinary people, a side of Maya archaeology that had been sadly neglected. The surface survey and numbering of all structures within and adjacent to the great wall of the city has been completed. A. L. Smith and Ruppert report that a total of 4,140 buildings and platforms have been recorded. Approximately 2,100 of these appear quite surely to have served as homes, a figure that might well be increased were we able at this time to identify the function of certain questionable types of remains. Aside from the steadily accumulating information concerning burial, household religion, and the simpler sides of the culture of the time, some aspects of which have already been reported, the material provided by this survey, which will be amplified by additional excavation, offers the basis for the most accurate estimate of population that has yet been made of any ancient Maya city. It would be premature to mention any figure at this time, but the simple count of houses suggests that the settlement was large in terms of present day Yucatán.

The large-scale plan of the ceremonial center at Mayapán, a project begun last year to provide the basis for comparative architectural studies, was completed this season. In an area approximately 200 by 300 m there are no less than 114 structures varying in size from the great pyramid temple, the so-called Castillo, to small shrines, dwellings, and simple platforms. Proskouriakoff, who performed the mapping and has carried on preliminary studies of the architecture, notes that this is a far more crowded assemblage than is found at earlier ceremonial centers, and suggests that it came about, at least in part, from a decentralized ritual organization serving a multiplicity of cults.

As the mapping and architectural studies have progressed, there has been further definition of types of structures and of function. The dominant type of civic or religious building is the colonnaded hall. An interesting aspect of these buildings, which, because of their locations and certain internal features, have mostly been thought of as being for ceremonial use, is that some may have had a residential function. This is indicated by the close association of dwelling-type structures that seem to have been for the purpose of providing household services for the halls. Proskouriakoff raises the question whether the Mayapán hall is not, the counterpart of the ancient Mexican *telpuchcalli*, the bachelors' or men's house, or the *calmecac*, a monastery or place for the training of novi-

tiates, buildings that are described by the sixteenth century writer Sahagun as having existed at Tenochtitlán, the Aztec capital.

Major excavations, as in the previous field season, centered in and around the ceremonial, center at Mayapán. Although most of this work was directed toward the study of the civic and religious architecture, a phase of our explorations that is now virtually completed, some attention was given to the better class of residences, presumably the palaces or houses of the aristocracy. Fourteen temples, colonnaded halls, shrines, and platforms were explored by Shook; by Winters, a graduate student in anthropology at the University of Chicago, working with this Department; by P. E. Smith and Irving, graduate students in anthropology at Harvard University, also working with the Department; and by Pollock. Lesser excavations in ceremonial buildings were carried out by Proskouriakoff, Pollock, Strömsvik, and R. E. Smith. Proskouriakoff, Irving, and Thompson tested and explored several imposing residential groups and structures. Detailed accounts of this work will be found in succeeding sections of this report. A few of the more interesting discoveries and some of the broader implications of our findings will be mentioned here.

The finding by Winters of a group of effigy incense burners of pottery, badly broken but with most of the pieces present, enabled him to restore a number of those elaborate vessels. Although sherds of this type of censor are found in tremendous quantities, the pottery is so friable that a vessel normally disintegrates into hundreds of pieces; up to this year it had not been possible to restore a single example to anything approaching completeness. The censers, in which copal, the native incense, was burned, are typically large, some 40 or 50 cm high, with an anthropomorphic figure, modeled usually in the full round applied to the side of the vessel. The figures are of gods or of men impersonating gods. They are elaborately painted and show in detail attributes of the deities or symbols of office, ceremonial objects weapons, and accouterments of dress. Guided by the restored vessels, we should be able to identify fragments that previously were without meaning and to restore considerable sections of other censers. A study of the details of the figures offers promise in a subject that is otherwise scantily represented by archaeological remains.

Many of our excavations at Mayapán have produced fragments of wall plaster that show traces of painting. These occur with sufficient frequency to indicate that architectural decoration of this sort was common. It is rare, however, to find any sizable area of plaster still adhering to a wall, and no painted designs, other than those on fragments so small as to give little idea of the original, had been found prior to

this year. During the past season, Winters' excavations in a temple uncovered the wall of a room some 5 m long that retained fairly large areas of painting on the plastered surface. Most of the paint was on the lower half of the wall, only vestiges of the scene remaining on the upper part. As the mural had been covered by a later coat of plaster and much of the underlying plaster had pulled away from the wall, ready to crumble and fall at any moment, the removal of the surface layer and cleaning of the painting presented no small difficulty. This task was undertaken by Winters and a native assistant, and was carried on while the mural was being copied.

Under these difficult conditions, complicated by dust and sun, Proskouriakoff made a watercolor reproduction of the painting. The key to understanding the subject portrayed rested largely in deciphering, and relating to the rest of the mural, the fragmentary details on the upper part of the wall. Proskouriakoff's solution of the problem and restoration of the composition were brilliantly successful. The scene depicts five buildings, possibly temples, resting on a low platform. The walls of the buildings and platform are elaborately decorated with painted designs. The architectural style suggests a mixture of Maya and Mexican traditions and is of a sort not suspected from the remains of buildings at Mayapán or elsewhere in Yucatán.

In our last annual report [Chapter 1.42] it was noted that the late stage of Maya history represented by the principal remains in Mayapán seemed to have witnessed some rather profound changes in general cultural level and in religious structure as compared with the old classic Maya civilization. Aside from the obviously inferior art and architecture, this change was expressed in the poverty of ceremonial offerings. The numerous shrines, apparently a late development, suggested the decline in importance of a centralized religious organization and the growth of a multiplicity of cults. This process of decentralization may have attained its ultimate expression in the transference of much of what remained of religious ceremonialism to the private dwelling.

Our excavations and explorations this season in the finer residences are revealing in respect to these matters. The shrine room in the house or the separate shrine in the courtyard before the house appears to be customary, if we may judge by the examples so far explored. More surprising is the fact that both in excellence of building and in quality and variety of ceremonial objects the important houses thus far tested have proved richer than the temples and other ceremonial structures. One is tempted to picture a time when the gods were slighted in favor of personal comfort and glory. More evidence is needed, but in an era of deca-

dence, which is clearly indicated by inferior art forms and the falling-off of craftsmanship as compared with earlier times, it is not surprising to find cultural decay and materialism walking hand in hand.

In the native literature and early Spanish accounts that deal with the preconquest history of Yucatán there are numerous references to the fall of Mayapán, the last great city of the Maya. This event, which presumably occurred about A.D. 1450, is variously referred to as the "abandonment," "depopulation," or "destruction" of the town, and is often associated with fighting of the nature of civil war. Our excavations in 1953 uncovered several instances of the apparent looting of altar deposits, and it seemed clear that this had been done in ancient times, before the buildings that housed the altars had collapsed. Although these findings suggested insurrection or invasion and pillage, that interpretation was by no means certain. The gradual abandonment of the city from causes other than strife, and the breakdown of old social and religious forms, might in time leave the empty temples as open to acts of vandalism as the more cataclysmic effects of war.

Discoveries of the past season, have thrown light on the nature of the abandonment of Mayapán. Not only have we uncovered several more examples of the robbing of altars prior to the collapse of buildings, but we have noted three instances of charred timbers beneath the debris covering the floors of structures. These charred timbers are unquestionably the remains of roof beams. As it would be relatively difficult to set fire to the wooden supports in a beam and mortar roof, owing to the nature of the construction, there is good evidence that the buildings were purposely burned. There is also evidence from the pottery on the floors that this occurred late in the occupation of the city and that, in at, least one instance, the building was in use at the time of destruction. These findings clearly suggest that the sack and destruction of the city by hostile forces, as implied by old records, did in fact take place.

In our annual report of two years ago [Chapter 1.41] we discussed a number of problems dealing with the history of Yucatán during the five centuries preceding the Spanish Conquest. The gist of those remarks was that a reappraisal of the archaeological evidence might lead one to question prevalent reconstructions of the history of that period. The work of Ruppert, Shook, A. L. Smith, and R. E. Smith at Chichén Itzá this season has provided additional information bearing on these questions. The survey of house mounds there discloses no dwellings like those at Mayapán; the collections of stratigraphic samples of pottery show a very small proportion of types assignable to the Mayapán Period. This leads the investigators to suggest that the permanent occupation of Chichén Itzá terminated at or near the end of the Toltec Period at that city, other-

wise known as the Period of Foreign Domination. They further suggest that the small amount of ceramic remains of the Mayapán Period, or Period of Maya Resurgence, represents no more than the leavings of pilgrims who journeyed to their holy well, the Sacred Cenote, to make sacrifice. This, in the main, is confirmation of one of the standard reconstructions of Yucatán history.

Whatever the final answer to these questions, and the evidence is not yet conclusive, a matter of equal importance is that the ceramics of Chichén Itzá and Mayapán strongly indicate that the major break or change in cultural tradition occurs not at the beginning of, or during, the Period of Foreign Domination, but at the close of that period and with the ascendancy of Mayapán. This revives questions raised earlier as to the character of the later period and the correctness of our designation of those times as the Period of Maya Resurgence, questions discussed in the annual report referred to above.

The foregoing paragraphs have touched on some of the wider implications of our findings of the past season. Detailed reports on this work will be found in succeeding sections. There also will be found reports on explorations in the vicinity of Mayapán and on solidification of buildings at Mayapán by Strömsvik, on the ceramic stratigraphy of Mayapán and its vicinity by R. E. Smith, on the art and artifacts of Mayapán by Proskouriakoff, on explorations in Quintana Roo by Strömsvik, Pollock, and Berlin, on archaeological reconnaissance along the east coast of Yucatán by William T. Sanders, and in Tabasco and Campeche, by Heinrich Berlin, Carnegie Institution Fellows with this Department, on research in ceramic technology by Shepard, and on field studies of Maya agriculture by Joseph A. Hester, Jr., also a Carnegie Institution Fellow with this Department.

1.44.

H.E.D. POLLOCK

Department of Archaeology

YB 54:265–269, 1955

The year covered by this report saw the completion of a program of field activities initiated in 1951. As is known from previous reports, these activities have been concerned with the peninsula of Yucatán. Major exca-

vations have been carried out in the large pre-Columbian city of Mayapán, and archaeological surveys combined with lesser excavations have been advanced in a number of other locations and areas within the peninsula, notably along the East Coast and in the Tabasco-Campeche region. This phase of our program is ended. There remains the task of studying the large collections of objects and the mass of data that are the products of this work.

It may be of some interest to those who have never been immediately in touch with archaeological field work to have some idea of the size of an operation such as ours that has extended over several years. Approximately half a million pieces of pottery, varying in condition and size from whole jars to scraps no bigger than one's fingernail, have emerged from the digging. Each single piece has passed through the hands of at least one person and usually of several people. By far the greater part of this material is classified and recorded; even the fragments so weathered as to elude classification are counted and a record is made of their provenience and association with other pottery and materials. Lesser artifacts, tools, ornaments, and the like, of stone, bone, antler, shell, coral, metal, pottery, stucco, even fragments of textile, have been catalogued to the number of 1,400 specimens. Nor does this give a complete picture of the amount of such materials, for several objects are sometimes grouped under a single specimen number, and the cataloguing is not yet complete. Brief description, measurement, a rough sketch are the minimum of data that go with each specimen. Skeletal remains, human and animal, the former to be measured and studied, the latter to be identified, are to be numbered by the boxful. Stone sculptures, architectural and monumental, are recorded by the hundred. This list is by no means complete, for example, there are page upon page of architectural drawings, but it suggests the amount of material that is dealt with. These are the products of excavation. With their appearance above ground and their initial recording, the task of the archaeologist is only fairly begun.

In the course of our several field seasons at the large ruins of Mayapán, our work has proceeded along two main avenues of approach, namely, surface survey and excavations of varying magnitude at selected locations. Because of the great number of building remains within the city wall, only a small fraction of which we could hope to excavate within the time allotted to our program at this site, survey work took on particular significance, a significance amplified by our interest in the simple dwellings that make up so large a proportion of the remains. It was not, then, until the end of the 1954 season that our program of surface examination stood virtually completed. This situation

allowed us to devote almost complete attention to excavation during the 1955 season. It further allowed us to judge what lacunae existed in our work up to that point, and where we might most profitably direct our efforts during our last season at Mayapán.

As can well be imagined, there were numerous situations that seemed to merit further investigation, and there were a number of problems the solutions of which held promise of providing worthwhile knowledge. It appeared quite clear, however, that our work should give primary attention to two classes of remains. We needed a better sample of excavated house mounds than we had been able to obtain up to that time, showing the various types of structure and their distribution within the city. We also wished more knowledge of a class of buildings that at first had been thought to be civic or religious in function, but which further knowledge had given good reason to believe were the residences of the aristocracy or nobility. Most of our effort was kept within these two areas during the past season.

Ruppert and A. L. Smith, who carried the chief burden of surface survey at Mayapán, undertook widespread excavations in simple house mounds. They also worked in some of the larger structures of the second class mentioned above. The data they have accumulated must of course undergo careful study before they are interpreted. A factual statement of their findings appears in a following section of this report. One of the most promising aspects of their work was the complete excavation of several house groups. It is hoped that excavations of this sort will lead to some understanding of the pattern of residence in the extended family and will throw some light on the organization of domestic life within the group. As it seems quite clear that household worship was an important part of Maya culture at this time, there is also the question of how religion functioned within the family group.

One of the most imposing assemblages of buildings at Mayapán is the large, quadrangle partly excavated this season by Proskouriakoff and Temple, the latter a graduate student in anthropology at Yale University who worked with this Department during the field season. This quadrangle, which encloses a sizable courtyard, seems clearly to have been residential and very probably merits the often misused term "palace." The group is too large to have allowed complete excavation, but sufficient exploration was carried on to gain an excellent idea of the growth and development of the complex. There is good reason to believe that it was planned from the beginning to be a residence. Although there was continual tearing down, rebuilding, renovation, and general change of plan, it is surprising to discover that the complex was begun at a late date in relation to the main ceremonial center

of the city. This relative lateness appears to characterize many of the residences we have tested, and this fact raises some interesting problems in regard to the growth of the city. Like many other structures, the quadrangle seems to have been occupied at the time of the violent destruction of Mayapán, for many objects, apparently left by the departing inhabitants, were found on the floors of rooms beneath debris from the burned roofs. An interesting discovery was a kitchen that retained a number of its furnishings, with other household articles and a deep deposit of midden refuse off the slopes of the terrace outside the room. It was not until this season that any kitchen had been identified. The removal of valuables, as witnessed by the looting of caches, was prevalent in the quadrangle as in many other buildings we have excavated, but a new light on the behavior of a presumably fleeing group of people was provided here through the discovery of a tremendous number of effigy incense burners dumped into a plundered tomb, as though the household gods had better be broken and buried than allowed to fall into the hands of people of alien beliefs. It is possible that the breaking occurred at the hands of the alien group, but there are indications that it was done by the departing residents of the palace.

A residential group almost as imposing as that referred to above was excavated by J.E.S. Thompson and D. E. Thompson, the latter a graduate student in anthropology at Harvard University, working with this Department. A discovery of particular interest was a cremation, sealed within a pottery jar, buried in the altar of what appeared to be the family oratory. As is pointed out by Thompson and Thompson in a succeeding section of this report, this cremation strongly suggests a cult of ancestor worship such as that described by Bishop Landa.

Although our excavations this past season were primarily directed toward gaining knowledge of the domestic side of Maya life, additional work of this sort being carried on by Chowning, a graduate student in anthropology at the University of Pennsylvania, temporarily with this Department, and by D. E. Thompson, some effort was also directed toward amplifying our knowledge of the civic and religious aspects of the culture. Pollock undertook limited excavations at a relatively large group of buildings that from surface examination suggested functions involving ceremonialism but that were sufficiently aberrant from known types to leave considerable doubt. It appeared after excavation that this group had almost certainly had people resident there at certain times, possibly, preparatory to religious rites and ceremonies, possibly for religious training, but that there was little reason to think the structures were houses in the sense of a family residence. Shook and Chowning excavated round

buildings that in each case can almost surely be identified as temples. Strömsvik, Chowning, and D. E. Thompson carried on limited excavations at the small ceremonial center next Cenote Itzmal Ch'en in the eastern part of the city. This group was later mapped by Proskouriakoff.

As reported previously, the Department has cooperated, through informal agreement, with the Instituto Nacional de Antropología e Historia of the Mexican Government in carrying out a limited program of repair and consolidation of selected structures at Mayapán. The effort has been to leave on display one example of each of the major types of building at the site. Strömsvik has had charge of this work. During the past season the program of repair was completed with the consolidation of a round temple, of a typical section of the city wall, and of one of the major entrances in the wall. It is believed that future visitors to Mayapán will be able to gain a good idea of the range and character of the architecture there.

During the past season a start was made on the more general studies leading to interpretation of the large amounts of raw data that have been amassed from four seasons of field work. So far these studies have been confined to pottery, work that has rested in the hands of Shook and R. E. Smith. The former devoted the major portion of his time to analyzing the large collections that have accrued from our digging in the main ceremonial center at Mayapán. Because of the wealth of ceramic material recovered during the current season, which was handled by Smith, the latter was able to give less time to such detailed studies. He did, however, prepare a preliminary report, now in press, on the early, pre-Mayapán Period pottery from Mayapán and its vicinity.

As noted earlier in this report, the Department has carried on a program of archaeological reconnaissance in other regions of the Yucatán peninsula than the Mayapán area. During the past season Sanders, working with the Department under a Carnegie Institution fellowship, continued his ceramic survey of the East Coast. His work of the previous year had resulted in exploration of the northeastern tip of the peninsula as far south as the ruins of Tulúm and including the island of Cozumel [Chapter 33.2]. Knowledge gained from this exploration and ceramic testing allowed him to select two important sites, Tulúm and Tanchah, for intensive work this year in his search for stratigraphic sequences of ceramic remains. Late in the season reconnaissance was extended southward to the Chetumal Bay area, where testing was carried out at the sites of Ichpaatún and Calderitas. With the collections now in hand it is confidently expected we can provide a far sounder basis than previously existed for the understanding of cultural sequences along the East Coast

and of the relations of that area with other parts of the peninsula. It is already apparent from a preliminary study of the pottery, not only that many of the East Coast sites are of the same general period of time as Mayapán, a fact that had long been suspected, but that the two areas were unquestionably in contact. It is not unlikely, moreover, that the East Coast remains, because of the sequent stages of culture there, can give us more information on the sources and development of late Maya civilization than the more renowned, but relatively short-lived, capital city of Mayapán.

Archaeological reconnaissance was carried on by Shook in the environs of Mérida along the coast of Campeche, and in the Chiapas highlands. This work was particularly important in calling attention to the wealth of Preclassic remains, both ceramic and architectural, in one small area of northern Yucatán; in noting on the west coast of the Yucatán peninsula the existence of remains apparently of the Toltec-Chichén Itzá type and period, remains that are extremely scarce in Yucatán outside the type site; and in discovering a magnificent stratified deposit of Preclassic materials in the archaeologically little known upper drainage of the Grijalva River.

Berlin, whose Carnegie Institution fellowship ended during the period covered by this report, devoted his time to the study of, and preparation of a report covering, the archaeological material recovered by him during the two previous field seasons in Tabasco and Campeche. Of special interest was the isolation of a late type of Fine Orange pottery found abundantly along the southeastern shore of the Gulf of Campeche. This same pottery has been encountered in small amounts at Mayapán, thus establishing a chronological and cultural link between that city and the southwest sections of the peninsula. Berlin also visited several small Maya sites where interesting and previously unknown sculptures were recorded.

Beside seeing her forthcoming monograph, *Ceramics for the Archaeologist*, through the press, Shepard has continued her laboratory research in ceramic technology. Several lots of sherds from Mayapán have been examined for evidence of changes in paste composition that might be useful diagnostics for subdividing the period represented, for intrusive sherds that would illuminate foreign contacts, and to evaluate the position of this pottery in the technological history of Yucatán ceramics. Work has also been done on the analysis of Fine Orange pastes preparatory to a study dealing with that important ware. Basic research concerned with the thermal behavior of clay minerals has continued, notably by means of thin sections of polished clay slips which have uniform orientation, facilitating the determination of optical properties. Shepard is also engaged in a review of literature on

contemporary pottery making in preparation for a systematic analysis of pottery-making traits with respect to their degree of dependence on environmental conditions, and in order to judge the feasibility of identifying forming techniques of prehistoric pottery by means of the orientation that clay particles are given by the forces applied in building.

Toward the close of the field season Dr. Eduardo Noguera, Director of the Dirección de Monumentos Prehispánicos, Instituto Nacional de Antropología e Historia of the Mexican Government, and Dr. Alberto Ruz L., Head of the Oficina de Monumentos Prehispánicos en Yucatán, visited Mayapán and our Mérida laboratories at the invitation of the Department. Dr. Noguera and Dr. Ruz inspected our operations at the ruins, giving particular attention to our work of consolidation of buildings and to our procedures for protecting monuments from deterioration following excavation. At this time we were able to discuss procedures for transferring guardianship of the archaeological zone of Mayapán to the Mexican Government. This act was accomplished in May 1955, when an official guardian, a native of the village of Telchaquillo, was appointed by the Government.

On July 1, 1955, Earl H. Morris retired, thus terminating 31 years of service with the Institution. Morris' first work with the Department was in Middle America, where the Institution was just beginning its large program of excavation and restoration at the ruins of Chichén Itzá in Yucatán. It later developed, however, that his true interest lay in the archaeology of the Southwest of the United States, an area in which he had worked for some years prior to joining the staff of this Department. After a few seasons in Yucatán he consequently transferred his operations to the Southwest, where the Institution was willing to undertake a small program, and, with the exception of a single season in Guatemala, his work has continued in the area of his original interest. So successful have been his researches and so outstanding his contributions that in 1953 he was presented the Alfred Vincent Kidder Award of the American Anthropological Association.

On July 1, 1955, Margaret W. Harrison resigned as Editor of the Department of Archaeology, ending an association of 21 years with the Institution.

As a tribute of recognition of his outstanding achievement in archaeology, the Government of Guatemala has conferred on Alfred Vincent Kidder, past Chairman of the Division of Historical Research, the decoration of the Order of the Quetzal, in the grade of Knight Commander.

1.45.

H.E.D. POLLOCK

Department of Archaeology

YB 55: 335–338, 1956

In last year's annual report [Chapter 1.44 this volume] we noted the completion of a program of field activities concerned with the peninsula of Yucatán. The past year has seen the staff engaged in the preparation of preliminary reports covering the work of the 1955 field season and the beginning of the larger, definitive studies that will follow.

The handling of archaeological collections and recorded data is, naturally, determined by the nature of the materials. Buildings cannot be collected, nor can excavations be left open indefinitely without undue risk of deterioration of the exposed remains. Architecture must, then, be recorded in such detail that all pertinent data will be available after the worker has left the site of his excavations. The same is true, also, of large sculptures and monuments. Pottery is transportable, but it frequently occurs in such amounts that only preliminary sorting and classification can be done on the spot. Final study, when the full range of material is at hand, must await a later time. Other artifacts, covering a large range of relatively imperishable materials, also may occur in considerable numbers. In the busy press of an active field season these objects can receive only preliminary cataloguing, and they too, like the pottery, must be set aside for later, more painstaking study.

The problems of handling collections and data indicated in the preceding paragraph have been met in a variety of ways. Those members of the staff concerned with architecture, and with the wider implications of building remains, such as population estimates, settlement patterns, and the life and customs of the people in general have been at work in Cambridge. Over the years of active field work our collections of pottery and other artifacts have steadily moved from the site of excavation to a central repository in Mérida, where they were systematically stored. To study these collections, certain members of the staff traveled to Yucatán this past winter. Human skeletal remains, many extremely fragile, were stored at our field camp, and the study of this material by a physical anthropologist also required his going to Yucatán. Lastly, we should mention collections that could be shipped to the United States for study by scholars in fields other than archaeology. These materials included animal bones, selected specimens of shell and stone, fragments of textiles, and all artifacts of metal.

In July 1955, Edward I. Fry, a graduate student in anthropology at Harvard University, spent several weeks at the Department's field camp in Telchaquillo, Yucatán, studying our collections of human skeletal remains. Because of the nature of the material he concentrated his attention on evidences of pathology, anomalies, and deformation exhibited by the remains rather than attempting to accumulate extensive amounts of anthropometric data. Fry's report on his findings is now in press. Highlights include comparative data on types of tooth filing, the low incidence of carious teeth and of healed fractures of long bones, and the high incidence of antero-posterior cranial flattening and of degenerative arthritis.

R. E. Smith and Proskouriakoff went to Mérida in December 1955, the former to work with our pottery collections, the latter to study our other collections of artifacts. Proskouriakoff returned to Cambridge early in March, and is now engaged in preparing a definitive report on her work. Smith, faced with a very large amount of material, remained in Yucatán until the end of May.

A minor exception to the ending of field activities in 1955 was the collecting of pottery samples at the ruins of Uxmal and Kabah during the past winter. These small excavations, which were carried out by Strömsvik during February, were designed to provide R. E. Smith with background material for his studies of Mayapán ceramics. The results of the work are reported by him. As our 5-year contract with the Mexican Government had expired in September 1955, Strömsvik's excavations were made under special permission from the Instituto Nacional de Antropología e Historia, and in co-operation with its work at those sites.

It has been mentioned above that studies of parts of our collections have been undertaken by scholars in fields other than archaeology. These studies are listed by Proskouriakoff in a subsequent section. Particularly worthy of note are the spectroscopic analyses of metal objects, some of which will be subjected to further tests, by Dr. W. C. Root, of Bowdoin College, and the identification of large collections of animal bones by Mr. Clayton Ray, a graduate student at the Museum of Comparative Zoology of Harvard University. Although the work on the metals has not progressed sufficiently for any details of the findings to be given, this study holds promise of indicating routes and sources of trade and commerce; no metal being native to the Yucatán peninsula, all objects of this material must have been imported.

In the matter of the identification of animal bones produced by our excavations, the Department was most fortunate in obtaining the assistance of Ray, who has made over 6,000 identifications of mammals, reptiles, amphibia, fish, and birds. It is pleasant to relate that, aside from the anthropological information to be

derived from these identifications, such as the dietary habits of the ancient Maya and the domestication of animals by these people, studies yet to be made, our collections were of sufficient interest to another discipline to merit the preparation by Ray of two papers to be published in zoological journals.

While referring to assistance from other disciplines, we wish to report the dating by the carbon-14 method of two charcoal samples from Mayapán. The age determinations were made in 1955 by Professor Hessel de Vries, of the Physical Laboratory, State University of Groningen, Holland. The specimens were selected in the hope of marking, as nearly as possible, the beginning and ending of the principal period of occupation of the city. The precise provenience and other details relative to the samples will be given in a report now under preparation. Suffice it to say here that the earlier specimen (GRO 452) yielded a reading of 700 (A.D. 1255) ± 95 years. This finding is in close accord with the date expected on archaeological grounds. The later specimen (GRO 450) yielded a reading of 335 (A.D. 1620) ± 90 years, approximately 200 years later than the expected date and falling in post-Columbian times.

During the past year Ruppert and A. L. Smith have been occupied primarily with the preparation of preliminary reports covering their extensive excavations in dwelling remains in Mayapán and their reconnaissance and excavation of similar remains elsewhere in Yucatán. One such report is now in press. They have also begun the analysis of the large amounts of data accumulated during five seasons of field operations at Mayapán and other ruins, an analysis that should materially increase our knowledge of the character of domestic architecture, patterns of settlement, and sizes of populations in Mayapán and vicinity.

Thompson, in addition to preparing a report on his excavations at Mayapán in 1955, has continued work on his catalogue of Maya hieroglyphs [Chapter 6.11]. The end of this long and arduous undertaking is now in sight.

During the latter half of the period under review Shook was on leave of absence from the Institution. This leave was to enable him to lead an expedition of the University Museum, University of Pennsylvania, to the great lowland Maya ruins of Tikal in Guatemala. Before his departure he was engaged in preparing reports covering his activities in Yucatán during the 1955 field season.

Sanders, whose fellowship with the Institution ended January 1, 1956, has been occupied with the preparation of a report on his archaeological survey of the east coast of Yucatán, a survey that extended over two field seasons. His report is expected in the near future.

Shepard has been pursuing studies in geology and mineralogy to broaden her background in those subjects. This work has included a research project on clay mineralogy in which she is applying X-ray and petrographic methods to the study of the thermal behavior of clays within the temperature range of primitive firing. Her survey of technical methods in archaeology has been supplemented by abstracting for *Studies In Conservation*, International Institute for the Conservation of Museum Objects; she is serving on R. J. Gettens' American working team. Shepard has also prepared sets of models demonstrating the factors affecting the color of fired clay for the purpose of clarifying basic principles of ceramics for archaeological students.

The foregoing covers the research activities of the staff. There are some administrative matters which should be reported. Most important is the decision of the Institution to discontinue its archaeological activities some two years hence.

Our 5-year contract with the Mexican Government, under which our program of field activities in that country had been carried out, expired in September 1955. As excavations were at an end, and the terms of the contract allowed a period of two years following the completion of the work before our collections need be turned over to the Instituto Nacional de Antropología e Historia, renewal of the contract was not requested.

By late winter 1956 it was apparent that our field camp at Telchaquillo was no longer needed. During March and April all equipment at the camp was moved to Mérida, and the property, which we held on lease, was returned to the owner. This operation was carried out by Strömsvik.

Before the closing of the Telchaquillo camp, it had been decided by the Institution that the greater part of the field equipment no longer needed by the Department should be turned over to the Instituto Nacional de Antropología e Historia, to be used in its archaeological researches in the Maya region. This policy, which assured that the equipment would continue in the uses for which it originally was purchased, has resulted in the handing over of considerable amounts of highly useful equipment to the Yucatán office of the Instituto Nacional.

Toward the end of April the President of the Institution and the Director of the Department made a journey of approximately a week's duration to Yucatán, Guatemala, and Honduras, in order to review some of the past activities of the Institution in the field of Middle American Archaeology. The ruins of Uxmal, Kabah, Chichén Itzá, and Mayapán were visited in Yucatán, where the President and the Director were joined by R. E. Smith and Strömsvik. In Guatemala the great ruins of Tikal, the largest known Maya city, were inspected with the aid of Shook, who was just completing his

field season were under the auspices of the University Museum of the University of Pennsylvania. The following day, again in the company of Shook the ruins of Copán in Honduras were visited. Lastly, the fine Museo Nacional de Arqueología y Etnología de Guatemala, in the organization of collections and the installation of exhibits for which the Institution had played a prominent role, was inspected.

The fifty-fourth annual meeting of the American Anthropological Association held in Boston during November 1955, included a symposium on Middle American anthropology and thus was of particular interest to our staff. Papers were presented by Proskouriakoff and Thompson; Shook acted as discussant of a paper; other papers were given by a number of people who at one time or another have been associated with the Department.

During the past year Proskouriakoff has been appointed Assistant Editor (Middle America) of *American Antiquity*, replacing Thompson.

It is with deepest regret that we report the death on June 24, 1956, of Earl Halstead Morris, a recently retired member of the staff of the Department. His outstanding accomplishments in the fields of Southwestern and Middle American archaeology were described [Chapter 1.44] at the time of his retirement. American archaeology has suffered a grave loss with his death.

In recognition of extensive research work and brilliant publication, J. Eric S. Thompson was awarded the Viking Medal in archaeology for 1955. Thompson is the second member of the staff of the Department to receive this award since its inception 10 years ago. The first recipient of the medal was Alfred Vincent Kidder, then Chairman of the Division of Historical Research.

It is a pleasure to be able to record yet another honor for our past Chairman. In October 1955, Dr. Kidder received from the University of San Carlos, Guatemala, the degree of *Doctorado honoris causa*.

1.46.

H.E.D. POLLOCK

Department of Archaeology

YB 56:407-410, 1957

The work of the year under review has followed the pattern indicated in our previous annual report [Chap-

ter 1.45 this volume]. With the completion of field activities, the efforts of the staff have been directed to the production of preliminary reports on the field work and to the broader studies that will lead to definitive statements covering the results of our recent program of researches in Yucatán.

Our progress in the first area is recorded here in a subsequent section dealing with publications. This phase of the work is now virtually completed, only two or three such reports remaining to be published.

In connection with the larger studies R. E. Smith worked in Yucatán, from the beginning of December 1956 until the end of May, with the large collections of pottery stored in our Mérida headquarters. Because of the vast amount of material of this nature that was produced in our five seasons of excavations at Mayapán and elsewhere in the Yucatán peninsula, this study is the most time-consuming of the several major divisions of our researches. A statement of Smith's progress is contained in the following section of this report.

Thompson made a trip to Yucatán in March 1957 for study of the effigy incense burners recovered from Mayapán, to determine what light they would throw on the religion of Mayapán and of the late preconquest Yucatecan Maya in general. The results of this work were highly rewarding, in that he was able not only to identify a number of the gods or personages represented on the incense burners and to make tentative identification of others, but also to show how considerably the religion of Mayapán was influenced by foreign ideologies. A more detailed report on this work will be found below.

A. L. Smith has continued his research dealing with the domestic architecture and living patterns of the people of Mayapán. The raw data for this study are extensive, and their ordering and analysis are of necessity a slow, painstaking process. The work has progressed from the study of types of individual structures to the examination of groups of buildings that presumably housed family units. It is too early as yet to anticipate the results of these studies.

Proskouriakoff has been engaged in preparing reports on the formal architecture of Mayapán and the artifact remains, other than pottery, from that site. In regard to architecture, her careful work has developed some interesting information concerning assemblages of specific types of structures that may have functioned as ceremonial units. It has also brought out the necessity for changing our ideas in regard to the type, and presumably the function, of certain buildings. A highlight of the study of artifacts is the suggestion that the date of the introduction of metal into Yucatán may have been later than it has commonly been thought to be.

During the past year Shook has been on leave of absence from the Institution. As was stated in our last report, he has been in charge of the work of the University Museum, University of Pennsylvania, at the ruins of Tikal in Guatemala.

Shepard has continued her academic work in geology in anticipation of making that her principal field. Certain of her studies, especially theoretical igneous petrology, metamorphic petrology, ore genesis, paragenesis, and clay mineralogy, have been of direct benefit in her research in ceramic technology.

In addition to her class work and a review of the literature of clay mineralogy, Shepard has investigated Maya pigments, particularly Maya blue, an exceptional pigment that has so far defied identification. In collaboration with Dr. R. J. Gettens, of the Freer Museum, Smithsonian Institution, Shepard has examined petrographically a number of blue minerals obtained from the U. S. National Museum through Dr. Gettens. She has also run thermal tests and made some experiments in synthesis. She has now arranged for a micro-organic analysis, the results of which, together with results of a semi-quantitative spectrographic analysis being supplied Dr. Gettens by the U. S. Geological Survey, should define the composition of the pigment.

During February and March 1957, the Director had the opportunity to accompany Dr. Gordon R. Willey and Dr. Philip Phillips, of the Peabody Museum, Harvard University, on a visit to certain ruins, museums, and private collections in Mexico. The journey extended from the northern border of the country to Yucatán, most of the distance being traversed by automobile. Quite aside from the archaeological remains, a large part of which were seen for the first time by the Director, he was reminded of the value of first-hand knowledge of the environment in which the various aboriginal cultures existed. The trip was a most stimulating experience.

As has been mentioned in earlier reports, the Department has frequently relied upon the aid of scholars in fields other than archaeology. Shepard's collaboration with Dr. R. J. Gettens on Maya pigments, has been referred to above. The work of Dr. W. C. Root on the analyses of metals recovered from Mayapán, noted in last year's annual report, has continued. We are indebted to Professor Hessel de Vries, of the Natuurkundig Laboratorium der Rijks-Universiteit te Gröningen, Holland, for another Carbon 14 age determination of charcoal from Mayapán. The specimen was selected because of its important archaeological associations. It marks a late phase in the history of Mayapán. The sample, GRO 1166, gave a reading of 400 (1557 AD $\pm$ 55 years). Allowing a value of 100 to 200 years for "Suess effect" brings the date closely in line with historical evidence that Mayapán was abandoned

about 1450 AD.¹ Lastly, the Department has been instrumental in obtaining for Professor W. Sandermann, of the Institut für Holz- und Zellstoffchemie, Reinbeck bei Hamburg, Germany, samples of contemporary tropical woods to use in connection with his identifications of ancient woods from Maya ruins.

In anticipation of the closing of this Department a year hence, we have continue to dispose of certain records and equipment no longer needed. Gifts of this sort have been made to the Museo Nacional de Arqueología y Etnología of Guatemala, the Instituto Nacional de Antropología e Historia of Mexico, the University Museum of the University of Pennsylvania, the University of Arizona, the University of Colorado, and the Haddon Library of Cambridge University, England.

In October 1956 the Director attended an international conference on radiocarbon dating at Andover, Massachusetts sponsored by the R. S. Peabody Foundation and the National Science Foundation. During the same month the Director anticipated in the first meeting of the Committee for Latin American Anthropology of the National Research Council, held at the Wenner-Gren Foundation, New York. The purpose of the meeting was to discuss plans for the preparation and publication of a handbook of Middle American Indians. In February 1957, Dr. Gordon Willey, Chairman of the above committee, and Pollock met with a number of Mexican colleagues at the Museo Nacional de Antropología in Mexico City for further discussion of the same subject.

Karl Ruppert, the senior member of the staff in length of service, retired on October 1, 1956. His retirement terminated an association of almost 32 years. Coming to the Institution early in 1925, Ruppert did his first work under the late E. H. Morris in his excavation and restoration of the Temple of the Warriors at Chichén Itzá. Ruppert's talent for the complicated procedures involved in creating authentic restoration of the intricate stone architecture of the Maya soon became apparent, and most of his time for the next dozen years was devoted to work of this sort. At Chichén Itzá the Temple of the Wall Panels, the Caracol, the Mercado, and the Sweat House stand as monuments to his talent.

Although mainly occupied in these early years with architectural restoration, Ruppert had already embarked upon some of the explorations that were to characterize the next phase of his career in Middle American archaeology. By 1936, when the rebuilding of the Sweat House at Chichén Itzá was completed, he had traveled overland to the east coast of the Yucatán peninsula, to the ruins of Yaxchilán on the Usumacinta River, and had made three trips into the virtually unexplored regions of southeastern Campeche and

southwestern Quintana Roo. In the next six years his travels took him to southern Veracruz, where he worked in co-operation with archaeologists of the Mexican government, to southern Chiapas, again into Campeche, and as far as Nicaragua. After the interruption of the war years, which brought overseas service, Ruppert was soon again embarked upon difficult explorations, now to eastern Chiapas and once more to Campeche.

With the beginning of the Department's recent operations at Mayapán, Ruppert and A. L. Smith joined in the tremendous task of recording the several thousand dwelling type structures at that site and in the immediately surrounding area, extending their survey to include comparative material from other areas in Yucatán. It is safe to say that the records accumulated by these men comprise the largest body of information on the domestic architecture of the Maya now in existence. It was the analysis of this material, data that will be used by Smith in a forthcoming monograph, that engaged Ruppert up to the time of his retirement. His wide experience and friendly help will be missed.

At the close of the period under review, Gustav Strömsvik, second only to Ruppert in length of service, retired. His association with the Institution, beginning early in 1926, covered a span of more than 31 years. Strömsvik's abilities proved to be so varied that he was called upon to perform many tasks not strictly archaeological in nature. In his early years at Chichén Itzá he assisted in building the then growing camp, and for a number of years was responsible for the operation of all mechanical equipment there, a task requiring no small ingenuity because of limited supplies and facilities. He worked with Morris on the difficult engineering problem of supporting an overlying temple while one beneath it was being excavated. In 1934, first working under Morris but later in charge, Strömsvik re-erected, repaired, and stabilized a number of the huge monolithic monuments at the ruins of Quiriguá in Guatemala, an achievement that quickly led to his being called upon to do similar work at Copán, Honduras, and to carry out the even greater task of deflecting the Copán River from eroding away the magnificent acropolis at that site. Between archaeological field seasons he built and installed a small museum in the village of Copán, and supervised the construction of an aqueduct to serve the village, thus providing a public facility beyond the reach of the community without his assistance.

Strömsvik's archaeological activities have covered a wide range. In his early years in Yucatán, he participated in expeditions to Quintana Roo and southern Campeche. During the summer and fall of these years, when excavation was at an end in the tropics, he

worked with Morris in the Southwest of the United States. In 1933 he carried out the work of consolidating a part of the building known as the Temple of the Phalli at Chichén Itzá. His work at Quiriguá, already mentioned, included excavation and the making of plaster casts of some newly discovered and unusually fine monuments there. At the magnificent ruins of Copán, where from 1935 to 1942 he was in charge of the co-operative undertaking by the Institution and the Government of Honduras, the entire valley was explored and mapped, large-scale plans and sections were made of the ruins, and Temples 11 and 22, the Ball Court, and the Hieroglyphic Stairway were partly restored. The result of this work was the declaring of the ruins a national park by the Government of Honduras.

Strömsvik served with the Norwegian Navy during World War II. Upon his return from, that duty he soon was occupied with a variety of archaeological assignments. In 1946 he assisted the United Fruit Company operations at Zaculeu in Guatemala; in 1947 and 1948 he participated in the United Fruit Company financed Carnegie Institution-Mexican Government expeditions to Bonampak, Chiapas being in charge the latter year; in 1949 he carried out an archaeological reconnaissance at the ruins of Asunción Mita in Guatemala. With the beginning of our recent operations in Yucatán, Strömsvik saw to the purchase and supply of the new equipment needed and supervised the construction of our field headquarters. During five seasons of operations there he was responsible for the proper functioning of all equipment and at the same time had charge of our program of stabilization of a limited number of structures in the ruin of Mayapán. He also participated in expeditions to southern Yucatán and into Quintana Roo, and carried out exploratory work in the Cave of Dzab-Na, Tecoh, Yucatán. Lastly, it fell to his lot to dismantle our field camp at the close of our operations in Yucatán.

Few careers have been more varied. No task has been too large to undertake, no task too small to deserve his attention. In his native Norway, where Strömsvik has retired, he plans to occupy himself with archaeological problems of that land. His colleagues and his host of friends on this side of the Atlantic wish him well.

NOTES

1. A similar correction should be applied to the dates published in [Chapter 1.45].

1.47.

H.E.D. POLLOCK

Department of Archaeology

YB 57:435–449, 1958

THE PAST

In this final report it seems appropriate to review the past activities of Carnegie Institution of Washington in anthropology and archaeology. This is a history of over 50 years of research, the results of which fill something like 100 volumes of Institution publications and of course many papers published elsewhere. It is clear, then, that in the space of the next few pages we must view this great body of work from a distance, omitting all detail, seeking out trends and stages of development in research, to the loss, unfortunately, of many a fine discovery, and to the further loss of much of the flavor and excitement of the work.

Upon the incorporation of Carnegie Institution, early in 1902, the Executive Committee, acting under instructions of the Trustees to determine what work should be undertaken, proceeded to appoint a number of Advisory Committees. Eighteen such committees, covering areas in the humanities, the sciences, and the social sciences, were named. One of these was for anthropology. It consisted of W. H. Holmes, Franz Boas, and G. A. Dorsey. It would have been difficult, if not impossible, to assemble three more celebrated anthropologists.

The report of this committee, published in *Year Book 1*, is not without interest as we view it from the vantage point of 50 years. One senses that these men were uneasy in being called upon to review so vast a subject and to compress their findings in the space of a few pages. Touching upon the broad field of anthropology, the subjects that come under that discipline, and the work then being carried on in the Americas, the report moves on to suggestions for work by the Institution. Here the subject is treated under the then standard divisions in America: physical anthropology, archaeology, and ethnology. Although the desirability of knowledge of the cultures of Africa, Asia, and the Pacific Islands was noted earlier in the report, all recommendations were for work in the United States. In the light of developments that were to come a decade later, we should like to quote one sentence from the discussion leading to recommendations for work in archaeology: "In Middle and South America much is still to be done, but your committee has only been able to find, and that at the last moment, one person properly qualified for this branch of research."

Of the three projects recommended by the committee's report, two, namely, in archaeology and ethnology were promptly instituted. For the next two years Holmes carried on a search for geologically early remains of man in America; Dorsey concerned himself with the ethnology of the American Indian for the following five years. We cannot refrain from noting that being "in on the ground floor" was not without its advantages, and that a sort of nepotism within committee was not below such giants as Holmes and Dorsey.

In spite of the fact that the Advisory Committee on Anthropology had made no specific recommendation for work outside the United States, research in Old World archaeology promptly got under way. In response to a commission by the Institution, a rather full report on the opportunities for archaeological researches in the lands of the eastern Mediterranean appeared in *Year Book* 2. Even before this report was prepared, however, two projects concerned with the archaeology of the Near East had begun. One of them, the expeditions of Raphael Pumpelly to Turkestan and his excavations at Anau, carried on in 1903 and 1904, stands not only as a high point in the researches fostered by Carnegie Institution but as a shining light in the archaeology of the Near East. Properly controlled excavation and detailed recording rolled back the centuries to times previously undreamed of, and with the two-volume report (Pumpelly 1908) that followed, the prehistoric archaeology of the Near East left the realm of fancy and entered the more rigorous climate of fact.

With the exception of Pumpelly's expeditions in Turkestan, researches in anthropology and archaeology during the Institution's first decade seem to have been a matter of not infrequent but relatively small grants to individuals. Researches were wide-ranging in area and in subject. The ethnology of the American Indian and the search for geologically early man in America have been mentioned. Other studies involved Oriental art, Near Eastern, Egyptian, and Nubian archaeology, Classical archaeology at Rome and Athens, and archaeology and linguistics in Polynesia. It seems to have been a period of supporting the competent individual interested in worth-while research. There appears to have been no coherence among the various projects, no over-all plan as to what direction archaeology and anthropology might take under Institution auspices. Projects tended to run for about five years, but with no set term. An exception was the work of E. B. Van Deman in Roman archaeology, which continued for many years.

In 1913 the Institution published *Reports Upon the Present Condition and Future Needs of the Science of Anthropology*, which consisted of papers by W.H.R. Rivers, A. E. Jenks, and S. G. Morley that not only reviewed

the status of anthropology at that time but also made recommendations for future work. It is interesting to speculate as to which of the three plans of research presented in those reports would today be considered the most stimulating, potentially the most productive of results, and the most suitable for undertaking by Carnegie Institution. Whatever the choice might now be, Morley's project, which called for intensive archaeological research at the Maya ruins of Chichén Itzá in Yucatán [Chapter 1.1], was approved by the Trustees, who, in so doing, pretty well set the course of the Institution's work in anthropology and archaeology for the next 45 years. With the exception of Van Deman's researches in Roman archaeology, and a few sporadic projects, notably one dealing with Kamchatka and the Aleutian Islands, all other work in anthropology was terminated and for the next 15 years attention was directed almost solely to the archaeology of the Maya.

The following year, 1914, Morley was appointed Research Associate in American Archaeology, a title that was shortly changed to Associate in American Archaeology. Although his plan had called for intensive work at Chichén Itzá, and that to be done on a sizable scale, the project was not to be put in operation for another decade. It will be remembered that this was the revolutionary period in Mexico, and conditions were not auspicious for establishing a long-term contract with the government of that country or the initiating of large-scale operations. It is further possible that the Institution felt some stringency of available funds and a lack of available and competent staff for the project. At all events, research in Maya archaeology was supported by a series of minor grants until 1921 or 1922, when the work reached a scale demanding support by large grants.

The time for intensive work at the ruins of Chichén Itzá not being ripe in 1914, Morley suggested, and received approval for, "a work containing descriptions and decipherments of all known Maya texts." Hieroglyphic research was the side of Maya archaeology nearest to Morley's heart, and remained so throughout his life. Not content with the then known body of glyphic material, he soon proposed to the Institution, and again received approval, that further field work be undertaken. For the next half dozen years, sometimes alone, sometimes with one or two companions, Morley conducted extensive, indeed indefatigable, explorations, often under the most trying and even dangerous conditions. His travels took him time and again into the jungles of the Petén region of Guatemala, time and again to the great ruins of Copán, down the Chamelecón River valley in Honduras, along the eastern coasts of Honduras and Nicaragua, to Costa Rica, and to Yucatán. New sites were discovered, and many

new hieroglyphic inscriptions were recovered. An event that was to have considerable effect on the future work of the Institution in archaeology should be mentioned, namely the discovery in 1916 of the ruins of Uaxactún with "the oldest monument yet reported from the Maya field." In 1920 appeared Morley's huge monograph *The Inscriptions at Copán*, it being realized at that time that the corpus of Maya hieroglyphic inscriptions had grown so large, and knowledge concerning them so extensive, that the original idea of publishing all known Maya texts in a single work was not practicable.

The Institution's interest in Maya archaeology had grown by 1921 to require the annual appropriation of a large grant. Although the nature of the research did not materially change for the next three years, the scope was expanded. Limited excavations were undertaken, and archaeology was supplemented by brief studies in linguistics and agronomy. In 1922 the President notes (YB 21), "It is also of much importance to us in the near future to expand considerably our program of studies in the field of Middle American Archaeology." In 1923 a 5-year permit, supplanted in 1925 by a contract of similar term but with the option of renewal for another five years, for archaeological research in Guatemala was obtained from the government of that country. A ten-year contract was entered into with the government of Mexico. The way was now prepared for the larger and different type of operations that the Institution was about to undertake.

This second decade, 1914–23, of anthropological research may be characterized somewhat as follows. In the first place the Institution had set itself squarely in the field of Middle American archaeology and had put aside nearly all other anthropological activities. The nature of the work was primarily exploration and hieroglyphic research. A number of new sites and many new monuments with hieroglyphic texts had been discovered. The broad outlines of Maya history as conceived by Morley in 1913 had not substantially changed during the decade, but detail had been added, and a very considerable body of new material had become available for future studies. The first volume of Morley's (1937–38) great work on "descriptions and decipherments of all known Maya texts" had appeared, and a site report and archaeological area study was in press.

It is not surprising that in the 10 years that had intervened since Morley presented his plan calling for intensive work at the ruins of Chichén Itzá his ideas as to what would constitute an adequate attack on the problems of Maya prehistory had changed. In the Institution's original permit from the Guatemalan government permission was granted for excavations at Uaxactún, Piedras Negras, and Tayasal, in the Depart-

ment of Petén. The final contract omitted mention of Piedras Negras but included exploratory privileges at all other sites in the Petén. The contract with the Mexican government specifically named Chichén Itzá. Morley's purpose in selecting these three sites [Chapter 38.9] was to bring under study the entire range of Maya history.

Two principles, that if not unique were at least novel at that time, were set forth in Morley's 1913 plan. The first was that the Institution, cooperating wholeheartedly with the antiquity laws of the country, should make no effort, by permission or otherwise, to export any objects discovered, but should return them all to the appropriate governmental authority once their study was completed. The second was that the excavator had an obligation to preserve the remains uncovered from further deterioration. Reconstruction of architectural remains was specifically mentioned. Undoubtedly this farsighted policy was instrumental in our gaining contracts with governments that at that time were far from reassured about gringo motives, and was further instrumental in maintaining extraordinarily cordial relations with those governments. It also set a standard for other organizations practicing archaeology in Middle America.

Morley's dream of intensive archaeological work at Chichén Itzá became a reality in 1924. Large-scale excavations, followed in due time by consolidation and restoration of buildings, began that year and continued almost uninterruptedly for the next decade. A dozen or more structures were rebuilt or repaired to varying stages of completeness. Many more were tested by means of minor excavations, and scores were examined for all that could be learned from what was visible above ground. At the ruins of Uaxactún, after a preliminary survey of the site in 1924, intensive work got under way in 1926 and continued for a dozen years. One huge complex of related buildings was completely excavated, several lesser structures were similarly treated, and many others were uncovered to varying extent. Parenthetically, the contemplated work at Tayasal, where preliminary excavations had been carried on in 1921 and 1922, was never undertaken. Along with the large scale excavations at Chichén Itzá and Uaxactún, exploration elsewhere in the Maya area continued. Year after year expeditions pushed into the little-known regions of British Honduras, the Petén, the Usumacinta drainage, Campeche, Yucatán, and Quintana Roo. New sites were discovered; previously known sites were newly explored; many new hieroglyphic texts were recorded. Morley's hieroglyphic research continued unabated.

Although the work outlined above continued well beyond 1930, quite a different program of operations began in that year, and it seems well to review the

period 1924–29 before moving on. By and large these years were characterized by intensive excavation, restoration of large architectural remains, exploration, and hieroglyphic research. Excavation and restoration on any such scale were new to Maya archaeology and virtually unparalleled throughout Middle America. Equally new, although far less dramatic, were the beginnings of the systematic study of the lesser artifacts of the Maya. Previous to this time Maya studies had been concerned primarily with the hieroglyphic texts, the documentary history, and the spectacular art and architecture. Earlier excavations had turned up pottery and implements of stone, but these had gone largely unstudied. In 1926 the late George C. Vaillant undertook the study of pottery remains collected under stratigraphic controls at Chichén Itzá, and in the following year he produced a doctoral thesis dealing with the chronological significance of Maya ceramics. Good-sized excavations were now under way at Uaxactún, and pottery was appearing in quantity. In 1928 Vaillant visited Uaxactún, and in the few days he was there sank a small pit through successive plaza floors and into the underlying earth. The pottery that came up was not Maya in the sense of what had until then been thought of as Maya pottery; it was akin to the early Archaic pottery of the Mexican and Guatemalan highlands. It was, moreover, obviously earlier than the structural remains above, which in turned were considered to be the earliest discovered up to that time. A whole new horizon of Maya prehistory appeared in the bottom of that pit, and the systematic study of ceramic remains was well on its way.

Clearly, the Institution's interest in archaeology at this time was active and was growing. Indeed, it was not confined to archaeology but included the whole history of man and his works. In 1923 the President wrote:

The plan of study of Chichén Itzá concerns the broader problem of early American history as it can be interpreted through the Maya civilization. Along with specifically archaeological investigations touching the history of engineering, architecture, art, and the stratigraphic sequence of cultures, the researches will include a study of the physical characters of the race and of the environment in which it developed. In order to understand these people as they lived and to secure information concerning their industries and their agriculture, it is necessary to know the limitations imposed by geological, climatological, and other physical conditions determining the development of the plants and animals upon which the inhabitants were dependent. The studies proposed will naturally require the assistance of a considerable group of specialists and it is hoped that through coopera-

tion of other agencies and institutions interested in this work a thoroughly fundamental investigation may be carried out.

The broad study outlined in that paragraph was not to come for some years, but it apparently was held steadily in mind. The person who finally was to implement the program was A. V. Kidder. In 1926 Kidder, who had earlier been retained in the capacity of adviser on the archaeological work of the Institution, was appointed Research Associate, and the following year Associate in charge of archaeology. In 1929 he was named Chairman of the newly formed Division of Historical Research. The Division, which was an administrative grouping of most of the humanistic studies being carried on by the Institution, consisted of the Section of Aboriginal American History, Section of United States History, Section of the History of Science, and Associated Investigations in Palaeography and in the History of Greek Thought. This organization of the Division was to change over the years, notably by the termination in 1936 of the Section of United States History and the substitution in its place of the Section of Post-Columbian History. As our prime concern here is the work in archaeology and anthropology, we shall follow the course only of studies that in one way or another relate to the history and culture of aboriginal man.

Kidder immediately set about organizing the many-sided approach to the study of man that had been envisioned by the President. In 1930, the first year of operation under the new Division, there were either in operation or in process of organization studies in archaeology, epigraphy, physical anthropology, medicine, social anthropology, linguistics, aboriginal documentary history, colonial history, and environmental studies involving plant and animal biology. To this list, over the years, were added studies in ceramic technology, geography, geology, and agronomy. A good part of the work was cooperative in nature, notably with the University of Chicago and the University of Michigan. The central effort focused upon Middle America, and particularly the Maya area, but other work, primarily archaeological, was carried on in the Southwest of the United States.

Even to list the many activities, not to mention their results, under this widespread program of research would go beyond the limits of our report. The largest effort in manpower and resources went into Middle American archaeology, and this part of the work, which will be mentioned again, came nearest to acting as a unifying force in so varied a program. During the dozen years from 1930 to the entry of the United States into the war, certain parts of the program operated virtually continuously. This was of course true of

the work in archaeology, both Middle American and Southwestern. It was also true of the work in social anthropology and the linguistic studies, which dealt with both lowland and highland Maya peoples. Studies in the aboriginal documentary history of the Maya and the colonial history of the Maya area, which were begun in 1931, also continued throughout this period. Research in ceramic technology, begun in 1934, went on without interruption. Work in physical anthropology, medicine, and the environmental studies of biology, geography, geology, and agronomy were carried on for shorter lengths of time. There are excellent reviews of this work as it progressed in Kidder's annual reports during that period [Chapters 1.18–1.30 this volume], notably in [Chapter 1.28 this volume]. Here we shall turn to an account of the archaeological researches.

Before taking up the Institution's central effort in the Maya area it should be remarked that near the beginning of the period we are now reviewing the Institution entered a new archaeological field, namely, the Southwest of the United States. This work was carried on by the late E. H. Morris, who had been in charge of excavations at Chichén Itzá from 1924 to 1928. The field work centered in the northern parts of Arizona and New Mexico and southern Colorado. These researches, which continued uninterruptedly until Morris's retirement in 1955, were never a large effort compared with that in Middle America, but nevertheless were highly productive. Particularly worthy of mention is Morris's elaboration of our knowledge of the early Basketmaker II period of Pueblo culture, and his discovery of remains that, through dendrochronological methods, allowed the chronology of the northern Pueblo area to be carried back to a time before the Christian Era.

Returning to the archaeological program in Middle America, it has already been mentioned that intensive work continued at Chichén Itzá and at Uaxactún until the mid 1930s. With the tapering off of activities at Chichén Itzá, a somewhat similar project, jointly sponsored by the Institution and the Honduran government, and involving excavation and stabilization of buildings and monuments, was instituted at Copán. There was also a small project for the repair and stabilization of monuments at the ruins of Quiriguá in Guatemala. As has been mentioned above, stratigraphic methods of excavation, particularly applied to pottery and other lesser artifacts and especially fruitful in connection with the work at Uaxactún, were under way. Activities of this sort were likewise carried on in British Honduras. The importance of this work cannot be overstressed. From Uaxactún emerged a chronological sequence of architectural styles and pottery types (A. Smith 1950; R. Smith 1955), the latter ably reinforced by the work in British Honduras, that

is fundamental to our knowledge of Classic lowland Maya culture.

Exploration, continuing actively, involved not only individual sites but surveys of sizable areas, notable examples of the latter being expeditions into the hill regions of Yucatán and Campeche and to southern Campeche and southern Quintana Roo. Work of this sort extended as far as southern Veracruz, where a cooperative effort with the Mexican government was undertaken. Hieroglyphic research, always the primary interest of Morley, was now reinforced by the unfortunately brief but brilliant work of J. E. Teeple, and the equally brilliant and long-continuing work of J.E.S. Thompson. Last, there were studies concerned with the simple, domestic houses and the living patterns of the people, aspects of Maya culture that had largely been disregarded until this time. As will appear in subsequent pages, these studies foreshadowed the work of the Department in later years.

So far we have been referring to researches restricted for the most part to the Maya lowlands. Almost by definition Morley looked upon Maya civilization as a lowland phenomenon. That this position might be open to question was suggested by the knowledge that Maya-speaking peoples had inhabited the Guatemala and Chiapas highlands at least since the Spanish conquest and the suspicion that they had been there for many centuries before that event. At Uaxactún the deeply buried ceramic remains, whether considered to be Maya or not, intimated highland-lowland connections at an early time. At all events, in 1930 we find Kidder raising the question whether it might be desirable to undertake excavations in the Guatemala highlands. A more definite statement to this effect by the late O. G. Ricketson appeared the following year, and archaeological survey and excavation began in 1932. With these gradual and rather tentative moves the Institution broadened its archaeological program to include the Maya highlands, an area that was at the same time being brought under study by a number of other disciplines in the overall program of the Division of Historical Research.

Archaeological researches in the highlands, which continued almost without interruption for approximately 20 years, included both excavation and survey. A good part of the work centered in the great ruin site of Kaminaljuyú, lying on the outskirts of Guatemala City. The choice of this site was in part planned, in part fortuitous, owing to modern building operations and public works incidental to an expanding Guatemala City. Important archaeological remains were being uncovered willy-nilly, and there was pressure on the Division's staff from the local governmental office in charge of archaeology, as well as the urgings of professional responsibility, to see that

knowledge of such remains was not forever lost. Indeed, it was uncontrolled digging by local people that led to the Institution's undertaking an operation that stands as a milestone in Middle American archaeology. The work of Kidder, Jennings, and Shook (1946) in 1936, 1937, 1941, and 1942 at two inconspicuous mounds at Kaminaljuyú resulted in the formulation of a time-space network that linked the great Classic centers of Middle American culture in the Valley of Mexico, the Valley of Oaxaca, the Guatemala highlands, and the Petén lowlands. Not only were breached the artificial boundaries that had seemed to surround lowland Maya civilization, but for the first time the high cultures of Middle America came into focus in time and space as parts of one great area of relatively homogeneous, or at least interdependent, civilizations. It is hardly possible to exaggerate the effect of these discoveries on Middle American archaeology.

Inasmuch as the entry of the United States into war late in 1941 severely disrupted the normal activities of the Institution, the archaeological and allied researches being no exceptions, it seems well to pause here in an effort to characterize the work of the dozen years from 1930 through 1941. Certainly the epitome, the very essence, of the program was its many sided approach to the study of man. Time and again in annual reports to the Institution and in papers published elsewhere Kidder presented the rationale and the philosophy underlying that approach. They may be stated somewhat as follows: that human history is a continuum, beginning in the unknown past and still in the making; that man's actions and his culture are intelligible only when focused against his environment; that the story of man can be recovered and properly told only through the aid of researches under various disciplines. To attempt even to summarize the results of this broad program would exceed the limits of the present report. Kidder has gone a considerable way in doing this, unfortunately in an unpublished report, and Morley (1943) has treated the more strictly archaeological activities. Here we must content ourselves with brief comments on the work directly related to anthropology and archaeology.

As mentioned earlier, research in social anthropology was carried on in the Maya lowlands and the highlands. It started in Yucatán, and by the end of the period we are reviewing several volumes and a number of papers covering the results of the work had appeared. Little had been published up to that time on the Guatemala highland studies, but a sizable amount of material had been amassed that was to appear later, although not under Carnegie Institution imprint. Even though most of this work with modern Maya culture was not historically oriented, and its connections with the central historical and archaeological program were

at the time somewhat tenuous, it did point out problems that were subject to, and that since have been brought under, archaeological investigation.

Linguistic research, which had gone on since the beginning of the period and had covered an extraordinarily wide range of Mayan-speaking peoples, was abruptly terminated, temporarily, by the untimely death in 1941 of M. J. Andrade, who had been in charge of that part of the program. Andrade left extensive records, including a nearly completed manuscript of a Yucatec grammar, but virtually nothing had been published.

Studies in physical anthropology were never a large part of the program. Some work had been done on the living Maya of Yucatán, resulting in two publications. There were also the descriptions in archaeological reports of the none too plentiful human skeletal remains produced by excavations.

Research in aboriginal documentary history, primarily concerned with preconquest times in contrast to colonial history and hence more directly applicable to archaeological researches, was highly productive. By the end of the period we are considering, two translations of important Yucatecan Maya documents, magnificently annotated, had appeared, and a third, more general volume (Roys 1943) dealing with the history of Yucatán at the time of the Spanish conquest appeared two years later. This work, which was of particular value to hieroglyphic research, did much to advance our understanding of the social, religious, and intellectual content of Maya culture, knowledge of a sort that is so difficult to wring from the material remains of a past civilization.

It has previously been mentioned that the hieroglyphic researches of Morley were amplified at this time by the efforts of Teeple and of Thompson. The work of these men resulted in a fundamental change in prevalent reconstructions of Maya history. The Morley-Spinden correlation of the Maya and Christian calendars, the most widely accepted correlation up to that time, was quite generally abandoned in favor of the later Goodman-Martínez-Thompson correlation. The effect of this change, which tended to be confirmed by certain archaeological discoveries, was to place the beginnings of Classic Maya civilization around A.D. 300 instead of near the start of the Christian Era. This led to surrendering the long held idea that the northern Yucatán development of Maya civilization, the so called New Empire, came about only after the abandonment of the great southern centers, located in the so-called Old Empire, and substituted the idea that the northern cities were at least in part coeval with the Old Empire. During this period Thompson was busily working with, and publishing papers on, new interpretations of hieroglyphs, work

that was to bear even heavier fruit in later years. In 1938 appeared Morley's great 5-volume compendium, *The Inscriptions of Petén*, the second major contribution to his lifetime task of compiling "a work containing descriptions and decipherments of all known Maya texts."

We have already touched upon the general course of the archaeological work during these years. Here we should like to point to trends that characterized the period and to certain fundamental advances in our knowledge of Maya civilization. It will be remembered that intensive excavation and the restoration of architectural remains had been continuing much as in the previous decade. As the period progressed, however, this form of activity began to taper off. Exploration went on, but took more the form of area surveys in which the discovery of new sites was incidental to acquiring a knowledge of the area rather than an end in itself. There were the beginnings of studies concerned with the domestic houses and living patterns of the people, a new development in Maya research and one that was later to become extremely popular in American archaeology. Ceramic technology, the scientific study of the physical properties of pottery, was yet another new approach to archaeological problems. Almost certainly the most important aspect of the work of this period was the steadily increasing emphasis on "dirt" archaeology, the use of stratigraphic techniques of excavation to develop sequences of architecture, artifacts, and pottery.

There was also the important matter of extending the work to the Guatemala highlands. Two earlier fundamental misconceptions of the prehistory of Middle America were thus corrected. The idea that Classic Maya culture had its immediate beginnings in the highlands, whence it was carried to the previously uninhabited lowlands, was clearly untrue, as shown by the long sequence of Preclassic, and surely indigenous, pottery underlying the Classic levels at Uaxactún. Secondly, the idea that the Maya were the first "civilizers" in Middle America, that they had given high culture to other peoples, was no longer tenable, for the widespread chronological equations established by the finds at Kaminaljuyú demonstrated that the Classic phases in other cultures were roughly coeval with that of the Maya, the earlier, underlying phases apparently being autochthonous. Lastly, it should be noted that Maya civilization was no longer looked upon as an isolated phenomenon but was regarded as one of the several high cultures of Middle America and as a part of the aboriginal civilization of the whole area. These were fundamental changes in thinking.

We are not sure that we have sufficiently stressed the size and the uniqueness of the program of historical researches that the Institution had begun in 1930. This program, moreover, was not simply large; it was

diverse, and it was experimental. Even omitting the studies outside Middle America, the only unifying force that applied to all segments of the work was the common area of operation. Unquestionably, some of the environmental studies had little regard for whether man had ever inhabited those parts or not. Some of the studies concerned with man had little interest as to his earlier, or perchance later, activities than those upon which the work focused. This is not to say that all studies were not providing knowledge pertinent to the understanding of man's career in Middle America. Virtually without exception they were. The problem was how to pull all this knowledge together, how to synthesize the results of the work, how to shape the great accumulation of knowledge, or potential knowledge, to the long-range purpose of the program—the story of man through the ages in Middle America. The more distant purpose, the effect and usefulness of that story in the over-all study of man and his works, was yet another matter.

It is clear that Kidder was well aware of the magnitude of these problems. In a number of his annual reports he points out the difficulty of coordinating such widespread researches, the problem of correlating and interpreting the results, the experimental nature of the program, and the need for an arbitrary time limit against the initiation of new work and for the completion of old. In his 1939 report [Chapter 1.27 this volume], following a review of the first 10 years of operation of the Division, he restates much of his earlier thinking on these matters and suggests a termination of researches and synthesizing of results over the following decade (YB 38). Before this report appeared in print war in Europe had begun, and two years later this country was actively involved.

It is hardly necessary to point out the disruption of research and plans for research occasioned by the war. Quite aside from war, however, there were, and had for some time been, other forces at work that gravely affected the Division's operations. The broad program of allied researches envisioned by the President in 1923 and put into practice in 1930 had been predicated upon the expenditure of large sums of money. As the years went by and the costs of all research increased, it became progressively more difficult to finance so large an undertaking. Even at the peak of expenditures appropriations for the Division's work were approximately 20 percent below the figure originally contemplated, and during the decade they averaged some 25 percent below it. With the outbreak of war financial matters gave way to more pressing problems, but it became clear that in the future there would have to be a reappraisal of the activities of the Institution in general, and more specifically, from our point of view, of whether the broad program of historical researches

involved a larger proportion of its resources than the Institution cared to allocate to such work.

At the end of hostilities the members of the staff of the Division, along with millions of other people, found themselves in a very different world from that of a few years earlier. The difference that concerns us here was a new climate in which to carry on their work. In his annual report for 1946 [Chapter 1.36 this volume], we find Kidder discussing the war's disruption of plans for an orderly termination, in the late 1940s, of the Division's program of researches, the need for reducing the extent of the Division's activities in the future, and the desirability of promptly formulating recommendations to the Institution for a new program of work to follow the termination of the old. The first of these problems can best be taken up in describing the research activities of the Division during the war and postwar years. In regard to the second problem, it can simply be stated that by the end of 1950 all activities of the Division not directly related to archaeology had been concluded. Lastly, after a series of staff meetings, a new program of research, which will be described later, was presented to the President in 1947 and was approved in 1950.

Some research was, of course, carried on during the war. The work in social anthropology continued, although on a reduced scale. Hieroglyphic research went on without severe interruption. A project concerned with the architecture of the Maya, started just before the war, was brought to fruition in one of the Division's finest publications (Proskouriakoff 1946). In the matter of archaeological field work, the winter of 1942 was active, mainly because a number of parties were already in the field, or on the point of departure, at the time of our entrance into the war. One such project, moreover, developed information of considerable importance to our understanding of Maya history. In his ceramic survey of Yucatán the late G. W. Brainerd found in a number of sites in the northern part of the peninsula Preclassic, or Formative, period pottery. It will be remembered that a few years earlier the change in thought about the correlation of the Maya and Christian calendars had tended to push back in time the beginnings of civilization in northern Yucatán, but no one had thought very seriously of such beginnings as being earlier than the Classic period. With Brainerd's discovery it became evident that the northern culture was just as deeply rooted as that of the south, and equally indigenous. After the 1942 field season almost nothing was done except for some explorations in 1944. The preparation of manuscripts and publication of results of research, of course, continued through the war period.

Turning to the postwar years, it will readily be understood that the general process of contraction of

the activities of the Division and the necessity of terminating in the space of five years a large and badly disrupted plan of researches left no place for a coordinated program of field work. Primary stress was upon the completion of earlier projects and upon the publication of the results of past research. How well this was accomplished is indicated by the appearance, from 1946 to 1950, of no less than 12 volumes in the Institution's monograph series, with eight more, all based on earlier work, to appear over the following five years. There were, moreover, other publications not under the Institution's imprint. Such field work as went on was mostly in the Guatemala highlands. It consisted mainly of archaeological survey and limited excavations. Somewhat more intensive digging, to a considerable extent unplanned in that it frequently originated from chance finds brought about by industrial and civic excavations, was carried on at the ruins of Kaminaljuyú on the outskirts of Guatemala City. The results of this work were extraordinarily profitable in that there was developed and defined a long sequence of Formative cultures extending considerably further back in time than had previously been known. An understanding of the relatively high development of Formative culture, moreover, did much to explain the apparently abrupt flowering of culture in succeeding Classic times. Another field project of major importance, also brought about by a chance find, was the recording and study of the now famous wall paintings at the lowland Maya site of Bonampak (Ruppert, J. Thompson, and Proskouriakoff 1955).

It was mentioned earlier that hieroglyphic research continued relatively uninterrupted during the war and postwar years. This work was in part terminated in 1948 by the death of S. G. Morley, founder of the Institution's researches in Middle American archaeology, for 35 years a member of the staff, and a lifelong student of Maya hieroglyphic writing. There nevertheless appeared in 1950 the Institution's third great work on Maya epigraphy (J. Thompson 1950), this one by J.E.S. Thompson. Last, we should mention a project begun toward the end of the war that introduced a new method in the study of Maya sculpture. There is every chance that this work (Proskouriakoff 1950) will stand as a milestone in the study of aboriginal Middle American art.

Certain activities of the Institution during this period, although not of a research nature, should be recorded. These included the assistance given to the government of Guatemala in establishing a museum of archaeology and ethnology and in the organization of a national institute of anthropology and history. Such activities, carried out on an unofficial level, constitute international cooperation of the best sort. Indeed, the entire history of the Institution's work in Middle

America has been one of friendly dealings with governmental agencies and sincere cooperation with foreign colleagues. Surely not the least of the Institution's accomplishments has been the stimulus provided to the study of anthropology and archaeology in the countries where it has worked.

In reviewing this period of approximately a decade that included the war and postwar years, certainly the outstanding factors affecting the work of the Division were the disruption of research caused by the war and the change in thought by the Institution as to the part historical research should play in its over-all program of activities. In the first place, the long considered and carefully laid plans that called for an orderly termination of the many and diverse studies under the historical program, to be followed by summation and synthesis of results, upon which were to be built recommendations for future work, were badly thrown awry by the war. Fortunately, there was time to bring the great majority of projects, with a few outstanding exceptions, to the point of publishing definitive results, but there was no place for summation and synthesis of the results of the whole, wide program of studies. Second, the rapid retrenchment during the closing years of this period left the Division engaged almost solely in archaeology, with ceramic technology and a tenuous connection to aboriginal documentary history as the only collateral researches. This was, of course, a vast change from the large and expanding program of the 1930s.

In view of the difficulties that had to be overcome during these years, the results of the work were considerable. Of outstanding importance was the knowledge acquired of the Formative cultures of the Guatemala highlands and of Yucatán, and the light it threw upon the origins and development of Classic civilizations. Hieroglyphic studies had been measurably advanced, and a new approach to the study of pre-Columbian art had been created. Last, a large body of factual and definitive material had appeared in a long series of monographs and other published reports arising from the work of the Division.

Late in 1950 A. V. Kidder retired and the writer was appointed Director of the Department of Archaeology, the successor organization to the Division of Historical Research. The suggested program of operations, already mentioned, that had been presented to the President in 1947, had by this time been approved; it is presented in some detail in the annual report for 1951 [Chapter 1.40 this volume]. The program was designed to be compact and to reach the stage of drawing conclusions in a predictable number of years. It was, of course, based primarily on archaeology but with considerable reliance on the results of previously performed historical research. The locus of the work

was the Yucatán peninsula, and the period under consideration was the approximately five centuries preceding the Spanish conquest. The focal point of field operations was the last important center of aboriginal Maya civilization, the ruins of Mayapán. Subsidiary operations were archaeological surveys and exploration in outlying areas thought to be important in the period under study, and an examination of certain known centers of Maya rule after the fall of Mayapán and during the final 100 years before the Spanish completed the conquest of Yucatán. The essence of the program, aside from more usual archaeological objectives, was an experiment in linking the results of archaeological research with the knowledge derived from aboriginal and early Spanish written records in the effort to discover how much of the intellectual, or at least nonmaterial, content of a bygone civilization could be recaptured.

It will be seen from the above that the earlier methods of intensive excavation at one large site, area surveys, and exploration were employed. At Mayapán, after the mapping of the ruins, particular emphasis was given to the study of the secular aspects of the culture, the dwellings of commoner and of noble, and the arrangement of houses within, and on the outskirts of, the city. Comparative work on a smaller scale was carried on elsewhere in the peninsula. Archaeological surveys, particularly stressing ceramics, were conducted in the little-known areas of Tabasco and coastal Quintana Roo. Exploration on a modest scale occurred in Yucatán, Quintana Roo, and along the west coast of the peninsula. Stratigraphic techniques of excavation, now firmly established in Middle American archaeology, were of course used extensively. In recognition of the friendly cooperation at all times offered by the Mexican government, the Institution voluntarily undertook a limited program of restoration of building remains, a project desired by that government.

Outside of archaeological field work documentary research continued, culminating in R. L. Roys' (1957) *Political Geography of the Yucatán Maya*. In his hieroglyphic researches during this period Thompson turned to the gigantic task of compiling a Maya hieroglyphic dictionary, a tool that should be of immeasurable value to future work in this field. Work in ceramic technology went on, resulting in the first definitive presentation of this subject from the point of view of usefulness to the archaeologist (Shepard 1956). Other researches correlative to the central archaeological program were studies in physical anthropology dealing with the human skeletal remains from Mayapán, the identification and study of animal skeletal remains from that site, and the analysis of metal objects. The technique of dating archaeological remains by the newly developed radiocarbon method was also relied upon.

As this program of archaeological and related researches developed, the Institution made the decision to withdraw from the field of archaeology. Fortunately, the program had been shaped to reach the stage of drawing conclusions within approximately five years. Virtually all field work terminated in 1955, and the staff turned to the task of presenting the results of the work for publication.

The writer is hesitant in attempting to characterize the period from 1951 to the present. Not only has he been too closely identified with the work, but he lacks the perspective of time. Certainly one contrast to the preceding 20 years was the contraction in the size of the program and the restricting of the work to relatively clear-cut limits in time and space. Possibly the most important directing influences were the effort to link recorded history, both aboriginal and Spanish, with the results of archaeological field work, and the considerable attention devoted to the secular aspects of the life of the ancient Maya. Operating procedures did not vary in any marked degree from the preceding period, and the use of intensive excavation at one site was the revival of an earlier approach. A new technique, not peculiar to the work of the Institution but employed generally in American archaeology at this time, was radiocarbon dating. Interestingly enough, because of certain radiocarbon dates there has been a marked trend among Middle American archaeologists to return to the previously little-favored Spinden correlation of the Maya and Christian calendars, a shift that affects our reconstructions not only of Maya history but of aboriginal Middle American history in general. Beyond this the writer does not feel that he should go in characterizing the work of the period.

One is even more hesitant about summarizing the results of the recent program. Some eight or nine manuscripts dealing with these results are at present in various stages of completion. The final story must rest on the information they present. In the meantime it seems possible to point to some failures, some successes. The effort to learn something of the last 100 years of aboriginal history in Yucatán, the time from the fall of Mayapán to the final conquest by the Spanish, was almost fruitless. In the matter of linking historical records with the information derived from archaeological field work, and the effort to develop some knowledge of the nonmaterial aspects of Maya civilization, it appears that we may not have gone as far as we had hoped but that our progress was not inconsiderable. In the annual reports of the period we are reviewing and in this Department's series of *Current Reports* will be found a number of references to the archaeological confirmation of previously unproved historical statements and to archaeological evidence concerning the social and religious aspects of Maya

civilization. Chronological and cultural information of the sort normally to be expected from archaeology was of course produced. The time of greatness of Mayapán was well established, the character of its culture was delineated, and the relative chronology of, and the cultural ties, or lack of ties, between, central Yucatán, the east coast of the peninsula, and western Campeche and Tabasco were outlined. Last, but not least, it was shown that the great break in cultural tradition, the precipitous step downward to degeneracy, occurred not with the rise to power, under foreign domination, of the great city of Chichén Itzá, but at the end of that city's time of greatness and with the rise of Mayapán. In broad outline these appear to be some of the results of the work of the past seven or eight years. Amplification must await the definitive reports now in preparation.

THE PRESENT

The work of the present year has, of course, been directed toward the termination of the activities of this Department. The major effort has gone into the preparation of reports presenting the results of our researches. At the end of the year, four such reports were finished, one was nearing completion, two others were well advanced, two were yet to be written. Quite naturally, no new field operations have been undertaken. Several members of the staff did, however, travel outside the country to complete their studies of archaeological collections.

R. E. Smith was in Yucatán approximately six months analyzing the large accumulations of ceramic remains from Mayapán and other sites in the peninsula. This phase of the work is now finished. A statement covering his recent activities appears in a subsequent section of this report. Smith will continue with the Institution for another year in order to prepare a monograph dealing with the pottery of Mayapán.

Aside from her primary task of preparing reports on the architecture and artifacts of Mayapán, Proskouriakoff spent two weeks in Yucatán in a final check of our collection of artifacts. She then continued to Guatemala, where she gave an additional two weeks to the examination of materials in the national museum that will be of value in her forthcoming studies. A report on this work will be found below. She will continue her studies, with the Institution, on the evolution of aboriginal art forms in Middle America.

Shepard, who has divided her time for the past year between the U. S. Geological Survey and this Department, has continued her researches in ceramic technology and in the composition of pigments from wall paintings and pottery decoration recovered from the ruins of Mayapán. During the winter she was able

to spend three months in Yucatán and Guatemala, assisting R. E. Smith with his analysis of Yucatán pottery and rounding out some earlier research on pottery from Guatemala. Her report on this work will be found below. Shepard has recently been appointed geologist in the U. S. Geological Survey. She will continue for the present, however, to give some time to her ceramic technological researches for the Institution.

A. L. Smith has given the greater part of his time to a study of the residential structures and settlement patterns of Mayapán and its environs. In this work he is using comparative data from a number of other important sites in Yucatán. An interesting finding from these studies is the apparent similarity of the ancient groups of buildings, each group within its own walled enclosure, to the walled family lots in modern Indian villages in Yucatán. Some information about the function of structures is also emerging. In anticipation of his future work with the Peabody Museum of Harvard University, Smith spent approximately three months during the past winter in Guatemala, where he participated with Dr. Gordon R. Willey, of Harvard University, in a survey of ruins where the Peabody Museum is considering future operations. Smith left the Institution to take up his new work on July 1, 1958.

Thompson's principal activity during the past year has been the continuation of his catalogue of Maya hieroglyphs. The work of listing all examples of every glyph, other than those of a strictly chronological nature, was concluded some time ago, and for some months past he has been engaged in transcribing this material into a catalogue which records every known combination of main element with affixes and the location on monument or codex of each combination. This is a long and tedious task, for often a main sign can be identified, whereas the smaller affixes, more easily affected by weathering, are difficult to make out. Up to the end of April Thompson had catalogued, with some commentary, 95 main elements, all of the geometric category, representing 4,940 occurrences.

Thompson has also given some attention to locating by means of local glyphs the sites at which certain artifacts, or at least the glyphs on the artifacts, were carved or incised. This study should throw light on local styles and trade routes. At a later date he hopes to publish a short paper on the subject. On his retirement from the Institution in the near future, he will continue his researches in England, where he has taken up residence.

During the past year Shook has remained on leave of absence in order to take charge of the work of the University Museum, University of Pennsylvania, at the ruins of Tikal in Guatemala. With his retirement from the Institution on July 1, 1958, Shook will continue his work with the University Museum.

Shortly after the close of the year under review, Lillian Lawrence, Administrative Secretary of the Department for the past eight years, will leave the Institution. The Director and all members of the staff are deeply indebted to Miss Lawrence for her unfailing assistance, efficiently and cheerfully performed, in administrative and many other matters. She will take up new duties in business.

Several administrative happenings of the last 12 months should be recorded. In November the Director went to Yucatán to effect the turning over of a considerable portion of our archaeological collections to the Instituto Nacional de Antropología e Historia of Mexico and to arrange for the closing on January 1, 1958, of the Department's offices and laboratory in Mérida. The remainder of the collections was delivered to the Instituto, during the past winter and spring. A detailed and carefully arranged documentation accompanied these materials.

The disposing of the equipment and scientific records of the Department, a process that has gone on for several years, was brought to a conclusion by the end of the year under review, with the exception of such materials at our laboratory of ceramic technology at Boulder, Colorado, where Shepard will continue her researches for the present. It has been the policy of the Institution that equipment should be disposed of so as to continue in the uses for which it was originally acquired. Following this policy, gifts have been made to the University Museum of the University of Pennsylvania, to the Middle American Research Institute of Tulane University, and to the R. S. Peabody Foundation for Archaeology at Andover, Massachusetts. The major part of our field and office equipment in Yucatán has been presented to the Instituto Nacional de Antropología e Historia of Mexico. Scientific equipment, office equipment in Cambridge, and virtually all our scientific records have been given to the Peabody Museum of Harvard University, an organization with which this Department has closely cooperated for many years.

In the autumn of 1957 J. Eric S. Thompson was elected a member of the Faculty Board of Archaeology and Anthropology, Cambridge University. Tatiana Proskouriakoff has recently been appointed Research Fellow in Maya Art, Peabody Museum, Harvard University.¹

NOTES

1. Appendices 1 through 4 describe the archival records for the CIW Maya Program available at the CIW headquarters in Washington, DC, and at the Peabody Museum of Archaeology and Ethnology at Harvard University, the University of Chicago Library, and at the Latin American Library at Tulane University [ed.]

2.0. ART AND ARCHITECTURE

2.1.

H.E.D. POLLOCK

Architectural Problems in the Maya Field

YB 30:117–119, 1931

Certainly one of the most impressive facts pertaining to the civilization of the ancient Maya is the extraordinary activity of these people as builders. Any one even moderately well acquainted with the territory occupied by this civilization can not but have marveled at the vast number of ruins that lie hidden on every hand in the dense growth of bush and jungle that covers those parts of Mexico and Guatemala inhabited by the Maya. The narrow trails that traverse this country are continually passing by, or leading over, low mounds and platforms, often difficult to separate from the natural contours of the land, but usually offering some peculiar features to distinguish them as the handiwork of man rather than of nature. The number and extent alone of such artificial hillocks mark the Maya as indefatigable builders, but fortunately for the student there are also many buildings in a sufficiently good state of preservation to show that these people were not only untiring workers, but architects of a relatively high order. The great stone cities of Yucatán and Guatemala, first brought to general at-

tention nearly 100 years ago, and much discussed in recent years, contain many excellently preserved structures; and every worker in the field knows that there are scores of less conspicuous sites containing literally hundreds of buildings in various stages of ruin, many of which offer valuable architectural details to the student.

It is now believed that nearly all surviving Maya structures served in one way or another for religious purposes, but whether this surmise is correct or not, their size and elaboration mark them as works of communal labor; and it seems fair to assume that, outside of work pertaining to the ordinary domestic economy, no other activity occupied, so much of the energy of the Maya as did his architecture.

In two articles appearing in recent *Year Books* of the Carnegie Institution [Chapters 1.17 and 1.18] attention has been called to the need of a general survey of Maya architecture. The importance of this work can hardly be overestimated, but before attempting to discuss any future course of action, it may be well to review

briefly the present status of the Maya architectural problem.

At present there is a very considerable body of published material upon Maya buildings. No serious effort, however, has yet been made to coordinate the available data, the reason presumably being that those acquainted with the literature realize that in its present form it is too fragmentary to provide a basis for an adequate survey of Maya architecture. Dealing with the broader aspects of the situation, our present knowledge allows us to divide the Maya area into eight or nine regions that appear to be characterized by more or less distinctive features of assemblage, construction, or decoration. Because these regions have been associated with certain periods in Maya history through nebulous historical records, and through a somewhat larger and more reliable body of hieroglyphic calendrical inscriptions, it is customary to assign their architectural remains to time periods that accord with the historical and calendrical data; and although some effort has been made empirically to trace the development of architectural forms, our knowledge of the evolution of Maya architecture is still for the most part dependent upon external, rather than internal evidence. In the present embryonic state of Maya archaeology, a situation of this sort is not extraordinary. The possibilities of a short cut to the reconstruction of history offered by the understanding of so fine a time machine as the Maya calendar have of course long been apparent to workers in the field with the result that during the past two or three decades intensive work on hieroglyphic material has obscured the value and caused neglect of such other important lines of research as architecture and ceramics. It is indeed not impossible that the supposed "open sesame" of the calendar may actually have led us into erroneous beliefs in regard to certain aspects of Maya history. The addition, therefore, of another category of evidence, such as it is hoped may be found in architecture, should not only tend to fill the gaps in our present knowledge, but should serve as an extremely salutary check upon hypotheses now current.

Whatever the eventual worth of a survey of Maya architecture may prove to be, and whatever may be the ramifications to which it leads, its immediate aim is to establish one or more sequences of architectural form that will be intelligible both chronologically and geographically in the interpretation of Maya history. A study of this sort should stand as an independent index to the development of Maya culture, to be coordinated with the many other indices which eventually will go to make up the whole story of the Maya; it should stand as an aid to the rest, and not be a passive factor totally dependent upon other lines of research for its own interpretation. This is not to be understood

as meaning that related fields such as calendrical material and ceramics, which may well prove of great aid in building up architectural sequences, should be neglected, but rather that architectural conditions should first be allowed to speak for themselves in creating the desired sequences. It is hoped that, given a sufficiently large and detailed knowledge of the remains, a natural development in forms and practices will become manifest and that in many instances buildings may be assigned to proper chronological position upon internal evidence alone. General laws in the development of architecture have been found to hold true when dealing with other civilizations, and there is no reason to believe that similar laws may not have been operative in the case of the Maya.

As previously intimated, a considerably greater and more detailed knowledge of architectural remains than now exists is necessary, for any comprehensive study. Undoubtedly the first step, is to sift all earlier work, rejecting what is unfit, and carefully to arrange and coordinate the remainder to form a framework, or at least a starting point, for the further information that will be acquired in the field. This review should present opportunity for devising a convenient and efficient system for handling the great amount of material that must be collected. The importance of an intelligent and clear arrangement of data can hardly be overestimated, for unrelated facts mean nothing. Turning to the work in the field, it may be said that the larger aspects of assemblage, construction, practice and decoration must be studied, and that the component parts of buildings must be examined and carefully noted. This means that architectural remains should be treated not only as single buildings, and groups of buildings, but that each structure should, figuratively speaking, be dissected, its elements be recorded by means of drawings and photographs, and the facts thus accumulated by logically ordered for comparative study. Only through detailed analysis of this sort is there any hope of establishing a chain of evolution in architecture. It is quite possible, however, that even this meticulous process will prove insufficient to make clear the development of forms and practices, and the unerring guide of secondary construction in the form of superposition, lateral expansion and renovation should carefully be watched for. A factor militating against uniform development is that of varying environment, especially in the matter of available supplies of building stone. The Maya territory and its architecture are both fairly homogeneous, but local peculiarities must be given consideration from the aspect of environment, and not simply be interpreted chronologically.

At the very outset of any project of this nature, one comes face to face with certain practical considerations that often dictate a course of action quite different from

the theoretical ideal. In the present instance, the ideal would of course be to excavate every building in the Maya area and record all possible information in regard to it. This is obviously impossible. The tremendous quantity of remains, and their general inaccessibility, makes all thought of excavation, other than of the most cursory sort, out of the question; but it is hoped that remains still above ground will provide sufficient material to carry on the study. Not only must extensive excavation be set aside, but at first it would appear advisable largely to restrict work to known sites rather than to indulge in much exploration. When a considerable body of material has been collected, certain obvious gaps in our knowledge will immediately become apparent. Then, exploration particularly dedicated to the filling in of these gaps may be carried on. Accepting these practical considerations of little excavation and restricted exploration, it would not appear to matter greatly in what region operations are begun. The entire area must eventually be covered, and in fact it will probably be necessary to have data from nearly all regions before lines of growth become intelligible. This is merely another way of saying that much must be done before conclusions may justifiably be drawn, and in this statement we have the crux of the problem immediately at hand. With the collection of further material from representative sites of the various regions of the Maya area, and its careful arrangement in conjunction with facts already known, will come both opportunity and necessity for interpretation and inference.

2.2.

ALFRED V. KIDDER
Architectural-Ceramic Survey

YB 31:96-97, 1932

As pointed out in previous *Year Book* reports, the outline of early Maya history has been based upon hieroglyphic dates. Dr. Morley's immediate chronological assignment of Calakmul, on the evidence of such inscriptions, is a case in point. For working out the actual story of the growth and decline of any given city, as well as for the placing of the many Old Empire sites which yield no dates, and practically all the ruins of the New Empire, one must, however, rely upon methods other than epigraphic. For such purposes

ceramics and the details of architectural practice are by far the most easily obtainable and most surely reliable criteria available at the present time. Mr. H.E.D. Pollock has accordingly been devoting himself to the study of Maya architecture and Mr. H. B. Roberts to that of Maya pottery. During the past year they have combined forces to carry on a joint investigation in northern Yucatán, using Chichén Itzá as a base. The team attack has proved most satisfactory. On the practical side it naturally results in marked economy; intellectually it is a great advantage for two men approaching the same problem from different points of view to be able to keep closely in touch with each other's methods and results.

During the season of 1932 Messrs. Pollock and Roberts made three trips; two to the Puuc region south of Ticul, where they worked at Sabacché, Muluc Seca, Xlapak Maler and Labná; one to Yaxuná, a site some 12 miles [19.3 km] south of Chichén, at which the ancient causeway running eastward from Cobá is thought to terminate. Mr. Roberts also at Cobá to supplement, by pottery studies, the architectural observations made by Mr. Pollock in a previous year.

Ceramic research in the Maya area outside the highlands of Guatemala is rendered difficult by the fact that surface sherds are either hidden by rank vegetation or are so weathered by exposure as to be more or less useless. It therefore became evident, early in Mr. Roberts' study, that some method must be developed for easily and economically collecting representative specimens from underground, and particularly for gathering material from places which would yield stratigraphic evidence. As rubbish heaps naturally best fulfill the requirements of abundance of sherds and stratigraphic deposition, he has devoted much attention, at Chichén Itzá and elsewhere, to identifying the spots where the Maya were most given to dumping refuse. The result has been an increasing ability to locate heaps off the edges of terraces, in corners of plazas, in low spots adjacent to temple-groups, etc. His trenches of 1932 at Chichén Itzá, in the Puuc, at Cobá, and Yaxuná have accordingly produced a great amount of broken pottery, so many thousands of pieces, in fact, that one of his major problems has been to keep their cleaning, sorting and classification abreast of their excavation.

Research upon the 1932 sherd collections is still in progress. It can not therefore finally be reported upon, but Mr. Roberts has already been able to recognize many well-defined types, to group these types into regional categories, and even to establish certain definite chronological relationships. In other words, the study of Yucatecan pottery is being placed upon a sound basis. Also, growing familiarity with the wares is permitting, the quicker separation of what is of significance

from what may safely be discarded in the field, thus sensibly reducing the amount of material which must be taken to the laboratory at Chichén Itzá, and so shortening the whole classification process.

In addition to his strictly archaeological work, Mr. Roberts has collected information as to the technique of present-day pottery making in Yucatán.

In his architectural investigation, Mr. Pollock has likewise been faced by difficulties in the collection and recording of data. Buildings abound, but they are, in many cases, so badly ruined that it is extremely hard to determine even their general layout and ground-plan, to say nothing of the details of their structure. Furthermore, while potsherds can be brought in for study, temples unfortunately can not, and full descriptive recording must be done in the field. This involves photography, and the making of sketches, plans and elevations, all time-consuming processes. Mr. Pollock has therefore not found it easy to keep pace, at such large sites as Labná, with the ceramicist. He believes, however, that with the assistance of a collaborator to help with surveying and photography, he can do so. His data, like those of Mr. Roberts, are not yet at a stage permitting conclusion. It may be said, however, that significant architectural diagnostics are beginning to be recognized, and that when similar studies are made of other groups, important regional and chronological differences will become evident. In the meantime Mr. Pollock has developed an extremely efficient method of note-taking and filing which not only permits instant comparison between analogous features of different structures, but which also brings his factual data into proper form for immediate publication.

2.3.

H.E.D. POLLOCK

Architectural Survey

YB 35: 122–125, 1936

In last year's report [Chapter 2.1] it was pointed out that the ruins of the Puuc region of Yucatán were serving as point of departure for the comparative study of the architecture of Yucatán. It was further noted that, while considerable progress had been made toward gaining a knowledge of Puuc architecture, an obvious lacuna was to be found in the lack of any adequate study of the great ruins of Uxmal. In addition,

it seemed desirable that a reconnaissance be made of a number of lesser sites in the Puuc; and lastly, it was pointed out that the small amount of work done outside the area gave promise of highly significant results whenever the survey could be carried into contiguous regions.

The operations of the past season were planned in accordance with the foregoing factors. Work at Uxmal and a rapid reconnaissance of minor sites were to terminate the survey of the Puuc. Keeping in mind the work of future years, the reconnaissance was to be extended to include a number of sites in the very important Chenes region lying south of the Puuc and west of the modern city of Campeche. Necessities of transportation dictated that the Chenes trip come first, at the height of the dry season. As in past years, the architectural and ceramic surveys operated in conjunction.

While previous work had provided a considerable knowledge of the ruins of the central and north-western sectors of the Puuc, little was known of the southeastern and southern ruins. The expedition therefore first visited Chacmultún, one of the larger southeastern sites, and thence moved westward to Chacbolai, Kom, Kiuic, and the little-known remains of Huntichmul I, all of which proved to fall definitely within the tradition of Puuc architecture. At Kiuic were found three stelae, two plain and one with the crude carving of a skeleton; and at Huntichmul I a façade decoration that is common in the Chenes and further south.

The next move was southward to Itsimté. These ruins are very extensive, but due to their proximity to the town of Bolonchenticul they have been so thoroughly robbed of building stone that few architectural details remain visible. Geographically, the site is located in a region that might be expected to form the southern border of the Puuc area, and what little may be gleaned from the architecture seems to be in accordance with expectation, for the remains appear to be essentially Puuc in character, but with certain transitional, or at least exotic, elements not usually associated with the ruins to the north. While the reconnaissance left the Puuc at this point, it subsequently visited two ruins that appear further to delimit the region and thus may be mentioned here. These are Xkichmook and Xculoc, the former lying east of Itsimté, the latter northwest. Like Itsimté, both seem to contain transitional architectural elements, Xkichmook probably drawing from the Chenes area to the south, Xculoc being rather definitely associated with the nearby Xcalumkin region which in turn seems closely related to the Puuc.

Leaving Bolonchenticul and Itsimté, the party moved southeastward to Xtampak, more frequently

known as Santa Rosa Xlampak. These ruins are definitely non-Puuc, and presumably are to be associated with the as yet ill-defined geographical and cultural area known as the Chenes. Xtampak is of great importance. Not only is there a large amount of readily available architectural detail, but during the present season eight stelae were discovered, two of which carry Initial Series that record dates a year or two prior to the katun-ending 9.16.0.0.0. The style of architecture at Xtampak has been used in support of one of the proposed correlations of Maya and Christian chronology, so the occurrence there of dated monuments may prove of value in dealing with the vexed correlation problem as well as in fixing the relative chronological position of a distinctive style of architecture.

With one exception the remaining ruins visited were in the Chenes area. In the regions of Hopelchen, Dzibalchen, and Iturbide are a number of remains varying considerably in size and importance. Those examined were Dsehkabtún, Nocuchich, Dzibilnocac, Nohcacab II (or IV), Chenchan (Chanchen), Tabasqueño, Dsibiltún, and Hochob. The last two are worthy of particular mention. Hochob, the southernmost point reached, offers a wealth of splendidly preserved architectural detail which, stylistically, is probably further removed from the decoration of the Puuc than is that of any other site visited. They may prove to be typical of the Chenes, or may be transitional to another school of architecture farther to the south. Dsibiltún, near the village of Komchen in the heart of the Chenes country, exhibits a form of architecture that appears not only to be entirely Puuc in tradition but of a highly developed and presumably late stage. If the above-suggested cultural and chronological associations are correct, the site is obviously of great importance.

Lastly, the reconnaissance included Edzná-Tixmucuy, some distance west of the Hopelchen-Dzibalchen region. While Edzná was probably one of the great cities of the Yucatán peninsula, it is unfortunately so ruinous that it offers few architectural data, although further exploration may remedy this defect. What could be gathered from a single structure indicated that the remains are more closely allied to the Xcalumkin-Puuc group than to the Chenes, and that they might quite possibly have influenced Puuc development. The chronological position at present assigned to Edzná rests more upon the relatively early dates of its stelae than upon its architecture, although the latter corroborates the inscriptions by appearing definitely earlier than the characteristic Puuc forms.

The work at Uxmal was largely confined to the smaller and lesser-known structures. Of outstanding importance is the existence of several buildings that in mode of construction or style of decoration seem surely to be allied to the remains of the Chenes. Two of these

give evidence of being demonstrably earlier than the structures known as the Casa del Gobernador and the Casa de las Tortugas, but in so far as the Gobernador and Tortuga probably are comparatively late examples of Puuc architecture, the determination of the relative chronological position of the Puuc and Chenes styles is not greatly aided. It is worthy to note, however, that should we subscribe to the rather common view that the Chenes remains antedate those of the Puuc, a long period of occupation is indicated for Uxmal.

In judging the progress of the survey, it seems that the architecture of the Puuc has now been sampled adequately and that activity in that region may for the present be discontinued. The work of the past season greatly enlarged the survey's horizon, in that for the first time a considerable number of ruins outside the Puuc were visited. As a result, local culture areas are now beginning to take shape. There are indications, moreover, of inter-influence between areas, and suggestions as to relative chronology. Thus, we find that the Chenes culture penetrated to Uxmal, while the Puuc tradition was carried to Dsibiltún. It is becoming increasingly clear that certain existing ideas in regard to conditions in the western part of the peninsula must be revised. The different architectural styles and the local culture that these styles reflect can no longer be thought of as sequent stages in the passage of a single cultural impulse from south to north, each stage marking an advance in time. On the contrary, they must be considered as products of several impulses that may have varied widely in point of origin. It is possible, in fact probable, that difference in origin, rather than difference in time, was the major factor in bringing about the observed variation in the character of the remains.

Problems relating to the course of future work have been clarified. In earlier years Edzná, Holactún-Xcalumkin, Oxkintok, and possibly Jaina, had been marked out as of strategic importance in the western Yucatán-Campeche area. To these must now be added Xtampak, and probably Dsibiltún. The reconnaissance of the Chenes, moreover, has demonstrated the need for its fuller investigation and for exploration in several adjacent regions. South of Hochob there is a strip of archaeologically little-known territory that lies between the area traversed by the past season's reconnaissance and that covered by the Division's several Campeche Expeditions [Chapters 15.1 and 15.2]. In so far as much of the architecture of southern Campeche and southwestern Quintana Roo seems allied to that of the Chenes, it is important that the remains of the intervening area be better known. The work at Xcalumkin and the brief visit to Edzná indicate that the ruins in western Campeche differ in style from those of the Chenes. The architecture of these western

sites is closely related to that of the Puuc and, in conjunction with several relatively early Initial Series dates, suggests that the region formed the avenue of approach for many of the basic traits of Puuc architecture. Almost no remains are known between Edzná and Xcalumkin, although ruins are reported by the natives. This is an area in which one may look forward with some confidence to the recovery of hieroglyphic material, and there is little doubt that further work here will amply justify itself. Nor should the southwestern extension of this coastal region be neglected. South of Edzná and Champotón, and west of the area covered by the Campeche Expeditions is a blank spot upon the archaeological map. And as the Edzná-Xcalumkin-Puuc complex does not seem to find direct derivation either from the Chenes, remains or from those of the Petén southwestern Campeche is the logical place to seek earlier links in that cultural chain. The region, moreover, appears to have included the ancient cacicazgo of Acalán-Tixchel [Chapter 9.9] the history of which-forms the subject of a monograph now in preparation by Messrs. Scholes and Roys, and Miss Adams, and it is not beyond hope that some connection may be established between the archaeological remains and the documentary records. This would obviously be of great importance for the reconstruction of Maya history.

2.4.

H.E.D. POLLOCK

Architectural Survey

YB 36:141–143, 1937

Dr. Pollock's activities in 1937 differed from those of earlier years (for previous reports of the Architectural Survey, see [Chapters 2.1, 2.2, 2.3] in that instead of collecting definitive data on the architectural remains of relatively limited areas, he made rapid reconnaissance of an extensive territory. At the same time, he was able to visit several sites under excavation and to observe others that had witnessed a certain amount of digging in past years.

The first part of the season was devoted to the Guatemala highlands, a region rapidly becoming more accessible to travel but which as yet is archaeologically little understood. Prior to this the lowland ruins of Quiriguá and Copán were visited, as well as San

Agustin Acasaguastlán and, the little known ruins of Papalguapa and Asunción Mitá.

The next group of remains investigated was that centering about the town of Santa Lucía Cozumalguapa, on the Pacific slope of the cordillera. The sites of El Baúl, El Castillo, Pantaleón, Bilbao, Aguna, Los Tarros, Palo Verde, San Andrés Osuna, and El Portal, the last near Antigua Guatemala, were seen during this trip.

The final and most extensive phase of the highland survey included examination of an unnamed mound group between Kilometers 65 and 66 on the road from Guatemala City to Tecpán, and the well-known ruins of Iximché. A stop in Chichicastenango allowed observation of the famous Rossbach Collection. On succeeding days the sites of Utatlán, Chiché, Joyabaj, Zacualpa, Comitancillo, San Pablo Jocopilas, San Pedro Jocopilas, Zacleu, and three sites in the vicinity of Aguacatán were visited. Lastly, Dr. Pollock with Dr. Kidder inspected the Lake Atitlán ruins of Chuitinamit, Pachiuak, Chukumuk, Xikomuk, and Pavocol.

The above trips necessitated frequent passage through Guatemala City, where it was possible to see the excavations being carried on at Kaminaljuyú and to study the collections in the Guatemala National Museum.

Dr. Pollock devoted the second part of the season to reconnaissance of ruins on the Pasión and Usumacinta Rivers in company with Messrs. Smith and Shook.

Starting from Uaxactún, where Dr. Pollock had opportunity to see the results of over 10 years of intensive excavation, the combined party moved southward to the ruins of Tikal, where four days were spent. This visit resulted in the discovery of a previously unreported group of remains located about 1 km north of the Great Plaza, two new sculptured stelae (19 and 20), a sculptured altar (VIII), five plain stelae, and six plain altars. According to Dr. Morley, Stela 19 and 20 record the dates 9.18.0.0.0 and 9.16.0.0.0, respectively, each date being declared as a Period Ending. Leaving Tikal the expedition continued southward, visiting Ixlú, Tayasal, and Chakantún, in the course of the journey to Subin Creek, a branch of the Pasión River.

The small ruin of Aguas Calientes was the first site reached on the Pasión. The following day the party visited an unreported site about 3 km east southeast of the settlement of La Florida on the left bank of the river. The ruins were given the name El Caribe, from a nearby arroyo of that name. Two sculptured stelae (1 and 2), a hieroglyphic step-stone, and a plain altar were here discovered. While the readings are as yet uncertain, Dr. Morley feels that Stela 1 and two probably were erected to commemorate the date 9.17.10.0.0. Next day

a second now site, situated some 4 km south of La Florida and given the name La Amelia, was examined. This yielded a sculptured stela and six step-stones, all carrying epigraphic texts that still await decipherment.

The little-known ruins of Altar de Sacrificios at the confluence of the Pasión and Salinas Rivers, which together form the Usumacinta, were next visited. Exploration here revealed five new sculptured stelae (8 to 12), two new sculptured altars (2 and 3), five plain altars, and the fragments of two doubtful stelae. While much of the hieroglyphic material on these monuments remains to be deciphered, it seems clear that Stela 12 records the Initial Series 9.4.10.0.0, a very early date for this region, and Stela 8 the Initial Series 9.9.15.0.0. It is also reasonably certain that Stelae 9, 10, and 11 record Initial Series dates.

The party continued downstream to the ruins of Yaxchilán, El Chilé, El Cayo, and Piedras Negras, at the latter site being most kindly entertained by the Pennsylvania University Museum expedition, now at work there. Lastly, four days were spent at Palenque.

The results of such rapid and far-flung reconnaissance will become most clearly evident in the course of future work. New problems are defined, old ones are clarified, a more intelligent, more efficient program is made possible. The Guatemalan highlands constitute a region of great archaeological complexity, in that they not only have witnessed a relatively long period of occupation but have been subjected, at certain times, to numerous outside influences and cross-currents of culture. Any considerable amount of excavation in an area so little understood should be preceded by wider and more thorough reconnaissance than that undertaken this year. It is wholly probable that one or two seasons of careful work of this sort would go far toward determining cultural boundaries, and sub-areas delimited by these boundaries with characteristic remains of each; and should also permit selection of strategic points for attack.

The Usumacinta region has long been known to abound in impressive archaeological remains. It is an area, however, that is extremely difficult of access and that, for some years to come, will probably be very expensive to explore. As in the highlands, further reconnaissance seems advisable, but even careful reconnaissance in the Usumacinta country is arduous and costly. A site of obvious importance is Altar de Sacrificios-El Pabellon at the junction of the Pasión and Salinas Rivers, streams that drain the eastern lowlands and the southern highlands respectively, and that almost surely were ancient highways of commerce. The site should thus have been a meeting place of cultural currents from the Guatemalan highlands, the Petén lowlands, and the Usumacinta region. Work at this site

might not only yield indications of movements of culture and material of value for chronological cross-checking, but would greatly facilitate further exploration of the region, the confluence of the Lacantún and Usumacinta Rivers being a point of special promise.

2.5.

H.E.D. POLLOCK

Architectural Survey of Yucatán

YB 39:265–267, 1940

Brief reports upon the purposes and progress of the Architectural Survey have appeared in earlier *Year Books* [Chapters 2.1, 2.2, 2.3, 2.4]. It has been pointed out that the so-called Puuc region of Yucatán saw the initial efforts of the survey, and by the close of the 1936 season it appeared that that area had been sampled adequately. During these years occasion had been taken also to reconnoiter the Chenes region to the south and to make brief trips into the Maxcanú, Hecelchakan, and Campeche districts to the west and southwest. These last-mentioned districts, although relatively populous and easily accessible, form an area that has been a notable blank spot on the archaeological map; yet the information gained by these trips suggested, not only that the region possessed numerous remains, but that these remains were closely allied to, if not merely a variant of, those of the Puuc. The three comparatively well known sites in the area, moreover, appeared in each case to be of strategic importance. With the survey of the Puuc ruins completed and the Chenes ruins sufficiently sampled to give a good idea of what was to be expected in that region; it seemed logical to extend the work to this western area that appeared to have so definite a bearing upon the architecture of the Puuc.

Preparatory to entering an area whose ruins were virtually unknown, it was deemed advisable to conduct some preliminary exploration. During the preceding winter (1939) two native laborers, trained in the work of the survey, were consequently sent to this region to locate and briefly describe new ruins. The results were even better than anticipated. At very small cost these men visited and reported upon some 25 previously unrecorded groups. The Architectural Survey was thus able to enter the field the following year with

a long list of partially explored sites, and with valuable and time-saving information on such matters as facilities of transportation, water supply, and living conditions.

The 1940 expedition consisted of Dr. Pollock and Mr. Shook. The broad plan of operation was to start at Maxcanú, the northern tip of the area to be covered, and to work southward along the Campeche rail road line; constantly striking eastward into the interior hill region and occasionally ranging westward onto the coastal plain. In an earlier year the ruins of Oxkintok, just outside of Maxcanú, had been briefly visited and marked as large and of strategic importance, an opinion that was confirmed in 1939 by the discovery of a lintel carrying the earliest Initial Series date (9.2.0.0.0) so far known in northern Yucatán. Work was therefore begun at that site and was continued for about one month, a large number of outlying groups and two small nearby sites being explored as well as the centrally located ruins.

The ruins of Oxkintok are characterized by two types of building that seem to represent different periods of occupation. What are assumed to be the remains of the earlier period are akin to certain southern Maya ruins in assemblage, style of architecture, details of construction, and the association of monuments with hieroglyphic inscriptions. The early Initial Series lintel mentioned above is *in situ* in a structure of this style of architecture. The second class of building, assumed to be later, is of typical Puuc tradition. In general, the earlier remains tend to cluster in the central part of the site, and the outlying groups and a certain number of structures near the center are for the most part in Puuc tradition. These explorations disclosed some notable examples of stone sculpture and a considerable body of hieroglyphic material as yet not studied.

The second part of the season's work, again amounting to about one month was concentrated in the Cumpich-Xculoc-Halal region east of the railroad station of Hecelchakan. Some 20 sites, varying widely in size and importance, were visited. Broadly speaking, the remains of the region are akin to the previously studied ruins in the savanna of Xcalumkin. They are very similar to the buildings of the Puuc but, in Dr. Pollock's opinion, are distinctive in a sufficient number of details to justify their being set apart from the ruins of that area. As at Oxkintok, a considerable amount of hieroglyphic material and stone sculpture was discovered, and in addition some fragmentary examples of wall fresco were found.

The third and last part of the 1940 season was devoted to exploration of the region along the railroad and east of the railroad between the towns of Pomuch and Hampolol. Here again some 20 sites were visited, and in the main it may be said that the remains are in

the same tradition as those of the area surveyed on the preceding trip. Possible exceptions are the ruins of Bakná, northeast of Boholá, where there appear to be traces of the early-style architecture of Oxkintok; and Acanmul, near Hampolol, where assemblage and relatively high proportion of pyramidal-type structures set the ruins off from those of the major part of the region. During the final week the site of Oxkintok was revisited to check up on certain matters considered important, and at the same time the ruins of Sihó, west of Halachá, were visited. These last ruins, while in certain respects akin to those east of the railroad, are in other ways distinct. Upon returning to Mérida, a brief visit was made to the long known, but so far inadequately studied, ruins of Acanceh and Mayapán. It should possibly be noted here that the Acanceh remains are strikingly similar to relatively early southern ruins.

The work of the past season has, been one more step in clarifying the cultural picture of northern Yucatán. Not only have a large number of ruins been examined in an area that was relatively unknown, but that area is found to have a concentration of remains comparable to that of the Puuc region. The main concentration appears to lie in the hill and savanna region east of the railroad, the railroad towns mostly old aboriginal settlements, forming the western border at the foot of the hills. The coastal plain west of the railroad gives evidence of a comparatively sparse aboriginal population. From the point of view of architecture, the area is extraordinarily homogeneous. As noted above, the remains are so closely akin to those of the Puuc as to present the question whether they should be differentiated at all. There is little that occurs in the region that might not be found in the Puuc; but Dr. Pollock believes that the proportion of certain forms of assemblage, types of buildings, ground plans, structural details, decoration, and glyphic material justifies distinguishing these remains from those of the Puuc. Departing from the general architectural homogeneity of the region are the presumably early remains of Oxkintok, which represent a cultural horizon that may be present at Bakná but as yet finds no direct parallel elsewhere. Acanmul and Sihó also give signs of difference from the norm. The source and cause of these divergences are at present unknown.

Future objectives of the Architectural Survey seem clearly to lie to the south in the region extending east from the Campeche-Champotón coastal strip. The work of the survey to date has given good indications of the borders of the Puuc and of this new subcultural area in its northern sector, but its southern limits have not been defined, nor has the expected Chenes border been discovered. An extension of the survey south and southeast should solve these problems. In addition,

there is hope of picking up further traces of the early Oxkintok architecture. In the past it has been the experience of the survey that major advances in the understanding of the broad cultural picture have come in passing from one cultural area to another, and it is confidently expected that the delimiting of this new area to the south and southeast, and the knowledge of what type of remains are contiguous, will greatly clarify the relation of these remains to those of the Puuc and Chenes. There are, moreover, the broader questions of the entrance and continuing flow of culture to Yucatán from the south and west, and the region suggested for future work appears to hold promise of throwing light upon such problems.

2.6.

H.E.D. POLLOCK

Architectural Survey of Yucatán

YB 45:206–207, 1946

Dr. Pollock returned to the Division in September 1945, following Army service of somewhat over three years. At the time of his departure in 1942, he was engaged in preparing for publication the results of field trips to Yucatán and Campeche beginning as far back as 1932. A résumé of the field work of the Architectural Survey with references to earlier reports appears in [Chapter 2.5].

On resumption of work with the Division, it seemed desirable that Dr. Pollock should spend some time in studying the very considerable amount of Middle American archaeological literature published during his absence. Several months were devoted to this pursuit, and the reward is probably to be measured equally in terms of reorientation of the worker and in knowledge gained of the advancement in research.

It has long been felt by Dr. Pollock that the publication of architectural data should rely mainly on illustration rather than text. The preparation of such material, consisting in the present instance of a great number of drawings as well as photographs, is a time-consuming process. A large amount had been prepared prior to his departure; but the hiatus of almost 4 years made necessary a thorough recheck to discover what details had been omitted, and to refresh the memory in regard to the general content and specific problems of the task in hand. This work is now in progress.

It is not wise to be rigid in establishing the precise form and content of a publication when the raw data are still in process of reduction to final form. Some thought may nevertheless be given to the problem. In the present instance, information that should some time ago have been available to fellow workers has yet to appear. Moreover, the freshness of the research, as expressed in the myriad details the researcher carries in mind but never reduces to paper, has dimmed. The wise course therefore would seem to be to bring forth as promptly as possible a publication presenting mainly the factual aspects of the field work, and not to delay publication by the preparation of elaborate comparative data. It may indeed be advisable to publish the material in successive parts dealing with sub-areas of the region covered by the survey. When this stock of facts that have sat on the shelf so long is made available to all, comparative studies should be commenced—studies that presumably will be furthered not only by the Division but by other interested workers.

2.7.

H.E.D. POLLOCK

Architectural Survey of Yucatán

YB 47:218–219, 1948

It was noted in a previous report on the Architectural Survey [Chapter 2.6 this volume] that the immediate task in hand was the preparation of the illustrative material that will form the body of the final report on this work. In the working over of the notes, sketches, and photographs that are the raw data of the survey, it was inevitable that certain gaps, certain loose ends, should become apparent. Some of the lacunae and uncertainties thus uncovered seemed sufficiently important to merit checking in the field. Dr. Pollock consequently spent March and part of April 1948 in Yucatán.

As a good proportion of the checking concerned the ruins of Uxmal, this site was used as a base. The work was greatly facilitated by the kindness of Sr. José A. Erosa Peniché, archaeologist of the National Institute of Anthropology and History, in offering the use of the Institute's living quarters at the ruins. Approximately three weeks were spent at Uxmal, during which time trips were made to the ruins of Huntichmul I,

Kiuic, and Xculoc. Dr. Pollock was so fortunate as to have company of Dr. Morley during a part of his stay at Uxmal.

Toward the end of March Mr. Shook joined Dr. Pollock in Mérida and the two visited the well known site of Mayapán for the purpose of checking the existing map of the ruins in order to determine the advisability of additional mapping.

The small but excellent regional museum in Campeche was visited next. As the new highway connecting Mérida and Campeche had recently been opened for traffic the opportunity was taken to traverse this road, which continues the old Mérida-Uxmal highway to the ruins of Kabah, thence to Bolonchen-Ticul, to Hopelchen, and westward to Campeche. A number of ruined sites were observed along the road the most notable being that marked by high, pyramidal structure which may be seen at a distance of 2 or 3 km north of the highway between Uxmal and Santa Elena. Mr. Shook is of the opinion that this structure is part of a large site that observed from the air while flying from Guatemala to Mérida. It is probable that these are the ruins of Xcoch, discovered over 100 years ago by John L. Stephens and, so far as is known, never revisited. Also worthy of mention is a group of remains, immediately west of Hopelchen, that have been cut through and in part demolished by the construction of the new highway.

The work of the Architectural Survey has been retarded by the administrative duties assumed by Dr. Pollock in 1947. The results of this research are not so publication as might have been expected at this time. Although the great task of drafting the illustrative material is virtually completed, this material and the photographs are not yet arranged in final form for publication. Only a small part of the text has been written. It is hoped that Dr. Pollock will be able to give more of his time to this work in the ensuing months.

2.8.

F. B. RICHARDSON

Study of Maya Sculpture

YB 37:156–159, 1938

In attack upon the problems of any archaeological area certain definite processes are indicated. First must come a preliminary stocktaking of remains, their general nature and their distribution. The second step should

be the chronological ranking of those remains, in order to determine the extent and the location of population at different periods, and also to make clear the trends of cultural change. For this chronological ranking one should select types of evidence, which most clearly reflect the passage of time.

In the Maya field the Initial Series dates supply the most obvious material for the establishment of sequences; and during the early years of Maya research they were relied upon almost exclusively. But while these inscriptions are of the greatest value as chronological landmarks, they cover a period of only about 500 years. They supply, therefore, no evidence regarding the obviously long developmental stage which preceded the erection of the earliest monuments; and Initial Series ceased to be recorded several centuries before the coming of the Spaniards. Furthermore, monuments are few or lacking at many sites even of the epoch of greatest inscripational activity; and none at all occur in the important peripheral districts.

For this reason it is necessary, in an attempt to deal with the whole area and the entire span of Maya history, to include intensive study of criteria other than epigraphic. Of these, pottery and the details of architecture are among the most useful and have been made the subject of special researches and surveys by the Division. Of almost, if not quite, equal importance is sculpture, an art in which the Maya were pre-eminent among the prehistoric peoples of America.

Maya buildings were lavishly decorated with carvings in stone and with figures modeled in stucco. The monuments bearing the above-mentioned hieroglyphic dates were also elaborately sculptured and, as Spinden demonstrated some years ago, it is possible by means of the dates on the stelae to establish the trends of sculptural technique. Conversely, the nature of their carving permits determination, in many cases, of the age of stelae whose inscriptions have become undecipherable through breakage or the erosion of time. The stylistic evidence offered by sculpture has therefore come to play a significant role in epigraphic as well as in architectural research. Furthermore, there are important linkages between sculpture, jade carving, and the decoration of pottery. Finally, Maya art formed an integral part of the larger art field of Middle America. It influenced, and was influenced by the work of other neighboring cultures.

The study of sculpture is thus of great importance; but the mass of sculptural and closely allied material is so great, and artistic and technical problems are so many, that epigraphers, ceramicists, and students of architecture must rely upon others for the highly specialized sculptural data they require. For this reason Mr. F. B. Richardson has undertaken a detailed survey of this aspect of Middle American culture.

The ultimate objective of Mr. Richardson's study is the comparison of Maya sculpture with similar developments in other parts of the world. Included among the immediate problems are: interrelation with adjoining cultures; identification of sculptural foci; tracing of trait diffusions within and without the Maya area; determination of the origin, the chronological development, and the influence upon the other arts of Maya sculpture. Such an investigation should contribute toward clarifying the history and society of the Maya.

The activities of Mr. Richardson, previous to the field season of 1938, were confined to the gathering of a comprehensive photographic file, and to examination of museum collections and the literature of the subject. During the winter of 1938, he made a rapid reconnaissance to the south and west of the Maya area, gathering data on regions which are archaeologically little known. The season's work was devoted to four districts: western Salvador, the Pacific area of Nicaragua, southwestern Honduras, and the central Pacific coast of Guatemala and the adjacent highlands.

In western Salvador, Mr. Richardson examined El Limón, El Congo, Las Siete Princesas, Casa Blanca, Quinta Elena, and Tazumal, all in the department of Santa Ana. In addition, he visited collections at Chalchuapa and Santa Ana, notably those of Sr. Carlos Álvarez L. and Sr. Luis Fredrico Mathies. En route from Guatemala City to Santa Ana and thence to San Salvador, he stopped at Asunción Mitá, noticed mounds near Plata and Los Esclavos in Guatemala, and at San Andrés in Salvador. In San Salvador he examined collections of the National Museum, of Dr. Oscar E. Salazar, Dr. Alfonso Quiñones, and Mr. Schmidt.

In Nicaragua, Mr. Richardson visited Asososca, Nejapa, Nindiri, Diriamba, Masaya, Masatepe, and Granada. The major part of the work, however, consisted of studying specimens in the collections of the National Museum, the Presidential Palace, Sr. David Sequeira, Dr. Joaquín Gómez, Doña Josefa Vde. de Aguierre, Mr. F. Bunge, Mr. R. E. Frizell, Mr. R. E. Harding, Mr. F. Dreyfus, Mr. Maurice Marragou, Mr. Alfred Bequillard, Mr. Morelock, Sr. José Maria Gutierrez, Sr. Constantino Marengo, Mr. Arthur Vaughan, and the Jesuit College.

En route from Nicaragua to Gracias, southwestern Honduras, Mr. Richardson stopped in Tegucigalpa to study and photograph material in the Honduras National Museum. From Gracias he rode down the valley of the Río Mejocote visiting the sites of Las Flores, Tapusuna, and Sehuatpeque. He then continued on to the valley of the Río Alash, reporting ruins at Cucuyagua and La Unión; the latter being fairly extensive and having been called to his attention by M. Rafael Girard through Dr. Jesús Maria Rodríguez,

Minister of Public Education of Honduras. In this same valley near the towns of El Corpus, Corquin, Sensenti, and San Marcos, sites were reported to, but not investigated by him. With Santa Rosa as a base, two unsuccessful days were spent trying to locate ruins reported by E. G. Squier in 1854, lying roughly about 16 km to the north of Santa Rosa. A subsequent three weeks' stay at Copán enabled Mr. Richardson to benefit from the accumulated results of many years work at that sculpturally richest of all ancient Maya cities. He also spent five days at Quiriguá, whose stelae are of outstanding artistic importance.

On the Pacific coast of Guatemala Mr. Richardson reconnoitered the lowland sites of Monte Alto and La Flora, El Baúl on the slope of the divide, and the highland sites of El Duranzo, El Naranjo, and Villanueva. From the lowland towns of Obero and Masagua, and the highland towns of Tecpán, Itzápa, El Tejar, and Antigua, sculptures not *in situ* were recorded. While in Guatemala City he studied collections at the National Museum.

The season's work necessitated frequent airplane travel allowing cursory geographical observation. In addition, reports gathered indicated unrecorded remains in areas surrounding those visited.

Such an extended itinerary opens up new vistas for future research and contributes toward a more adequate understanding of existing problems. The Pacific coast of Central America has long been recognized as a route of migration. Within this area in Guatemala, Salvador, Honduras, and Nicaragua, there appears to be a distinction between lowland and highland cultures. Certain traits are localized, while others cover a relatively large area. The Chorotegan sculpture of Nicaragua was found to have no close relationship to that of other known areas. Evidence gathered tends to weaken the hypothesis that the Chorotegan culture antedated that of the Maya. Certain sculptures from southern Veracruz, Tabasco, and northern Chiapas are believed to have affiliations with those of the Pacific coast of Guatemala. The Río Lempa in eastern Salvador apparently is close to the fusion point of northern and southern traits. In the department of Chontals, Nicaragua, remains differ from those of the lake region.

In Honduras, the archaeologically fertile and hitherto unexplored Alash River valley produced, among other sites, one with definite Maya traits in conjunction with surface material of non-Maya character.

Geographically and in part culturally the Guatemala highlands have much in common with western Salvador. The headwaters of the Río Alash interlock with those of the Río Lempa and together with the Río Mejocote they join to form the Río Jicatuyo. With the exception of the Comayagua Valley drainage, the Río

Jicatuyo is the largest tributary of the Ulúa River. It would therefore seem that further investigations in the western half of Salvador and in the Alash Valley should contribute toward a more adequate understanding of the Guatemala highlands and of the similarity between ceramic material from Salvador and that of northwestern Honduras. Under the Institution's present program Nicaragua lies too far afield for immediate additional attention. Further work on the Pacific coast of Guatemala should help to determine the geographical limits, chronological sequence, and routes of migration, of certain Middle American cultures. That area, accordingly, would seem most important for intensive study.

2.9.

TATIANA PROSKOURIAKOFF
A Study of Maya Sculpture

YB 45:209–211, 1946

A study of the development of monumental sculpture in the Maya area was originally undertaken with the object of resolving specific disagreements which had arisen as to the period of erection of monuments whose style was deemed by some observers to be incompatible with the dates inscribed on them. Although the results have not been in all cases decisive, the study has revealed the possibility of a clearer definition of the trends of artistic development in Maya sculpture than has yet been attempted. An exposition of these artistic changes is useful not only as an aid in establishing the chronological relation of monuments having no decipherable dates, but also in throwing light upon other aspects of culture and in revealing contacts between various sites and between the area as a whole and other regions of Mesoamerica.

The greater part of this year was spent in developing a convenient system of stylistic appraisal based on the duration of traits and qualities of design as determined by their known occurrences. A method was devised by which traits of a given monument can be compared with a standard illustrated series, which also shows on a time scale the periods of which the traits are characteristic. The time distributions of all the traits observed on the monument are then combined in a single graph which indicates the span of time in which the given combination of traits is most

likely to occur. This method is not intended to supplant the more discriminating judgment of experts who can sense variations that cannot be clearly defined. It has the advantage, however, of being less dependent on subjective reactions or preconceived theories of aesthetic evolution, and of demanding no specialized training on the part of the investigator who wishes to make an independent evaluation of the style of a given monument. It is hoped that it will bring into closer agreement opinions which are now widely divergent. The chief limitation of the method is that it rests entirely on the known epigraphic series, which is very unevenly distributed through the body of sculptural material. Close determination of stylistic affiliation, therefore, is possible only for stelae of the period of Initial Series and sculptures of similar type. When this method is tested against the epigraphic series by assigning to each of the 137 dated monuments an optimum date on the basis of its trait graph, the errors resulting are not greater than two katuns in about eight out of 10 determinations, and not more than three katuns in nine out of 10. Larger errors occur when the monument tested is of the early period, which, though of long duration, is scantily represented; when the carving is badly effaced; and sometimes when the design is atypical or poorly executed. In view of the differences in skill and taste of contemporary artists, the unequal distribution of dated material, and the erosion that mars most of the monuments, greater reliability of chronological estimate is perhaps not to be expected.

The illustrated series of traits, chronologically arranged, reveals that the important directions of change are related to purely aesthetic considerations. The traits which show most consistently progressive changes during the period of the Initial Series are those which may be defined as types of form configuration, and not those which are based on the choice of motif. The development, therefore, is most clearly demonstrated by a comparison of abstract decorative forms of similar structure. There appear to be two major periods, separated by a gap of nearly a century (9.4.10.0.0–9.8.15.0.0), which was singularly unproductive of any major sculptural work. The earlier period is too poorly represented to show trends of development, but as a whole may be characterized by distinctive positions of the human figure and by simple structure and configuration of decorative forms, frequently designed with stress on a vertical axis. For the later period, a definite progress can be traced in the study of forms and in their manipulation to produce aesthetic effects. The first sculptures of this period can be recognized by the survival of specific qualities of early arrangements combined with a more studied, but still simple, delineation. The direction of progress is toward more perfect

geometric regularity and more complex structure, in which previously independent elements are adapted and related to each other in arrangements which, though not directly copied from nature, resemble natural motifs in their logical organization. Curvilinear rather than axial arrangements predominate in this period, and rhythmic variations of curve and straight line are mathematically precise, as in the progressively diminishing undulations of waving forms, which in the earlier periods tend to be irregular. The latest phase of this development shows emphasis on expressive and mobile qualities of forms and their free adaptation to the purposes of the general composition. This results in irregularities due to deliberate distortion and exaggeration and culminates in a type of delineation that may be designated as cursive.

In Yucatán the aesthetic development is less consistent, and since there is little material which can be dated on the basis of inscriptions, the definition of trends and influences is more difficult. It is doubtful whether a chronological sequence of monuments in Yucatán can be constructed on the basis of style alone, since many variations, particularly of the later periods, appear to be fusions of different styles, and are dependent on historical juxtaposition of these styles. There is no reason to suppose that they would form in any sense a progressive series. Rare and scattered examples of sculpture closely analogous to that of the earlier phases of development in the south indicate that the progress may have been at first roughly parallel, but the fact that the latest phases cannot be identified in the north may mean that the influx of foreign influences in this area came before the end of the period covered by the Initial Series. The investigation at present is chiefly concerned with defining the qualities of the many schools of Yucatán sculpture and formulating the problems of their interrelation.

The Mexican school of Chichén Itzá, which was the last highly developed school in Yucatán, presents interesting opportunities for the study of an eclectic style. It is less preoccupied with the aesthetic effects of form than is the art of the southern area, and concerns itself primarily with the presentation of dramatic subjects, a quality which reflects the troubled spirit of the times. Some of the qualities and even the specific forms it employs are remarkably similar to those of the earliest Maya stela. Possibly this can be explained by the survival of these traits outside the Maya area and their reintroduction in late times. Similar qualities may be wed in some sculptures of the Puuc, and in very late monuments of the southern area. At Chichén Itzá, these apparently archaic traits are combined with others which are directly traceable to the style of Tula, Hidalgo, and still others which appear to stem directly from the tenth-cycle period of the Initial Series. The latter traits,

which have not yet been observed in the Puuc, suggest that a fusion of the Tula style with the local variant of the Puuc found at Chichén Itzá may not be sufficient in itself to account for the origin of late Chichén Itzá sculpture, though no explanation for the presence of these traits is yet apparent.

The problem of the interrelation of styles in Yucatán is very intricate, and a survey of monumental sculpture in this area must rest content with mere suggestions, for the amount of material available for study is relatively meager. The history of design as a whole, however, is probably closely paralleled in architectural ornament, in mural painting, and in pottery decoration and other minor arts. Each of these must contain developments peculiar to its own technique and subject; but they are at all times interrelated, and only detailed descriptive presentations and analytical studies of each of them will make possible a comprehensive study of the progress of artistic styles.

2.10.

TATIANA PROSKOURIAKOFF
Maya Sculpture

YB 46:189–190, 1947

The summer and early fall of 1946 were devoted to the preparation of the text which is to be an exposition of the results of researches in Maya sculpture carried on during several seasons. The study deals chiefly with general trends of development in the lowland Maya area as a whole, and these have been briefly summarized in a previous report. Their more detailed statement brings out certain points in regard to the regional distribution of traits which suggest changes in the degree of contact existing between separated sites of the Maya area at different periods of its history.

For the eighth cycle, the material is very meager, and it is not possible to give a clear description of the prevalent styles or their distribution. Strong similarities between Maya sculpture of this period and certain monuments which have been attributed to other cultures on the periphery of the Maya area may be significant. The carving on the Hunacab mouth of the Igo Cave of Loltún, the stela at El Baul which bears a disputed early date, the sculptures of Santa Margarita and San Isidro Piedra Parada in the Department of Quezaltenango, and certain monuments of Kaminaljuyú

exhibit traits characteristic of the earliest phase of the Early Classic period. Since the seventh-cycle and early eighth-cycle dates suggested by the inscriptions on some of these monuments fall outside the known range of Maya sculpture, stylistic comparison cannot be used to confirm them, but it may in some degree overcome the reluctance to assign these sculptures to an early horizon.

At the end of the Early Classic period (in the first quarter of the ninth cycle) the Maya style appears as an integrated and distinctive entity wherever sculptures of this period are found. This period is followed by a hiatus, and when sculptural activity is resumed, at about 9.8.6.0.0 or 9.9.0.0.0, sculpture shows marked regional differences. Copán retains many characteristics stemming apparently from early Petén, and its style is closely related to that of the Leyden Plate. The most advanced characteristics seem to appear first in the western half of the area and to the north, indicating that the impetus of the new development came from either of these two directions. As the Late Classic period progresses there is a rapid fusion of regional styles, and particularly a spread eastward of Usumacinta traits. Complexes of traits noted at the beginning of the period at Piedras Negras become common in Copán after 9.14.0.0.0. Another group of traits links the Usumacinta and specifically Yaxchilán with the Puuc area of Yucatán. Although such stylistic similarities do not in themselves demonstrate direct contact between sites, they furnish valuable leads for the study of the relations existing between diverse regions.

In the winter of 1947 the study was interrupted by a field trip to the highlands of Guatemala in connection with the survey of that area reported by A. L. Smith. It was resumed in May, when we were very glad to acquire the services of Miss Kisa Noguchi in the preparation of illustrations which will be the basis of the method of stylistic appraisal proposed in the study.

2.11.

TATIANA PROSKOURIAKOFF

Middle American Art

YB 49:200–202, 1950

A monograph entitled *A Study of Classic Maya Sculpture* was completed and submitted for publication in December 1949. This study outlines sequent stages in

the development of ornamental forms on Maya stelae, for which scroll or volute forms furnish the clearest illustration. No attempt is made to compare this development with others outside the Maya area, since no sequences of artistic change have yet been worked out for other styles. Tracing the history of art is extremely difficult where there is no accurate method of dating monuments. At seemed worth while, however, at this time to make, as a sequel to the study of Maya sculpture, a cursory review of art forms in Mexico, and more particularly to explore the possibility of using our knowledge of the sequences of pottery wares to follow the development of those sculptural styles whose ornamental forms are reflected in pottery decoration.

A working catalogue of Middle American sculpture outside the Maya area was begun, and an attempt was made at a preliminary definition of styles, with particular reference to abstract ornament. The style formerly called Totonac, more recently Tajín or Tajínoid, is one of the most distinctive and ornate in Mexico. It seems to have had a wide influence and offers the best promise of showing a sequence of development as complete as that of the Maya style, if at least some of its variations can be correlated with pottery types and their stratigraphy. Its copious use of scroll forms, which in the Maya style proved to be sensitive to general artistic trends, makes it especially well suited for such study.

In February 1950 Miss Proskouriakoff made a trip to Mexico to look over pottery collections and to judge if their known sequences might provide clues to chronologically important changes in scroll designs of Tajín type. The stage of archaeological research in Mexico at present appears to be only a little short of making such an approach to art history extremely rewarding. An excellent stratified collection of pottery from Cempoalla, now being studied by Dr. J. García Payón, should yield valuable design sequences. Unfortunately, most of the decorated wares in this collection and others from Veracruz seem to be concentrated in late, probably Post-classic, periods. Gulf Coast designs, however, also occur at Teotihuacán, apparently as an intrusive trait, and there should be an excellent opportunity to correlate them with stratigraphy once the full range of stylistic phases at this site has been worked out. Recent archaeological work has uncovered stratigraphic sequences which are still being studied. Although at present there is considerable difference of opinion concerning the chronology of Teotihuacán remains, we may hope for an early solution to some of the major problems.

While in Mexico, Miss Proskouriakoff made a short trip to Tajín, primarily to obtain photographs of sculptured columns, which have never been adequately published. Tajín sculpture is the only con-

siderable body of material in Mexico which seems to show a connection with the Late Classic period of Maya art and at the same time depicts motifs similar to some found at Chichén Itzá. It is therefore of peculiar interest to students of the Maya. Moreover, Tajín architecture, though different in construction from that of the Maya, is at least as advanced in structural principle and also offers interesting stylistic parallels. It is possible that the sequence of development in Veracruz, when adequately studied, will provide a correlation with the Late Classic Maya period, which we still lack in central Mexico, perhaps because it was there a period of violent cultural change reflected in such events as the apparent destruction of the great city of Teotihuacán.

An attempt to sketch a history of artistic styles in Mexico would probably have little chance of success until archaeological work there is somewhat further advanced. Nevertheless, a definition of the variant forms of one motif, such as the scroll, including their occurrence in defined pottery complexes, may help to clarify some of the problems that need to be solved. A short paper discussing the types of scroll designs in Middle America and suggesting their possible interrelations is now being prepared.

2.12.

TATIANA PROSKOURIAKOFF

Art and Artifacts

YB 57: 451, 1958

To check on some questions that had arisen in the course of preparing a report on the artifacts of Mayapán, Proskouriakoff spent two weeks in Novem-

ber in Mérida. At the same time, 50 new specimens from Chichén Itzá and the Puuc region were catalogued, and the Mérida copy of the catalogue was checked and arranged for consignment to the Instituto Nacional de Antropología e Historia of Mexico.

The following two weeks were devoted to the examination of ceramic collections in the Museo Nacional de Arqueología y Etnología in Guatemala City, with the object of appraising their relevance to a projected study of the evolution of art forms in Middle America. The collections are admirably organized and include a large body of material representing sequent stages of development in highland Guatemala before the Classic Period of Maya art. The sequences have been worked out by Kidder and Shook in their collaborative work on the archaeology of the region, but only a very small part of the material has been published. From the earliest stages represented, the pottery is richly decorated and continuities in motifs and in formal treatment can be traced over considerable spans of time. Although it is not yet clear on what basis more or less independent traditions of ornament can be distinguished, it was observed that a small number of early wares employ designs that are clearly related to basic motifs of Classic Maya art. It is therefore possible that an exposition of continuities in developing traditions will draw definite limits to the degree and nature of artistic influences that can be ascribed to outside sources, and thus may restrict the field of speculation concerning similarities found in widely separated styles such, for example, as have been adduced in support of the hypothesis of trans-Pacific contacts.

In addition to opening possibilities of tracing back the history of Classic motifs, the Preclassic collections, because of the restricted range of the designs and their relative simplicity, present a body of material peculiarly adapted for testing various methods of describing and representing the changes that take place in a complex of decorative styles as the culture passes through successive phases of development.

3.0. ENVIRONMENT

3.1.

F. W. GAIGE

*Research in the Biology of the Maya Area
conducted by the Museum of Zoology of
University of Michigan in cooperation
with Carnegie Institution of Washington*

YB 30:128–131, 1931

So little is known, relatively, about the biology of Central America that a considerable amount of exploration will be necessary from the first to determine the species of animals and plants to be found in each biotic province and the relative abundance of the forms involved. At present the composition of the fauna and flora is inadequately known, while the distributional ranges of species is most vague. Data of this sort are of fundamental nature for more advanced studies in animal and plant biology; such knowledge is essential to any understanding of the history of the evolution and migrations of the faunas and floras in the area. Central America has served as a passageway for many North American groups of plants and animals to enter South America and for some South American groups to reach North America. Biogeographically, then, the region is a most significant and important

district. The present fauna and flora are a complex and little understood mixture of North and South American elements.

Explorations and biological reconnaissances over the region must be made, the data and specimens studied both for the area directly involved and in comparison with contiguous regions. The results can not fail to be of importance and real significance.

Much attention and study must be given to the ecologic relationships of the various animal and plant species, and the major ecologic communities will have to be determined for each of the biotic provinces considered. A knowledge of the influence of types of cover, that is, jungle, temperate forest, savannah, etc., the availability of water, and the many other environmental factors on the occurrences of the various species is highly important. The periodic changes in the abundance of

certain species, a common phenomenon in arctic and temperate regions, should be investigated for the tropics and where found given detailed study. The ecology of Central America is almost unknown. Certain biologists have expressed doubt as to whether ecologic communities comparable to those of the temperate regions can be found in tropical jungles, or at least distinguished as such. This is a fruitful field of investigation which can be profitably undertaken in a coordinated and continuous program with assurance of a solution. Studies of this sort can be adequately carried on where permanent field headquarters allow the concentration and protection of the necessary apparatus throughout the year.

Surprisingly little is known of the life histories and habits of the animals of the region. Even the major forms, such as the birds and mammals, present a great number of problems of the highest interest, while the smaller ones, insects, shells and various other invertebrates present almost endless lines of research. Some of these animals will undoubtedly be found to be reservoirs or carriers of tropical diseases of importance to man and animals, some of importance, harmful or beneficial, to agriculture. Studies in embryology, breeding, and nesting habits, periods of incubation, methods of life in all phases must be made and will supply new data on forms and to regions previously little known and understood. In connection with the studies on parasites and diseases which are carried by certain animals, special attention must be given to determination of the distribution, abundance and ecology of the species serving as secondary hosts or carriers.

Of high scientific importance will be the determination of the occurrence and effectiveness of the adaptations in the various species of animals and plants to the environment under which they live. Numerous presumed adaptations have been described and suggested for many tropical organisms, but little actual information is available as to whether these and other characters of structure and behavior are of real advantage to the species in its environment. Detailed experimental work is most desirable in connection with problems here.

Another problem of high importance for study in the field is that of the ability of various species, including man, to become acclimated to tropical environments. A knowledge of the factors in the environment which are responsible for the difficulty which the white race encounters in attempting to maintain itself in the tropics would be of great use. Some light may well be thrown on this relationship by observation of some of the species of lower animals and by carefully controlled experimentation with them. Here again are problems which could well be attacked with the facilities afforded by the permanent and adequate field headquarters available.

One of the important objectives of the biological work will be to determine the relationships which primitive man had with the native plants and animals and his effect upon them. The interpretation of data collected will fall upon both archaeologist and biologist alike and be of the highest use to each. From the standpoint of the animals, many were used as food, many destroyed food, some may have been of religious and ceremonial significance. What part the occurrence of ticks, mosquitoes, red bugs, sand flies and others may have had on a great aboriginal population needs detailed investigations. The numerous species of animals had become involved in the folklore of the Maya, and in elucidating the beliefs and history of this civilization and knowledge of the occurrence and habits of the species is important.

The identification of the many animals used by the Maya in his sculpture will be greatly aided by an understanding of the present fauna. In 1910, Tozzer and Allen made an admirable preliminary report of phases of this field of investigation. The collection and preparation of skeletons of the birds, reptiles and mammals and their identification will be of great use in the determination of such fragments as are found in excavating the ruins and other sites. Without such check material, serious errors can be most easily made in interpretation of both carved figures and skeletal remains.

From the botanical side, of special interest in connection with the archaeological work will be the search of the plant cover of the ruins for economic plants which may be interpreted as vestiges of ancient cultivation. Only long experience can show what plants really belong in this category. The shrubby *Physalis* of the ruins of Uaxactún and the *Agave* of the great temples of Tikal must be suspected as such. The aguadas, too, are likely to yield plants not truly indigenous but which owe their distribution to human agency. One must not overlook the possibilities among the plants of the jungle, but here the problem is so complex that only wide travel and long experience in the region will enable one to judge what in the present distribution of plants is natural and what has followed human occupation of the land. Here again the ethnobotanical problems merge in into those of phytography and ecology.

One can not undertake exploration of a complicated vegetational area, such as that of the Maya, with any hope of solving quickly the major ecological problems presented by the ecological succession from artificial clearing to old jungle. It will be necessary first to do a great deal of purely descriptive work, covering the area by intensive study at as many points as possible and connecting these points by rapid traverses. In the long run the data accumulated by a thorough going biological survey will throw light upon the

former utilization of the area by man, but it would be futile indeed to attempt to draw any conclusions until a basis had been established by detailed analysis and mapping of the fauna and flora. There is as yet no criterion for a judgment as to what is primeval forest and what is secondary in the sense it has followed human occupation. From the botanical standpoint there must be statistical analyses of the flora, 1. with especial reference to the relative abundance of non-economic plants with heavy seeds, as contrasted with those spread rapidly by wind; 2. of species intolerant of shade as contrasted with those shade-tolerant species; 3. of species that appear to be outside of their natural phyto-geographic boundaries as contrasted with undoubted natives; and 4. of species that might have been protected because of economic or ceremonial importance. Effort must be made to accumulate a Maya vocabulary of plant and animal names, checked against proper determination of the specimens.

With this brief summary of some of the avenues of research which are wide open to biological investigation in the Maya area and which would yield results of sound scientific and economic value, it seems desirable to outline the work of the biologists for the past season at Uaxactún and adjoining regions.

Three men participated, Dr. J. Van Tyne, Dr. A. Murie of the Museum of Zoology, and Professor H. H. Bartlett of Department of Botany. The first was responsible for the bird studies, the second for the mammals, the third collected plants for the University herbarium. In addition to their particular interests, the men took certain other material, Dr. Van Tyne and Dr. Murie collected reptiles and amphibian, fish, crustaceans and insects for the Museum of Zoology, and Professor Bartlett made a collection of spiders for Professor Chickering.

Due to prolonged rains, the party spent the first part of the field season, January 26 to middle March, in a careful investigation of the fauna and flora of the "pine ridges" in British Honduras near the Guatemalan frontier, the trail into Uaxactún being impassable. The study of the plants and animals of this isolated ridge above the jungle was most profitable and will prove still more valuable when similar work is done on the ridges of the Petén. The effects of both isolation and elevation can be splendidly observed on the ridges, and the effects on the fauna and flora seen.

Some work was also carried on along the upper reaches of the Belize River in British Honduras to furnish check material for that accumulated in the Petén.

About the middle of March the trail into the Institution's field headquarters at Uaxactún became passable and the party moved there to establish a base for work in the jungle of the Petén. Professor Bartlett left there about May 1 and the others about May 17.

The season was highly successful in all ways. Some 900 specimens, skins and skeletons, of birds were taken, 720 mammals, skins and skeletons, many specimens of other animals as noted before, and 3,000 collections of plants. Many hundreds of photographs were taken of living specimens, ecologic associations, and items best recorded for final reports by photography.

The expedition was assisted in this season's work by a grant from the Carnegie Institution of Washington and by the use of the Institution's facilities in British Honduras and Guatemala.

As this report is written in June the men are just in from the field, the collections not unpacked and data in field form. Work will start immediately on reports of the season's results, and it is expected that within the year they will be ready for publication. It is felt by the Museum of Zoology that in a cooperative enterprise such as this, results must be made available to cooperators as rapidly as practicable in order to be of full use.

3.2.

ALFRED V. KIDDER

Geographical Research in Guatemala

YB 31:101-107, 1932

Knowledge of the structure of the land and of its possibilities of its use by man, together with information upon how modern populations avail themselves of its resources, in other words, materials of the sort gathered and recorded by geographers, is essential both for an understanding of present-day life and for interpreting the necessarily meager and purely factual record compiled by the documentary historian and the archaeologist. The special methods developed by geographers for the collection of data and for analyzing the complex interrelation between human beings and their physical and biological environments, should unquestionably be called into service in any such survey as that of the Maya area. Geographical research was accordingly begun during the winter of 1932 by Dr. Wallace W. Atwood, President of Clark University, who generously donated both his services and the expenses of his expedition; and by his son, Dr. Rollin S. Atwood of the University of Florida, the University cooperating most effectively by granting Dr. Atwood leave on salary during the period of the investigation, Carnegie Institution providing the funds for the research.

The Atwoods, with Mr. Webster McBryde, a graduate student of Clark University, took the field in February. The highlands of Guatemala were chosen as the scene of the first year's work. Several considerations dictated the choice of this region. Most cogent was the fact that large Indian populations are still living there in more nearly their aboriginal condition than in any other part of the Maya area. Also, the region is most important archaeologically, having been the seat of high cultures in late prehistoric times; as well as the probable home of the early peoples who are believed to have contributed elements to the very foundation of Maya civilization. Furthermore, the country is healthy and readily accessible; several other investigations are going forward there. Last, but by no means least, the government of Guatemala and its president, General Ubico, have been most helpful and cooperative in forwarding the Institution's scientific activities.

Dr. Wallace W. Atwood undertook the definition of the physiographic provinces of the central highlands, with special attention to study of Lake Atitlán and the territory immediately adjoining.

The most striking feature of the highlands is the chain of recent, and in cases active, volcanic cones which borders the region on the southwest. Many of the peaks rise to over 11,000 feet [3,350 m]. They are but lightly etched by running water and for the most part are clothed with forests to within a few hundred feet of the summits. Most of the highlands under consideration are of volcanic origin, and by far the greater bulk of the material composing them is of fragmental nature. One explosive eruption followed another throwing ashes and dust high into the air. This material settled slowly and accumulated over the entire landscape. At several localities volcanic ash at least 3,000 feet [914 m] in thickness can be examined. Most of this material is of pumiceous character. Relatively few flows of heavy lava were noted. The huge cones are chiefly of basaltic flows, but the materials which compose the inhabited portions of the highlands are pyroclastic in origin. Thus the volcanoes that are conspicuous in the topography of today must be conspicuous in any analysis of the origin of land forms in this part of the Republic.

Related in origin to the volcanic peaks are the modern ash basins, large flat areas of pumiceous ash fallen, for the most part, from the air, but also supplemented by intercalated and bordering deposits washed from adjacent slopes during and since the period of maximum volcanism. This ash lies in what appear to be old, relatively deeply eroded basins, filling them to an almost uniform level. Examples of such basins are the region of Guatemala City, that of Chimaltenango, the area between Chichicastenango and Santa Cruz Quiché, the vicinity of Quezaltenango.

Although he was unable to visit them, Dr. Atwood believes, from inspection of the relief map at Guatemala City, that there may well be others in the region of Salamá, and another centering, at Cubulco. The flat or gently undulating surface of the modern ash basins, and their fertile soil, have naturally made them focal points for agricultural communities where large populations can be sustained. The deep-out gorges or barrancas, whose almost vertical walls testify to the recency of their origin and therefore to the youth of the deposits which they dissect, are eating rapidly into the basins, and threaten seriously to reduce the area of farming land.

Bordering each of the modern ash basins studied are older ash deposits which are in a much later physiographic stage of development. Their topography is so rough that it should be described as mountainous. There are evidences of at least two cycles of erosion. During the first cycle a late stage of maturity was reached. Broad, open U-shaped valleys were developed. In the younger cycle, sharp inner canyons or gorges have been cut. These younger canyons or barrancas are now working headward and may be seen just below the upper U-shaped valleys in many of the mountainous regions. The older valleys of the first cycle or erosion are usually well cultivated. Drainage from them at many places falls or tumbles into the younger canyons.

Depth of weathering is greater and soil formation is much better in these provinces than in those that have been designated as modern ash basins: In many places, and notably along the road east of Los Encuentros, the black humus extends 8–10 feet below the surface. These rich soils have been discovered by the native Indian peoples of the highlands and many areas are under cultivation. Even the steep valley slopes have been cleared of their forest growth and planted each year for the production of corn and wheat. After a period of years the native people abandon a field which has been under cultivation and allow the forest growth to return, so that the landscape is distinctly patchy or spotted, cultivated fields alternating with forested areas. In many instances the cultivation is continued to the watersheds or divides, and this has resulted in considerable, destructive erosion. In other places, the timber have been allowed to remain, and in the region of Chichoy hill there is a magnificent forest which appears never to have been completely removed.

The large communities or villages are not located in these older areas of ash deposits. The landscape is dotted with little-thatched roof cabins where the native people make their homes. They live near their fields and have the custom of going each week to market in some neighboring village.

THE ANCIENT CRYSTALLINE AND METAMORPHIC AREA

In the political province known as Totonicapán and northward into the political province of Huehuetenango, Dr. Atwood identified sufficient exposures to demonstrate the presence of a much more ancient geologic foundation than had been found in any of the other areas studied during the past season. In this physiographic region there are deeply weathered granites, various micaceous schists, quartzites, conglomerates, ancient coarse-grained volcanic breccias, and various types of ancient lava flow. Structurally this region has the character of an ancient massif, and yet there is in many places a mantle of relatively recent volcanic ash. This most ancient of the physiographic provinces thus far defined probably extends far to the northward and westward of the route along which it was examined. East and northeast of Guatemala City along the route of the railroad to Puerto Barrios there are exposures in ancient metamorphic rocks, lava flows and breccias that indicate that the topography in that region, preceding the relatively recent and violent volcanic activities in the highlands of Guatemala was much more rough or mountainous than it is today. That area was not seen in sufficient detail to be classified as a physiographic province, but from travel along the railroad the hypothesis was formulated of an ancient mountain area of complex structure and metamorphosed rocks in which the elevations were buried up to their shoulders in volcanic ash.

RECENT ALLUVIUM

In the highlands of Guatemala the extent of recent alluvial deposits is very slight. This is a region of extreme youth from a physiographic standpoint. The streams have not had time in the present cycle of erosion to develop broad flood plains. There are a few small deltas and torrential fans about the shores of Lake Atitlán. They have been discovered and pressed into use by the native people who are always on the search for more good lands where food may be produced. About the shores of Lake Atitlán and southward along the outlet drainage from that lake there is a little alluvium. When physiographic studies are extended into some of the old parts of Guatemala and into the coastal lowland bordering the Pacific Ocean, much larger areas of alluvium will be discovered.

LAKE ATITLÁN

Dr. Atwood devoted special attention to Lake Atitlán which, he believes, is a great crater lake or, most properly speaking, a caldera. If so, its rim-to-rim diameter

of some 12 miles [19.3 km] makes it one of the largest, if not the largest, in the world. Evidence in support of the caldera hypothesis is furnished by the vertical, faulted faces of the spurs between the valleys cut into the walls for the basin; by the outward dip of lava flows and ash beds in the wall; and by the uniformly great depth of water (1,000–1,100 feet; 300–335 m). The volcanoes Toliman and San Pedro, which tower some 6,000 feet [1,820 m] above the lake's surface, are, in Dr. Atwood's opinion, of much more recent origin than the caldera.

Within the great caldera occupied now by Lake Atitlán there are no less than nine Indian villages that are situated but a few feet above the water level. Within the present drainage area and located 1,000 to 2,000 feet [300–600 m] above the waters of the lake there are six others. The native people have chosen the deltas and the torrential fans for their settlements in some instances, but in at least two they have placed their homes in order not to invade the agriculturally precious alluvium, upon lava flows and have built their houses of blocks of basaltic lava. The many ruins observed by Dr. Lothrop testify to a dense aboriginal population.

In closing his preliminary report, of which the preceding paragraphs are a skeleton summary, Dr. Wallace W. Atwood expresses the opinion that Guatemala offers to the physiographer a most fertile and important field.

Dr. Rollin S. Atwood had as objectives for the season: to size up the geographic problems of the highlands as basis for a definite program of future activities; and to undertake a detailed geographic survey of a typical area. The region of Chichicastenango was selected for the intensive study, headquarters being made at the residence of Padre I. H. Rossbach, the representative of the Catholic Church at that city, a gentleman whose hospitality, scholarship and unfailing helpfulness have done so much to facilitate and to render pleasant the work of all scientists who visit his parish.

The town of Chichicastenango with, its adjacent villages has a population of about 30,000, composed almost exclusively of Indians who maintain to a remarkable degree their native individuality. It lies near the center of one of the great ash basins described by Dr. W. W. Atwood. The preliminary examination of the region gave the impression that the population is more or less evenly distributed. A more careful study, however, showed that all the large present-day villages and, in most cases, even the small settlements are located in direct relation to the physiographic features which control the water supply. It also became apparent that changes in the water table have resulted in abandonment of certain areas occupied in ancient times.

The foundation of all life and work in the highlands of Guatemala is agriculture. In the Chichicastenango basin it is predominantly the growing of corn, wheat, and beans. Wheat, due to its ability to withstand lower temperatures, is grown in the "high cantones" on the maturely dissected rim of the basin. Corn holds full sway throughout the inner basin, but because of the universal demand for it and the enticingly rich soils of the higher, colder and rougher regions, is also cultivated on the rim. The planting near Chichicastenango takes place after the second heavy rain, which usually comes about the middle of May. Cultivating is done about every six or eight weeks throughout the rainy season, which lasts until about the middle of October. In November the "*puntas*," sections of stalk above the ears, are cut off to stop further growth; and the ears are allowed to ripen and dry out until the middle of December, when they are harvested. During the entire growing season the Indians carry on more or less elaborate religious ceremonies.

Although practically every Indian in this region is engaged in agriculture, there are scarcely any who work solely on their land the year around. Out of a total population of approximately 30,000, it is estimated that slightly less than 8 percent do part time work on the coffee and sugar fincas near the coast. Almost all adult male Indians who do not work on fincas engage to some extent in commerce. A few of the less energetic are satisfied with carrying their 75 to 90 pound loads of produce each week to the local market of Chichicastenango. For many of these, this means a long journey over narrow and steep mountain trails. The large majority, however, not content with doing merely local business, travel on foot from one market to the next, selling and buying at each one. Thus there is produced a network of trade which covers the entire Republic and extends far beyond its borders. The careful tracing out of this commerce is essential for understanding the social and economic life of the highlands. Its roots, too, doubtless go back to prehistoric trade. Dr. Atwood studied the markets of the several towns visited, noting the major products bought and sold in each. He made a very detailed investigation of the market of Chichicastenango.

In the Chichicastenango region, industrial development, as it is known in the United States, is entirely lacking. Manufacturing is in the early handicraft stage and is practically limited to products used by the Indians themselves. Detailed descriptions of the major industries were recorded and an economic and industrial survey of the town itself was made.

Both Dr. W. W. and Dr. R. S. Atwood report that the lack of a good topographic map of Guatemala greatly handicaps all geographical work. They stress the fact that the detailed observations necessary for solving

the geological and physiographic problems of the Republic cannot well be made, nor can data from different regions be correlated without maps far more accurate and upon larger scales than any which now exist. And the essential investigations in human geography: the studies, for example, of soil utilization, of distribution of crops, of land ownership and of village boundaries, also urgently require adequate maps to serve, at least, as the basis for sketch enlargements to be made in the field. The Guatemalan government is not at present able to undertake the necessary surveys, but its enlightened attitude toward all scientific activities renders it probable that every possible aid would be given. Attempt is therefore being made to bring about this badly needed and, intrinsically, very interesting cartographic project.

Mr. McBryde's work consisted of an intensive study of Sololá, a thriving Indian community perched far above Lake Atitlán on the rim of the great caldera. He prepared a traverse map of the town and immediately surrounding country, showing physical features, such as hills and streams; and cultural features, streets and roads, ditches, aqueducts, buildings of all sorts. For the central part of the town was recorded the distribution of stores, administration buildings, churches, residences, etc. The map also indicates the use of non-urban land, showing crop distribution, pasture and forest. Notes were taken upon crops, growing seasons, agricultural methods, political organization, industries, religious ceremonies in relation to planting, to harvest and to market; upon artisans—the distribution of their shops, and where, generally, they learned their trades. He collected climatological data, census material, and made a complete photographic record.

To the market Mr. McBryde, like Dr. Rollin Atwood, paid special attention. He listed all commodities sold, with names in Spanish, Cakchiquel, Quiché and Tzutujil, and prices. On four weekly market days he gathered, with the help of native assistants, a detailed record of all Indians entering Sololá, of their provenience, and of their loads both coming and going. This record is supplemented by a map of the market place locating every vendor by sex, town of origin and commodity sold.

3.3.

C. L. LUNDELL AND L. C. STUART
Botanical-Herpetological Survey

YB 32:108–111, 1933

The biological survey of the Maya area under the joint auspices of University of Michigan and Carnegie Institution was forwarded by studies made between March 28 and June 12, 1933, in the savanna country near La Libertad, Department of the Petén, Guatemala. The expedition was in charge of Mr. C. L. Lundell, botanist; Dr. L. C. Stuart served as herpetologist. Its purpose was to explore the area and make a preliminary biological and geographical survey. There was collected a total of 2,800 plants and more than 10,000 herbarium specimens, together with ecological data and information regarding vernacular names and native uses of the plants. Plant associations were carefully studied, and every collection was made according to habitat. All of the plant associations were photographed. Frequency indices were made to show the distribution of species in the various ecological areas. Dr. Stuart took soil samples from every area, and Mr. Lundell gathered geological data which will aid in defining the vegetational zones.

In spite of the fires which swept the bush and open areas, it was possible to obtain a representative collection of the dry-season flora of the western portion of the Petén savanna country. As this work represents the first extensive plant study made in the region, the collections are of great scientific interest. Many of the plants are new, and in some groups as many as 10 percent are probably new species. Emphasis was placed on groups least known from the Maya area. Extensive collections were made of mosses, ferns and the epiphytes which include orchids and numerous species of the pineapple family. Some interesting new palms were found and adequate herbarium material was obtained, so that this group can be critically studied. Especial attention was given to trees, and some interesting new species were discovered.

The flora of the savanna country varies considerably from that of the Yucatán peninsula. The area may be considered as the transition zone between the floras of Yucatán and the region to the south. The line where the Yucatán flora terminates may roughly be drawn across the base of the peninsula from Laguna Perdida to Lake Petén and then to the Belize River in British Honduras.

The savanna country may be considered as a definite phytogeographical division. It is apparently the bed of a great ancient lake. The region consists of wide

open areas of red clay of great depth broken by low ranges of forested limestone hills. As the open clay country is very fertile, it was probably cultivated extensively by the ancient Maya. This cultivation and the seasonal fires accompanying it may account for the present open savanna areas. The flora is essentially that of species adjusted to annual fires. Bush is encroaching in every direction, and if there should be a period of wet years without fire, there is every likelihood that the entire region would be reclaimed by forest. Studies were made of the forest species which appear to be reclaiming the open country.

The ethnobotanical work included a study of the food and fruit plants now found in central Petén. Many of these plants were important in the economic life of the ancient Maya. Mr. Lundell's earlier studies on Maya agriculture and the milpa system were continued.

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3.4.

R. A. EMERSON, AND J. H. KEMPTON
Agronomic Investigations in Yucatán

YB 34:138–142, 1935

Studies of modern Maya diet made by Dr. Steggerda, Dr. Redfield and Dr. Rollin Atwood indicate that maize forms some 85 percent of all food consumed. And, as would naturally be expected, the whole existence of the Maya is conditioned by the cultivation of this plant. There is also every reason to suppose that it played a role of equal, or even greater, significance in pre-Columbian times. Understanding of the present and interpretation of the events of the past therefore depends very largely upon knowledge of maize-growing methods and of the potentialities of the area for maize production.

The Maya of Yucatán cultivate maize by the so-called milpa system, under which an area of forest sufficient for the farmer's needs is felled at the beginning of the dry season. Toward the end of the dry season the desiccated slash is burned, and when the rains come the seed is planted. If all goes well, the first year's crop will be a good one; in the second year the return

will be less. Further consecutive sowing of the same field is seldom attempted; it is allowed to revert to bush and a new patch is cleared. This type of farming obviously requires a great deal of land, because the old milpa is not used again until forest conditions have become re-established. As this is a slow process, a large percentage of all available ground must at any given time be lying fallow.

One of the most vitally important of problems of Maya archaeology is whether the milpa system was followed by the prehistoric people of northern Yucatán and of the Petén, or whether some form of intensive agriculture was practiced. Upon its solution depends judgment as to the size and distribution of population, as to ancient economic and social systems, and as to the causes for the decline of the Old Empire. But until we know much more about the working of the present-day milpa system, we can not hope to do more than guess regarding its antiquity, nor more than speculate as what its effect would have been upon the former life of the Maya. For this reason the agronomic survey was inaugurated. The field work of 1935 was done by Professor R. A. Emerson of Cornell University, and J. H. Kempton of the U. S. Department of Agriculture. Most valuable assistance was rendered, by Dr. Morris Steggerda, who made available the data and experience obtained in his thorough studies of the villagers of Pisté. The method followed in the investigation was that of interrogating the Indians in their milpas where their answers could be weighted by the observer's judgment. The area visited was limited largely to the State of Yucatán, though a brief trip was made to the region centering on the city of Campeche. The milpas studied were cultivated by the villagers of Pisté, Xochenpich, Oxkutzcab, Eklum, Aquil, Teabo, Tecax, Peto, Sabaquil, Campeche and Uayamon.

With the exception of the fertile belt extending from Ticul to Peto, on both sides of the hills, estimated yields are remarkably uniform, falling, within the range of 1–1.5 cargas per mecate (33 bushels per acre [4046.9 square m]), for the first crop following the burning of the bush, and approximately one-half to three-quarters of the first year yields in the second season, after which time the land is abandoned to bush. In the poorer regions east of Chichén Itzá these estimates are halved for both years, and in the fertile country they are doubled or even tripled.

Although these are merely estimates, they are far from unsupported guesses. Dr. Steggerda's studies show a remarkably uniform consumption of 1.6 pounds of corn per adult per day. For the standard family of two adults and three minor children the annual consumption of corn, therefore, is about 45 bushels. To produce this amount of corn with a yield of one carga

per mecate requires between 3 and 4 acres [0.012–0.016 sq km], which is the amount of land most of the Indians claimed to farm. Estimates of acreage can be made more accurately than, estimates of yields, and the actual size of the milpas could not have differed greatly from the given size without detection. Further corroboration of the estimated yields is found in the estimated acreage in the fertile hill region where the number of mecates in a family milpa is about half that in the vicinity of Chichén Itzá.

There is no question about the decline in yield of the crop grown the second year following the burning of the bush. Some ascribe the drop in production to loss of soil fertility, others think the difference is due to the small quantity of ashes from second year burns and still others blame the weeds. From field observations the latter explanation seems the most important, though undoubtedly all three are operative. With one or two minor exceptions there was no difficulty in determining from mere inspection of the weeds and returning bush whether a given milpa was in its first or second year.

In the second-year milpas, the general practice is to cut weeds twice or even three times, and when it is understood that it takes more time to weed a mecate of land than it does to fell the bush one wonders why a second crop is ever attempted. Possibly in the days of stone axes, cutting new bush was more of a task than now and the practice of growing two crops has persisted from ancient times.

In the fertile lands milpas are weeded every month during the growing season. The necessity for this frequent weeding limits the grower to an acreage not more than one-half to one-third that planted elsewhere in Yucatán, but the Indians believe that the high yields compensate them for the smaller acreage. Actually, in corn, production per man the fertile region enjoys no advantage over the Chichén Itzá area. If anything, the man hours required per unit of corn are slightly greater in the fertile regions.

Following the second crop, milpas are abandoned to return to bush. Estimates as to how many years are required before the second growth of bush is large enough to burn are very unsatisfactory and those estimates can not readily be checked. The estimates range from 8 to 18 years with most replies centering around 8 to 10 years. The actual time required for the bush to regain burning size should be determined, as this period constitutes the greatest unknown factor in calculating the population a given region is capable of supporting.

At none of the places visited either in Yucatán or Campeche does grass seem to be a factor in corn production nor in the re-establishment of the bush. A few acres of grass were found, but these had been planted for pasturage.

No milpas were seen that indicated savannas would replace the bush after corn cultivation had been abandoned. Neither does it seem likely that soil erosion is of any importance in the agriculture of Yucatán or Campeche.

No evidence of destructive bush fires that might result in deforestation and subsequent denudation of large areas was found. So far as the observations of this survey go, the bush seems to re-enter abandoned land rapidly whether such land be small clearings surrounded by mature and seeding bush or whether it be large sisal plantations kept cleared for several years. The recovery of the bush, therefore, would seem to be assured under the agricultural practices followed at the present time. Whether or not this conclusion would hold under more extensive occupation of the land is a matter for investigation.

If the bush can be cut every 8 or 10 years following two years in corn and the land produce grain at the rates indicated, there seems to be no reason why this type of agriculture can not continue indefinitely. Even though the time required for the bush to attain cutting size is increased to 20 years, the land seems capable of supporting a population (at its present level of subsistence) of approximately 50 persons per square mile [2.6 sq km] employed in agriculture and an additional 10 persons who may reside in urban communities and engage in non-agricultural activities.

The State of Yucatán produces the maize support for the city population of Mérida and Progreso and for much of the labor used on the henequen plantations. It is evident, therefore, that in normal years the present agricultural population, using the methods of culture presumably practiced by their temple-building forebearers and improved merely by the substitution of simple metal tools for those of stone, is capable of supporting a large non-agricultural society. Yet the most striking thing about the Yucatán bush is the sparseness of the population and the low percentage of potentially productive land actually utilized for growing food. Given a strong administrative control, the present agricultural population could be forced to double its grain output, thus making possible the food requirements of a non-productive population 4 or 5 times that of the present urban one.

Present practice gives a marketable surplus over the requirements of the producer of approximately 20 percent of the crop. If the production per man were doubled by increasing the area cultivated and by intensive destruction of weeds, at least 4 times as much corn would be available for market as is now the case. If the grain output is doubled by doubling the agricultural population, then the non-producing population could only be doubled also since the ratio of grain consumed to that marketed would remain the same.

Probably in ancient times the production per man was greater and the agricultural population was larger than at present. Thus it seems safe to conclude that in the past the agricultural population was large enough to insure the food requirements of a non-agricultural group (priest, warrior, artisan or noble), larger than the present urban population of the state.

No evidence has been discovered of any form of intensive agriculture, other than the modern fruit tree cultures in the hill region. Indeed, the topography and rock outcrop is such that intensive agriculture in any form now known out of the question.

In a general way the agriculture of the present differs from that of the past in two particulars. The introduction of domestic farm animals has forced the Indian to fence his crop as a protection against the depredation of these beasts. Although the fences are not examples of geometrical precision, they do represent much labor and the withdrawal of an appreciable amount of small bush from the burn. The investment of labor in these fences may well be a contributing factor in the use of milpas for a second year, despite the fact that it would require less total hours of labor to burn new bush each year. On the other hand the animals encourage farming at greater distances from the villages in two ways. First they provide easy transportation of the harvest to the village home and second, since most of the animals are kept around the village, the remote milpas often need not be fenced. In the agricultural economy the introduction of the beasts of burden probably represents a loss of efficiency since they could not be used (because of the nature of the terrain) in the actual production of crops, but merely in transportation. It is doubtful whether in view of their food requirements they transport enough more than a man carries to represent a real saving of food. They must, therefore, be considered merely as a social improvement and an agricultural retrogression. Without them the farmer would bear more burdens, but would save labor in corn production.

The second difference of present-day agriculture over that of the past is the disappearance of cotton, and to some extent tobacco as cultivated crops. Cotton culture has been completely abandoned and tobacco is a rarity. Probably the latter crop was never as extensively grown as cotton. Cotton, on the other hand, is a necessary now purchased with maize.

Just how much land and time was devoted to cotton by the ancient Maya can not now be determined. If this product did not enter extensively into interregional trade but was used solely to clothe the resident population, probably less than 5 percent of the land in crops was utilized in growing cotton. On the other hand, if owing to its ready portability and high value as a finished product it served, as an article of barter, much

more land could have been given over to its cultivation. Land and time so used would have to be subtracted from that allotted to the production of food for the non-agricultural population.

So far as this preliminary survey can be considered trustworthy, the following conclusions are suggested: 1. The milpa system is the only one practicable in Yucatán even with modern tools and farm animals and there is no evidence that the milpa system as followed with two years in maize to 8 or 10 in bush could not continue indefinitely; 2. So far as the limits imposed by the bush alone are concerned this region can support 50 persons per square mile [2.6 sq km], together with 10 non-agricultural inhabitants concentrated in cities; 3. Maize culture has entirely supplanted that of cotton, though beans and squash are usually interplanted with maize and a small amount of tobacco is, planted in certain regions; 4. The crops no longer grown are purchased with maize, so that the cultivated area required by each family has not been greatly altered; and, 5. These conclusions are subject to large errors, since there is no definite record of the rapidity with which the bush regains burning size, nor have we any certain information on the yields obtained when the bush is cut the second time. It is possible, therefore, that the number of years which must elapse following a corn crop before the bush can be burned again is much greater than 10 or 12. In evaluating these conclusions it should be kept in mind that they represent the digest of information collected on a trip of only one month's duration. They are, therefore, something in the nature of opinions that must await careful investigation for their ultimate verification or disproof.

3.5.

J. H. KEMPTON AND
WILSON POPENOE
Maize Investigations

YB 35:138-140, 1936

Civilizations, like armies, progress on their stomachs. Without an assured food supply neither can advance. Agricultural practices that release the greatest numbers from the production of food provide the best conditions for the development of the other arts and of the sciences by which the cultures called civilizations are

evaluated. Even under our highly organized and efficient social order, about one-quarter of the labor of the average wage earner is required to obtain the family's food. Viewed from this standpoint the agricultural American Indians are not our inferiors.

The development of the corn plant and the mastery of its culture made the American Indian civilizations possible, if indeed the expanding agricultural art did not make the civilizations. At the time of the Discovery the corn civilizations were highly developed and the archaeological evidence shows that maize was a cultivated cereal at least as early as the beginning of the Christian era.

The origin of this cereal, which is the most valuable crop produced in the United States, is an unsolved mystery. It is known that maize is a purely American plant unknown in the Old World until the voyage of Columbus. The creation of this cereal is an achievement of the American Indian, and an understanding of its origin would contribute to solution of the problem of the antiquity of man and of agriculture in America.

The closest relative of Indian corn is a broad-leaved grass, *Euchlœna*, usually known by its Aztec name, *teosinte*. There are two species of this grass, one an annual, the other a perennial. Both are found in Mexico, commonly around the margins of cornfields. Until recently *Euchlœna* was unknown in the wild state outside of Mexico, but in 1932 Dorothy and Wilson Popenoe found it in southern Guatemala.

Although the relationship of teosinte to maize is so close that the annual species produces fully fertile hybrids in crosses with maize, botanists are not in agreement as to what position teosinte occupies on the maize family tree. All are agreed, however, that it is associated with the origin of maize.

At the present time the distribution of teosinte demarks the presumptive region in which maize originated, since it is self-evident that all domesticated organisms, whether plants or animals, have been derived from wild ancestors. Accordingly, as part of the project concerning the origin of maize and the maize culture of the Indians, an expedition was put into the field in Guatemala in October 1935, with the object of determining the area occupied by teosinte in southern Guatemala and the connection, if any, between the teosinte of Guatemala and that of Mexico.

The personnel of this expedition consisted of Dr. Wilson Popenoe, of the United Fruit Company, and Mr. J. H. Kempton, of the U. S. Department of Agriculture.

The expedition first visited Jutiapa in the Department of the same name, where the Popenoes had discovered teosinte in 1932, and from there proceeded to El Progreso and to Lake Retana, the latter in the ad-

joining Department of Jalapa, finding teosinte in abundance in both places. The La Paz drainage basin including Lake Retana and Lake Atescatempa in Guatemala and Lake Guija in El Salvador, were visited, but teosinte was not found far south of Lake Retana and appeared not to grow below 3,000 feet [910 m]. Inquiry disclosed that it grows at Moyuta and at Papaturro, both in the Department of Jutiapa, so that in southern Guatemala this plant occurs sporadically within a triangular area having Lake Retana, Moyuta and Papaturro as the points. Within that region this grass is well known under its Aztec name, teosinte, which may have been assigned during the Aztec occupation of this territory in pre-colonial times.

From El Salvador the expedition retraced its steps to the Department of Huehuetenango in northwestern Guatemala to visit Camoja, from which locality Weatherwax had reported teosinte. This report proved to be unfounded, but as the expedition moved on toward Mexico a vast acreage of teosinte was discovered centering on the town of San Antonio Huista in the valley of the Grijalva River. There teosinte, known locally by the Jacaltecan name *silica* or *solicit*, is the dominant plant in the vegetation, completely occupying the steep slopes and tablelands between 4,000 and 5,000 feet.

Although the plants were just flowering on October 31 it was apparent that in the characteristics of the rachis segments this teosinte closely resembles the Mexican form. Cytological material was collected and a subsequent study of the chromosome morphology by Dr. A. E. Longley places this form in an intermediate position between the teosinte of southern Guatemala and that of Mexico.

The expedition next moved on to Jacaltenango and thence to Nentón. A few scattered plants of teosinte were found at both places, but Nentón proved to be the northernmost locality for teosinte in Guatemala. From Nentón a visit was made to the Finca Chanquejelve where Oliver La Farge had observed what he believed might be a primitive corn or a maize ancestor. What he had taken for a small ear of corn proved to be the spadix of an aroid (*Spathiphyllum friedrichsthali* Schott).

Shortly after leaving the Finca Chanquejelve the expedition entered Mexico where the region in the state of Chiapas between Gracias á Dios and Tuxtla Gutierrez was traversed via Comitán, San Cristóbal and Acalá, without discovering teosinte anywhere along the route. Since the Huista River is a tributary of the Grijalva it was expected that teosinte might grow along its course, but though the conditions, except altitude, seemed favorable for its occurrence it was not found.

As a result of the expedition it seems certain that teosinte at the present time is more abundant and less

restricted to cultivated areas in Guatemala than in Mexico. In so far, therefore, as this plant may be considered as directly involved in the creation of maize, the most probable region for the origin of maize would appear to be the highlands of western Guatemala.

3.6.

G. W. COLLINS, J. H. KEMPTON,
R. STADELMAN¹

Maize Investigations

YB 36:149–150, 1937

As part of the research on the origin of maize and the distribution of maize relatives, Messrs. Collins and Kempton made an expedition in October 1936, through the region of Mexico where the states of Chihuahua, Durango, and Sinaloa meet. This expedition was undertaken to establish definitely the identity of a maize-like grass discovered near the town of Nobogame, Chihuahua, in 1895 by Lumholtz.²

The expedition proceeded from Santa Barbara, Chihuahua, by pack train into Nobogame via Cerro Prieto and Guadalupe y Calvo. The return trip was made through Guanacevi and Tepehuanes to Durango City. Much of the route was at elevations in excess of 9,000 feet [2,740 m] and largely through heavily forested country sparsely inhabited by primitive Tarahumara Indians.

At Cerro Prieto and at Nobogame, both approximately 7,000 feet [2,130 m] in elevation, the expedition found the maize-like grass described by Lumholtz. It proved to be teosinte (*Euchloenana mexicana*), the nearest known relative of maize. There was no evidence that the plant was utilized in the manner reported by Lumholtz. The Indians make no attempt to eradicate it from cornfields. Neither do they use the plants for forage, despite the fact that mine pack trains cause such a demand for forage that most of the common cornfield weeds are husbanded for this purpose.

At Cerro Prieto the area occupied by teosinte did not exceed half an acre [2,023 square m] and the plants found there may be the descendants of the seed transported from Nobogame as reported by Lumholtz.

The distribution of teosinte around Nobogame is more extensive than at Cerro Prieto, the plants occurring along stream banks over several square miles. Although there is unmistakable evidence that at one

time the region around Nobogame was widely cultivated, this is no longer true. The Indian population has been reduced to a few families and the area occupied by maize is small.

At both Cerro Prieto and Nobogame maize fields were common and the flowering season of maize and teosinte coincided. As would be expected, natural hybrids between maize and teosinte were found in both localities. The persistence of teosinte at Cerro Prieto, where it is overwhelmingly surrounded by maize, affords a demonstration of how this plant can survive for generations and retain its identity. The question is raised as to how much of the distribution of this plant is the result of human effort.

The discovery of teosinte at Nobogame extends the range of this maize relative 200 miles [321.9 km] farther north than it had been known before and to that extent enlarges the possible area within which maize may have originated.

Morphologically the teosinte at Nobogame and Cerro Prieto is indistinguishable from that found not far from Durango City, where additional collections were made by the expedition. It is considered not improbable that teosinte may have been transported by man to Nobogame from the Durango region, possibly with maize.

An understanding of how ancient populations met their subsistence requirements is essential for the reconstruction and evaluation of their civilizations. Accordingly, with the object of learning as much as possible about the agriculture of the Indians now resident in the region of the Maya culture Mr. Stadelman has been stationed in the highlands of Guatemala since early January.

In choosing the site for this investigation consideration was given to the racial composition of the population, to its relative freedom from European influence, its independence of an industrial outlet, and, since aboriginal agriculture in the Americas was primarily corn-growing, to the importance of this crop in their present economy. These major considerations and a host of minor ones led to the selection of Todos Santos, an Indian village in the Department of Huehuetenango in northwestern Guatemala, as the base from which observations would be made.

The present season's corn crop, planted in January, will not be harvested until October and therefore only tentative conclusions from preliminary records are possible.

The study indicates that in the region of Todos Santos an Indian family of two adults and three children can obtain their subsistence requirements from the product of 4 acres [16,187 square m] with a labor expenditure of approximately 150 man-days. Evidence has been obtained that an effort is made to combat

erosion on the steep mountain-side farms, and the practice of fertilizing the soil with animal manure has been adopted by some Indians.

The initiation of this investigation at this time proved fortunate, as the adoption by the Guatemalan Government of the work-book system, whereby every able-bodied adult male must prove employment for 150 days each year, or work out the difference on the public highways, will tend to standardize the time spent on the farms at this figure.

NOTES

1. Participation in the Division's program of Messrs. Collins and Kempton, members of the staff of the Bureau of Plant Industry of the U. S. Department of Agriculture, has been made possible through the good offices of Secretary Wallace and of Mr. F. D. Richey, Chief of the Bureau of Plant Industry.

2. "Around Nobogame grows a plant called maizillo or maizmillo. It is more slender than the ordinary corn plant and the ears are very small. It grows among the corn and has to be weeded out, as it injures the good plants. However, several Mexicans assured me that when cultivated, the ears develop. After three years they grow considerably larger and may be used as food. A man in Cerro Prieto raises this kind only; others mix it with the ordinary corn. I was told that people from the hot country came to gather it, each taking away about one almud to mix with their seed corn. The combination is said to give splendid results in fertile soil. Can this possibly be the original wild plant from which ordinary Indian corn has been cultivated?" (Lumholtz 1902:429).

3.7.

C. L. LUNDELL

The 1938 Botanical Expedition to Yucatán and Quintana Roo

YB 37:143–147, 1938

In continuation of the biological survey of the Maya area, under the joint auspices of the University of Michigan and the Carnegie Institution of Washington, botanical investigations were undertaken in Yucatán and Quintana Roo, Mexico, from May 27 through August 3, 1938, by the writer, and Amelia A. Lundell, who served as field assistant. The expedition, supported by the Horace H. Rackham School of Graduate Studies, and the Faculty Research Fund, University of

Michigan, carried out intensive explorations in the coastal area 40 miles [64.4 km] east and west of Progreso, around Chichén Itzá for a radius of 20 miles [32.2 km], and in the vicinity of Cobá, Quintana Roo. Important but smaller collections were made along the road south to Uxmal and around Mérida. Facilities of the Carnegie Institution of Washington at Chichén Itzá, generously placed at the disposal of the expedition, contributed substantially to the success of the field work.

The State of Yucatán has been worked more extensively by resident collectors and visiting botanists than any other part of the Yucatán peninsula, yet few data have been gathered concerning such important subjects as the general aspects of the vegetation, zonation, abundance and distribution of species, successional stages, relic forest areas and their importance in the interpretation of the natural climatic climax forest. Biotic influences, which include the effect of milpa agriculture and fire destruction, have been largely ignored. Hence these subjects were given primary consideration. In the course of the studies, approximately 8,000 herbarium specimens were collected, included among which are adequate series of such difficult groups as cacti and palms. Many of the described endemics some known from single collections without locality data, were rediscovered and gathered repeatedly with both flowers and fruits. A few species, some characteristic of the Yucatán and Quintana Roo forests, appear to be new to science. Clear taxonomic interpretation of a number of species and some genera, heretofore inadequately known, will now be possible from the ample herbarium material obtained. To substantiate and amplify ethnobotanical data, this subject received special attention in the Chichén Itzá area with the able assistance of Mr. Francisco Campos, who served as our interrogator of Maya herb doctors and farmers. The extensive collections from Cobá, the first large series from the interior of Quintana Roo, reveal an astonishingly close floristic and physiognomic relationship between the East Coast forest and the older forest of Yucatán. Collections of reptiles and amphibians from Chichén Itzá and Cobá, and fish from Lake Cobá and Lake Macanxoc, Quintana Roo, were made incidentally to the botanical work.

It is premature to describe the vegetation of Yucatán and Quintana Roo before the collections have been identified and the extensive field notes critically analyzed, hence the following preliminary discussions should be considered tentative and subject to revision.

The dry coastal area, east and west of Progreso, consists of three distinct physiographic zones: 1. the sand dunes lying between the sea and the cienaga; 2. the shallow cienaga and salt flats; and 3. the limestone flats extending for about 10 miles [16.1 km] south from the edge of the cienaga into the interior.

The sand dunes, in areas remote from the coastal settlements, support low thickets ranging up to 15 feet [4.6 m] in height. Around Progreso and other villages, cutting for wood, charcoal, and other needs keeps the vegetation down so that it scarcely exceeds 5 feet [1.5 m] even in the most favorable spots. The abundant treelets and shrubs of the dunes include species in the following genera: *Metopium*, *Coccoloba*, *Thrinax*, *Coccothrinax*, *Hippocratea*, *Maytenus*, *Bumelia*, *Capparis*, *Lycium*, *Agave*, *Jacquinia*, *Rhacoma*, *Thevetia*, *Caesalpinia*, *Cordia*, *Tournefortia*, and *Gymnopodium*. Cacti are locally abundant, but nowhere as common as in the area south of the cienaga. Of particular interest is the occurrence on the sand dunes, as shrubs or gnarled treelets, of such species as *Achras zapota*, *Krugiodendron ferreum*, *Thevetia peruviana*, and *Metopium brownei*, all of which are large trees in the wet forest to the south.

The cienaga, a shallow salt-water swamp behind the dunes, has wide areas of open water with islands of mangrove. The bordering flats usually are covered with mangrove, or in open areas with *Salicornia*, *Batis*, and other halophytic herbs.

From the southern edge of the cienaga low limestone flats, interspersed with rainy-season ponds, have a distinctive vegetation which extends inland for approximately 10 miles [16.1 km] in the Progreso region. Because of the high percentage of endemics and the predominance of cacti, this xerophytic belt, where rainfall does not exceed 20 inches [50.1 cm], is one of the most interesting phytogeographical areas in the peninsula. The vegetation reaches a height of 45 feet [13.7 m] in undisturbed sections, but averages much less in the proximity of villages owing to culling and clearing. The large cacti, *Nopalea gaumeri*, *N. inaperta*, *Pachycereus gaumeri*, *Lemaireocereus griseus*, and *Cephalocereus gaumeri*, are abundant, forming almost impenetrable thickets in undisturbed sections. Low cacti, *Opuntia dillenii*, *Acanthocereus pentagonus*, and several other species, not identified, are locally conspicuous. The interesting low species of *Neomammillaria* abound here only. Species in the following genera are the principal associates of the cacti: *Acacia*, *Mimosa*, *Pedilanthus*, *Agave*, *Haematoxylum*, *Euphorbia*, *Prosopis*, *Zanthoxylum*, *Pithecolobium*, and *Croton*.

Inland from the cactus thicket zone, the limestone plain rises slightly, extending unbroken southward to the low sierras bordering Yucatán on the south and southwest. With increase of rainfall from the coast inland, the vegetation undergoes a marked transition, although this transition is masked by invasion of species from the dry-cactus zone, a result of biotic disturbances. The greater part of the State of Yucatán, not planted in henequen or cleared for milpas, is covered with low thickets from 10 to 25 feet [3.1–7.6 m] in height. These are all second growth, the result of repeated

clearing and fire destruction. Two species of legumes, *Acacia gaumeri* and *Mimosa hemiendyta*, both native to the peninsula, are the principal dominants, with a host of shrubs and vines as associates. This widespread assemblage, often considered to be the typical vegetation of Yucatán, is nothing more than an early successional stage.

In a country which has supported as large an Indian population as Yucatán, thinly settled outlying districts are likely to contain the only sections of forest little disturbed, by man. In the search for data with which to reconstruct the appearance of the old climax vegetation of Yucatán, borderline country, far from villages and outside the limits usually reached by milperos, was combed. Here stands of advanced forest, with relics of *Achras zapota* and other slow-growing hardwoods, were discovered.

The floristic composition and physiognomy of the advanced and relic forest stand out in marked contrast against the widespread young legume thickets. The height usually exceeds 50 feet [15.2 m]. Species rare in the young thickets are here abundant, whereas *Acacia gaumeri*, *Mimosa hemiendyta*, and other associates of the low rank growth are comparatively rare. Principal trees of the advanced and relic hardwood forest include the following: *Lysiloma bahamense*, *Vitex gaumeri*, *Metopium brownei*, *Piscidia* spp., *Swartzia* spp., *Lonchocarpus* spp., *Achras zapota*, *Coccoloba* spp., *Bursera simaruba*, *Caesalpinia* spp., *Thouinia paucidentata*, *Torrubia* spp., *Hippocratea* spp., *Albizia* spp., *Guettarda combsii*, *Byrsonima bucidaefolia*, and *Malmea* spp. Of the tall shrubs, the following are abundant: *Gymnopodium* spp., *Neomillspaughia* spp., *Diospyros* spp., *Eugenia* spp., *Acalypha* spp., *Croton* spp., *Hampea trilobata*, *Randia* spp., *Erythroxylon* spp., and *Bauhinia* spp.

The most extensive remnants of the old forest were found in the vicinity of Yokdzonoot, between the villages of Pisté and Libre Unión, and along the road from Chichén Itzá to Kaua. Scattered stands of old second growth along the road from Mérida to Uxmal have much the same assemblage of species. The relic forest east of Cobá, Quintana Roo likewise resembles the advanced forest near Yokdzonoot and along the Kaua road; in fact, the stands at Cobá differ little floristically, and the dominants are the same. We may conclude that similar forest probably extended at one time as a wide belt across the northern tip of the peninsula, possibly as far south as Peto and Champotón. Its southern extension along the East Coast is not known.

Throughout this zone, endemics outnumber in individuals all other species, therefore comprise the bulk of the forest mass. In 1936 a similar condition was observed in advanced forest on the limestone plateau of southern British Honduras.

The older forest of Yucatán, deciduous with few exceptions during the dry season, may be designated as advanced deciduous forest to distinguish it from the advanced, predominantly evergreen quasi-rain forest of southern Campeche, southern Quintana Roo, northern Petén, and northern British Honduras.

This advanced forest of Yucatán and northern Quintana Roo differs considerably in dominance and to a certain degree floristically from the southern quasi-rain forest. Of significance is the absence in the north of such typical southern species as the escoba palm, *Cryosophila argentea*. The distribution of species in such genera as *Gymnopodium*, *Neomillspaughia*, *Diospyros*, *Cryosophila*, *Acacia*, *Mimosa*, *Orbignya*, and *Swietenia* must be studied to obtain satisfactory data by which these two phytogeographical areas may be more accurately delimited.

In spite of the fact that the relic forest east of Cobá differs considerably from advanced forest in the vicinity of Old Empire ruins in southern Campeche and northern Petén, the forest covering the ruins of Cobá compares very favorably with forest covering such sites as Calakmul, Topoxté, Naachtún, and Yaxhá. On the Cobá ruins, *Brosimum alicastrum* dominates, with the following associates much in evidence: *Achras zapota*, *Cedrela mexicana*, *Talisia olivaeformis*, *Sabal* spp., *Protium copal*, *Thevetia peruviana*, and *Chlorophora tinctoria*. All these are important in the economy of the Maya. Of interest is the prominence of *Chlorophora tinctoria* and *Thevetia peruviana*, both of which occur as trees up to 10–16 inches [25.4–40.6 cm] respectively in diameter. Neither one has been observed on Old Empire sites heretofore. An orange grove of undetermined age was discovered in a plaza growing in the shade of high ramon forest. Could this grove be a relic from Conquest times?

The role of fire in the destruction of tropical forest is nowhere more evident than in areas of Quintana Roo visited. Beyond the village of Dzitnup, along the trail to Cobá, we rode for four hours through utterly desolated country. For at least six years, possibly longer, annual dry-season fires have swept through. In some places a few scattered large relic trees, *Vitex gaumeri*, *Metopium brownei*, and *Piscidia* spp., all noted for their fire resistance, still stand, which indicates that high forest covered the area previously, a fact attested to by Indians in Dzitnup. In some sections, not a living plant remained from the former forest, only fallen trees and standing skeletons. Not only has the forest been killed, but the destruction of the humus and roots by fire has resulted in complete erosion of the thin mantle of soil into underground crevices to leave barren stretches of white pitted limestone.

Approaching the ruins of Cobá, a section has escaped the fires for possibly two years. Here the rank

second growth consists mainly of *cecropias*, *acalyphas*, and morning glory vines. East of Cobá, fire destruction has not been as severe; the forest there, as already pointed out, resembles remnants of old Yucatán forest. The area of fire-culled forest is said by chicleros to extend unbroken almost to Tancah on the East Coast.

Fire destruction has been repeatedly emphasized as one of the primary controlling factors to be considered in the interpretation of the vegetation of the Yucatán peninsula (Lundell 1937:92–94). Failure to recognize its extent and importance is due probably to confusion of rank second growth with old hardwood forest. The desolate area between the village of Dzitnup and Cobá is a convincing demonstration of the widespread destructiveness of tropical forest fires.

In the reconnaissance of the forest covering the Cobá ruins, a new sculptured monument was encountered, which may be designated as Stela 25. It is located approximately 1,200 feet [365.8 m] east of Structure XXV (Thompson, Pollock, and Charlott 1932: Plate 14) in a shrine at the edge of a low mound. The base, which leans badly, stands to a height of 6 feet 7 inches [2 m]; the upper part, broken into two large pieces and several fragments, measures 7 feet 10 inches [2.4 m] in length, giving the entire stela a height of 14 feet 5 inches [4.4 m]. Its width in the center is 4 feet 4.5 inches [1.3 m], which is narrowed to 4 feet [1.2 m] just below the rounded top. From the middle, where it measures 13.5 inches [34.3 cm] in thickness, the monument tapers to the edges and top to a thickness of only 8.5 inches [21.6 cm]. Only the face is sculptured. The glyph-blocks, surrounding a large figure suggestive of those on Macanxoc stelae, are badly eroded. An unsuccessful attempt was made to lift the leaning base, for the sculpture on its protected face does not appear, as badly weatherworn. It is possible that a date could be obtained from this section.

Probably less than half of the ruins of Cobá have been mapped. Group, B extends to the north and northeast almost to Group D (Nohoch Mul), and eastward past Sacbé 8. This area, through which extends the new emergency airfield, should yield additional monuments. Two well-preserved temples on tall substructures have been revealed by the clearing at the east end of the airfield near Sacbé 8. Photographs of the temples, Stela 25, and the airfield clearing have been deposited in the files of the Division of Historical Research, Carnegie Institution of Washington.

3.8.

RAYMOND STADELMAN

Maize Investigation

YB 37:161–162, 1938

In previous reports there has been made clear the outstanding economic importance of maize throughout Maya history. There has also been stressed the significance, for studies of the rise and diffusion of native New World culture, of determining the place of this cereal's origin. The latter problem has been under attack for several years by Mr. J. H. Kempton of the United States Bureau of Plant Industry in cooperation with Carnegie Institution. During the past year Mr. Kempton, using material gathered on former field expeditions, has been engaged in laboratory investigations of the genetics of teosinte, a plant suspected to have been involved in the ancestry of maize.

Mr. Kempton has also directed the study which Mr. Raymond Stadelman has been making of maize agronomy in the highlands of Guatemala.

Mr. Stadelman took up residence in January 1937 at the Indian village of Todos Santos in the department of Huehuetenango, Guatemala, as reported in the last *Year Book* [Chapter 1.26]. He has now observed and recorded in detail the agricultural practices of a typical Indian community throughout a full agricultural year. This has enabled him to prepare a list of definite questions regarding the agronomic and economic aspects of maize culture which he is at present using for an extended survey of other towns in the highlands. The intensive and extensive information being obtained by Mr. Stadelman will provide, for the first time, accurate data upon farming in the mountainous parts of Guatemala, which will be of great value for comparison with similar data already collected by Messrs. Kempton, Emerson, and Steggerda in the lowlands of northern Yucatán.

3.9.

KIRK BRYAN

Soils and Climatic Chronology in Guatemala

YB 44:168–170, 1945

Dr. Kirk Bryan, professor of geology at Harvard University, spent two weeks in Guatemala studying recent deposits in the neighborhood of Guatemala City and in the Motagua Valley. He also made a short trip to Lake Atitlán and Chichicastenango in order to acquaint himself with the more westerly highlands ash basins.

The city of Guatemala is built in a wide valley dissected by broad, deep gulches (barrancas) and bounded by hills and mountains. It lies in the divide between drainage to the Pacific and drainage to the Motagua River and thence to the Atlantic. The valley floor is composed of tuff that was deposited as successive showers of volcanic ash. The tuff filled the valley near the city to depths of 1,000 feet [305 m] or more. It was also deposited on the hills but was almost immediately washed off into the valleys. Eastward toward the Motagua each valley had a filling of ash successively finer in grain and shallower in depth. As the height of the fill decreases eastward, it appears that concurrently with the filling of the valleys, runoff took place across the body of ash, so that there was a stream grade on the top of the ash of about 4,000 feet [1,220 m] in 30 miles [48.3 km], or 13 feet to the mile. In the Motagua Valley there is a terrace of waterworn pumice fragments that rises about 200 feet above the present river grade. It seems to be the river-laid equivalent of the tuff fillings of the tributary valleys. One must suppose that enormous quantities of ash were carried by rainwash off the slopes of the hills into the valleys and thence to the Motagua. Here the river transported most of the load into the sea, but was itself overloaded to such an extent that it built up its grade and formed the tuff terrace.

The origin of the ash showers is presumed to be in one or more of the great volcanoes which fringe the southwestern border of the Guatemala highlands. The tuff has not, however, been traced to any definite source. Toward the end of eruption the rate of fall decreased and became spasmodic. The upper measures of the tuff sequence near Guatemala City are distinctive. A typical section consists of the following members:

Table 3.9.1. Highland Geological Sequence.

	Feet	Inches
Soil, dark brown to black	0	6–8
Subsoil, dark brown columnar or blocky; in low places, columnar black clay from	1–2	6–0
Disconformity, erosion of shallow valley		
Pumice tuff (upper sand or arena)	3	0
Massive decomposed buff-colored tuff (talpetate)	6	0
Pumice tuff (lower sand or arena)	4	0
Decomposed buff-colored tuff grading down into massive undecomposed tuff (talpetate fino)	0–2	6–0
White to gray tuff	many feet	

The talpetate fino is an old land surface in which the previously deposited tuff was decomposed and converted into a massive yellow clayey layer of variable thickness. Over this surface pumice tuff was deposited by fall from the air. The fragments of pumice range up to half an inch [1.3 cm] in diameter. The material is used as building sand, hence its local name arena. The next layer is a decomposed tuff, very massive and compact. It is obviously a subsoil representing a long period of decomposition under a climate wetter than that of the present time. This compact massive material is used in local building as quarried blocks and as a constituent of sun-dried brick. It is therefore well known and is called *talpetate*, a word presumably related to the Mexican *tepetate*. The overlying pumice is similar in all respects to the lower pumice tuff.

These formations slope gently upward and, in places, extend to the slopes leading to the adjacent mountains. In particular, the upper pumice tuff mantles steep mountain slopes of older rocks along the Guatemala-Lake Atitlán highway as far as Mixco. Near Guatemala City these three formations are eroded in broad shallow valleys, which drain into the deep barrancas. One of these valleys extends from northwest to southwest through the site of Kaminaljuyú. At its lowest points it reaches the talpetate fino. The surface soil is dark brown to black, blocky silty clay, or clay. Intensive cultivation by prehistoric and modern people has disturbed the soil nearly everywhere. Also there are numerous borrow pits from which the prehistoric people obtained material for pyramids and other structures. Many of these pits were back-filled with debris, and the area has since been cultivated. It is thus difficult to find truly natural conditions. Obviously, however, the soil was developed only in part by weathering of underlying material. It is usually an unconformable blanket over the underlying formations and has been largely built up by the gradual fall of ash from nearby volcanoes. The soil processes operating on this continually increasing layer have produced the deep

humus-bearing subsoil. In the lower areas, where water has stood in the rainy season, the subsoil is a columnar black clay. On better drained sites it is a blocky silty clay and in places shows fragments of the underlying pumice tuff or talpetate.

It appears that the existing climate, with its strong dry season, produces a soil that accumulates calcium carbonate in the sub soil. It is therefore a climate on the arid side. There is a break in the sedimentation between the soil and subsoil and the upper pumice tuff represented by the erosion of the broad valley already referred to. One must suppose that the talpetate, which is an old subsoil of the ferric oxide-aluminous type, was formed in a climate wetter than that of the present. This epoch, however, was far anterior to the earliest known culture of the area. As shown by the excavations of the Carnegie Institution, the oldest pottery of the site, when found in undisturbed areas, occurs at the base of the soil just above the jointed clay. In many localities the soil, subsoil, and part of the underlying material arena or talpetate has been excavated. The back-fill may be three feet or more thick and may contain pottery of any age. The soil and subsoil appear to represent a continuous period of growth by accretion of wind-borne volcanic dust and of soil formation under a pine-grass cover. The soil phenomena of the remote past, as represented by the talpetate and talpetate fino, record wetter conditions. Within the period of known prehistoric occupation no detectable change in climate is indicated by the soils.

3.10.

JOSEPH A. HESTER, JR.

*Agriculture, Economy and Population
Densities of the Ancient Maya*

YB 51:266-271, 1952

Under an Institution Fellowship a study is being made of geographical conditions which could have affected the economy of the Maya civilization, particularly in the State of Yucatán. The intent of this project is to investigate the agricultural possibilities in Yucatán, within a framework of aboriginal technology, with the hope of arriving at a somewhat firmer basis for an evaluation of Maya economy, and perhaps a more realistic estimate of aboriginal population densities.

The artifacts which give substance to archaeology include more than the durable remains of architecture and implements. It is almost inevitable that a culture which has occupied an area as large as the peninsula of Yucatán, and occupied it intensively over a period of many centuries, should have left its mark plainly upon the region. Though increasing social elaboration, as evidenced in the architecture, mythology, and Spanish chronicles, certainly required the presence of the Maya in urban centers, it also required that they go farther afield in the satisfaction of their consequently heightened economic needs, and that they intensify the technology already at hand. In Yucatán, as elsewhere in the Americas, since there existed little significant mechanical means and no motive force other than man himself, the residue of aboriginal, economic life in all probability is confined largely to various aspects of agriculture.

It is abundantly apparent from the literature on Maya archaeology that authorities are by no means in accord in their estimates of population densities during, for example, a period of intensive occupation of the peninsula in pre-Columbian times. It has been held by some authors that the voluminous and often intricate architecture demanded large populations with high density. Others have pointed out that the agricultural potential of the 100,000 or so square miles [250,000 sq km] of the lowland Maya area is much too low, on the basis of milpa agriculture, to support the large populations postulated on the basis architectural remains.

All estimates of population density which are projected into the past must depend on the common economic denominator, agriculture. With respect to this factor, it has been held variously by modern investigators that the surviving, and presumably ancient, milpa method of growing maize, the chief staple apparently throughout the time of the Maya habitation of the peninsula, is the most advantageous usage of the rather poor soil, and a ruinous method of cultivation which hastens the destruction of the soil.

Modern Maya agriculture requires relatively few tools and simple techniques, but considerable know-how. The milpa system apparently is wasteful of the natural vegetation, the soil, and presumably the fertility of the soil. Furthermore, it is the practice in Yucatán to plant a field for usually no more than two years and then to move to a new field from which has been cleared 10 or more years' growth of natural vegetation. The yield of maize declines in the second year of planting in a given milpa, a phenomenon apparently universal in the lowland areas. This has been attributed to such causes as decline in soil fertility; increase in competition from natural vegetation or "weeds," particularly grasses; inability to kill off insect pests when the field is fired during the second

season, because of insufficient fuel furnished by the light growth of the previous year; and loss of soil due to erosion of the exposed milpa during the first year.

Several contradictory observations regarding the apparent decline in soil fertility are under investigation. One is that in the northern and western parts of the State of Yucatán, where soil generally is thin, seemingly poor, and very rocky, henequen plantations are maintained year after year, sometimes in increasing production, and are replanted almost as soon as the old plants cease to be productive. Occasionally, in the three years or so before newly planted henequen shoots come into production, maize is seen growing between the rows of henequen. In other instances henequen plantations are adjacent to productive milpas. It seems to be obvious that henequen and maize do equally well on the same type of soil, and that henequen is not subject to decreased productivity due to prolonged use of the soil. A second contradiction may be that the natural vegetation does not seem to be noticeably affected by diminished fertility. By the second rainy season after a milpa has been abandoned to return to "bush," the soil is supporting a heavier growth of natural vegetation than it ever supported of maize.

It is hoped that the information gained by studying the agriculture and agricultural lands of the present-day Maya, added to the considerable data already published, will provide the basis for a study of Maya economy in aboriginal times. There are several ways in which this study is being approached. The first and most obvious is the ethnobotanical one. This phase is being pursued at Telchaquillo with the assistance of Daniel Vargas, a milpero with an intimate and extensive knowledge of food and medicinal plants in that area.

In pre-Columbian times the New World was rich in quality and quantity of domesticated plants. Mexico was one of the more favored regions in this respect. Modern Mexico is vastly more wealthy in diversity of agricultural products, largely because of the importation and adaptation of Old World plants. A basic assumption is being made in this study that, in general, no Old World plant has replaced a New World plant of the same type (e.g., starch plants) in any given locality unless the Old World plant offered some decided advantage. That is, the Old World plants for the most part now occur in Mexico as additions to and not as replacements for the pre-existing New World plants. Another, and perhaps self-evident, postulate is that the native American plants, particularly those which are important staple crops, were, for the most part, long adapted to the area in which they occurred at the time of Old World contact. Consequently, with proper discretion, certain plants, such as those of dietary staple rank, may be regarded as archaeological indi-

ces, less subject, in some ways, to outside influence than are monumental architecture and ceramics. Domesticated plants have a further advantage over inanimate objects in that they may be subjected to genetical analysis.

The ethnobotanical collection that is being made is expected to furnish further insight, once identifications have been completed and the Old World plants subtracted from the New, not only into aboriginal economics, but perhaps into the problems of prehistoric population movements as well, provided in the latter instance that the centers of domestication of the various plants are reasonably well established.

A second approach to the agricultural problem comes through a limited study of the properties of the various soils of the peninsula. The area covered is largely the land bordering the paved and otherwise passable roads to which access may be had from Mérida. Soil specimens are being gathered every 10 km along the highways, wherever possible, and at archaeological and modern sites, in any event, at places which can be located readily on an accurate map. The purpose is to discover any soil types beyond the tolerance of maize. Conclusive tests have not been accomplished at this writing, but preliminary values, obtained in pH tests of the specimens already collected, indicate that few, if any, of the soils are too acid or too alkaline for maize cultivation. A probable exception appears to be the coastal sands within a few meters of the ocean. Ultimately it is expected that the soil samples will be subjected to a more thorough analysis.

A third approach is being made through a study of available water. This aspect goes farther than agriculture alone, for water is even more intimately associated with man's existence than is agriculture. The rains which support milpa agriculture were the limiting factor, ultimately, in the size of any aboriginal population on the peninsula, since they were the absolute limit upon the food supply. But availability of water during the dry season may have been the limiting factor in the ability of the Maya to realize the full production of their agricultural technology; thus, domestic drinking water is an important factor in the ecological relations between the Maya and their habitat.

It was hoped that during the course of this study some relic of intensive agriculture would be found which would indicate that the larger cities of the Maya were not exclusively dependent on milpa agriculture. Some of the highest pre-Columbian cultures in the New World featured some form of intensive agriculture; for example, the elaborate and highly efficient terraced gardens of the Peruvian Andes, and the chinampas, or so-called floating gardens, of the Valley of Mexico, both of which continue in use in those areas today. The Peruvian terraces, particularly, are unmistakably

artificial, and clearly bespeak the agricultural, as well as the economic, intensity of the cultures which built them. They are often the product of considerable engineering and architectural skill, and have left a lasting impression on the landscape, something which the archaeologist can "sink his teeth into."

At the end of four months in the field intensive agriculture, particularly of the post-rainy-season variety, remains to be found in Yucatán, in the archaeological sense. It exists in the dooryards around present-day Maya huts, supported usually by water from wells, most of which were not in existence in aboriginal times. Terracing occurs on a minor scale. Occasionally a few cubic meters of soil are walled up crudely on the side of a cenote to allow a papaya tree to take root. What appeared to be agricultural terraces were observed at several places, but investigation indicated that these, in each case, were architectural remains which coincided by chance with a present-day milpa, and thus far none has appeared to have had a clearly agricultural origin.

Water supply is an important item in intensive agriculture. The Andean terraces in many cases derive their water ultimately from glaciers and snow fields; the chinampas are lacustrine phenomena. If evidence of intensive agriculture exists in Yucatán, it is to be sought near perennial sources of water. With this in mind, many cenotes and aguadas have been visited. None has proved of sufficient size to have contributed significantly to the economy of more than one or two families at most. The lakes of Cobá, the laguna of Chichancanab, and others in Quintana Roo and southern Campeche have not been visited. They are at least potential sources of information with respect to the question of chinampa agriculture or related techniques.

Two weeks were spent at Telchaquillo in March, and a similar period in May, in an examination of present-day agricultural methods and the question of water supply. Milpas were visited both within and outside the wall of Mayapán. Parenthetically, it should be noted that the soil in and around Mayapán appears thin, rocky, and of little value agriculturally to the local milperos, who frequently rent land for milpa in the town lands of Tecoh and Xcanchakan. A trip was made to eight so-called aguadas some, 15 km south of Telchaquillo and to several others about 8 km to the northeast. The "aguadas" appeared to be large, shallow cenotes rather than true aguadas. The essential difference between aguada and cenote seems to be that the water in the aguada does not communicate readily with the local water table, whereas the surface of the water in a cenote is, in fact, the water table. It was decided on the basis of preliminary inspection that two or more of the eight "aguadas" to the south could

have been significant in dry-season agriculture of an intensive character, but that their influence on the dietary of even the local peoples could never have been of any considerable importance. A quadrangle of ruins in total disrepair was located adjacent to Xtantani, the largest of the "aguadas" immediately south of Telchaquillo.

Visits were made to Kabah, Uxmal, and Chichén Itzá for a preliminary survey of what the agricultural problems may have been in those areas. It seems probable that agricultural conditions in the three regions differ to an appreciable extent in terms of soil characteristics, and that although the same techniques of cultivation may have been applied to all these areas in archaeological times, local conditions may have affected yields or even types of plants cultivated.

An attempt was made at each site to observe what the settlement pattern may have been, and to determine whether or not domestic dwellings were located within, or immediately adjacent to, the ceremonial centers, as presumably was the case at Mayapán. Within a 1.5 km radius of Kabah remains of small structures, which conceivably could be construed as house mounds, were noted, but at Kabah as well as at Chichén Itzá the vegetation was too heavy for adequate observation. About Uxmal there are extensive cleared fields, frequently, perhaps predominantly, with deep soil that, with care, probably could support a very heavy crop of maize over a long period of time. Observation here was much simplified, and it was noted that the lowest-lying lands usually contained deep soil in which no artifact other than an occasional, and perhaps recently deposited, sherd occurs. All architecture seemed to be confined to higher ground. The frequent hillocks usually supported some vestiges of building, but in each instance the architecture was judged to have been more elaborate than that of the majority of the presumed house mounds at Mayapán. The hillocks often contained near their summit some indication of a chultun, in or about which usually was noticed a quantity of weathered ceramic fragments. No remains whatsoever were detected of a "working class" domicile. It may be noted here that the renowned aguada, usually to be found a kilometer or so south and west of the dried up following the main ruin group, rainy season of 1951 and remained dry through at least the month of May 1952. The three preceding years are reported as having been years of subnormal rainfall.

Kempton, Emerson, Steggerda, and Stadelman, among others, have investigated and published on many of the problems of milpa agriculture. In the present study, it is hoped to extend their investigations into the problems of clearing the milpa with the known aboriginal tools, that is, without the use of

metal, and of the amount of work required to keep the field clear, particularly during the height of the rainy season, as compared with that involved in present-day "machete" cultivation. In connection with this study of aboriginal milpa technique, and as an examination of soil fertility, soil exhaustion, and the absolute amount of soil required to permit a stalk of maize to grow to maturity, a series of tests is being conducted in which the volume of soil is precisely measured beforehand, the plant being exposed otherwise to conditions as close to those in the milpa as possible.

3.11.

JOSEPH A. HESTER, JR.

*Agriculture, Economy, and Population
Densities of the Maya*

YB 52:288–292, 1953

The study reported here continues as an investigation of the geographical conditions of the Yucatán peninsula which would have affected the economy of the Maya in ancient times [Chapter 3.10]. It includes the ethnological aspects of modern Maya agriculture and general economy which may be considered as having survived more or less intact, from pre-Hispanic times.

An experiment was conducted in clearing 10 mecates, slightly more than one acre [4,046 square m] of Yucatán forest without the aid of metal implements. The purpose was to determine what difficulties Maya, agriculturists once had to overcome in preparing fields for planting. Two plots were selected, one of four mecates within the village of Telchaquillo, and another of six mecates in the Telchaquillo public lands, 1 km south of the Mayapán wall. The latter site was purposely located in what was considered the highest native vegetation in the region, although the highest trees did not exceed 40 feet [12.2 m], and only half a dozen were higher than 25 feet [7.6 m].

No attempt was made to identify the various plant species here; they were representative of the typical Yucatecan bush (Steggerda 1941:100–107), characterized by great variety in which no single type dominated. Density of woody plants per mecate ranged from more than 100 to slightly less than 200; size of trees apparently was not a factor in the density per mecate of woody plants. Of the trees, from 30 to 50 in each mecate were 4 inches [10.2 cm] or more in diameter. In

the six mecate plot there were several habin (*Piscidia erythrina* L.) over 15 inches [38.1 cm] in diameter. These are reported to grow to heights of 80 feet [24.4 m] and are said by the workmen to have the hardest wood in the forest; the half-inch [1.3 cm] thick bark is still used occasionally for sandals and buckets.

The workers used no metal tools; leather gloves were supplied for part of the work. The experiment was carried out during the rainy season, in July and part of August. Vegetation at this time of year tends to be moist and crisp, and generally can be broken easily, although during the preceding dry season the same vegetation may have been dry and hard. For most of the vegetation, it was found possible for a man to break a trunk or branch up to 2.5 inches [6.4 cm] in diameter without assistance. For green vegetation heavier than this, the workers experimented with unhafted pieces of limestone, used as mauls or choppers. Sometimes a large block of limestone was used as a chopping block or anvil in conjunction with the chopper. After experimenting for two weeks with various sizes, shapes, and weights of stone, we discovered that entirely unworked limestone fragments could be utilized satisfactorily; such fragments, in convenient shapes and sizes, were plentiful. The choppers usually averaged about 5 inches [12.7 cm] wide by 9 inches [22.9 cm] long in their greatest dimensions, and 1 inch [2.5 cm] or slightly more in thickness. Some of these "fist-axes" were used for two weeks or more without becoming damaged beyond usefulness. Such material abounds in Yucatán. It is put to use readily and satisfactorily, and when discarded it shows no signs of having been used, other than vegetable stains which soon weather off. This may be considered a partial explanation of why some types of stone tool are so rarely identified in Maya archaeology.

Branches, foliage, and small tree trunks, when chopped or torn down, were piled in mounds about 10 feet high in which there was adequate drainage. It was found that the brush had dried sufficiently to be burned within two weeks from the time it was cut, even at the height of the rainy season. During the rainy season in Yucatán precipitation occurs typically in scattered, intermittent showers, and frequently a given area may receive no rain for two or more days. After such a brief rainless period, vegetation piled in high mounds may be burned easily despite dampness of the ground and high atmospheric humidity.

Trees too large to break down and too hard to chop through with blunt limestone tools were girdled. The bark was peeled away in bands a foot or two [31–61 cm] in breadth, a process requiring from 5 to 10 minutes per tree. The cambium layers of many trees, however, were tough and spongy, and difficult to chop with stone tools. There was sufficient moisture in the air at

all times during the rainy season so that moss or fungi soon formed a protective sheath on the surface of the cambium matter, shielding it from aridity, and at the end of the experiment it seemed probable that many of the girdled trees would survive. Had the branches and foliage been piled at the base of these trees, however, and fired toward the end of the dry season, as is done by many primitive peoples in clearing jungle for cultivation, these trees almost certainly would have been killed; at least their growth would have been retarded to such a degree that the ground beneath them could be cultivated for a year or two before the trees recovered their foliage sufficiently to shade out plants around them.

It was concluded that the clearing of agricultural lands in Yucatán with bare hands, unworked stone tools, and fire at the proper time can be accomplished as effectively as with steel axes and machetes. Without such metal tools, it is estimated that approximately twice as much time would be required to clear the land as is needed at present with metal tools. Nowadays, almost as much time must be devoted to fencing the plot as is required to clear it of vegetation. Fences have been necessary since the conquest, to keep out livestock, animals of Spanish introduction which, the Maya did not previously have. Since fences almost certainly were not needed in ancient times, the total time required for the preparation of a given area of land for cultivation under aboriginal conditions may be considered closely comparable, to the time required at present. Such clearing would be most effective during October and November, after the rainy season, but while the vegetation is still green. At this, time there is greater probability that the larger trees would be killed by girdling, without the use of fire.

Almost all the nonarable land in the state of Yucatán is confined to regions bordering the coast which are too wet for agriculture, or where soil is too thin or lacking. The arable land, probably more than 90 percent of the state's area, all comes under cultivation sooner or later, with greater or less frequency. Native vegetation covering the arable part of the state is characteristically low forest of secondary growth, usually referred to technically as "bush." The volume of vegetation above ground is indicative of the agricultural potential of the soil, consequently that land on which the highest bush grows is considered most desirable for agricultural purposes. But no large tract of land is left uncultivated over a period sufficiently long for the largest trees to realize their full potential growth. Thus the height of bush in Yucatán is a sensitive index of profitable land utilization in relation to population density and with primitive agricultural practices. Those areas in the east and southeast parts of the state in which the bush is relatively high are less densely

occupied. In the central and western region of the state, which there is no high bush, there prevails a relatively delicate ecological balance between the population and its economic medium, extensive maize agriculture, which indicates clearly that the population now has approximately reached saturation with respect to its economy. Because of food importation now into Yucatán, facilitated by manufactured exports, chiefly of henequen, the modern population density of approximately 30 persons per square mile [2.6 sq km] of productive farm land probably equals or exceeds the aboriginal maximum.

The mecate was used as the unit of areal measure in the experiment primarily because it is one with which the workmen are familiar and because it is the accepted unit of measure among the Maya at present. The word, however, is an introduction into Yucatán from the highlands of Mexico, stemming from the Nahuatl *mecatli*, and probably conceptually related to the Maya *kaan*. The mecate is used as both an areal and a linear measure usually, but probably erroneously, considered to be 20 m by 20 m, or simply 20 m long. In the vicinity of Telchaquillo the mecate was consistently found to be longer than 20 m, suggesting a surviving aboriginal unit of measure more meaningful to the Indians than its modern metric approximation.

For the experiment, mecates were measured by six lengths of a pole locally called *uah la che*, which was cut according to measurements memorized in terms of each individual's body dimensions. Usually such poles measured two arm spans plus some additional compensation, such as a hand's width, or the thickness of two or three fingers. The poles seldom varied more than a half-inch [1.3 cm] in length, although cut by different individuals. A similar pole, *píi zi che* (approximately), is used near Sayil; a mecate rope or *kaan* is used near Pisté.

It was observed that cultivated fields, would seem superficially to be plantations of maize only, may actually contain more than 24 varieties of cultivated food plants, although frequently there is no more than one variety of maize planted in a given field. For example, the assortment on one 50 mecate farm (approximately 6 acres [0.024 sq km]) was found to include four varieties of Old World melons, 10 varieties of beans or pulses, both native and foreign, two squashes, one (nonedible) gourd, a large assortment of tuberous crops-including two kinds of yams, three of sweet potatoes, sweet manioc, and two additional kinds of tuberous plants, one variety of chile, papaya, one variety of maize, and grasses. In this same field flowers of various kinds were grown for seed, to be planted later in the farmer's dooryard garden. The assemblage of food plants cultivated on this one farm did not exhaust the diversity of

plants locally available, but represented the farmer's personal tastes and preferences. Other men in the area planted different varieties of the same species, according to their individual preferences, selecting, for example, from more than half a dozen local varieties of maize, and from four or more of chile, etc.

Although grass is usually considered detrimental with respect to Maya maize agriculture, it was learned that some grasses actually are sown from seed in the richest soil among stalks of maize. Some of these grasses attain a height of 4 to 6 feet [m], and are used for roofing thatch. In some areas, grass thatch is considered superior in many respects to palm thatch (Wauchope 1938:108, 116). This finding also has some bearing on a statement by Bequaert to the effect that many of the weed grasses in Yucatán were introduced there by man, along with agriculture (Shattuck 1933:510).

In soil samples collected for analysis, roots of grasses were found to be quantitatively more abundant in the soil of lands which had been cleared but not burned adequately. Generally, in the second successive year of cultivation there is insufficient fuel to produce an adequate conflagration, by local standards. In such fields it was found that grass roots were an estimated 10 to 50 times more abundant in soil over which there had been only a light burn than in soil in the same field over which there had been as intense a fire as in the first year.

The role of fire in the preparation of fields for maize cultivation has long been a problem. Burning of cut brush *in situ* helps to control grasses in shallow soil and to minimize the insect menace, and it leaves ashes containing readily soluble mineral salts. Such minerals normally are the chief source of fertilizer received by the soil. But these salts are dissolved and leached rapidly through the shallow Yucatán soil, through the interstices in the bedrock limestone, and into the ground water, beyond the reach of maize and farmer alike. Unfortunately also, the humus which could retard such leaching is usually consumed entirely in the burning. This destruction of humus is a serious consequence of burning, for long-range fertility of the soil here depends to a high degree on humus content. For soil fertility in the season subsequent to first-year burning, however, the less competition there is from weeds, the greater are the chances that the crop plants will receive an adequate supply of minerals. The burning of cut brush in preparation for planting is the only immediately practical technique available to the Maya, both for clearing the land and for fertilizing the soil; but over the years it has the deleterious effect of maintaining the soil at an extremely low level of fertility.

The northern coastal bar of the peninsula was traversed from Punta Lastre (Punta Nimún) in northwest-

ern Campeche to Boca de Dzilam, Yucatán, on the north-central Coast, to observe agricultural conditions and the source of the ancient salt supply. Agriculture on the coastal bars is precarious with respect to maize and other subsistence crops. Frequently the entire season's crop is lost because of insufficient precipitation; but for the years in which precipitation is ample, yields are reported almost double those for any other area in Yucatán. Most of the inhabitants of the coastal bar, outside the one major town, Progreso, work on coconut plantations and in fisheries or lumbering industries. Many Indians so employed cultivate small plots of maize on the mainland, about 4 to 6 km inland from the lagoon where soil and precipitation are adequate. It is assumed that this also was the practice in ancient times.

Salt continues to be gathered from the lagoon each year, toward the end of the dry season. Frequently only bare hands or a shell are used in collecting salt from the floor of the lagoon, a technique which cannot have changed significantly since the conquest. The salt is of comparatively high quality, is shipped for sale to other parts of Mexico, and locally is utilized for domestic and industrial purposes. One important use to which salt is applied is in Yucatán fisheries, in conjunction with commercial drying and preservation of fish.

Since aboriginal times, the only important change in the economy of those Maya living on the coastal bar is probably the addition of coconut plantations. Although the coconut almost certainly was growing in the New World before the Spanish arrived, the indications are that it was not cultivated in Yucatán until after the middle of the sixteenth century.

3.12.

JOSEPH A. HESTER, JR.

Maya Agriculture

YB 53:297-298, 1954

The 1953 field season, September through December, had a threefold purpose: to supplement a study of Maya agriculture begun in 1952, to compare Maya agriculture with surviving primitive agricultural practices on the Mexican mainland, and to make a cursory examination of archaeological ruins for possible aboriginal units of measure.

From the lowland Maya area in Chiapas, Campeche, Yucatán, Quintana Roo, and British Honduras were gathered data on approximately two dozen varieties of maize which can be considered native to the peninsula of Yucatán. These all, however, are tentatively identified as hybrid derivatives of no more than three of the group. The three basic races of Yucatán maize seem to be *nal tel*, small, yellow-grained, and precocious; *dzit bacal* (*olotillo* on the mainland), a slender-cobbed, 8-rowed white maize; and *xnuc nal* (*tuxpeño* in Veracruz), largest of Yucatán varieties, considered by some to be related to the "Southern Dents" of the United States. Through the courtesy of the Rockefeller Foundation, facilities were made available at the national agricultural college at Chapingo, Mexico, for a study of collections of Yucatán maize.

Certain basic differences between highland and lowland tropical primitive agriculture were noted. These could be attributed, not to apparent cultural differences, but to geographical differences, chiefly of temperature and precipitation. Abundant crude agricultural terracing was observed in highland valleys from the state of Hidalgo to southern Chiapas. Occasion-

ally rock-faced, the terraces for the most part are earth-faced or retained by rows of agave or other plants. Many terraces seem to have been abandoned for a long time, the abandonment often leading to disastrous and irreparable erosion.

In an effort to detect a consistent system of measure, measurements were taken of basic structural lengths and intervals, and of decorative elements, on ruined buildings at Tula, Teotihuacán, Monte Alban, Zempoala, El Tajín, Palenque, Uxmal, Chichén Itzá, and Xunantunich. A special, but inconclusive, effort was made to compare the Temple of Quetzalcoatl at Tula, Hidalgo, with its Yucatán counterpart, the Temple of the Warriors at Chichén Itzá. Although a near periodicity was found in the recurrence of certain lengths in the basic design of these two and other structures, no consistent unit of measurement was found to emerge clearly through the crude workmanship. More than a score of contemporary Maya terms for units of measure were recorded from informants in Telchaquillo, Yucatán, and in Soccotz, British Honduras, together with data on the manner in which these units are taken and the purposes for which each is used.

4.0. CERAMICS

4.1.

H. B. ROBERTS

Problems in the Study of Maya Ceramics

YB 30:114–116, 1931

The general problem toward the solution of which the Division of Historical Research is directing its efforts was formulated and discussed by the Chairman in his report to the Trustees last year. The interpretation of the results of the “meeting of two races of diverse physical make-up and differing culture” must rest on a thorough knowledge of the constituent elements of the conflicting cultures. To that end the archaeologist is working; bending every effort to synthesize the data obtained, through a study of the various categories of material culture, in order that, finally, he may present an accurate picture of the state of Maya culture at the time of the introduction of European blood and civilization.

Of the various divisions of material culture which aid in the reconstruction of the history of an aboriginal people, one of the most useful is a study of their pottery. Frequently the only clue to the sequence of cultural periods has been furnished through a study of the potter’s product. Questions of origin, tribal movements, trade with contemporary peoples, the influence exerted through external contacts, and even minor os-

cillations of culture within a definite period any be solved in the story of the potsherd. The problem of the ceramicist is, then, to discover those factors in the origin and growth of Maya culture which are not readily ascertained through the study of any other medium.

The presentation of ceramic material in the literature has been little more than descriptive; no attention has been paid to the chronological. Arrangement of the wares, nor has the investigator tied his particular group into the whole range of Maya pottery. The most notable exception to this neglect of Maya pottery in the past has been the work of Dr. George Vaillant. In an unpublished manuscript, submitted in partial fulfillment of the requirements of the degree of Doctor of Philosophy at Harvard University, he has identified the major wares and arranged them in a partial sequence. This chronological sequence is based on evidence uncovered years ago at Holmul by Dr. R. C. Merwin and by Dr. Vaillant in the Group of the Phalli at Chichén Itzá. Careful consideration of the present status of ceramic investigation in the Maya area clearly

points to the need of accurately documented collections with which the great mass of existing material can be compared and consequently arranged in a time sequence. The specific problem is, then, the collection of stratigraphic evidence of the origin, growth and decay of Maya pottery.

Recent work at Chichén Itzá and at Uaxactún has demonstrated that this is not an impossible task and that it does not involve great projects nor the expenditure of large sums. Trenching in plazas, dead cenotes, low-lying areas near buildings will produce the evidence required. In those favorable locations where large sites are in the process of investigation, additional may come through the careful study of sherds from various parts of buildings, particularly those structures which have undergone architectural changes at different times in their history.

In dealing with the product of peoples high in the scale of cultural evolution, one is confronted with an enormous mass of material generally produced in a wholesale fashion. The nature of this product is such that it is capable of indicating only the great and abrupt changes in culture. In considering this mass it is necessary to find those wares, probably minor or special wares, or those modifications of the fundamental body shape, which are time carriers. The stratigraphic work at Chichén Itzá and Uaxactún has indicated that much valuable information will come from a careful study of rim form, changes in type and location of handles, and shifts in styles of decoration.

Further, a portion of this specific problem will be the study of the composition of the pastes of the different wares. An analysis of the clays and tempering materials used in the preparation of the paste and the location of the source of these substances should enable the investigator to identify the foreign wares from those made locally. Crude beginnings along this line have already demonstrated that certain wares could not possibly have been made in the region in which they are found, unless the clay used was imported.

With the exception of isolated descriptions of the present-day processes used in the manufacture of pottery vessels, little attention has been paid to this important field of investigation. It seems likely that a study of the various processes in use in the Maya area today may point to the solution of pre-Spanish problems which as yet can not be understood.

Finally, it is impossible to complete the story of the development of pottery making among the Maya without a wide knowledge of the ceramic product of contemporary neighbors of this people.

The best approach to a study of Maya pottery, in the opinion of writer, is one based on intensive research in regions which seem to have been centers of ceramic development. The territory of the Maya has been di-

vided into a series of geographic regions which seem to be, on the basis existing material, ceramic units as well. These districts, which are the same as those used by Dr. Vaillant in his unpublished manuscript on *Chronological Significance of Maya Ceramics*, are: 1. The Peninsula of Yucatán; 2. The Petén; 3. Copán-Salvador; 4. The Highlands of Guatemala; 5. The Ulúa Valley and Honduras; 6. Cobán and the Motagua; 7. Chamá and the Chixoy; and, 8. Chiapas and Southern Mexico.

It has seemed best to begin with the peninsula of Yucatán because of the great mass of documented sherd material which is now available from Chichén Itzá. The origin of the Maya ceramic group is one of the most important problems with which the archaeologist must deal. The recent work at Uaxactún and the earlier investigations at Holmul suggest that in the Petén study an indication of the source of Maya pottery may be forthcoming. The similarity of certain Uaxactún figurines to those of Salvador would indicate that a study of the Copán-Salvador material should follow. The next step is to consider the ceramic history of the highlands of Guatemala. Whether or not the other districts should be studied in the order named will depend on the results of the earlier work and, on the opportunity to carry out these investigations.

A ceramic research such as outlined above should eventually produce as complete a picture of ceramic development as it is possible to obtain. When all the material has been drawn together, and the full story of the origin, development and decay of the manufacture of pottery among the Maya is known, will it be possible to so correlate this data with the evidence from the other categories of material culture that we may describe with confidence any particular stage in their history? Shall we be able to demonstrate the value of a ceramic history to answer questions of culture growth and break-up when no other data are available? Can we safely interpret events in the life of a people with no other evidence than that furnished by important changes in ceramic styles and wares? Can we say that degeneration in pottery always precedes actual cultural decay? The ultimate problem from the ceramicist's point of view in these researches in Maya pottery may be stated as follows: "Is the complete story of the origin, development, and disintegration of the art of pottery making among any people an index of these same processes in their history?"

4.2.

H. B. ROBERTS

Ceramic Research

YB 32:86–88, 1933

The Section's study of the pottery of Yucatán was inaugurated in 1926 by G. C. Vaillant, who established a preliminary classification of the wares found at Chichén Itzá. The investigation, continued in 1930 and 1932 by Mr. H. B. Roberts, comprised thorough examination of the large sherd collections taken in previous years from excavations in various temples at Chichén Itzá; stratigraphic tests in several refuse deposits in the city; and organization with Mr. H. B. Pollock, of the Architectural and Ceramic Survey which, in 1932, resulted in accumulation of stratigraphic data from Cobá, Sabacché, Labná and Yaxuná. Review of the situation at the close of 1932 indicated that one more field season could be counted upon to complete the local ceramic picture and to furnish the evidence necessary for the relative dating of the more important buildings. It also appeared desirable to finish all contemplated work at Chichén Itzá before undertaking further activities in other localities, for it was evident that full ceramic data should as quickly as possible be made available for the use of those members of the staff who were engaged upon other archaeological problems of the site. Furthermore, it was felt that a well-rounded knowledge of Chichén pottery would permit new evidence accruing from extension of the Architectural-Ceramic Survey more readily to be fitted into its proper place in the general ceramic scheme. Mr. Roberts therefore decided to devote himself exclusively to Chichén Itzá in 1933.

During the field season (ending June 10) the sorting and classification of all ceramic material obtained, from the structures excavated by the Chichén Itzá Project were completed. The pottery found in 1932 and 1933 by Mr. Bolles in his study of the Monjas and associated structures was examined and classified. This material is archaeologically the best documented series from the city and covers the longest period in time of any collection studied. It will prove very valuable for making the final determination of the chronological sequence of Chichén Itzá wares.

The sherds taken by Mr. Ruppert from the Mercado-Southeast Colonnade group in 1932 were classified and studied in relation to those, from the large refuse deposit near that structure examined by Mr. Roberts during the same year. The pottery series obtained from these two locations correlate very well and provide an excellent ceramic picture of the period

during which the buildings were under construction and in use.

During the course of the season some 30 test pits, fairly well distributed over the city, were dug in areas likely to reveal stratified refuse. Sixteen of the pits were enlarged into trenches, located in the following groups: north of the terrace of the Group of the Initial Series, north of the terrace of the Principal Group of the Southwest, east of the terrace of the Group of the Hieroglyphic Jambs, east of the Group of the Sculptured Jambs, north of the House of the Deer and Red House, and Colorado, bajo north of the Temple of the Three Lintels, and bajo west of the Guest House. While the material from these trenches has not been sufficiently studied to allow definite and final statements, it seems certain that we now have a fair sample of the ceramic make-up of Chichén Itzá and that three main ceramic periods may be discerned: I. Pre-Mexican period, with pottery similar to that of the Labná-Puuc region; II. Period of Mexican occupation; and, III. A period following the era of Mexican domination, characterized by the return of certain earlier Chichén Maya forms.

The close relative dating of the sherds from individual buildings will be on the basis of sub-periods which have not as yet been clearly worked out.

It is believed that we are now in possession of data adequate for preparation of the ceramic history of Chichén Itzá which Mr. Roberts is at present engaged in writing. Further work would certainly add many details, but until new and improved methods for the study of pottery have been developed, such work does not seem justified.

In addition to the materials from Chichén Itzá, Mr. Roberts examined the sherds collected by Mr. Ruppert in southern Campeche. Although the collection is too small to warrant confident conclusions, it appears that the wares fall into groups which may roughly be correlated with certain architectural changes noted by the Campeche Expedition.

4.3.

H. B. ROBERTS

Ceramics

YB 34:126–127, 1935

The general program of ceramic research in the Maya area has been outlined in previous *Year Book* reports [Chapters 4.1 and 4.2]. In the continuance of this

investigation Mr. Roberts spent the period from the middle of November 1934 to June 1935 in the peninsula of Yucatán. The Ceramic Survey was, as in past field seasons, combined with the Architectural Survey under Mr. H.E.D. Pollock. This arrangement has proved mutually beneficial and at the present time is the most satisfactory method of conducting the Architectural and Ceramic Survey of the Maya area. Ceramic studies were carried on at Chichén Itzá, Sayil, Kabah and Holactún (Xcalumkin).

The ceramic material from Chichén Itzá examined and classified during the past field season consisted of the specimens collected by Mr. John Bolles in the spring of 1934. These potsherds were obtained in the excavation of the East Mound of the Monjas Group. This series completes the available ceramic data from the Monjas Group. The pottery from the East Mound is generally representative of the period of the Mexican (Nahua) occupation at Chichén Itzá and would seem to be typical of the phase nearing the close of that period. In some sections of this unit of the Monjas group, potsherds were obtained which represented wares characteristic of the post-Mexican (Nahua) stage in the history of Chichén Itzá, a period identified by the reappearance of pure Yucatecan-Maya forms.

Mr. Roberts also examined the ceramic material collected by Dr. S. G. Morley at Yaxacumché, a site near Oxkutzcab. The wares from this site are in the main similar to those from the Puuc region. About 10 percent of the rim forms wares are early in the chronological sequence of the pottery of the Puuc. The majority of ceramic specimens from this site are characteristic of the final phases of the historic development in the Puuc. There is an additional 10 percent of the wares from Yaxacumché which can not be identified by the writer at the present time. It is unfortunate that it was impossible to obtain a stratigraphic sequence of the above mentioned wares. The importance of ceramic material from this site can not be over-emphasized as it represents the first definite evidence of the spread of Puuc types beyond the range of hills known by that name in Yucatán. It is hoped that further work may be carried on in this region as it has, an important bearing on the general problem of the first Nahua invasion of the peninsula of Yucatán.

The ceramic survey of the archaeological area known as the Puuc was begun in 1932. Mr. Roberts was unable to continue this survey until the past field season when the sites of Sayil and Kabah were investigated. While the sherds obtained in 1935 have not been thoroughly studied and the data compared with those obtained in 1932, the preliminary sorting and classification of the material confirms the evidence obtained from Labná and the other sites investigated in 1932. The most important information obtained from

these two sites was the discovery in the lowest strata: of two trenches at Kabah of polychrome sherds of the same general type as those from Holmul V and Uaxactún III. Polychrome sherds of wares assignable to the above two periods have been found under stratigraphic conditions at two other sites in the Yucatán peninsula; namely, Cobá and Yaxuná. The Cobá and Yaxuná sherds were found in strata which did not contain any of the standard Yucatán-Maya wares. At Kabah the polychrome wares were found in direct association with the earliest of the Puuc wares and rim forms. It is interesting to note that these Petén wares occur at sites at which, with the exception of Cobá, no initial series dates have been discovered.

The chronological sequence of rim forms and wares in the Puuc area can now be arranged on the basis of actual stratigraphic evidence. The series begins with a type of pottery which has been identified as the polychrome of Holmul V and Uaxactún III and continues through the Yucatán-Maya wares to and including the introduction of Fine Orange, a ware which was Mexican in origin.

A factor of importance in the final determination of the position of the sites of the Puuc in the history of the Yucatán-Maya is the total absence of Plumbate. This ware has not been found in stratified deposits in any of the Puuc cities.

Since at Holactún (Xcalumkin) there occurs an initial series date, it was hoped that the ceramic material would throw some light on the general problem of the appearance of Petén polychrome wares in Yucatán. Mr. Roberts, however, failed to locate any refuse deposits which yielded this information. The data from this site are at present very perplexing. It has not possible to obtain any definite stratigraphy, but the majority of the rim forms and wares from the lower cuts were typical of the later phases of the Puuc. The mass of the material was similar to that of the Mexican period at Chichén Itzá. The Holactún pottery seems to represent a reoccupation of the site at a time post-dating the original construction of the city. Until the sherd series has been more thoroughly studied and further data collected, it is impossible to state the exact position of Holactún in the ceramic history of northern Yucatán.

In addition to the field investigations on the ceramic history of Yucatán, Miss Anna O. Shepard of the Laboratory of Anthropology of Santa Fe, New Mexico, has begun a technological study of the pottery of this area. The Mexican Government has kindly permitted the exportation of the material necessary for this research.

4.4.

ANNA O. SHEPARD

Ceramic Technology

YB 36:144–145, 1937

Of all archaeological materials, pottery is the most useful for tracing the development and spread of cultures, and for measuring the strength and identifying the source of external cultural influences. But its value for such purposes depends upon the certainty with which ceramic types can be recognized and defined, and upon the accuracy and uniformity of their description. Until very recently, however, pottery has been classified almost solely on the basis of its external characteristics, vessel form, color, decoration, features so subtly variable that their recording in terms sufficiently objective to be of service to other students is extremely difficult. Attempts have been made to use the more definite and tangible evidence offered by clays, tempering materials, and pigments; but success has hitherto been meager, because no archaeologist has had the highly specialized knowledge required for certain identification of the various ceramic ingredients.

When, therefore, Miss Shepard, a trained petrographer, began the study of ceramic technology, she entered a practically virgin field. Her work on ancient Pueblo pottery quickly demonstrated its value in permitting more accurate and more objective description of wares. She has also often been able to recognize in pottery mineral inclusions not found in local deposits and, by identifying their source, has not only proved the vessels in question to be trade pieces, but has in many cases been able to determine their place of origin. This is obviously of the greatest importance to the archaeologist.

Miss Shepard, through cooperation of the Laboratory of Anthropology at Santa Fe, has for several years taken part in the Institution's studies of Southwestern and Maya pottery. On January 1, 1936, she joined the Division staff on temporary appointment. She has continued her research upon the collections of E. H. Morris from the La Plata region of northwestern New Mexico, and upon those of J.E.S. Thompson from British Honduras. During the past winter, she spent six weeks in Guatemala studying, with R. E. Smith, the wares of Uaxactún. An unexpected result of Miss Shepard's Maya work has been the discovery that a large percentage of the pottery from British Honduras, from Uaxactún, and even from northern Yucatán contains tuff temper, although no deposits of this material are presumably to be found within long distances of the sites producing the vessels. The pottery neverthe-

less appears to be of local manufacture. This raises problems of the extent and direction of aboriginal trade in raw materials, whose solution will throw much light upon prehistoric conditions in the Maya area.

4.5.

ANNA O. SHEPARD

Ceramic Technology

YB 37:159–161, 1938

The plan of the Ceramic Technology Project has been to conduct concurrently studies of both Maya and Anasazi (Basket Maker-Pueblo) pottery. This division of effort is advisable because the archaeological investigations of the Division are being conducted both in the Maya field and in southwestern United States, and also because a greater diversity of materials and problems is thus presented. The methods of pottery making in the two areas are in many ways distinct and the course of ceramic development differed. A broader knowledge of primitive techniques is therefore gained; and, at the same time, opportunity is afforded to work out the evidence of culture contacts and influences as shown by trade in pottery and spread of specialized techniques of pottery making at two levels of cultural development. The purpose of the technological laboratory is to make extensive and systematic investigations which may be expected to yield data of general historical interest, rather than to provide facilities for analyses to be used for miscellaneous and unrelated identifications. Cooperative studies with other institutions are therefore made only when material contributes to the solution of the broad problems outlined for investigation.

Research in the Maya field during the year centered mainly around the completion of technological notes on the pottery of San José, British Honduras, for Mr. Thompson's report on this site. The various pastes had in the main been identified the previous year, but more detailed studies and comparisons with pottery from Uaxactún showed definite possibilities of tracing to their source a portion of the limestone-tempered pastes which are so widely distributed in the lowland region. The tuff-tempered wares regarded as intrusive in San José were re-examined for comparison of properties of the tuff with that in pottery from Copán, San Agustín Acasaguastlán, Kaminaljuyú, and Zacualpa. The study of San José pastes was supplemented by the

microscopic examination of sherds from Holmul, Tayasal, and Baking Pot in the Peabody Museum at Harvard. As the paste of over 1,400 sherds was identified, our knowledge of the distribution of tuff-tempered wares in the lowland region, a phenomenon of primary interest because of the questions of trade which it raises, was extended; and the necessity of considering frequency of occurrence in relation to natural resources was demonstrated. The marked differences in the proportion of tuff temper, both by period and by ware, in the various sites shows that distribution and relations are complex. Extensive studies will accordingly be necessary in order to determine the full significance of the numerous occurrences of tuff-tempered pottery in the limestone area.

Maya potters gave especial attention to vessel finish; and brightly colored, highly lustrous surfaces are characteristic of the monochrome slipped wares of the Petén. The properties of these slips indicate the use of specialized techniques which should provide important clues for study of the spread of traits. A number of different experiments were made to determine whether or not these surfaces were coated with some organic material after firing and the effect of such material, if present, on luster and color. Some positive evidence was obtained and a number of problems outlined for future investigation.

The principal advance made in the Ceramic Technology Project during the year was in extending the scope of the work to include chemical analysis. Simple qualitative tests and a few quantitative determinations had previously been carried out, but adequate facilities for chemical analysis were not available until the project was moved to Boulder in October. A laboratory was then equipped and the essential apparatus for micro-qualitative and micro-quantitative analyses obtained. Basic training in analytical chemistry and micro-technique was taken by Miss Shepard during the year while devoting full time to her regular duties.

4.6.

ALFRED V. KIDDER

Ceramic Technology

YB 38:246–248, 1939

During the current year studies in ceramic technology by Miss Shepard were continued in both the Maya

and the Southwestern fields; those in the Maya field were devoted largely to the Uaxactún collection and to general analyses of a preliminary nature, and those in the Southwestern field to specific problems outlined by earlier investigations, particularly firing methods, and paste composition of Río Grande glaze wares.

The study of Maya pottery presents serious difficulties resulting on the one hand from limited knowledge of the distribution of types with consequent uncertainty regarding the source of foreign sherds, and on the other from the nature of the pottery itself, for both peculiar and ill-understood methods of manufacture and the extreme weathering which characterizes much of the material from sites in the tropics makes accurate identification by visual inspection alone almost impossible. There are therefore decided advantages in introducing microscopic and other methods of analysis at the very inception of ceramic studies, as a means of ascertaining how peculiar effects in finish and decoration were obtained; while paste composition, which may constitute a basic criterion of classification, can always be accurately identified even in badly weathered material. Thus technological analysis furnished a sound basis for classification, as well giving independent evidence bear upon the relations of types and their sources. With these objects in view, pottery from sites excavated by the Division is being studied and the material supplemented by that from other collections, in order to build up our knowledge of the distribution of techniques and materials. In the fall a petrographic study was made of the principal pottery types of Uaxactún and of a representative series of sherds from Copán, 178 thin sections having been prepared and analyzed. This work brings the collection of thin sections of Maya pottery to 655, including material from Petén sites, the highlands, Copán, and Chichén Itzá. In addition to petrographic work, the sherd collection from Benque Viejo, British Honduras, was studied with the binocular microscope, paste composition and surface finish being compared with that of pottery from San José, British Honduras and Uaxactún.

In the spring Miss Shepard spent two months in Guatemala in work on the Uaxactún collection. A total of over 10,000 sherds from stratigraphic tests was examined, and the tempering materials used in the various periods and areas are therefore now fully defined. The three main classes of tempering material (sherd, calcite, and tuff) which occur in the principal pottery types show a clear-cut chronological sequence and definite correlation with style and form. There is therefore every indication that temper will be an important means of learning sources of influence and the origins of imported pottery when distributions are better known. The value of the microscope for identifying

intrusives, especially when surfaces are weathered, has also been fully demonstrated. Yucatán Slate Ware and Eggshell Orange from Mexico were both identified in this way. In addition to the analysis of paste composition, attention was also given to problems of surface finish and a microscopic study was made of pigments of polychrome vessels. Certain pigments, particularly browns, grays, two flesh colors, pink, and purple, were found to be mixtures of basic pigments. This study will be carried farther to determine what extent particular colors and color techniques characterize pottery types and districts of manufacture.

Ten days were spent at Copán in the study of sherds obtained from stratigraphic tests. The basis of classification of this material was checked and a preliminary analysis made of paste and finish. A search was made for local sources of clay and temper, and samples of raw materials were collected for laboratory testing.

4.7.

GEORGE W. BRAINERD
Study of Yucatecan Pottery

YB 39:270–274, 1940

The purpose of the study now under way, is the establishment of a correlated sequence of the prehistoric pottery types of Yucatán order to discover what chronological cultural interrelations existed among archaeological sites.

Such a chronological scale is, of course, of prime importance in providing the historical framework to which the archaeology of any area must be fitted. Although epigraphy has furnished us with the basis of our chronology, the absolute dates thus obtained can necessarily serve only as anchoring points for a detailed cultural history. Yucatecan sites have no dated monuments, and when sculptured dates do occur the difficulty of associating them closely with structures and artifacts is often insurmountable. Pottery provides the easiest and most reliable method available for the exact placing of cultural material in the time scale.

It is probable that a careful study of Yucatecan pottery will uncover data of much more general significance in Maya archaeology than the simple filling-in of dates on a calendar outlined by epigraphic evidence. Although Yucatán is peripheral to the main

Central American cultural stream, the importance of its chronology is enhanced by the fact the correlation between the Christian Maya calendars (upon which all exact datings depend) is based upon Spanish records made in Yucatán at the time of the conquest. Owing to the abbreviated method of writing dates used by the later Yucatecan Maya, there is a period of unknown between the last inscriptions written in the unabbreviated older style and the date of conquest. Therefore, a pottery chronology correlated with the abbreviated hieroglyphic dates, reaching from the conquest to any of the Old Empire style dates, is needed.

The materials available for the study consist of pottery collections from some 30 sites in the Yucatán peninsula which have been made by various Carnegie Institution workers during the past 16 years. They consist of a few whole vessels, and about 200,000 sherds selected from excavated collections of perhaps eight times that number of fragments. The bulk of the pottery comes from the extensive excavations carried on at Chichén Itzá. Most of this material was obtained as a by-product of the excavation and restoration of buildings, although some was taken from special trenches cut into dumps. Test samples from most of the other sites represented were obtained by H. B. Roberts during four field seasons, spent chiefly in the Puuc region in the western part of the peninsula, in conjunction with the architectural survey of this region conducted by H.E.D. Pollock. This joint survey was arranged in the hope that the cross-correlation of architectural and ceramic traits would give a rounded picture of the sites visited. The pottery survey was, however, interrupted by the illness and subsequent resignation of Mr. Roberts.

Dr. George C. Vaillant formed some tentative theories as to Yucatecan pottery chronology in 1927 from a study of the whole vessels available in museums, and in 1929 he worked out a partial Chichén Itzá chronology from trenches in the court of the Temple of the Phalli. At Holmul (which actually does not belong in this region) a pottery sequence was determined, chiefly however from ornate burial pottery which cannot be correlated with the pottery normally found in excavation. Other than these isolated studies, no chronological pottery work has been reported upon.

The following sites were represented in the Carnegie collections stored at Chichén Itzá: Calakmul, Cobá, Holactún, Oxkintok, Uxmal, Chacbolai, Chacmultún, Chunchuhub, Dzibilnocac, Dzibiltún, Chichén Itzá, El Palmar, Labná, Santa Rosa Xtampak, Yaxuná, Kabah, Kewic, Nohcacab, Nocuchich, Hochob, Huntichmul, Iturbide, Itzimté, Sabacché, Sayil, Tabasqueño, and Xlabpak-Maler.

Dr. Brainerd began this work without previous experience with Central American pottery, but with

archaeological experience in Iran, northern Arizona, and Tennessee, and a total of about three years' intensive laboratory work on Arizona pottery carried on for the most part at the Ceramic School of the Ohio State University. Therefore, although methods of dating by means of potsherds were well known to him, a period of study of the new type of material was felt necessary. At the beginning of this project in December 1939, six weeks were spent at the laboratory of Miss A. O. Shepard in sorting and microscopic examination of sample collections of Yucatecan sherd material.

After this work and after study of Roberts' field notes, Dr. Brainerd went to Chichén Itzá to begin detailed study of the collections. The work in Yucatán has thus far consisted almost entirely of classification and description, the building-up of the corpus from which the results will be drawn. A week was spent in excavating pottery samples, totaling several thousand sherds, at Oxkintok, where an early date had recently been discovered. Three weeks were spent with Mr. R. E. Smith in the location of Petén types of pottery in the collection, and in the discussion of methods for Maya pottery classification. Owing to the deterioration of labels caused by 4 years' dead storage in so humid a climate, considerable reorganization and relabeling was necessary. To minimize further deterioration, and to prevent confusion in the extensive sherd comparisons now being made, the majority of the sherds have been printed individually with their provenience. The collection has also been indexed and moved to Mérida, where it is now permanently housed. During the time consumed by the move, 600 photographs of pottery were taken in private and museum collections at Mérida, for the purpose of comparison and as an aid to the reconstruction of whole vessels from the sherds in the Carnegie collection.

Although the study has not reached the stage of interpretation, a tentative statement of the developments as they now appear may be made. The work was begun on material from Cobá and continued with that from Yaxuná, Calakmul, and various Puuc sites, on the theory that the best understanding could be reached by following a sequence from early to late, based on available site datings. Chichén Itzá was left until last. Its location is somewhat isolated, making it not essential to the Puuc chronology, and it was felt that its comparative complexity could be better unraveled if the chronologies of related regions were built up first.

The Cobá sherds were easily divided into two groups: one of finely made, and quite varied pottery; the other all made of a very coarse calcite-tempered paste, some pieces slipped and some unslipped. In the deepest trench the fine ware is much more common at the bottom of the deposit, which seems to have antedated the plaza floor upon which the nearby build-

ings stand. According to Mr. Smith, who examined the pottery, the fine ware is in large part analogous with Old Empire wares found at Uaxactún. The coarse ware bears a general resemblance to the San José pottery illustrated by Thompson, although there are minor, constant differences. Interestingly enough, there are only 27 fragments of the slateware so abundant in many other Yucatecan sites. These were scattered through the tabulated sample of 2,338 sherds, about one percent. The two possible explanations of this scarcity are that the Cobá deposit in question precedes the body of Yucatecan sites, and that slateware was not made in or often traded to that part of the peninsula. Fifteen sherds containing a considerable proportion of finely divided cellular material, seemingly plant stalks, were found well scattered through the trenches. They all came from similarly shaped vessels. Miss Shepard, to whom a sample was sent, reports that she has not examined pottery similar to this. The presence of a type of temper differing so widely from the mineral tempers characteristic of the Maya area suggests the possibility of foreign cultural contacts on the east coast of the peninsula.

The collection from Yaxuná is very small (272 sherds). Since no qualitative differences could be seen in the sherds, they were tabulated together. Over 50 percent of the material consists of slateware, a proportion close to that found in the Puuc material so far examined, although the shapes are somewhat different. There are two types of coarse, unslipped, calcite-tempered, jar rims, one of which is more suggestive of the corresponding material from Calakmul than of that from any other site in the collection. Mr. Smith classifies several of these rims as early Old Empire Petén types. Red-Slipped Coarse Ware is present in Yaxuná as at Cobá but in smaller proportion. Fine, thin-walled monochrome and polychrome wares, markedly different from the above material, constitute about 15 percent of the sherds. Smith identified various sherds from the Yaxuná series as belonging to pre-Old Empire and Old Empire Petén types, but the present collection is too small and mixed to allow of its correlation by individual samples with the distinct Yucatecan wares present. More excavation is obviously required to clarify this situation. The results might well justify such excavation. The large time range represented by the relatively abundant Petén-style material should give valuable checks of the sort needed for correlations with epigraphic material if pottery deposits of sufficient size can be located.

A collection from Calakmul was examined and tabulated. It had been gathered during work upon stelae and came from the fill which had fallen against the monuments as a result of the collapse of adjacent structures. Hence the suggestion is that the pottery is older

than the stelae, although this may not be so. Smith classified most of this pottery as late Old Empire, and considers it to vary only slightly from Uaxactún material. A large proportion of the slips on coarser vessels from Calakmul shows the translucency and waxiness of the slips of slateware, which is present in very small percentages, if at all, at Uaxactún. Their colors are generally deeper than the dull buff or gray most common in Yucatecan pottery. It seems possible that there may be some intergrading of slateware with Petén types.

The material from Oxkintok, where an almost certainly early date (9.2.0.0.0) has been found, was excavated in the hope that early pottery from the Puuc area would be forthcoming. Fortunately there was found a deposit 2.5 m deep containing a seemingly homogeneous mass of pottery overlaid by nearly sterile earth. In the top of this trench, as well as in three others, pottery comparing closely with that from other Puuc sites was found. The earlier pottery includes no slateware, and it is in other ways quite different from any other in the Yucatán collections. Mr. Smith was also unable to place it. Much of it has a slip averaging light ochraceous buff to cinnamon, applied over a slightly granular surface. The vessel shapes are highly diagnostic; one of them, a basin with sub-rim flange, is reminiscent of the coarse, red slipped basins of Cobá, as is the general scale and texture of the whole ware. It seems likely that the affiliations of this pottery will be found in early sites somewhere to the southwest of the peninsula. At present there are no such sherds for comparison.

In the Kabah collections Mr. Smith found sherds which he equates with nearly the whole range of Uaxactún ceramics. He also noted slateware in shapes characteristic of Uaxactún. These findings, of course, suggest a long occupational sequence which might be tied in with the Petén. Unfortunately a listing of his identified sherds shows them to be distributed so haphazardly through trenches and levels that a chronological rating of the trenches is impossible. The local wares also have not suggested any stratigraphy as yet, although a complete tabulation was made for all trenches. The sample is rather small (1,244 sherds); more excavation might help in the correlation, particularly if large, homogeneous deposits could be found.

The collections from Uxmal are large and contain material of a very high grade. Their homogeneity, as well as their lack of Petén resemblances, suggests an extensive and late occupation. The larger collections, from the site have been tabulated, several show good stratigraphy, although the changes are in percentages of types rather than in the types themselves. The lower levels of several of the trenches at Uxmal yield specimens corresponding closely to materials from Kabah,

while the upper levels do not. More definite comparisons between the tabulations should allow closer correlation between the two sites.

It seems evident from the Puuc materials examined that few definite qualitative criteria exist between sites, and that correlations and datings must depend upon close statistical work and perhaps upon mineralogic differences between potteries made at different sites.

The Chichén Itzá pottery has not yet been tabulated, although considerable time has been spent in its organization. From cursory examination it seems evident that for the most part it is quite distinct from the pottery thus far worked. The determination of its chronology should be considerably helped by the architectural evidence accompanying the pottery, by the large size of the samples, and by the system evolved during the handling of the other collections.

The above observations have been made previous to a general, systematic comparison of all the material. Later work may confirm or refute them, and will indubitably add others. The final goal of the study, a chronological scale, can be reached of course only upon the close intercorrelation of all material, which will be the final step of the present work.

At present the establishment of a Puuc chronology seems certain, although the number of stages and dating criteria which it will comprise is not yet evident. Owing to Mr. Smith's examination of the collection, we now know that a considerable quantity of Petén-style pottery is present, and it is possible that technological analysis will prove whether such pottery is imported or locally made. The presence of early Petén pottery in the badly mixed deposits dug at Kabah suggests that more excavation might yield material for the Old Empire chronological check. The newly discovered complex at Oxkintok, of which we have a large sample, may prove to be the first step in the discovery of the time and route of Maya colonization in western Yucatán.

The pottery of Cobá substantiates the epigraphic and architectural evidence of its Old Empire and East Coast affiliations, and suggests that further work might produce Puuc dating correlations. The samples from Yaxuná indicate much closer connection with the Puuc than with Cobá, although a moderate percentage of the Cobá material is present. Actually, Yaxuná is closer to Puuc sites than to Cobá, a fact which the presence of the Cobá-Yaxuná causeway has tended to obscure. The finding of early Uaxactún-like pottery adds another argument for further excavation at Yaxuná, in the hope of closer Old Empire chronological correlations. There is every evidence that Kabah would also yield material interlocking with a long period of Petén chronology, and the size and condition of the ruin perhaps make it

a better possibility than Yaxuná for obtaining such material.

Chichén Itzá remains as the likely source of much information which still eludes us. Its long occupation coupled with its median position in the peninsula should allow it to serve as a connecting link among the various isolated samples from widely separated sites. The collections are large, and the material varies widely. The results should be rich.

4.8.

ANNA O. SHEPARD

Ceramic Technology

YB 39:275–277, 1940

Systematic work on the microchemical analysis of ceramic materials was undertaken during the current year for the first time. The desirability of obtaining chemical analyses, quantitative as well as qualitative, of paints and glazes, and also of certain classes of slips and tempering materials, has been recognized from the start, but this field has been neglected partly because of the extreme limitation in quantity of material obtainable, which greatly increases the difficulty of analysis, and partly because results of petrographic analysis have proved so fruitful that full time has been required for meeting the archaeologists' demands. Therefore only a relatively few simple qualitative microchemical tests have been used. During the past year a part-time student assistant handled routine work required for petrographic analysis, freeing more time for basic research on new methods.

The application of chemical methods in pottery analysis requires much more preliminary experimentation than does the use of petrographic methods. We can use with very little modification the techniques which the geologist has employed for many years, whereas in the case of chemical analysis we are borrowing from the relatively new but very rich field of microanalysis, and our samples and requirements differ from those for which the methods were developed, so that each procedure must be thoroughly tested and often considerably modified. Quantitative determinations on samples as small as those which are obtainable from the pigments of pottery present such serious difficulty that until recently they have rarely been at-

tempted by the chemist. Our laboratory is equipped with a microbalance (weighing to 0.000002 g), without which quantitative work would be impossible, a photoelectric colorimeter, and a microelectrolytic apparatus, all of which greatly facilitate the work. During the summer of 1939 the assistance of Mr. F. G. Schoffman, of the Chemistry Department of the University of Colorado, was obtained, and methods for quantitative determination on 3-mg. samples of eight of the elements most commonly found in ceramic materials were tested and applied. Gravimetric, volumetric, electrolytic, and colorimetric methods were used. In this preliminary work, in order to test the methods and also to test the value of the chemical data from the archaeologists' point of view, samples of 28 Pueblo glaze paints were analyzed quantitatively for from two to eight elements. Glaze paints were selected for analysis because the geographic distribution and sequence of types is sufficiently well known to permit the formulation of specific questions regarding trade, and direct influence on, and independent developments in, technique. Comparable material is not available at present from the Maya area. The results showed, first, that it is possible, and practicable to make quantitative determination on 3-mg. samples with an accuracy well within the limits required by the nature of our materials; second, that the results of such analyses have archaeological significance and enable us to answer directly questions which would otherwise remain subjects of speculation; third, that quantitative as well as qualitative analysis is necessary satisfactorily to answer these questions.

During the fall and spring microchemical work was continued with the analysis of three classes of Maya ceramic materials: iron manganese paint, carbonate tempers, and clay slips. Quantitative determinations of iron and manganese were made on the paints by rapid colorimetric methods to learn whether or not the ratio of the two major constituents might distinguish ores from different deposits. The painted wares on which this kind of pigment occurs are as yet ill defined, and little is known of their origin and relationships.

Similarities or differences in paint should help clarify these questions. The quantitative methods developed are rapid and accurate, and preliminary results showed a wide variation in ratios, and some indication of correlation with pottery types.

The carbonate tempers were studied in order to find a simple field test to distinguish dolomite or, dolomitic limestone, from magnesium-free limestone. Carbonate tempers were used in such a large proportion of Petén pottery that it is desirable to distinguish varieties of this temper in order to use temper as a means of locating sources or distinguishing wares from different sources. So far dolomite and dolomitic

limestone have been found in distinctive pottery types, but we have lacked a satisfactory field method for rapid identification dolomite. Four organic reagents for magnesium were studied, and their sensitivity and the limiting proportions of interfering ions were tested. One reagent, Titan Yellow, was found satisfactory for field use.

A number of Maya pottery types are characterized by slips having peculiar properties; for example, the exceptional luster and brightness of color of Petén Orange and Red and the hardness, vitreous appearance, and iridescence of Plumbate Ware. It was thought that chemical analysis of major constituents, particularly silica, alumina, and iron, might indicate whether or not an unusual type of clay was used, and aid in explaining the properties. The composition of the surface material of Plumbate, an important ware in Middle America because of its wide distribution and definite chronological position, was of particular interest because it was not definitely known that the surface had a clay slip and the nature of this surface has long been a puzzle to archaeologists. The microquantitative determination of silica in 3 mg samples proved difficult, and a number of procedures were tested before satisfactory results finally obtained by using a platinum filter stick to avoid transfers. Three Petén samples and seven from Plumbate and Plumbate-like sherds were analyzed. The results showed that Plumbate Ware has a slip of claylike material, and the proportion of element determined, sheds light on the peculiar properties of the surface.

Opportunity was afforded through a special grant to test the applicability and value of spectrographic analysis of the materials which were being tested microchemically. We were especially fortunate to have the analyses made at Massachusetts Institute of Technology under the direction of Dr. G. R. Harrison. Two hundred and six samples were analyzed, including glaze paints, iron manganese paint clay slips, and miscellaneous pigments from Kaminaljuyú. Results proved the value of method for rapid qualitative identification and especially for the detection of trace elements which could not be identified by another means. Trace elements no less than the ratios of major constituents may serve to distinguish material by source. Encouraging results were obtained with the Petén slips, but in the Pueblo glaze paints the proportion of major constituents appears more significant than the trace elements. Some quantitative spectrographic determinations were made of iron manganese ratios, but considerable research will be necessary before this procedure can be generally applied.

The collection of samples no less than the method of analysis presents serious problems. From one to two hours were required to obtain by delicate scraping most

of the samples analyzed. The process must be observed with the binocular microscope to avoid inclusion of clay with the paint, and the risk of contamination is too great to entrust the work to an assistant.

During the fall approximately a month was spent in a final check of pottery from Benque Viejo, British Honduras, for Mr. Thompson's report on this site. From November through early January laboratory facilities were made available to Dr. G. W. Brainerd, and assistance was given him in his preparation for work on Yucatecan pottery.

Petrographic studies were facilitated by the part-time assistance, from October through the rest of the year, of Mr. R. Spangler, senior in geology at the University of Colorado. Mr. Spangler, after training, prepared 674 thin sections. Sherds from Uaxactún, Zacualpa, Kaminaljuyú, Miraflores, and San Agustín were sectioned. Mr. Spangler was also trained in the use of the binocular microscope for temper identification, and identified temper in a large collection of stratigraphic test sherds from a Río Grande site, through the courtesy of the Museum of New Mexico. The study is an extension of that started with Pecos pottery for Dr. Kidder at the inception of the Ceramic Technology Project. Finally, Mr. Spangler was directed in the study of a collection of miscellaneous materials from Uaxactún, including mortars and plaster, and materials from vessel interiors. A different approach was made in the study of plasters from that usually followed. Chemical analysis, because of the nature of the processes taking place in the calcination, slaking, and subsequent exposure of limestone plasters, does not show whether or not they were calcined; therefore, for the Uaxactún samples, chemical and mechanical separations were made and the residues and fractions studied microscopically. In this way indirect evidence of calcination of some of the plaster, and of the use of some unburned limestone, was obtained. The microscopic features of the residues were so distinctive that they gave promise of the possibility of identifying limestones from different quarries.

The principal petrographic work undertaken during the year was the study of pottery from the Guatemalan highlands, including a comparison of paste types of a western, highland site, Tajumulco (material lent through the courtesy of the Museum of New Mexico), and southern highland pottery. A special study of Plumbate pottery from the highlands, Salvador, and Chichén Itzá was made. Petrographic evidence gives promise of throwing light on the place of origin of this important ware.

4.9.

ANNA O. SHEPARD
Ceramic Technology

YB 40:302–304, 1941

Ceramic technological investigations for the current year have included a statistical digest and final check of data on Río Grande glaze-paint pottery, a study of Plumbate Ware from highland sites in Guatemala, petrographic analysis of fragments of tomb vessels from Kaminaljuyú, Guatemala, and temper identification of the collection of Yucatecan sherds in Mérida.

The study of glaze-paint ware was undertaken mainly to clarify and illustrate the place of technological analysis in ceramic archaeological research. Pueblo rather than Maya pottery was chosen as the basis for a critical evaluation of the results of such analysis because the frame work of Pueblo archaeology is better known than is that of the Maya. In particular the distribution of pottery types and their time relations, have been traced in considerable detail in the Southwest. Also important to the study was the fact that, information on geological formations and natural occurrences of ceramic materials is more easily obtained for the Southwest than for Central America. As long as archaeological research is in the stage of reconnaissance, in which the mapping of distributions forms a major activity, there is a tendency to limit laboratory analysis of pottery to routine identification. Not until there have accumulated the basic data from which specific problems regarding cultural development and relationships can be outlined, is it possible to utilize fully and effectively the facilities for exact identification which ceramic technology offers. The statistical summary of the technological data on glaze-paint ware shows how composition of paste and paint provide specific evidence regarding the area in which the ware was made, the principal centers of its production, and the extent to which it was traded. These are questions which hitherto have been only subjects for speculation. Likewise the study has shown the importance of correlating stylistic and technological evidence, particularly in instances where there has been mixture of local varieties of pottery through trade. The manuscript which is now completed, was written in the hope that a striking illustration of the importance of proper sampling, specific and exact identifications, and complete correlation of technological and stylistic data would enable the archaeologist better to judge the type of problem for which technological analysis can effectively be employed, and prevent the waste of time often involved in making meaningless analyses.

The petrographic analysis of Plumbate Ware has been continued in order to accumulate evidence bearing on the place of manufacture of this type of pottery, which is of outstanding archaeological importance because of its wide distribution in Middle America. Theories which have previously been advanced regarding its origin have been based principally on the geographic distribution of the ware, and on its stylistic affinities. Information regarding distribution has been gained in considerable part from local collections and is therefore not only incomplete but also possibly misleading. In consequence both Salvador and the highlands of Guatemala have been seriously proposed as the source of the ware, and in each case the arguments are based on supposed frequency of occurrence. Mexican traits are noticeable in vessel shapes, in Tlaloc effigies, and in motives of incised design. These features, however, give us no means of ascertaining how far into Central America the Mexican influence may have penetrated. The composition of the paste of the ware offers more specific information. For many years the hope has been harbored that the particular kind of clay from which Plumbate Ware was made might be found. A direct search for the clay would be impracticable, and the chances of obtaining ethnological leads from the survival of tradition regarding the ware are practically negligible. The evidence of composition, which at present seems most promising, is of quite a different nature. Plumbate Ware contains very fine tempering material which consists of mineral grains and glassy rock fragments. All Plumbate sherds which have been analyzed (including specimens from Salvador; from San Agustín Acasaguastlán, Zacualpa, Tajumulco, and El Quiché in Guatemala; and from Chichén Itzá in Yucatán) contain this same kind of temper. If identical temper should be found in the common wares indigenous to a site where Plumbate Ware was abundant, we should have circumstantial evidence regarding the place of manufacture of Plumbate. Pottery from Tajumulco, a site in the northwest highlands, excavated under the auspices of the Museum of New Mexico, has been studied in detail because of the considerable number of sherds in the collection having the appearance of unsuccessfully fired Plumbates. The petrographic analysis of sherds from this site revealed, for the first time, temper similar to that of Plumbate in sherds of non-Plumbate style. It would be premature to conclude from this occurrence that Tajumulco was a place of manufacture of Plumbate Ware, because only a relatively small number of sherds were brought out from the site and made available for study. It is, therefore, possible that the Plumbate sherds and also the few non-Plumbate sherds with similar temper are intrusive in the site. Nevertheless a very promising means of locat-

ing the place of manufacture of Plumbate Ware has been recognized.

The surface finish of Plumbate Ware is no less distinctive than its shape and decoration, for it is unique in American Indian pottery. The peculiar range of colors and glaze-like luster have long attracted and puzzled the archaeologist; microscopic examination and chemical analysis reveal properties which, though less obvious, are no less unusual and interesting. The work completed to date has conclusively disproved a fallacy which has long persisted in the literature, the supposition that the material was a lead glaze. Analysis has shown that the lustrous material is basically a claylike substance which was applied as a slip. This disproves a second fallacy, the supposition that the surface and body were both the same, or that the surface layer was produced as an exudation of material from the body. Studies are being continued on the crystalline structure of the surface coat, its firing properties, the cause of its luster, and the technique of application.

During the fall, a month was spent in Mexico, two weeks being devoted to identification, with the binocular microscope, of temper in the collection of Yucatecan sherds at Mérida. The primary object of the study was to aid in the classification and description of the pottery, undertaken by Dr. Brainerd. The variety of materials found and their distribution, however, also indicated that paste composition will, here as elsewhere, give evidence of sources of types and the extent of trade in them, when adequate samples are made available for study.

A series of 65 fragments from Kaminaljuyú tomb vessels was analyzed petrographically for purposes of record and evidence of source. Since the great majority of pastes contained material of volcanic origin, either vitric or crystal tuff, it was necessary to make a detailed study of all features which might distinguish tuff from different localities. Particular attention was given to the structure of the tuff and the heavy minerals. As a result of the analysis a few vessels were clearly indicated as intrusive, but the temper of the majority was of the type common in the Guatemala highlands. A small collection of sherds of cylindrical tripod vessels from Teotihuacán, loaned by the American Museum of Natural History through the courtesy of Dr. Vaillant, were sectioned and the paste compared with that of cylindrical tripods from Kaminaljuyú. Although the tempers in both sites are of volcanic origin, they are readily distinguished in thin section. On the other hand, identity of the paste of Thin Orange Ware from the two sites proved that the vessels represented were all from same source. During the summer of 1940 courses in theoretical and applied spectroscopy and colloid chemistry were taken at Massachusetts Institute of Technology. Emission spectroscopy offers the

most practicable method for complete qualitative analysis of small samples, and the only method for determining trace elements in such samples. It is therefore a valuable means for analyzing paints and slips. The course in colloid chemistry covered fundamentals which contribute to an understanding of the properties of clay and also of many characteristics of primitive pottery.

4.10.

GEORGE W. BRAINERD

Yucatán: Pottery

YB 41:253–257, 1942

The present study of Yucatecan ceramics was begun in December 1939. The year 1940 was spent in Yucatán in the classification, tabulation, and illustration of the extensive sherd collections gathered during the previous work of the Institution [Chapter 4.7]; 1941 in Cambridge in making chronological studies from previous notes, in comparative work on museum and published material, and in preparation of the material for publication.

The analysis of the pottery collections showed that an overwhelming percentage of these belong to two major periods, neither of which can be accurately dated in either the Christian or the Maya calendar, and which together represent the relatively short part of the span of human occupation in the Yucatán peninsula characterized by the building of the more imposing of the standing architecture. The two major periods represented in the material excavated previous to this study can be identified with 1. the major buildings in ruins of the so-called Puuc region, Sayil, Labná, Kabah, and Uxmal, and the earlier buildings at Chichén Itzá; and 2. the later, or "Mexican," buildings at Chichén Itzá. These periods will be called "Puuc" and "Mexican" respectively for ease of reference. In addition to these main groups, pottery referable to all the Petén periods was represented in various collections but without definite stratigraphic association with the native pottery. At Chichén Itzá there were stratigraphic evidences of a later ceramic period, the pottery of which equate with isolated fragments and specimens from widely separated localities in Yucatán. A considerable number of distinctive groups of fragments occur in collections which could not be placed chronologically from

the collections on hand last year. The collections made from Oxkintok in 1940 produced a large sample of pottery stratigraphically proved to antedate the Puuc period and inferentially associated with the earlier style of Oxkintok architecture (Shook 1940), in which a lintel dated 9.2.0.0.0 was found.

This year's program was planned to supplement the available material to such an extent that a general chronological sequence, including the total span of pottery making on the peninsula, could be built up and its major periods described. It was also hoped that the completion of such a span would allow it to be dated with regard to the Maya calendar, the Christian calendar, or both, thus furnishing material to aid in the correlation of the two calendars.

The field work during the present season has consisted of five trips which together occupied approximately three months. Each group of ruins investigated was sampled by 10 to 20 trenches distributed throughout the site. From one to five of these were usually found to contain large stratified deposits, the analysis of which served as the key by which the other collections from the site could be identified. The best sources of large, stratified deposits proved to be cenotes whenever these were present near the ruin. Since the end of the field trips the greater part of the collections has been classified and tabulated, and illustrations have been prepared for about half the material. Mr. R. E. Smith spent several days in Mérida in the examination of this year's collections, making available to the study his thorough knowledge of Petén pottery typology. The tentative results, thus far obtained will here be presented in the order of excavation.

Yaxuná was visited. A previous sample excavated from this site, though small, shows a large variety of pottery types and considerable Petén contact. The larger collections obtained on this trip permit the definition of four distinct periods, characterized by changes in the basic wares. The first period can be equated definitely with the pre-Old Empire period in the Petén. The second seems to equate with early Tzakol in the Uaxactún chronology, but stylistically shows closer similarities to Early Ticoman pottery of the Mexican highlands. The third period appears to have been contemporaneous with later Tzakol and Tepeu 1 at Uaxactún. The last period equates with the pottery of the Puuc, or the earlier great building period at Chichén. A sculptured stela and a sculptured jamb were found and notes, drawings, and photographs made. Additional mapping was done on the site. Work of this sort was conducted at each site visited, including sufficient mapping to locate all pottery trenches accurately.

The site of Dzibilchaltún has not previously been reported upon. It lies 1 km south of the hacienda of the

same name, and about 15 km north of Mérida. It consists of an aguada with a nearby ruined colonial church standing in the center of a Maya plaza. The site was suggested by Professor Alfredo Barrera Vásquez as a likely source of early colonial pottery. In addition to such pottery, several large groups of ruins, two partially standing Maya buildings, about 2 km of causeways, and 22 stelae (six of which were sculptured) were discovered and mapped. Measured drawings were made of the Spanish buildings, and of remains of frescoes in the church. At one of the buildings a dubious sculptured date of 1593 was found, which, however, is given some support by a date of 1617 discovered at the architecturally similar church of the neighboring village of Chablekal. Mr. E. W. Andrews took notes on the Maya architecture and stelae, including plans and sections of the two standing buildings. The pottery from the Maya ruins consists of a small collection of pre-Old Empire sherds, a large collection which seems immediately to antedate the pottery from the Puuc area, and a small collection of a period contemporaneous with the Mexican period at Chichén Itzá.

At Acanceh the best sherd collections obtained came from the base of the pyramid which is surmounted by the building bearing the well known stucco façade (Seler 1911). The collections have not been sorted as yet, but are known to contain material ranging from pre-Old Empire times through the Mexican period. The pottery resulting from Mr. Andrews' clearing of the buildings surmounting the pyramid may allow these buildings to be fitted into the ceramic succession. A preliminary check of the material indicates that collections deposited after construction of the building with stucco façade antedate the Puuc period.

A large quantity of pottery was excavated from Mayapán, and a collection was obtained from the cenote of the nearby town of Telchaquillo. The Telchaquillo pottery is all post-conquest. The Mayapán collection contains small groups of pre-Old Empire and Old Empire Petén, and of Puuc period pottery from the bottom of a trench sunk in the mouth of a cenote. Above this shallow deposit, pottery of the Mexican period of Chichén occurred mixed with, and finally superseded by a deep deposit of redware of later date. A series of trenches dug near buildings throughout the main group of the ruin produced collections in which late redware preponderates. Several of the buildings have since been cleared and mapped by Mr. Andrews. The redware found at Mayapán corresponds to redware of the latest occupation of Chichén Itzá, an occupation which at the latter site left little pottery and few if any architectural remains. The Mayapán deposits contain a Fine Orange Ware which is stylistically the immedi-

ate descendant of the "X" type Fine Orange found at Chichén Itzá (Brainerd 1941).

The final field trip of the season was made to Ticul, Dzan, and Maní. Modern pottery making was studied at Ticul, and excavations were made in the environs of the three towns. Classification of the extensive collections made is as yet incomplete. The town cenote at Maní yielded a sequence ranging from a horizon to which we have thus far recognized no affiliations: through pre-Old Empire, through the Puuc and later periods, into heavy postconquest deposits. Deposits on the grounds of the historic Maní church and monastery present an extensive Spanish colonial sequence, ranging from vessels closely related in form and ornament to Dzibilchaltún specimens, up to modern times. These collections are rich in Mexican and European glazed wares, and we hope for accurate dating of the associated native wares from this part of the sample. Other excavations chiefly in chultuns in Dzan and Maní and near Ticul yielded samples of the Mexican, Puuc, and later redware periods, of which samples from this part of the country were lacking in our collections.

A summary and discussion of the chronology in its present status may be set down here, always qualified by the unfinished nature of the work and by the scarcity of samples over the large areas covered. During the periods above called "pre-Old Empire" the Yucatán peninsula formed part of the range of a more or less homogeneous culture, extending over a large area which included the Petén. A major part of our Yaxuná pottery of this period was accepted by Mr. Smith as very similar to the Uaxactún pottery. The Yucatán collections contain pottery of this kind from almost every large site sampled. Certain pottery types in the Yucatán sequence which may tentatively be equated with early Tzakol show definite similarities to central Mexican pottery of the Early Ticoman period. The Yucatecan periods which equate with Tzakol and Tepeu I vary throughout the peninsula, having but a minority of their elements in common with each other and with the Petén. Petén polychrome trade wares occur in small percentages, and stand out sharply from the native wares. The period herein called Puuc follows the above and is characterized by the dominance of slateware, the antecedents of which appeared in the preceding periods. This period is quite uniform throughout Yucatán, as are the following periods up to the conquest.

An interesting side light on pre-Old Empire architecture is furnished by the contents of three trenches dug in the lower slopes of a large pyramid (15–20 m high) at Yaxuná. The trenches were so dug as to pass through only post-constructional refuse and post-occupational slump. The pottery, beyond a few late

surface sherds, is exclusively and typically of the pre-Old Empire period. Yaxuná, with its evidences of long and early occupation and its suggestion of influence on Chichén Itzá (Morley 1938:546–547), should certainly repay excavation.

Our large collections from the Puuc region sites of Labná, Sayil, and Kabah contain no pottery equivalent to that of the Mexican period at Chichén Itzá. Uxmal contains only a small fraction of one percent. Thus these sites must have been abandoned before, or at the time when, the so-called Mexican period reached Chichén Itzá. North of the Puuc hill range near Ticul, however, as well as north of Mérida, and at Mayapán and Chichén Itzá, widely separated sites, the Mexican period is represented. The rise and major occupation of Mayapán coincided with the decline of Chichén Itzá. This fact is proved beyond reasonable doubt by stratified deposits at the two sites.

The collections on which we have worked until now contain no deposits dating from the transition between the Maya and the colonial periods. The color and finish of the earliest colonial slipped ware in our collection and that of the Mayapán pottery are very similar, but there are various changes in forms between the two periods. The small collections we have seen from Tulúm definitely belong to the Mayapán period. Tulúm was probably occupied at the time when the first Spaniards saw it (Lothrop 1924). Tradition places termination of the occupation of Mayapán at about 100 years before the conquest (Landa 1941), and the ceramic evidence certainly does not refute such a dating.

As can be seen from the above data, the purpose of this season's work is on the way to accomplishment. We have every reason to believe that, by the end of year a ceramic sequence equating with Petén ceramic sequence and extending to the colonial period in Yucatán will be available from the material already excavated. In addition, a re-examination of the long-held theory that the major cultural development of Yucatán coincided with the decline of the Old Empire has been made advisable by the increasing evidence that Yucatán supported a considerable, widespread, and culturally advanced population during and before the time of the Maya Old Empire, and that this population in most cases used the same architectural centers, even the same pyramids, as did the people of the heretofore emphasized New Empire. There is no evidence of a major break in Yucatecan pottery tradition between the times of the Old and New Empires and certainly no evidence of a sudden influx of Petén Old Empire influence during this period, when a migration, either cultural or physical, into Yucatán has been thought to have occurred.

The pottery collected this season has added several new wares, and extensive data on form and decoration,

to the known Maya ceramic repertory. Perhaps more important have been the stratigraphic data which have permitted the chronological placing of many kinds of pottery previously known only from isolated sherd samples and whole pieces. Data on the variation between samples of the same ware gathered from various localities have added to our knowledge of cultural distribution and exchange. The continuance of the policy of placing the architecture in the ceramic chronology by its accompanying pottery has been made possible in several instances this season through the work of Mr. Andrews on three of the sites included in this report.

This study should represent but the beginning of more intensive and illuminating work. It has not been conducted as an end in itself, but as a tool to aid in the unraveling of the broader aspects of prehistory in the Yucatán peninsula. The necessarily involved and time-consuming work now nearing completion should permit the approximate dating, or at least the placing in an anchored chronological sequence, of any ruin, standing or fallen, in the area. Only two of the six Yucatecan pre-conquest periods tentatively outlined in this report are at all well known, the Puuc and the Mexican. Architectural work on the immediately preceding and following periods has recently been begun by Messrs. Pollock, Shook, and Andrews.

The present ceramic sequence is merely a dating outline. The order of the periods described has been stratigraphically proved, but much could be gained by further study of developmental changes between the periods, cultural interconnections, regional variations, and craft techniques. Further ceramic studies should go hand in hand with the archaeological excavation necessary to furnish a complete picture of the several horizons, the chronological placing of which has been indicated by this survey.

4.11.

ANNA O. SHEPARD

Ceramic Technology

YB 41:271-272, 1942

The study of Plumbate Ware has been the principal project of the year. This ware, important because of its wide distribution in Middle America and its con-

sequent value for correlating occupations and establishing contacts, has for nearly 60 years been an archaeological enigma. The place of its manufacture is unknown, and postulates regarding that center have included such distant regions as Salvador and south-western Chiapas. From the standpoint of ceramic technique it is the most highly developed Middle American ware known, yet its peculiarities have been completely misunderstood and erroneous speculations have gained acceptance through frequent repetition. Technological analysis is therefore required. The ware also affords opportunity for a somewhat different approach from that which has been made in previous technological studies of Middle American pottery. In earlier work, pottery recovered from a single site has been analyzed for the purpose of defining occurrences. A considerable amount of time has therefore necessarily been devoted to the study of local wares of inferior quality which had no trade value and which consequently do not directly contribute to investigations of the interrelations of peoples. In the Plumbate project, on the other hand, attention is concentrated on a highly specialized and widely traded ware. All its geographic occurrences and ceramic associations are being studied. We are considering the indications which paste gives of the place of its manufacture, the degree of variation in the materials used and the possibility of admixture of clays, the relative importance of firing method and properties of the clay in their effect on the quality of the surface, the frequency and method of imitation, the possibility of trade in raw materials, and the comparison of contemporaneous wares in composition and workmanship.

In this study it has proved advantageous to observe technological and stylistic traits simultaneously. The technological work has included analysis of the surface material, thermal experiments to learn what methods of firing were employed, and petrographic analysis of the paste. In the study of surface material, spectrographic analyses have been made of 15 samples, together with comparative analyses of 25 samples of common red slips. We have been fortunate in having the privilege of using the 35 foot [10.7 m] grating spectrograph of the Massachusetts Institute of Technology. X-ray analyses of several samples have also been made by courtesy of Drs. Grim and Bradley of the State Geological Survey of Illinois. These results, together with those obtained by microchemical, determination of the three major constituents, definitely correct the idea that the vitreous appearance of the ware results from a lead glaze. The analyses also explain in large measure the distinctive surface qualities of this most unusual pottery. Except for the single analysis by Loeb in 1903, made before the development of refined methods of handling small samples, these are the only analyses ever made of the glaze material.

A series of firing experiments has been conducted to learn what temperatures and firing atmospheres would produce the peculiar hard, gray surface of the ware. Soft, red, under-fired portions of Plumbate sherds have been changed to the typical hard, vitreous surface in these experiments.

Because of the extremely fine texture of the paste, petrographic analysis has been more exacting and time-consuming than has that of other wares. The 150 sections studied are from several sites in the western Guatemalan highlands, and from Alta Verapaz, Salvador, and Chichén Itzá. Various sherds thought to be either of mixed material, or imitations have also been analyzed. The paste is distinctive in composition and unquestionably offers, the best clue to place of manufacture of the ware. In spite of the great importance of Plumbate, its stylistic features have never been fully described, partly because published studies have, in general, been based on small collections. In order to correlate stylistic and technological features and to compare them with those of contemporaneous wares, it has been necessary to obtain from many sources the available data on style. This stylistic material will be included in the final report on Plumbate. A record has been made and photographs have been obtained of the Plumbate vessels in the principal museums of the United States. Over 250 vessels are now represented in the file; the record includes profile drawings, and detailed measurements from which basic proportions have been calculated, and data on surface qualities and workmanship. To facilitate the analysis of style, drawings have been made by Miss Janice Snow of incised designs, and such details of effigies as features and objects of adornment. The mass of stylistic data which has already been collected, when extended by field studies in Central America, will, it is hoped, serve to corroborate and strengthen the results of technological analysis.

Guatemala and Salvador were examined, and with the assistance of Miss Janice Snow in tabulating and sketching, a complete descriptive and photographic record was made of Plumbate vessels in the national museums of the countries visited and in 10 large private collections. The most generous cooperation was received from museum officials and owners of collections. The file on Plumbate Ware has thus been extended by 344 vessels and now furnishes an adequate basis for defining Plumbate style and workmanship, a task necessary in order to determine the relationships of this important ware.

While in Guatemala, Miss Shepard visited the site of Tajumulco in company with Mr. Shook, and short reconnaissance trips were made to several nearby sites. The frequency of occurrence of Plumbate in this area, as well as indications of the population which the region supported, are of particular interest because of the large collection of Plumbate vessels excavated from Tajumulco under the auspices of the Museum of New Mexico.

Several weeks in Guatemala City were spent in microscopic examination of sherds from the 1942 excavations of Mr. Thompson at El Baúl and Mr. Shook at Kaminaljuyú. Subsequently Plumbate Ware from both sites and other wares from El Baúl, particularly that called Tiquisate, which is associated with Plumbate and bears some resemblance to it in oxidized surface colors, were thin-sectioned in the laboratory and analyzed petrographically. When the paste and slip of Plumbate from El Baúl and Kaminaljuyú were compared with those of typical Plumbate, Miss Shepard noted minor differences, which may be significant in view of the distinct vessel shapes characteristic of these two sites.

The remainder of the year has been devoted to the preparation of the Plumbate report.

4.12.

ANNA O. SHEPARD
Ceramic Technology
YB 42:178–179, 1943

The study of Plumbate Ware, outlined in [Chapter 4.11 this volume], has been continued through the current year. In the summer of 1942 collections in Mexico,

4.13.

ANNA O. SHEPARD
Ceramic Technology
YB 43:173–174, 1944

The interruption of archaeological field work has reduced the volume of routine analysis of paste required of the technological laboratory, and thus afforded time for the study of aspects of ceramics ordinarily consid-

ered outside the technological field. The desirability of fully correlating stylistic and technological data and of using technological analysis to aid in the solution of well defined archaeological problems has often been stressed but seldom found easy of accomplishment. One way of facilitating such correlations is for the technologist occasionally to undertake general ceramic investigations. The study of Plumbate Ware, described in the last annual report, led naturally to two broader studies, one of design symmetry, the other of pottery form; these have constituted the principal projects of the year.

The design study was initiated by an attempt to compare the symmetry of Plumbate design with that of Fine Orange Ware, which had been described by Dr. G. W. Brainerd. A series of experiments with symmetry showed that the usual concepts and accepted definitions are limited to those relating to finite designs; it is not ordinarily realized that infinite linear or one-dimensional designs involve higher types of symmetry and are of seven basic classes, instead of three as in the case of finite designs. A method of classification was therefore developed for linear or band designs, and its applicability, as well as the significance of the evidence obtained, was tested by analyzing a large series of designs from four Southwestern and three Middle American wares which are well illustrated in the literature. The Southwestern design systems chosen for study were: that of Mesa Verde, representing rectilinear and cursive design of the Classic Pueblo period; that of Pecos Glaze Paint Ware, for simple panel treatment in a medium which required progressive design Simplification; that of Santa Domingo, for curvilinear design of the historic period; and that of Classic Mimbres, chosen because of the complexity of its structure. The Middle American systems included, in addition to Plumbate and Fine Orange, that of Coclé, Panama, pottery, which is characterized by specialization in scroll patterns. The contribution which symmetry makes toward the understanding of design relationships was compared with that of structure and design elements which are recognized criteria in design analysis. Results of the study have been summarized in an illustrated paper.

Form is of primary interest to the student of Mesoamerican pottery because of its diversity, and particularly because many forms appear to be peculiar to periods or regions. It seemed desirable at this stage to summarize our knowledge of pottery shape in order better to trace the distribution of specialized forms and to understand the influence of one region upon another as revealed by the sum total of form traits. A card index of pottery form has therefore been started to facilitate such a summary, and also to guide the systematization of form classification and definition, and

to lead to broad comparative studies of the pottery shapes of different culture areas. To date, over 1,000 cards have been prepared, and a consistent working classification has been devised. The task of checking reports for this material has incidentally constituted a suggestive review of ceramic literature.

In the fall, six weeks were spent in the East were devoted in part to library work in the Peabody Museum at Cambridge, and, in part to the study of museum collections. Details of costume shown in codices, sculpture, and pottery were reviewed for comparison with representations on Plumbate effigy vessels. The study of museum collections followed a series of experiments with incised decoration planned to ascertain whether or not the use of different tools such as the gouge, knife, and point could be recognized. The effects of paste hardness and texture on the quality of line work were also investigated, and an instrument for measuring the depth of incised lines was devised.

Petrographic analysis during the year was limited, first, to a revision of the technological notes for the Kaminaljuyú report, together with further study of volcanic ash temper with relation to the question of the extent to which ash from different sources can be recognized; and, second, to the analysis of stucco and pigment samples from fresco-decorated wares of Guatemala, Mexico, and Salvador. In the stucco samples, a variety of materials and techniques was recognized which should aid in identifying the work of particular schools of stucco decoration.

In anticipation of the preparation of a handbook on methods of pottery analysis, a bibliography has been prepared which covers current periodical literature on recent ceramic research, and analytical method of interest to the technologist. In the same connection, recent literature on color standards and color nomenclature has been reviewed.

4.14.

ANNA O. SHEPARD
Ceramic Technology

YB 45:211-214, 1946

The temporary cessation of archaeological field work during the war afforded opportunity for investigations which were departures from those previously con-

ducted under the Ceramic Technology Project. Two principal studies under this extended program, that of Plumbate, an important Mesoamerican ware, and that of symmetry in abstract design, were completed in the current year. The advantages of broadening the scope of the project are apparent in view of the extreme specialization, which archaeological ceramic technology represents. During the period of establishment of the project, the accumulation of material and the necessity of testing the applicability of many analytical methods restricted Miss Shepard's activities to the purely technical aspects of ceramic research. There was then a large backlog of pottery from earlier excavations, and collections continued to come in from season to season. Extensive analyses were required in order to ascertain the range of materials and techniques used by the Maya and to gauge their possible significance in comparative studies; also the archaeologists reporting on pottery needed data to aid in their classifications. By the end of 1942, systematic and detailed analyses had been made of the more important collections and preliminary study of the others had been completed, many thousands of sherds having been examined microscopically and a variety of techniques identified by chemical and thermal tests. Although only a small part of the data thus amassed has so far been published, they have been made available to five archaeologists working on pottery under the auspices of the Division.

The disadvantages of extreme specialization were frequently apparent during this initial period, especially in attempting to correlate technical and stylistic features. Consequently, when the war stopped the flow of material from excavations, it seemed advisable to choose an archaeologically important ware and study all its aspects, since in this way the leads suggested by relations of composition and style could be followed by means of additional tests and experiments. Plumbate Ware was selected for this purpose because its wide distribution through trade makes it particularly useful in relating occupations, and also because it presents interesting problems of origin and development. The study was a long-term one, having been initiated with the analysis of sherds submitted at intervals by various archaeologists, and later extended by the examination of large museum and private collections. Reports on the work have appeared in previous *Year Books* [Chapters 4.4, 4.5, 4.8, 4.9, 4.11–4.13]. One recent result brought out in the final revision of the manuscript may be mentioned as typical of the usefulness of mutually supporting data on composition and style. The variety of Plumbate represented by sherds from Kaminaljuyú and El Baúl is distinguished not only by vessel shape, but also by a consistent difference in paste. Archaeological evidence indicates that this va-

riety antedates the better-known and widely traded variety. With two independent criteria for identification, the significance of hitherto puzzling specimens from Tajumulco in the far western highlands, as well as that of certain outstanding specimens from older collections, could be postulated with confidence. These data give a new frame of reference for the long-standing question of the place of origin of the ware.

The stylistic work on Plumbate led to a general review of pottery form and of certain aspects of design. In the search for fundamental properties of abstract design, symmetry was chosen for more intensive study. To the mineralogist, it affords a natural approach because the principles used to describe the form of a crystal are equally applicable in defining the arrangement of regularly repeated parts in a motif, a band, or an all-over pattern. Although several mathematicians have illustrated this fact, their method has been overlooked by students of art, and the concept of symmetry found in the literature of aesthetics is too limited to be of value in design analysis. In general this literature, including that in the field of philosophy and psychology as well as in that of pure and applied art, is dominated by the attempt to evaluate, a process which is irrelevant to the anthropological approach. The archaeologist may study design either as a criterion for identifying pottery types and as a means of following contacts of peoples through the spread of art styles, or as a cultural trait, in which instance he will consider such questions as what characteristics are common to the decorative art of all people, what features are most subject to change, how a style develops, in what ways artistic standards vary from time to time, and how new elements are assimilated. In either case, his individual tastes and those of his time have no bearing on his investigation, and his first problem is to recognize fundamental properties and to define them unequivocally. For the most part, archaeologists have previously centered attention on elements, motifs, or symbols and on methods of composition. These are particular features, treated descriptively. In contrast, symmetry permits classification by general, basic categories. The six different pottery styles which were used to test the significance of symmetry in design history exhibited a marked degree of variability in this property and at the same time showed its direct relation to design structure. The effect of symmetry on the less well defined characteristics of balance, rhythm, and dynamic quality was demonstrated by experimental constructions. Thus it has become apparent that symmetry is one of the fundamental features of formal design and that it lends itself particularly well to exact classification.

The effective utilization of the facilities of the Ceramic Technology Project is largely a problem in integration of evidence. We have in the Maya field particular

advantages for ceramic studies, and also some handicaps. These can be weighed by comparing conditionally those in the Southwest, where the value of the method was first tested. Maya ceramics offers a richer field for research: first because there is variety and refinement of decorative techniques reflecting the cultural advancement of the people, and second because there was much more extensive trade than in the Southwest, and it is in separating imported from local wares that petrographic methods have proved particularly useful. Our principal unfavorable factor is the difficulty of sampling pottery. Because of the rarity and weathered condition of surface sherds, it has been impossible to plot distribution of types by the economical method of surface survey which has been so fruitful in the Southwest. Also excavations have in many instances been in the nature of tests in widely separated regions from which it is difficult to make a well rounded historical reconstruction. For example, we may establish a sequence from a carefully excavated site, but as long as our knowledge of the ceramics of the surrounding area is blank, there is insufficient basis for distinguishing local from imported wares. Nor can we judge whether changes reflect indigenous developments or result from the introduction of new ideas or from replacement of populations. These circumstances have tended to reduce the work of the project to routine identifications for purposes of classification and record, thus supplying a necessary foundation for future investigations at the risk of wasting effort on details which may prove eventually to have no general archaeological significance.

A second circumstance seemingly unfavorable to technological work in the Maya area is the wide distribution of two commonly used tempering materials, limestone in the Petén lowlands and the Yucatán peninsula, and volcanic ash in the highlands. Small unrelated collections have probably exaggerated the handicap of this condition, as is shown by the fact that recent analyses of a well selected sample of Miraflores pottery showed a number of distinct varieties of ash, each associated with particular stylistic types. The possibilities of identifying material from different sources are therefore much better than they at first appeared; consequently our principal problem is one of sampling.

The studies of the past few years have demonstrated the advantages of extending the scope of the project and have suggested means of avoiding the limitations imposed by detached collections. Intensive study of archaeologically important wares or types best reveals trade relations and the spread of ceramic traits, and also most effectively illustrates aesthetic standards. In such studies we are not dependent on small sherd lots from single excavations, but can bring

together evidence from collections of the entire area. Usulután, a well distributed ware of the early horizon, has been chosen to trace the spread of a decorative technique and to locate centers of manufacture and the extent of their trade. There are also groups of types which would repay more detailed review in this way; for example, certain polychromes of the Petén and the Fine Orange types of the Gulf Coast. A second method of approach is by cultural regions, summarizing, comparing, and interpreting all available data. This would give a clearer picture of the similarities and differences of regions and show which among a complex of traits had the widest influence and which were specialized and restricted. It would also enable us to weigh the influence of environmental factors, the effect of natural resources on ceramic development. Both types of investigation would require close correlation of technical and stylistic evidence and would have as their primary aim the understanding of trends of development and the interactions of cultures as reflected by pottery. Finally it is our responsibility to make available to the archaeologist that part of our experience in ceramic analysis which would be useful to him. An archaeological ceramics handbook is therefore being planned.

4.15.

ANNA O. SHEPARD
Ceramic Technology

YB 46:190-192, 1947

The principal activities during the current year have been preparation of material for a ceramics handbook, study of a punch-card system, and preliminary analysis of Usulután ware. In addition, a section was added to a paper on the symmetry of abstract design, previously considered completed. Early material from the Pueblo region recently published by Dr. J. O. Brew suggested the new section, which is devoted to all-over patterns and a review of evidence of the influence of basketry design on early pottery design.

The purpose of the ceramics handbook is threefold: 1. To present for the archaeologist that part of technical and scientific ceramics which is applicable in our field, 2. To summarize and critically to evaluate methods of archaeological ceramic description and analysis, and 3. To consider the place of ceramic data

in archaeology and to examine the basis of our interpretations. There has long been need for an outline of ceramics written expressly to give the archaeologist background for understanding the technical features of pottery, particularly as scientific knowledge of the clay minerals has undergone marked advance in the past 20 years and much pertinent information has appeared only in technical journals. The review of analytical procedures will cover shape and decoration as well as technical features. A number of methods developed in our own work will be described, and attention will be given to field tests for the archaeologist.

Our ceramic studies have reached the stage at which a comprehensive review has become desirable. Extensive summarizations and comparisons require means of sorting rapidly the accumulated data. The practicability of a punch-card system for hand sorting has been tested in both technical and stylistic work. Immediate application of the system in technological analysis was found in an index of our collection of some 3,500 thin sections. A code covering provenience, period, pottery classification, paste composition, and various technical features has been devised, and cards have been printed. Sections of Petén and Copán pottery have been indexed to date, and the advantages of the method have been effectively demonstrated. Punch cards have proved no less applicable in stylistic analyses, particularly of entire and restorable vessels. Revision of method in these studies is desirable because our material is limited in extent and is scattered. To base comparative and distributional reviews on published illustrations is time-consuming and often unsatisfactory. Doubtless the fact that the bulk of archaeological ceramic material is in the form of sherds has directed and restricted our studies more than we ordinarily realize. We have inevitably been led to give undue prominence to secondary features such as color, texture, and wall thickness because they are easily determined in the fragment, which may give only a hint of vessel shape and design. Consequently ceramics as an aspect of material and artistic culture has been neglected for potsherds used as a tag for place and period. Without depreciating the potsherd, one may point to the desirability of bringing together a record of available, significant, entire vessels. A photographic file such as that started in the Cambridge office of the Division of Historical Research is beginning to be recognized as a requisite for comparative work; but with the ordinary indexing system it soon becomes unwieldy, and locating specimens and returning them to the file is discouragingly time-consuming. Punch cards fully meet this difficulty, since with a sound and comprehensive code a wide variety of classes and of specific traits can be sorted rapidly; moreover, filing is eliminated. Considerable time has therefore been given to

the development of systematic classifications of vessel shapes, decorative techniques, and design styles to insure a logically consistent and comprehensive code. A trial set of cards prepared for Usulután Ware is being used to test the code. It is hoped that when the system is perfected, other institutions will be sufficiently interested to adopt it and thus initiate a co-operative project for exchange of material. A number of archaeologists, including a large group of Mexican authorities, have been consulted on the code for cultural regions and have shown a splendid spirit of cooperation.

Usulután, the principal type of pottery analyzed during the current year, is one of the more widely distributed wares of the Archaic period and therefore affords opportunity for study of contacts and spread of influence on that horizon. Neither the decoration, which is simple and geometric in a technique long misunderstood, nor vessel form, which is varied and elaborate, has so far shed light on centers of production or on volume and extent of trade. The ware occurs mainly in the region of younger volcanic formations of Guatemala and Salvador; most of it is tempered with volcanic ash. When these conditions obtain, the feasibility of using paste composition to distinguish pottery from different sources may be questioned, and the Usulután study can therefore be considered a test case. The preliminary microscopic examination of a large collection from Miraflores and smaller samples from Copán, a number of localities in Guatemala, and several in Salvador has been encouraging. Eight distinct varieties of ash associated with different types of clay have so far been noted. Their distribution indicates distinct sources, and it is clear even from the preliminary examination that the ware was made in a number of districts and that there was considerable interchange between them. Relations will be plotted in detail as analysis proceeds. Possible local variation in style will also be studied by correlating form and composition. This evidence bears on the question of broad trends in ceramic history. It has appeared that the pottery of the Archaic period exhibits less regional specialization than that of the Classic, a possible difference which suggests a general parallelism with Pueblo ceramic development. But individual styles are less conspicuous among the predominant monochromes of the Archaic than among the polychromes of the Classic, and the fundamental obstacle in testing this generalization has been uncertainty as to amount of exchange and inability to distinguish indigenous from imported pottery by appearance alone, except in the case of a few striking types. There is now assurance that composition will afford a reliable basis for investigating the problem of local specialization in this area as it has in others.

4.16.

RAYMOND H. THOMPSON

Ceramic Studies

YB 49:202, 1950

Ceramic studies in connection with the Division's new program of research in the archaeology of the historic and protohistoric periods in northern Yucatán are being carried on by Raymond H. Thompson under an Institution fellowship. Thompson, a graduate student at Harvard University, will use the results of his studies for a doctoral dissertation. Special attention will be focused on pottery from early colonial and conquest period sites in an effort to define not only the time relations involved, but also the developmental interchange, and persistence of local cultural trends as reflected in ceramic traditions. Work was begun in February 1950 on the task of organizing the material already published and analyzing the available museum collections. Lengthy visits with Dr. George W. Brainerd of the University of California at Los Angeles, and Dr. Anna O. Shepard were planned in order to familiarize Thompson with the results of recent work in the area and with basic technological methods for use in the field analysis of pottery fragments.

The bibliographic work was temporarily abandoned and the conferences with Brainerd and Shepard were postponed until the summer in favor of a study of the ethnographic data on pottery shapes and functions to be found in the codices, wall paintings, and other forms of artistic representation. This project was suggested by Dr. Shepard, who hoped that some definition of function according to shape would result from it. Three months were spent in carefully searching the literature for representations of vessels, mainly from the three Maya codices, wall paintings, sculptured stone, and painted pottery. An ink tracing was made of each example found. Only the container itself was thus copied. Data on the position of the vessel, the person holding it, the contents, and the associated objects were included in a series of notes organized under the following categories: bibliographic reference, provenience, color, association, contents, quotation from the literature, and comment on function. The tracing and notes for each representation were recorded on cards which were filed according to a broad shape classification.

The results of a preliminary analysis of the over 400 examples are disappointing in terms of a functional study. Several factors contribute to this. Most of the source material is concerned with the representation of ritual events, which gives a ceremonial bias to

any functional conclusions. The small number of wall paintings and codices available narrows the range of shapes and uses. Moreover, the styles of representation and the different media used produce too high an individual variability in the representations of a single shape to justify a very detailed shape analysis. Because these factors so hamper a functional study, the emphasis has been shifted to a more purely ethnographic approach. A composite "type" of each of the shape classes will be compared with pottery vessels excavated from archaeological horizons. Thompson plans to write a short paper based on this comparative study of archaeological vessels and the representations of them found in Maya art.

4.17.

RAYMOND H. THOMPSON

Yucatán

YB 50: 232-236, 1951

One of the most rewarding aspects of the Institution's Fellowship program is the ever-present opportunity for the Fellow to gain experience and professional training from association with older members of the staff. Several such opportunities made in the period under review particularly productive in this respect. Early in the year, between five and six weeks were spent with George W. Brainerd, who provided both a basic knowledge of Yucatecan ceramics from the material he is preparing for publication, and a review of the statistical methods which have been developed for analyzing these data. A similar period was devoted to studies in ceramic technology with Anna O. Shepard. These studies consisted of an explanation of the methods used to analyze pastes, instruction in the microscopic identification of tempers, and an examination of the characteristics of the known Yucatecan pastes. After the season in Yucatán had begun, several members of the staff devoted themselves to the task of cleaning, sorting, classifying, and storing the huge ceramic collections which were in Mérida. This co-operative effort converted an otherwise monotonous and time-consuming job into an informal ceramic round table.

The research project of the past season consisted in an examination of Yucatecan ceramic materials in terms of Gordon R. Willey's "pottery tradition" concept, with special emphasis on the late prehistoric,

colonial, and contemporary periods. Although the problem in its purest sense is concerned with all those traits which run counter to horizontal changes and persist throughout parts or all of the pottery sequence, very little work has been done on early sherd collections. Study of the lower time horizons has been limited largely to the brief analysis made possible during the arrangement of the collections in Mérida. The major effort was concentrated on obtaining sherd samples from the little known late pre- and early post-conquest period. In spite of the importance of this time period to the Department's program, its ceramic components are only scantily represented by collections from Dzibilchaltún, Telchaquillo, and Maní. An intensive search this season for additional sherd deposits of this date has met with negative results.

During recent years Roys has been compiling a list of sites which show promise of yielding this type of ceramic evidence. In *Year Book* 48 [Chapter 9.28], he suggests the towns of Candel and Uxú as sites worth investigating. In order to appraise the digging possibilities of colonial sites still occupied, these two towns and a third, Chuburna de Hidalgo, were visited early in the season. Located north and west of Mérida, they were founded very soon after the conquest. All three have prehistoric ruins near the plaza and church. In each case, however, the long and continuous occupation of the same small plaza area makes it very unlikely that excavations would produce samples of conquest-period sherds, and the chances for a pure, unmixed deposit are even smaller. Certain features of the prehistoric remains are worth noting. Chuburna has three very small mounds, perhaps what is left of larger mounds, to the north and west of the church. These are being gradually destroyed to provide fill for leveling the plaza in front of the church. They appear to be dry rubble. No sherds were found despite a careful search.

Shook and Thompson made a second visit to Candel and Uxú to survey the ruins there. North of the church at Candel are the remains of six mounds, one of which was recently quarried away for the construction of the Mérida-Hunucma highway. Several floor levels appear where streets cut the edges of mounds, and there are masonry exposures on the two largest mounds. The approximately 8 m. high substructure of Mound 1 is by far the largest unit on the site. The masonry of two successive terrace constructions is exposed on the northwest corner. There is also a stairway on the south side. The masonry is of medium-sized blocks of roughly shaped but undressed stone which suggest Early Classic.

Mound 2 contains a circular wall about a meter thick and a little more than 5 m in diameter. This "round" structure is made of stone blocks of the same type as the stairway and terrace walls of Mound 1, but

the courses are liberally chinked with small stone fragments. Sherds collected from the fill thrown out during recent quarrying activities include some thin slate ware pieces which would reinforce the suggested dating for the Mound 1 masonry, perhaps raising it to Middle Classic. Round structures are not characteristic of this period; yet the masonry does not conform to the style known for the Postclassic period, when round structures do appear, nor was there noted anywhere at the site well cut and dressed stone such as is characteristic of Late, and Postclassic periods in Yucatán. This leads Shook to believe that "the masonry style suggests that the round temple, pyramid, and other structures at Candel belong to a period earlier than Late Classic." Shook also thinks that the round structure had a single doorway opening to the east. Thompson, on the other hand, is inclined to believe that this circular wall does not represent a "round" structure contemporary with the probably Middle Classic site, but rather the remains of a rainwater cistern built by the early Spanish settlers of Candel with stones robbed from Mound 1 or from a mound with similar masonry now destroyed. There are cisterns in a fair state of preservation among the ruins of the abandoned colonial towns of Hunacti, Calotmul, and Tecoh which have similar masonry and the same range of wall thickness and diameter. The fact that these cisterns are usually built into the side of a prehistoric mound would account for the association of thin slate sherds with Candel structure.

There is only one mound at Uxú, close on the north side of the church atrium. As a substructure about 8 m high with remains of a floor on top and a few veneer-style stones scattered about the sides and base. In the plaza Shook found a jamb stone, cut to full wall width, and part of a sculptured round column. The latter was broken just above the knees of the male figure which is carved on one side in low relief. The lower legs and the end of the breechcloth are all that remain. The sandals on the out-turned feet have a round ornament over the toes. The best guess for dating Uxú is Late Classic, somewhat later than Candel.

Roys [Chapter 9.28] also lists seven abandoned sixteenth century villages as likely to yield undisturbed deposits of the conquest period. These are Calotmul south of Tzucacab, Cauich just outside Oxkutzcab, Hunacti north of Tixmeuc, Kanchunup near Sotutá, Kizil near Uman, Tecoh east of Izamal, and Tuchicaan near Maxcanú. Three proved to be unsuitable for ceramic studies. The colonial town is completely destroyed at Tuchicaan, and all that remains at Cauich is a trace of some of the walls of the visita church. Although the Kanchunup church and atrium are well preserved, there is so little soil in the vicinity as to make it almost impossible to dig.

It was decided to select from the other four sites the two which, coupled with the colonial material that Brainerd obtained at Maní, Telchaquillo, and Dzibilchaltún, would give the best distributional sampling of the region. Kizil is still a very promising site, but, like Dzibilchaltún is in the Mérida area. Calotmul and Hunacti are quite near together in southern Yucatán. Since Hunacti was abandoned earlier, and therefore is more likely to yield a pure sample, it was selected for excavation. Calotmul, with its somewhat longer period of occupation, may yet prove to be the most favorable place to dig. Tecoh was chosen as the other site to be tested because its location in the north-east would considerably extend the areal coverage of the project.

There are fairly extensive prehistoric ruins at both Hunacti and Tecoh, those at the former being considerably larger. Although pottery of Preclassic and Classic types is common in both samples, no sherds have yet been identified as surely dating from the time of the conquest. Both sites have well preserved visita churches and associated colonial buildings which provide considerable information on the arrangement of an early Yucatecan colonial village.

It is difficult to explain why no conquest period sherds appeared in the excavations. The most plausible explanation places the blame on the time-honored custom of burning the milpas. The short occupation of these sites did not allow time for large accumulations of colonial pottery, and what did accumulate was on or near the surface. All known pottery of the period was tempered with calcite, a type of temper which does not stand up under intense heat. Consequently, unless in well protected and as yet undiscovered places, the thin soil cover characteristic of Yucatán has not provided enough insulation against the heat of the periodic milpa fires. This same argument can be invoked to account for some of the difficulties encountered in obtaining adequate surface sherd collections from most Yucatecan sites. One can walk through many a milpa near a ruin and pick up sherds in a well advanced state of deterioration induced by the fires of the burning milpas and aggravated by the heavy rains of the summer months.

At Roys' suggestion Thompson searched for and located two other colonial sites. It was hoped that some early Spanish sherds might be found at Tzucuaixim, which in 1605 was a sugar finca near Mérida. With the help of D. Juan Martínez Hernández, the present Quinta San Pedro Tzucuaixim on the eastern outskirts of Mérida, in the Chuminopolis section, was found to occupy the site of, and to preserve the name of, the old finca. The disturbance caused by lengthy and recent occupation makes this an unlikely place to dig. The other site, Yacman, was identified by Roys through

documentary evidence as a sixteenth century village with a visita church. At Hacienda Mahzucil, an annex of Hacienda Xcanchakan, the name *Yacman* is still used by the local people for a good-sized cenote about 2 km southeast of the hacienda center. There are a few small mounds near the cenote, and not far away the badly ruined remains of a rather small visita church. A surface collection of weathered potsherds included no fragments which could safely be dated later than the Classic period.

As noted by Shook [Chapter 4.17], he and Thompson made a collection of sherds from the ruins of the old convent of San Francisco in Mérida. Most of the sherds recovered are bolster-rim slate ware basins typical of the Late Classic. Through the courtesy of Dr. Eduardo A. Duarte E., Thompson was able to visit a newly discovered cave about 2 km southwest of Tekax. Sherds and two large jars found in the cave were Classic-style slate wares. Several large jars were found almost buried in calcareous deposits, pointing up the ancient practice of setting vessels in the caves to collect water from slowly dripping sources.

The failure of the concerted efforts during most of the season to obtain samples of conquest-period pottery has led to a stronger emphasis on the study of the archaeological and technological significance of present-day pottery making in Yucatán and Campeche. This type of investigation is aimed at tracing the "pottery tradition" through traits which seem to persist from prehistoric times into the contemporary period. Throughout the season considerable miscellaneous information on this subject has been collected, and as this report is being written, a systematic study of the main pottery-making centers of the region is being undertaken.

4.18.

ANNA O. SHEPARD
Ceramic Technology

YB 50: 241–244, 1951

During the past year stocktaking with respect to Yucatán ceramics has been carried on concurrently with the preparation of the book *Ceramics for the Archaeologist*. Experimental work with ceramic standards and methods of pottery making has extended the lat-

ter task. One of the major trends in ceramic studies of recent years has been toward standardization in recording outward appearances and away from consideration of the potter's methods. Description of appearances has satisfied the demand for objective reporting and eliminated speculation regarding techniques. Yet the potter's methods are of greater interest in the study of cultural development than are physical properties which exhibit secondary variations caused by differences either in composition or in methods or in both. Laboratory analysis, by establishing the composition of materials and revealing evidence of the method of firing, obviates the need for mechanical handling of physical properties. Furthermore, definitive marks of various shaping and finishing processes can be recognized through experimental studies. In line with this objective of understanding something of the potter's methods, an extensive study has been made of surface texture and finishing techniques. Some time has also been given to the preparation of material to illustrate graphically certain basic principles of ceramics.

The principal collections of Yucatán sherds in this country were shipped to the laboratory in the summer and used during R. H. Thompson's five week period of training in the use of the binocular microscope for the identification of the major classes of paste. These collections comprise sherds from Chichén Itzá, Puuc sites, Cobá, Holactún, and Oxkintok, and from the major phases so far recognized, but they are selected sherds and include a disproportionate number of unusual and unidentified types. They are inadequate for a review of the pottery of any one period or site, but can be used for a preliminary study of certain technological aspects of Yucatán ceramics. It is especially desirable at the inception of the Yucatán work to summarize present knowledge as aid in formulating problems and judging methods of solution.

Specific questions that have guided the review are:

- Whether or not the pastes of Yucatán pottery are sufficiently varied to serve for identification of localized types and for the recognition of interregional trade,
- Whether or not trade pottery from outside the Yucatán peninsula can be recognized by paste alone,
- and c. How Yucatán pottery compares with that from known Petén sites.

Recognition of local specialization contributes to the understanding of stylistic relationships and development and is needed to avoid confusing regional with chronological variations when reliable stratigraphy is lacking. Yucatán collections examined microscopically in 1940 showed indications of regional variations that gave promise that paste would afford means of segregating regional intrusives from local products, a difficult or impossible task when data are restricted to surface features and types are mixed

through extensive interchange. Two lines of evidence are used in the technological approach to this question of local specialization and regional trade: first, plotting of geographic distribution of the various paste types, and, second, correlation of paste with form or other stylistic traits.

In view of the problem of regional specialization, the collections in this country have been used to identify and define the varieties of the main classes of temper in Yucatán, volcanic ash and calcite. The material studied to date has shown a number of distinctive varieties of calcite and limestone, but the volcanic ash appears comparatively uniform in structure and mineral inclusions. This uniformity suggests that the ash was obtained from the same or similar sources. The origin of the volcanic ash in Yucatán pottery was a mystery for a number of years, until Pollock found in the Mérida market pumice said to have come from the coast, where it is washed in by ocean currents. Recently, experimental pieces were made from a sample of this pumice. Although they did not show the same structure as the ash in the pottery, it is quite possible that the pumice has varied in different periods. Nevertheless, certain characteristics of the ash temper suggest a terrestrial source. In addition to splintery glass and stray fragments of pumice, the pottery contains particles of tuff, that is, fine-textured, consolidated ash. The tuff, which could not be derived from pumice, often has a reddish clay or a calcareous matrix, and appears too soft to have been water-borne. The source of Yucatán ash temper is therefore still a question. A reddish or orange argillaceous tuff has so far been found only in Yucatán pottery.

The uniformity and distinctiveness of Yucatán ash temper is a great advantage in the recognition of intrusive ash-tempered pottery. Sherds that have been classed as foreign to the Yucatán peninsula on the basis of technological analysis include a few identified types, many odd sherds which because of their rarity have been tentatively classed as intrusives by the archaeologist, and many small, weathered nondescript sherds which would ordinarily pass unnoticed. The vitric ashes of these sherds include the rare perlitic type, as well as fine vesicular pumice and volcanic dust readily distinguished from the ash of Yucatán paste. Also common is crystal ash, which has not been found in any Yucatán type, though it is present at Uaxactún. Another prominent class of foreign paste has the texture of untempered clay. It is found in certain gray wares as well as in the various types of Fine Orange. Some progress has been made in distinguishing varieties of this paste by the presence or absence of calcareous particles, volcanic dust, and foraminifera. Other foreign pastes are tempered with igneous rock, of which there are a number of kinds.

Although intrusive sherds are easily recognized by paste, their source is in most cases unknown, and we do not yet have enough data or materials from the regions with which there may have been trade to make comparisons. But in view of the fact that a considerable proportion of the intrusive sherds have no distinguishing stylistic features, it seems desirable, as collections become available, to make a technological survey of likely areas to establish the distribution of paste types. On the Gulf Coast, samples from Tres Zapotes have been studied, and Professor J. García Payón is supplying us with collections from sites in the central Veracruz area.

The sherds in the Yucatán collections that have been classed as of Uaxactún style by R. E. Smith have been examined microscopically to compare their pastes with those of the type collection from Uaxactún. Sherds identified as Tzakol are, with rare exceptions, calcite-tempered, whereas Uaxactún Tzakol is almost exclusively ash-tempered. There were undoubtedly many local paste varieties within the Petén which we have not sampled, though a number are certainly represented by intrusives in Uaxactún. The Tepeu-like sherds from Cobá include both ash and calcite varieties in the same styles. The ash is exceedingly uniform and differs in structure from Yucatán ash. It is noteworthy that the ash-tempered and calcite-tempered medial-molding bowls show minor variations in rim form and type of molding, a correlation which strengthens the inference that they are from different sources.

The most obvious difference between Petén and Yucatán pottery is in decoration. In contrast with the elaborate polychrome painted types of the Petén, the principal type of well finished Yucatán pottery, slate ware, is either unpainted or decorated with simple patterns in black. The ware is readily recognized and has long been known but has never been fully defined. Tests of the paint have shown that it is organic, which makes the ware unique among analyzed Mesoamerican wares. The blackish or dark brown paints of polychrome ware of the Petén are mineral (iron-manganese ores), and this appears to be the most common black paint of Mesoamerica. The only other example of carbon paint that has been sent to the laboratory is that on Classic resist-decorated sherds. Examples of this ware from Teotihuacán and from Copán and Quiriguá have been found to oxidize readily at 550 degrees C. The pottery was almost certainly fired above this temperature, and it is therefore probable that the ware was painted after firing with a vegetable extract and reheated just sufficiently to char it. Unlike this black, the paint of slate ware is oxidized with difficulty unless hydrofluoric acid is used to loosen the texture of the body. In this respect, Yucatán black is comparable to the carbon black paints of the Pueblo area. The pres-

ence of a fired organic paint indicates a highly adsorptive clay. Thermal tests have also shown that the clay of slate ware has an exceptionally low vitrification point. Beading and blistering are noted at 950° C. In some instances a clear glass is formed. Still another peculiarity of some examples of this ware is the fact that the light drab surface becomes dense black at low heat, indicating that it was treated with some organic substance after firing.

Because of the historical and cultural relations of the Petén and Yucatán, a comparison of ceramic technique in the two areas is of interest. The same classes of paste are found in both areas, the similarity being dictated partly by natural resources, as in the case of calcite temper, partly by custom, as in the case of sherd-temper, which appears in the early types of both areas. In contrast with the paste similarity, the difference in decoration is striking and raises the question whether or not the decline in ceramic art in Yucatán was influenced by limitations of natural resources. To answer this question fully would require an extensive survey of Yucatán ceramic resources. It is clear from our present knowledge, however, that Yucatán potters had unusual clays, and that even though they made no use of their low vitrification point, they experimented with them sufficiently to develop a unique ware.

4.19.

ANNA O. SHEPARD
Ceramic Technology

YB 51:263–266, 1952

Laboratory work on the technology of Yucatán pottery was supplemented by a trip to Yucatán during the latter part of April 1951. A week at the Telchaquillo headquarters of the Department enabled Shepard to make a microscopic examination of sizable samples of Mayapán and Puuc Period pottery recovered this season, to search for clay deposits in the cenotes and sascab pits of the site, to visit the pottery-making village of Mamá, and to attend the staff conference held at the end of the field season. The second week in Yucatán was devoted to the study of collections at the Mérida office. At this time Shepard also held conferences with R. E. Smith and Shook on the code which

will be adopted for the pottery punch-card file for the Mérida office, and spent a day at Maxcanú observing potters.

Not the least important advantage of the trip was the opportunity it afforded Shepard to work with R. E. Smith and Shook. The technological study of pottery is necessarily a co-operative project between the specialist and the field archaeologist who collects the material, knows its context, and formulates questions regarding it. The more the field archaeologist knows about technological methods, their requirements, possibilities, and limitations, the more effectively the facilities of the ceramic laboratory will be used. Familiarity with technological methods is best gained by observation of work in progress and actual participation in those phases of the work that do not require special laboratory techniques, one of the most important of which is preliminary paste classification with the binocular microscope. During Shepard's stay, Smith and Shook gained some familiarity with the characteristics of the different paste types and their range of variations, and a set of reference chips of typical and distinctive pastes was prepared for them.

Knowledge of the distribution and properties of clays and non-plastic materials of Yucatán is essential to a full understanding of the ceramic development of the region. The materials used by present-day potters afford a practicable and convenient introduction to this subject and their study has a direct bearing on questions of continuity of ceramic tradition. In September R. H. Thompson spent a week at the laboratory on his return from Yucatán and left his collection of potters materials for analysis. Since the geological formations of northern Yucatán are uniform, and the samples were collected from eight villages, from Valladolid on the east to Campeche on the west, these clays promised to give some indication of the types of material available to prehistoric potters. We were interested in the extent of variation in the properties of these clays, how they might affect the potters' techniques, whether or not montmorillonitic clays are common, since there is evidence that slate ware slip is of this type, and whether or not any clays now being used are comparable to that of slate slip.

The clays are residual from limestone. Some are calcareous, others noncalcareous, but all are very fine-textured and highly plastic. Their mineralogical composition was studied by means of differential thermal analysis, X-ray diffraction, petrographic examination, and staining tests. The preliminary results indicate that kaolinitic clays are more common than we anticipated, although at least one montmorillonitic type is represented in the series. Firing tests show that all except two of the clays are red-firing, and none of them retains carbon paint effectively. Since none is compa-

rable to slate slip, the latter is apparently not a common type of clay in Yucatán, and it may have been traded extensively in prehistoric times.

The tempering materials collected by Thompson are all calcites, but they differ in form, in degree of crystallinity, and in purity. A matter of interest is the percentage of temper used by potters and its adjustment to the requirements of the clay. Chemical determination of the calcium carbonate in the clays, in the tempered pastes, and in the insoluble residues of the tempers showed that the percentage of temper is uniformly high, but there is no evidence of adjustment of amount to compensate for either a calcareous clay or an argillaceous temper.

During the year, the detailed petrographic analysis of Yucatán paste was carried forward, together with the preparation of a punch-card index of thin sections to facilitate the study of distribution of types and correlations of paste and style. The four paste classes represented by Yucatán pottery (sherd, calcite, volcanic ash, and lumpy clay) are clearly distinguishable and easily identified; our principal task has been to determine whether or not there are varieties within them that are localized. A question of primary interest with regard to the ash temper is whether or not more than one source of supply is indicated. All thin sections of this paste have been reviewed in some detail with this question in mind. The ash in all these sections is comparable in form and in sparseness and fineness of mineral inclusions. The paste is distinguished by the occurrence of particles of tuff or indurated ash. The similarity of these examples suggests derivation of the ash from a single source or from similar formations.

As yet we have no clue to the occurrence of this type of ash in Yucatán. If sherd collections were available, the geographic differences in frequency of occurrence might narrow the likely area of its origin. The reference collections selected from pottery provided by previous explorations in Yucatán, and now stored in Mérida, were examined with this question in mind, but they proved to be too reduced to give statistical results. As a tempering material volcanic ash is far superior to calcite, which, aside from the grave disadvantage of limiting firing temperature in consequence of calcination and hydration, gives a granular texture unless it is very fine. One of the puzzling questions of Yucatán ceramic history is why volcanic ash temper fell into disuse. Possibly the source of supply was cut off, or pottery-making in the centers using ash was interrupted by political disorders and the custom was lost. Our first problem is to establish the time of its disappearance.

Calcite, everywhere available in Yucatán, is the one tempering material that has been used continuously up to the present time, and it shows a great variety

of types. Present-day potters are using two and sometimes three types, either mixed or for different classes of vessels. R. H. Thompson reports that the potters think certain types are superior for cook pots, an idea to which thermal tests have given no support. There is no reason to suppose that conditions were simpler in prehistoric times, but the homogeneity and distinctiveness of certain calcite-tempered pastes and their association with particular pottery types, or their limitation to certain regions and periods, leave no doubt that there was consistent selection. Only by systematic study of large and well distributed collections can the significant variations be recognized. To date a number have been defined.

The pastes of all sherds recognized as intrusive in Yucatán are distinct from the indigenous pastes. Also, a number of foreign pastes have been found among nondescript sherds. We are handicapped in establishing the source of these intrusives because of inadequate data on the pottery of regions with which Yucatán may have maintained trade. We are therefore attempting gradually to build up knowledge of distribution as collections become available for study. Four such collections were examined during the year: Dr. Wells Jakeman gave us the privilege of examining and preparing thin sections of his material from Aguatal near Laguna de Terminos; Dr. Gordon Ekholm gave us a series of representative types from Panuco; Dr. Eduardo Noguera supplied us with red on brown sherds from Xochicalco which Dr. George W. Brainerd suggested should be compared with Yucatán Red on Slate; and, while Shepard was in Mérida, Dr. Alberto Ruz gave her the opportunity to examine his Edzná collection, which is of interest in relation to Petén types.

Ceramic studies carried on in the laboratory generally raise questions regarding trade in pottery, its effect on the spread of techniques and styles, and its reflection of contacts between peoples. Often the material required to answer such questions can be obtained only by extensive survey and testing. It is therefore necessary to formulate our problems directly with reference to the materials which are being recovered through field operations. The work at Mayapán has not yet progressed far enough to outline broad technological problems, but acquaintance with field conditions and the relations observed among present-day potters of the region have clarified the problems of regional exchange in Yucatán and given us a sounder working basis.

4.20.

RAYMOND H. THOMPSON
Modern Pottery of Yucatán

YB 51:266, 1952

During the late spring and the summer of 1951 R. H. Thompson made a study of pottery-making among the present-day Yucatec Maya. Previous studies of this subject have emphasized the uniformity of the method of pottery manufacture in this area and have singled out the use of the *kabal*, a foot-turned, unpivoted wooden support for the vessel, as the most striking feature of the method. The present study was aimed at documenting as much ethnographic detail as possible in order to accumulate a body of data on pottery-making which could serve as the basis for inference to archaeological ceramic materials.

Every village where pottery was known to be made was visited. These were Uayma, Valladolid, Mama, Ticul, Maxcanú in Yucatán; and Becal, Tepakan, Campeche, Lerma in Campeche. Also visited were Mérida and Izamal, where pottery is known to have been made around the turn of the century, but no surviving potters could be located at either place. All the steps in the pottery-making process from the collection of materials to the firing of vessels were recorded. Particular effort was made to obtain a complete photographic record. As much of the total process as possible was observed and recorded at each village visited. Further information was obtained by interrogation. A fairly extensive Maya vocabulary of pottery terms was compiled. Samples of materials, implements used in the manufacture, vessels, and other pottery objects were collected in all the villages. The samples of clay, temper, paste, and paint were turned over to Shepard, who has begun a technological study of them.

In addition, several old collections of Yucatán pottery and pottery-making equipment were examined. The largest and best documented of these is in the Chicago Natural History Museum. It was obtained from potters in Izamal in 1895 by George F. Gaumer, who set down a very complete description of the pottery-making process as practiced there. There are a number of small collections in the Peabody Museum at Harvard University. The earliest-known modern vessels from Yucatán were collected for the Peabody Museum by Edward Palmer in Progreso in 1878 and by Alexander Agassiz in Mérida in 1882. E. H. Thompson made a collection of vessels and pottery-making equipment largely from Ticul in 1900. He also prepared a paper on Maya pottery-making, but failed to separate observation of contemporary manufacture

from speculation about the methods employed by prehistoric potters. Another small collection is in the University Museum at Philadelphia. It was made by Henry C. Mercer, who published several short papers on his observations of pottery manufacture in Mérida.

4.21.

ROBERT E. SMITH

Ceramic Studies in Yucatán

YB 57: 450–451, 1958

During the past season Smith's work embraced four main projects: a recheck of the ceramic material from Kabah, Uxmal, and Chichén Itzá, studied last season, and an integration of the results of the technological analysis of this material made by Shepard in 1958; completion of the recording of data on the pottery of Mayapán; the selection of Mayapán pottery types as material for sherd libraries for various institutions in the United States and Mexico; and the organization in cases of all the ceramic material to be turned over to the Instituto Nacional de Antropología e Historia of Mexico.

Since he had previously studied the material from Kabah, Uxmal, and Chichén Itzá, it was a simple matter to introduce and to coordinate the technological data found by Shepard. This new information added greatly to the understanding and description of the wares and types from these sites. For example, ash temper formed 66.5 percent of all tempers used in the sherds examined from the Toltec Phase at Chichén Itzá, as compared with 19.4 and 33.7 percent from the latest phase at Uxmal and Kabah, respectively. This predominant use of ash temper suggested a considerable deposit of that material at or near Chichén Itzá, and with this in mind Shepard checked the area briefly during a two-day visit to the site but found no evidence of ash. This fact does not, however, eliminate Chichén Itzá, or some place near by, as the source of the wind-blown ash used as temper, since Shepard had insufficient time to make a thorough search of the site and did not investigate the surrounding areas. Ash of wind-blown origin was used as temper, though to a lesser degree, in the Puuc area, at least on pottery pertaining to the latest phase at Uxmal and Kabah. It is possible, then,

that ash was employed somewhat sparingly by potters who had the material at hand during the Classic Period, and that the use was greatly increased during the Early Mexican Period in Yucatán, owing to the advent and influence of the Toltecs who dominated Chichén Itzá during that period. These Toltecs, coming from a volcanic region in Mexico, may well have been prejudiced in favor of ash temper.

Prior to this season Smith had made a careful study of the pottery associated with the earliest and latest deposits at Mayapán. This year his efforts were concentrated on the pottery found midway between the earliest and the latest levels. The middle levels at Mayapán contained a very substantial part of the total sherd material examined, and for that reason, as well as others, they are of great importance. The result of this work was that, in Smith's opinion, there is no identifiable middle ceramic phase. The early types extend into the middle levels, gradually diminishing, and the late types occur in small quantities, gradually increasing until in the surface levels they predominate.

The selection of Mayapán pottery to be sent to various institutions in the United States and Mexico involved seven types: Mayapán Unslipped, Mayapán Cream, Mayapán Black on Cream, Mayapán Red, Mayapán Red on Buff, Mayapán Red and Black on Buff or on Orange, and V Fine Orange. Examples of all of them, including most of the shapes, decorative techniques, and styles of design, were chosen for shipment to each institution.

The organization of the ceramic material in the Institution's laboratory in Yucatán was on a typological basis. This material, together with all other artifacts, will shortly be transferred by the Instituto Nacional to the recently formed Instituto de Antropología e Historia de Yucatán in Mérida. There are collections from 87 sites: Quintana Roo, 29; Yucatán, 21; Tabasco, 18; Campeche, 16; Chiapas, 2; Veracruz, 1. Of these collections the largest and most thoroughly studied are: from Yucatán-Mayapán, in which the types are arranged according to early, middle, and late levels, Chichén Itzá, Uxmal, Kabah, and Maní; from Quintana Roo, Tulúm, Ichpaatún, and Tancah; from Tabasco, Jonuta, Juárez, Tamulté, and Huimango; from Campeche, Atasta, Santa Rosa Xtampak, Xpuhil, and Dzibilnocac (Iturbide); from Chiapas, Tecolpan. A report on the pottery from Atasta, Huimango, Jonuta, Juárez, Tamulté, and Tecolpan has been published by H. Berlin. W. T. Sanders has prepared, and will shortly publish, a study of the collections from Calderitas, Ichpaatún, Tancah, and Tulúm. A report by R. E. Smith on the Early Postclassic Period or Toltec Phase pottery at Chichén Itzá and that of the latest ceramic period (Late Classic and Early Postclassic transitional) at Uxmal and Kabah is nearing completion, and a full

report by the same author on the pottery of Mayapán is under preparation. Last, a general study by the late G. W. Brainerd of the pottery of Yucatán, which will include most of the Yucatecan sites in the collection, is expected to appear in the near future.

4.22.

ANNA O. SHEPARD

Ceramic Technology

YB 57: 451–454, 1958

During the current year Shepard, working in a half-time basis, has reviewed technological data on Yucatán and lowland Maya pottery in order to prepare this material for publication while transferring to geology and her major field of endeavor. Much of our analytical work on the ceramic technology of these areas was undertaken before the archaeologist's stylistic studies were completed. Our principal need, therefore, was to round out our data and establish a broader base for interpretations. This necessitated study of collections in Yucatán and Guatemala.

Shepard spent 12 weeks in the field seeking correlation between stylistic and technical features. From January 10 to February 7 she worked in Mérida on R. E. Smith's collections from test cuts at Uxmal, Kabah, and Chichén Itzá. A clear cut distribution pattern and definite relations between paste composition, ware, and vessel shape emerged from this review. Some wares, such as the fine-textured, calcite-tempered Thin Slate and the coarse, sherd-tempered Holactún Black on Cream, are uniform in composition, whereas the more generalized ware Puuc Slate is heterogeneous, including four paste classes: calcite-, volcanic ash-, and sherd-tempered pastes, and lumpy untempered paste. A number of varieties of calcite temper further diversify this ware. A similar contrast is found in the stylized vessel shapes. Calcite-tempered or volcanic ash-tempered paste is strongly preponderant in some forms, whereas others include a significant representation of the main paste classes. The degree of paste uniformity also differs by site. The two classic Puuc sites, Uxmal and Kabah, have a heterogeneous paste representation; in contrast, the Chichén Itzá sample, classed as Toltec by Smith, is exceptionally uniform, the various slipped types running almost exclusively to volcanic ash temper and the unslipped types to cal-

cite temper, with high correlation between classes of calcite and vessel form. We have, then, some good correlations between paste, ware, and shape, some centers showing well established techniques, others exhibiting technical diversity. These occurrences are most simply explained by the hypothesis that pottery-making communities drew on diverse local resources and that there was a lively trade among them, some communities being much more dependent on exchange than others. That is, standardized wares and types may be considered products of pottery-making communities having well established techniques; classes that are variable in composition suggest that style was more widely established than technique; uniformity within a site may reflect self-sufficiency in pottery production; diversity may indicate a community depending in large measure on trade for its pottery. These explanations are without doubt glaring oversimplifications. There are other factors that must be weighed, especially exchange of raw materials, potters of a community practicing a number of different techniques or passing through a period of experimentation, and different degrees of standardization in different centers. These explanations should all be tested as working hypotheses in future explorations, and this season's results hold promise that definitive answers can be obtained.

Several collections from other sites were examined for comparative purposes. The most interesting was a small sample of Tulúm Red Ware. Its calcite-tempered paste was distinguished from this class of paste in the Puuc sites, Chichén Itzá, and Mayapán by the presence of quartz grains. This diagnostic served to identify as trade ware some of the sherds from a small Mayapán lot selected by Smith on the basis of surface features as possibly Tulúm Red.

While in Mérida, Shepard examined a sample of the principal wares and some unusual pieces from the National Geographic-Tulane University excavations at Dzibilchaltún. It was gratifying to find sufficient interest in the results to give promise that this line of investigation will be followed independently.

Two pottery-making villages, Lerma and Tepakan, were visited to observe firing methods, and a record of firing temperature was obtained from the work of a Ticul potter at Hacienda Uxmal.

An attempt to obtain information on the source of the pigment Maya blue and to get a sample of it from the village of Tekax, where it is rumored to occur, was unsuccessful. During the year, however, additional analytical data on this pigment were secured. A record of reflectance spectra was made through the courtesy of Dr. R. O. Fehr, of the General Electric Company. The tristimulus values calculated from such curves serve to identify pigments, but no published values corres-

ponding to those obtained for Maya blue have been found. Shepard has considered the possibility that this pigment is an organic dye held by a clay with an expanding lattice. It was hoped that a clue to the presence or absence of an organic constituent might be obtained from an infrared transmission spectrum. Dr. Hans B. Gottlieb and Mr. Bert Weberg, of the Chemistry Department of the University of Colorado, kindly ran spectra for Maya blue and hematite as a control. The Maya blue curve corresponded to that of a rare clay mineral, but one peak, which might represent an organic constituent, was too faint to be definitive. A dye, if present, would make up a small percentage of the material, and we are still handicapped by lack of an adequate sample.

In Guatemala from February 7 to March 30 Shepard's principal project was a re-examination of the Uaxactún collection. She had established the sequence of paste classes in previous seasons. It is surprising that sherds, a superior tempering material that predominated in Mamom ware, was replaced by the inferior material, calcite, for unslipped Chicanel ware, and in the following phase, when ceramic progress was expressed by the advent of polychrome ware, sherd temper was abandoned almost completely. It was in the Tzakol phase that volcanic ash was first used extensively, and the great bulk of early and middle Tepeu fine ware was tempered with this material. Unlike the volcanic ash of Yucatecan ware, this shows considerable diversity in texture. Especially noteworthy is the associated mineral matter, which is high enough in one variety to class it as a crystal-vitric ash. It seems improbable from the coarseness of the ash that it was air borne this distance. The sources of these ash tempers of the Petén are as yet undetermined. Geologists from a number of oil companies having concessions in the Petén were interviewed but could offer no clues.

Correlations between paste composition and defined style were not high, suggesting that Uaxactún potters were using a variety of pastes indiscriminately or that Uaxactún was obtaining pottery from an area in which a single stylistic tradition held but technique and resources differed, or that our sherds were not giving adequate stylistic criteria. When attention was directed to finishing techniques, color classification previously established was found inadequate. It had not been related to basic finishing method and was sometimes misleading because the colors of distinct slips often intergrade and a given slip may exhibit wide color variations depending on post discard environment. The fullest evidence was obtained from the painted wares of the Classic Period. There are two distinct classes of slip: one is whitish to buff, earthy, nearly lusterless, and was applied as a relatively thick coat;

the other, which ranges from yellow through orange to red, has a high lacquer-like luster and is very thin. Frequently, both these materials are used on the same vessel, the lustrous one always forming the final coat. Each, however, was also used alone, and a fourth technique consisted in smoothing and polishing without the application of a contrasting coat. Microscopic examination has further broken down the light slip into calcareous, noncalcareous, and ash-tempered varieties. The composition of the lacquer-like coat remains to be defined by laboratory analysis. These four basic finishing techniques are primary diagnostics and in a number of instances showed close correlation with style and paste.

Two outstanding features of Classic Petén decoration are the range of colors obtained by mixing pigments and specialized resist techniques. Pigment mixtures include gray from manganese and calcite, a lavender pink from hematite red and calcite, and brown from manganese and hematite. The constancy of color of the brown, which was used to represent body color in figure painting, indicates the maintenance of similar proportions of the two pigments. A striking feature of the resist decoration is the employment of hematite red paint in contrast to the carbon black which is the standard pigment for this type of decoration in both North and South America. Evidence was also found for two successive applications of the resist material and the use of two colors in the resist process itself, which reflect an unusual elaboration of this specialized technique.

Other collections examined for comparative purposes included that from Piedras Negras, which presents marked uniformity in paste composition in contrast to Uaxactún. Shepard also spent two days at Tikal examining a sample of the pottery and reviewing the problems of paste analysis for Miss [Vivian] Broman, of the University Museum. A small collection of special interest was that made by Dr. Willey, of the Peabody Museum, at Altar de Sacrificios, a site long suspected of being a trade center. A number of pastes were defined, the sources of which cannot at present be located because of our limited knowledge of distributions in this area.

Short trips were made to Zaculeu, with a stop at Quezaltenango to examine the Robles Collection from Finca Paraiso, and to Cahyup near Rabinal. The latter trip indicated the feasibility of attacking the problem of trade and centers of pottery manufacture by defining petrographic provinces. Cahyup is in the Precambrian, well beyond the region of recent volcanics. The pottery reflects this location. Schist or quartzite was present in the three classes of paste collected. The location of petrographic provinces would be guided by available geologic maps and, in collecting, due atten-

tion would be given to the smaller sites which may have relatively less trade ware than the large prominent ones. This approach seems worth pursuing.

In bringing the Ceramic Technology Project to a

close Shepard will concentrate on the completion of reports. She will also be glad to aid, in whatever way is feasible, students interested in taking up any aspect of technological analysis.

5.0. TEXTILES

5.1.

LILA M. O'NEALE

Guatemala Textile Investigations

YB 35:136–138, 1936

It is unlikely, because of climatic conditions, that any representative group of textiles or other perishable materials dating from pre-Colombian periods in Guatemala will ever be recovered. It is, therefore, chiefly inferences based on surviving fundamental techniques that the artistry and the very evident technical skill of the old weavers as shown in the carvings must be interpreted. There are no such elaborate costumes extant today as were worn in the prehistoric periods, but unless new tools and obviously introduced devices be found, it seems reasonable to believe that some of the ancient methods of making fabrics are still in use.

The investigation carried on by Dr. O'Neale during the first half of the year had the following objectives: to visit the highland centers of weaving; to study the methods of producing cloth from native and imported materials; to study the use of simple sticks and more or less crudely shaped tools; to analyze the seemingly complex techniques in terms of skills with which those tools have been adapted to variety of pattern requirements. Mat-making and basketry were arbi-

trarily eliminated, as fabrications of materials which do not require spinning.

The methods of gaining data and information were direct. If possible, the market of a center was visited several times. Whenever details of clinical interest or of patterning were noted, efforts were made to find men who knew how to weave the specific features shown by the fabric. Special orders involving the duplication of the features were then given usually with the stipulation that they were to be executed in the presence of the investigator. The general territory covered may briefly be characterized by centers:

1. The Guatemala City-Antigua area: This district represents artistic rather than technical diversity. The typical patterning depends upon some of broadcasting, in the main.
2. The Tecpán area: The costumes from several smaller centers show techniques ranging from heavy brocading to sketchy embroidery. In the two areas mentioned there is an increasing amount of work

- being done by professional weavers of certain villages. The logical development out of a tendency toward specialization seems to be the purchase of factory materials and complete independence of the product of hand looms. Most of the Indian men's costumes have reached the point where the *banda* or sash is the sole remnant of hand weaving.
3. The Lake Atitlán area: The costumes in this part of the highlands are simple, the techniques are fundamental, and the conventional pattern entails little in the way of individual ingenuity.
 4. The Chichicastenango area: Here the complexity of the standard designs woven in silk, wool, or cotton by the woman, and the elaborate embroidery in silk on heavy home-spun black wool garments by the men are the main features of the textiles. The men's work, because still done for themselves, remains of higher quality, in general, than the women's weaving which has noticeably deteriorated during the last two years. This is an expectable result of a demand for trade products in primitive communities.
 5. The Momostenango area: This is the region celebrated for its work in wools, its dyeing with natural dyes, weaving in fundamental as well as eccentric patterns, and felting. While the spinning and weaving are done almost entirely with appliances derived from Europe, dyeing and felting are still accomplished by simple methods known to be used by primitive craftsmen in other parts of the world.
 6. The Quezaltenango-Salcajá-Totonicapán area: From the standpoint of methods and production, this area is unusually rich. There are still a number of small pueblos in which all the materials for the women's huipiles, and even some of the men's garments, are made on back-strap looms. There are, too, in this district, masses of materials made on foot-power hand looms, and on draw looms like those which preceded the Jacquard. In addition to the hand-loom products, there are the increasingly available materials coming steadily from the modern factory at Cantel. Salcajá supplies a large percentage of all the skirts which have patterns in tied and dyed yarns. Embroidery is done professionally by women, especially those of San Cristóbal Totonicapán.
 7. The San Pedro Sacatepéquez (Departamento de San Marcos) area: This center is a smaller Quezaltenango in the type and quantity of fabrics which come from its looms. Yet, side by side with yardage output, there may be found the weaving of huipiles by the women on their back-strap looms.
 8. The Cobán-Salama-Rabinal area: The costumes in this district are simple, but the techniques represent a high degree of skill. This is the only highland region in which gauze weaving is typical. The handling of fine single-ply cotton yarns in two varieties of the gauze weave says not a little for the manual skill of the weavers of the district. Also, besides the thin brocaded fabrics, there are the elaborate heavy brocades of Tactic, and the delicate embroidery of Cobán, at this time usually executed on factory made materials.
 9. The Huehuetenango area: This pueblo is the market center for a district rich in various types of hand weaving with both cotton and wool yarns. Unfortunately, unless one is prepared to go on beyond automobile roads, there is little in the way of actual result to be gained from a visit. Some of the most interesting fabrics in Guatemala come from the area bounded on the south by Comitancillo and on the east by Sacapulas. Because of the comparative isolation of the villages within this rectangle, there should be remnants of techniques which have persisted over a long period of time.

The textile fabrics of today in the Guatemala highlands are not technically complex, but they do show distinct local variations. The simple back-strap loom may be held responsible for the several modifications of the plain over-one-under-one weave, many types of weft-face brocades, several standard twills, and the gauzes. There are also warp-face pattern materials, and pile-loop weaves. Of the eight standard weaves known through modern fabrics, only the satin and the double-cloth are missing. The materials used are cotton, rarely hand-spun in these days, wool, silk of different qualities, and a deplorably increasing amount of artificial silk.

6.0. HIEROGLYPHIC WRITING

6.1.

SYLVANUS G. MORLEY AND
J. ERIC S. THOMPSON
Hieroglyphic Research

YB 32:97–98, 1933

Dr. Morley devoted such time as he could spare from administrative duties to completion of his monograph *The Inscriptions of Petén*, second of the compendious treatises in which he plans to cover the entire field of Maya monumental epigraphy. The first, *The Inscriptions of Copán*, appeared in 1920; the third will include all sites not considered in the first two. It is believed that the Petén volumes will go to press in 1934. The preparation of the many maps, plans, drawings and photographic plates has required periodic visits by Dr. Morley to Washington, where, under the able and painstaking supervision of Mr. T. R. Johnson, this great body of material is being prepared for the lithographers and engravers.

Mr. J. Eric Thompson, on leave from the Field Museum of Natural History, spent half a year in hieroglyphic research under auspices of the Carnegie Institution. His work consisted of an examination of the notes left by the late Research Associate of the Institution, Dr. John E. Teeple, at the time of his death, and of

the mathematical testing of glyphs whose meanings are unknown.

Dr. Teeple's material, kindly loaned to Carnegie Institution by Mrs. J. E. Teeple, proved to be almost entirely calculations without explanatory notes, the great majority evidently having been made for his publication, "Maya Astronomy." Almost all the residue dealt with the application of the determinant theory to Maya dates at various cities. Unfortunately, it would appear that the subject matter of the publication which Dr. Teeple had in view at the time of his death was never committed to writing and, except for a few notes, has perished with him. It is unnecessary to emphasize the great loss to science that this entails.

Dr. Teeple's material was incorporated into a general survey of the application of his determinant theory to each city.¹ The incomplete results suggest the feasibility of a correlation between high mathematical ability and low artistic ability in certain cities. For instance, in accuracy of determinants Naranjo ranks very

high, yet the art of this city was always provincial and stiff. On the other hand at Yaxchilán, where Maya art reached its apogee, the determinant theory largely breaks down. Where the level of art is high, there is a tendency to frequent mistakes in the inscriptions and indifferent calculations. At Copán, however, where the art was definitely masculine, as opposed to the somewhat effeminate art of the cities of the Usumacinta Valley, accuracy and a high artistic standard go hand in hand. Results of the work upon determinants will probably throw light on the relations between different cities. For example, in the early period before 9.15.0.0.0 the determinants at Palenque and Copán are in pretty close agreement, calculating the interval from Cycle 13 at about two days more than Gregorian. At 9.15.0.0.0 Copán started to calculate at one or two days less than Gregorian; Palenque had, apparently, ceased to erect epigraphic monuments; while Naranjo as early as 9.12.0.0.0 was reaching the same accuracy as Gregorian, but in the later dates around 9.17.0.0.0 had turned to the old Palenque-Copán formula.

In the mathematical testing some 20 glyphs were chosen. In each case every known example from the monuments was noted, together with its position in the tropical year, distance in days from the mythical start of the calendar, and year-bearer under which it fell. The distances in days between all examples of each glyph were then calculated and the results submitted to every mathematical combination which it was thought the Maya might have employed. These included all astronomical figures, such as revolutions of the planets, but not the sidereal revolutions, which it would seem almost incredible that the Maya could have realized. The yearbearers under which each example fell were also examined for indications of any ritualistic grouping.

The results were disappointing. One group led to the hope that it might comprise seasonal glyphs, possibly gods ruling over 13 divisions of the tropical year, forming a kind of zodiac, but the evidence is not conclusive. Nevertheless this method holds out the best hope of learning the meanings of unknown glyphs; and its findings will be universally accepted since they can be shown to be mathematically correct. A publication incorporating the determinant material is now in course of preparation. In it will be embodied a discussion of the Venus glyphs.

NOTES

1. A determinant is any date which the Maya appear to have used to declare what addition should be made to the Long Count in order to bring any specified date in the 365-day year into the same relation with the tropical year as it was believed to have possessed at the mythical start of the calendar at 13.0.0.0.0, 4 Ahau 8 Cumhu.

6.2.

SYLVANUS G. MORLEY

Hieroglyphic Research

YB 42:178, 1943

Dr. Morley spent the summer of 1942 in Santa Fe, New Mexico, with offices at the Laboratory of Anthropology, where on June 1 he began the writing of a popular book on the Maya civilization, *The Ancient Maya*. He returned to Mérida, Yucatán, September 1, and has since been devoting his time to the completion of the book, which he finished early in June 1943. During the fall, winter, and spring he made a number of trips to Uxmal and early in May visited the newly founded Museo Arqueológico, Etnográfico e Histórico del Estado de Campeche, at Campeche, a splendid local institution.

Work on the hieroglyphic dictionary has gone forward. All Initial Series introducing glyphs at 39 sites (Copán and the 38 sites covered in Dr. Morley's study, *The Inscriptions of Petén*) have been drawn to scale, each on a separate card. Work has been commenced on another section of the dictionary, that presenting all known examples of Glyph C of the Supplementary Series.

In cooperation with the Instituto Nacional de Antropología e Historia of the Secretaría de Educación Pública, the Campeche Museum has been excavating the ruins of Edzná, an extremely important site in central Campeche which has close affiliations not only with the Old Empire but also with the Puuc Period of the New Empire. Three new Initial Series were discovered, as follows: Stela 18, 9.12.0.0.0, 10 Ahau 8 Yaxkin; Stela 19, 9.13.0.0.0, 8 Ahau 8 Uo(?); and a third, a fragmentary one, inscribed on the risers of the hieroglyphic stairway leading to the principle temple.

Mr. Alberto Ruz Lhuillier, of the Instituto Nacional de Antropología e Historia who was in charge of the excavation at Edzná assisted by Mr. Raul Pavón Abreú, Director of the Campeche Museum, spent a week studying the Institution's ceramic sherd collections in Mérida toward the end of May.

6.3.

SYLVANUS G. MORLEY AND
J. ERIC S. THOMPSON

Reconnaissance in Mexico and Guatemala

YB 43:169–172, 1944

Dr. and Mrs. Morley visited Copán in February 1944. During Dr. Morley's stay he made observations on all the 41 stelae known at that site for the purpose of comparing the coefficients of Glyphs C and X of their respective Supplementary Series in an endeavor to ascertain the cause of their observed interdependability. A new stela (no. 28), discovered by Mr. Strömsvik, was studied. This is only a fragment but presents a very early style of glyphs. Unfortunately it gives no date. The most important discovery of the trip was the identification of a heretofore unreported Initial Series. This was found sculptured on the south jamb of the west doorway of Temple II, and records the date 9.17.2.11.16 (A.D. 783).

Later in February Dr. and Mrs. Morley met Mr. and Mrs. Thompson at Tuxtla Gutierrez and together they visited sites in the highlands of Chiapas. At Chinkultic there was discovered a new Early Period stela (the tenth at this site) bearing the Initial Series date 9.9.15.?? (A.D. 628). This monument is important in that it carries the sequence of dates back a century and a half beyond the earliest previously reported at Chinkultic.

The party then moved to Toniná. This, the largest known Maya site in the Chiapas highlands, is beautifully located on the north side of the Jatate Valley, a range of low hills having been terraced and utilized for the erection of pyramids and temples clear to the summit, some 300 feet above the valley floor.

The most important epigraphic discovery was an Initial Series inscribed on the back of a crouching anthropomorphic figure of heroic size (Sculpture T.10). This may record the date 9.3.0.0.0 (A.D. 495), which is 60 years earlier than any previously reported at Toniná. Two new Period Ending dates were also deciphered: 9.12.5.0.0 (A.D. 677) on Sculpture T.17, and 9.15.0.0.0 (A.D. 731) on Sculpture T.34.

Toniná was evidently a city of considerable importance. The style of its sculpture strongly suggests connections with the great cities of the Usumacinta valley, Piedras Negras, Yaxchilán, and Palenque, the one hand, and with Copán and Quiriguá in the south-east on the other.

On his return to Guatemala City in mid-March, Dr. Morley went to Quiriguá to compare the coefficients of Glyphs C and X of the Supplementary Series on the monuments of that site. On March 28 he flew to Flores,

capital of the Department of Petén, accompanied by Mr. Virgilio Viscovich, of the Chicle Development Company, whose services had kindly been loaned to the expedition by Mr. Cloyd Smith, manager of the company in Guatemala, without whose timely and powerful assistance the expedition could not have covered so much ground in Petén in so short a time. Mr. Smith, in addition to permitting Mr. Viscovich, to accompany the expedition as transport manager, not only placed at its disposal a powerful outboard motor for river travel, but also provided Dr. Morley with letters of recommendation to the company's contractors throughout Petén.

The expedition continued on to La Libertad in the great central Petén savanna by automobile the same afternoon, and the following day, again by automobile, to Paso Subin on the Río Subin, a small tributary of the Río de la Pasión. Here the party embarked in a dugout canoe, temporarily equipped with an outboard motor, for the trip down the Río Subin and Río de la Pasión, and reached La Florida late the same night.

The next morning Dr. and Mrs. Morley visited the nearby ruins of La Amelia, 5 miles [8.1 km] distant, first reported by Messrs. Pollock, Smith, and Shook of the Division's staff in the spring of 1940; and continued down the Río de la Pasión, reaching the important site of Altar de Sacrificios, 3 miles [4.8 km] above the mouth of the river, that evening.

Altar de Sacrificios is located on the point of land between the Río de la Pasión and the Río Salinas, which unite, 3 miles [4.8 km] below, to form the Río Usumacinta, the largest watercourse in Central America. This site in ancient times must have been of considerable importance because of its strategic location. Upriver, six to ten days by canoe, would have brought the Maya to where they could reach Quiriguá in two days' journey by mountain trails, and within three days' journey of Copán. Three days up the Río de la Pasión and the Río Subin, and another three on foot through the forests and savannas of central Petén, would have brought them to Tikal, the largest city of the Old Empire, and, a day beyond, to Uaxactún in northern central Petén. Six to ten days up the nearby Río Salinas would have put them in the important centers of the Guatemala highlands; six to ten up the nearby Río Lacantún, a tributary of the Río Usumacinta, brought them to the various centers of the Chiapas highlands. Finally, it required but two to three days' journey down the Río Usumacinta to reach Yaxchilán, Piedras Negras, and Palenque, the greatest art centers of the Maya. Literally, Altar de Sacrificios lay at the crossroads of the Old Empire.

Here Mrs. Morley discovered three new stelae and three new altars, the former numbered 15, 16, and 17. Two new Initial Series were found: 9.3.0.0.0 (A.D. 495)

on Stela 13 and 9.10.?.?.? (between A.D. 633 and 652) on Stela 16; and two new Period Ending dates: 9.14.10.0.0 ? (A.D. 720 on Stela 2 and 9.15.0.0.0 ? (A.D. 731) on Stela 17. Most significant, however, was the correction of Dr. Morley's former readings of the Initial Series on Stela 10 and 11 from 9.7.10-0-0 (A.D. 583) to 9.2.0.0.0 (A.D. 475). This extends the sequence of dated monuments at Altar de Sacrificios backward some 50 years and, indeed, makes this site, on the basis of the dated remains, 40 years earlier than any other known city in the Usumacinta Valley. It raises the implication, moreover, that Maya culture reached the Usumacinta Valley by way of the Río de la Pasión and thence down the Pasión Valley, rather than via the Río San Pedro Martir in northwestern Petén and thence up the Usumacinta Valley, as Dr. Morley formerly believed.

The expedition left Altar de Sacrificios for the return journey up the Río de la Pasión on April 3, stopping at La Florida to visit the nearby ruins of El Caribe, discovered by Messrs. Pollock, Smith, and Shook in 1940, and the ruins of Aguas Calientes, discovered by Drs. Morley and Spinden in 1914. The next afternoon La Libertad was reached, and the following morning was spent at the ruins of Polol, some 8 miles [12.9 km] west of La Libertad, first reported by C. L. Lundell, of the Institution's botanical expedition to Petén in 1933.

Dr. and Mrs. Morley flew from Flores to Paso Caballos on the Río San Pedro Martir on April 11, where they were met by Mr. Salomon González, the Chicle Development Company's contractor at La Florida on the middle reaches of that river, a few miles east of the boundary between Mexico and Guatemala. In March 1943 Mr. Shook had reported an important new site with sculptured stone monuments on the south bank of the Río San Pedro at La Florida, which was reached by motor-driven dugout canoe from Paso Caballos on the morning of April 12. The ruins are located immediately behind the present chicle and rubber camp. Four new stelae were discovered; one new Initial Series, 9.15.0.0.0 (A.D. 730 on Stela 9, and one new Period Ending date, 9.16.15.0.0 (A.D. 766) on Stela 7.

The party left La Florida late the following afternoon by canoe downstream. The Guatemala frontier guard at Progreso on the north bank of the San Pedro River was passed the same night, and late the following day the expedition reached the small settlement of El Tiradero, Tabasco, Mexico, at which point the newly opened railroad from Tenosique to Campeche, Mexico, crosses the San Pedro. The next morning Dr. and Mrs. Morley left El Tiradero by rail for Campeche, and reached the latter point the same evening and Mérida the following day.

6.4.

J. ERIC S. THOMPSON
Hieroglyphic Research

YB 43:172-173, 1944

The elucidation of the purely numerical part of Maya hieroglyphic writing has progressed so far that the possibilities of further success along those lines continually diminish. Recently Mr. Thompson has attacked the problem from a different angle, that of seeking parallels between the hieroglyphic texts and the chronological sections in the Books of Chilam Balam. There is a certain danger in that approach because we are not certain exactly what language was spoken by the people who erected the stelae. One may assume, however, that the language was some lowland dialect, because the highland Maya did not erect stelae with hieroglyphic texts. Unfortunately there are no chronological passages in Tzeltal, Chol, or neighboring lowland dialects or languages, but these are fairly close to Yucatec, the language of the Books of Chilam Balam.

A start has been made in deciphering the many affixes attached to the hieroglyphs. Mr. Thompson has identified the affix corresponding to the Yucatec preposition *ti*, "at, on, or from," and elements indicating backward and forward. He has also advanced evidence that the symbol for counting was the figure of the mythical fish called *xoc*, because this and the Yucatec word *xoc*, "count," are homonyms. This is the first good evidence that the Maya used rebus writing. The results of these investigations were published early this year under the title "The fish as a Maya symbol for counting." Since the publication, of that paper Mr. Thompson has come upon other material confirming beyond reasonable doubt his identification of the fish symbol as the *xoc* fish.

A variant of the affix used as the preposition *ti* appears with fair frequency in Maya inscriptions. Its occurrence in Yucatecan texts before the coefficients of month signs indicates that it represents the word *tu*, a contraction of *ti* and *u*, "of," for in the Books of Chilam Balam *tu* is written before the day coefficient, for example *ox cauac tu hunte pop*, 3 Cauac at first of Pop. Here glyphs and words are in complete accord.

Another example of rebus writing is supplied by the completion sign, which consists of a hand over a moon sign and which, immediately precedes the period ended. Here the moon sign can have no lunar significance, but *u*, the Yucatec word for moon, also means "of." The combination almost certainly reads *u dz'ococ* "the 'completion' of," for this expression oc-

curs frequently in the books of Chilam Balam in connection with Period Endings.

Sometimes the hand is shown in the act of scattering grain, with the *xoc* bracket "count" as prefix. In this form the glyph usually follows a record of time completed or precedes the day on which it was completed. It is not improbable that here we are dealing with a past participle *dz'ocaan* means, "brought to completion," and *ocaan*, "sown." One may assume that there is partial duplication here, such as occurs in Aztec rebus writing. For instance, the Aztec glyph for the town of Cuahuacán is composed of a tree, an eagle, and the place symbol, but the first two elements, *cuahitl* and *cuauhtli*, "tree" and "eagle," duplicate each other, one being redundant except to confirm the reading of the other. The Maya glyph, then, would read *xoc dz'oc (oc)aan*, "the count brought to completion."

Confirmation of the translation of one prefix as "forward" is supplied by its further use as prefix to an element which enters into the combination Teeple translated as "new moon" or "same moon age." Actually, the glyph has a somewhat wider meaning, for it is used to indicate that the date to which it is attached has lunar significance. When the forward prefix is added, the whole indicates that it is the later of the two dates between which it lies which has a lunar significance. This form occurs only at Palenque, where it was particularly needed because of the involved order in which dates and distance numbers were often recorded. Another affix is placed below period glyphs only when they occur as distance numbers.

Among the present-day Maya of the Guatemala highlands who still retain the old Maya almanac of 260 days, sunset marks the start of the new day. For Yucatán we have no direct evidence as to when the day started, but certain passages in the books of Chilam Balam suggest that the division came at day-break or sunrise. A study, involving mythological concepts, of all variants of the glyph for day in Maya texts leads to the conclusion that the glyphs record a count by sunrises. It is, of course, possible that the starting point had shifted from dawn to dusk before the Initial Series period, but that the old terms had survived in speech and writing just as September etc. have survived in our calendar, although they are no longer the seventh *et seq.* months.

The time may not be far distant when Maya hieroglyphic terms will have to be translated first into Maya in order to conserve the full richness of their message.

6.5.

SYLVANUS G. MORLEY

Hieroglyphic and Historical Research

YB 44:170–172, 1945

Dr. Morley left New Orleans for Mérida, Yucatán, Mexico, on November 7, 1944, returning there from on May 3, 1945. He spent the summer, at Santa Fe, New Mexico, his usual summer headquarters, where Dr. E. L. Hewett, Director of the School of American Research and the Museum of New Mexico, very kindly placed at his disposal office quarters in the Palace of the Governors at Santa Fe, now the Museum of New Mexico. He will return to Yucatán at the beginning of November.

Dr. Morley has devoted the year to two principal research activities: preparation of the Maya hieroglyphic dictionary, and work on the Maya chronicles, in the Book of Chilam Balam.

For work on the hieroglyphic dictionary, a full-time draftsman, Mr. Isaac Esquiliano, of Mérida, has been continuously employed for the past three years, drawing the individual glyphs of the Maya stone, stucco, and wood inscriptions under Dr. Morley's direction and supervision. During this period Mr. Esquiliano, a Mexican of mixed Spanish and Maya descent, has developed a very high degree of skill in drawing the Maya glyphs.

At the beginning of this enormous task it was decided to draw first all the glyphs of known meaning, and later those of unknown meaning. Further, in order to facilitate accurate representations, it was decided to concentrate on one glyph at a time, drawing all known occurrences of this particular glyph before proceeding to another. In this way, in the case of partially effaced and badly eroded glyphs, the draftsman would have the benefit of previous, experience and familiarity with better-preserved examples of the same glyph.

The first section of the dictionary is thus devoted to the Initial Series introducing glyph, a highly important character in the Maya inscriptions, which not only stands at the head of most inscriptions where it occurs, but whose principal element indicates the name of the patron deity of the Maya month in which the accompanying date falls. This first section is about finished, barring a few odd examples of this sign, chiefly in inscriptions from Campeche.

The next eight sections of the dictionary are being devoted to the different examples of Glyphs G and F of the Initial Series and to the six different signs of the Supplementary Series, Glyphs E, D, C, X, B, and A, all of which deal with the moon. Of these, the examples of Glyphs E, D, C, and X are also nearly completed.

The drawings of the different occurrences of Glyph D have brought to light important new variants and have made possible a number of corrections in decipherment of the corresponding moon ages expressed by that character.

With the cumulative experience gained in repeatedly drawing the same glyph, we have been able to get more out of partially effaced inscriptions than was formerly possible, and although only a beginning has been made, the project may be said to be off to a good start.

The Maya Chronicles Project deserves a brief word of introduction. There have been preserved in certain native Maya manuscripts known as the Books of Chilam Balam, which are written in the letters of Spanish script but in the Maya language, five chronicles or rescripts of Maya preconquest history. These chronicles are of varying degrees of merit, and there is strong internal evidence that three of them have been copied from a single source, probably an ancient Maya historical manuscript in the hieroglyphic writing, the original of which is now either lost or destroyed.

These five chronicles contain practically all that has survived on the documentary side (that is, as opposed to the stone, stucco, and wood inscriptions) of ancient Maya history. Laconic as the chronicles are, they nevertheless present a fairly accurate picture with a solid chronological background of the main events of Yucatán history from the early fifth to the late seventeenth century; and, as primary historical source material of the very highest importance, they have long merited the exhaustive and critical study now being given them by Dr. Morley and Dr. Alfredo Barrera Vásquez.

Dr. Barrera Vásquez is now working under a grant from the Colegio de México but having formerly held both Guggenheim and Rockefeller fellowships, has been collaborating with Dr. Morley on a definitive translation of these Maya chronicles into both Spanish and English, and on an interpretive study of their contents.

For the past decade, under the auspices of the above agencies and others, Dr. Barrera Vásquez has been devoting a major portion of his time, first, to making a reconstructed text, filling the lacunae in one chronicle from another and including all variant versions; and, second, to translating the original Maya into Spanish. For the past two years he has spent a month in Yucatán each spring working with Dr. Morley on this investigation. The Barrera Vásquez reconstructed Maya text of the chronicles has been translated directly into English, which language, it has been found, renders the original Maya more exactly than does Spanish. Dr. Morley has written a commentary on the chronicles, incorporating therein the results of his own epigraphic studies during the past 30 years in

so far as the latter concern the course of ancient Maya history in the northern half of the Yucatán peninsula.

The history of Yucatán, as set forth in the Maya chronicles, begins with the discovery of the province of *Ziyancaan Bakh'alal* (the region around the modern Lake Bacalar in southeastern Yucatán) by a group of ancient Maya called the Itzá, probably proceeding from some Old Empire site in what is now northeastern Petén, Guatemala, in 9.0.0.0.0, 8 Ahau 13 Ceh of the Maya era, or A.D. 435, and closes with the fall of Tayasal, the last Itzá capital, in central Petén, in A.D. 1697, more than 12.5 centuries of documented Maya history.

6.6.

J. ERIC S. THOMPSON
Hieroglyphic Research

YB 44:172–173, 1945

In the previous report a brief description was given of a new approach to the problem of the decipherment of the Maya hieroglyphs. This method, which involves comparison of glyphic texts with the content of the Books of Chilam Balam, continues to yield interesting results.

In the various Books of Chilam Balam occurs the expression *u xoc'ol haab ti lak'in*, "the count of the year to the east," and one may safely assume that similar phrases involving the other world directions were current in Yucatán in the sixteenth and seventeenth centuries. In the hieroglyphic texts of the monuments, the four world direction glyphs are frequently followed by a glyph which consists of an element previously identified as a symbol for counting, and the sign for year. The whole is surmounted by a well known superfix of unknown meaning. There can be no doubt that these pairs of glyphs mean. "To the east [north, west, or south] the count of the year." The whole supplies a close parallel to the Books of Chilam Balam save that the world direction is given first, not last.

A problem which has vexed Maya archaeologists for some 50 years is that of the meaning of the "pectacle glyph" which is attached to month signs on occasions which can be proved arithmetically to fall the day before the first day of a month. This sign has been generally read as zero. There are two serious objections to

this reading. First, signs with a meaning approximating that of zero are known, but are never substituted for the spectacle glyph. Secondly, the spectacle glyph is combined with the Winged Cauac (the *haab* or year sign), which, if the interpretation as zero were correct, could only mean zero approximate years. There are cases, however, where this glyph with dates which end 13 approximate years. The interpretation is thus obviously at fault.

In the Books of Chilam Balam one frequently finds, the phrases *u cutal Pop*, *u cutal Uo*, etc., "the seating of Pop," "the seating of Uo," etc., set opposite the first day of each month. On page 7 of the Chilam Balam of Tizimin is the expression *ti cutal ti tun*, "at the seating of the approximate year." Interpretation of the spectacle glyph as "the seating of" fulfills all the demands of the various contexts, and agrees with Maya phraseology. This interpretation led to the identification of two new glyphs, variants of the spectacle glyph, which record whether the addition of a distance number leads to the end of a tun or merely to an odd day. The glyphs must mean respectively "[leading] to the seating of the tun" and "[leading] to the seating of the day." More and more evidence accumulates that the hieroglyphic texts closely, parallel the spoken word.

Little success has hitherto attended efforts to interpret affixes, and variations in those attached to glyphs of known meaning have for the most part been ignored, or dismissed as artistic variations. As an example of slight variations in meaning which they reflect one might cite the three common suffixes of period glyphs. The geometric forms of the katun and tun usually stand on three small circles when these glyphs occur in Initial Series or as period endings. When these glyphs (and other period glyphs) are used as distance numbers, the suffix takes the form of two or three circles between two inverted crescents. Thus, if one finds a period glyph with this form of suffix, one knows that it is part of a distance number. Rarely, the simple suffix of three circles is retained, and the suffix indicative of a distance number is placed beneath it.

A rare suffix, the "bundle" element, is used with the katun and tun only to record anniversaries; that is to say, the completion of a number of tuns or katuns from some important date that is not a tun ending. An example of this is on Lintel 3, Piedras Negras. The Initial Series 9.15.18.3.13 is followed by the katun glyph with a "count" prefix and the bundle suffix. This date is precisely one katun later than a date prominent at Piedras Negras.

The suffix with three circles may be ornamental, or its meaning must be generalized; the other two suffixes are indicative of the way the periods are being used. There are somewhat similar distinctions in the Books of Chilam Balam.

The Maya language has a great number of numerical classifiers, each object or group of objects having its classifier. In English there are a few such numerical classifiers, e.g. head of cattle, loaves of bread, sheets of paper, but the system is with us vestigial. The Maya of Yucatán used *te* as a numerical classifier *inter alia* with years and months. In the hieroglyphic texts there is a small prefix which is sometimes placed between the numeral and the period or month glyph, but which never occurs with day signs. The fact that it sometimes appears as a suffix of head variants of numerals shows that it is connected with the number, not the period or month sign. It almost surely corresponds to *te*. This surmise is further strengthened by the absence of the prefix from day signs, since in spoken Maya the numbers with day names do not take this classifier. Its absence or presence seems to depend on the space available. It is most frequent with low coefficients, where its presence serves to prevent undue distortion of the accompanying glyph; it is almost unknown with high numbers.

The normal work of identification of glyphs has made some progress. Among new glyphs recognized is a rare head variant of the introductory sign to the distance number, there being a very fine example on Temple II, Copán. A section of the Dresden Codex has been found to treat of the burner period, prominent in the Books of Chilam Balam. Several new readings of dates have been made in addition to those published in various papers during the period covered by this report.

Mr. Thompson is now engaged in a comprehensive survey of Maya epigraphy. The first volume of this study should be completed during 1946.

6.7.

SYLVANUS G. MORLEY

Hieroglyphic Research

YB 45:207-208, 1946

Dr. Morley left Santa Fe for Yucatán October 28, 1945, by way of Mexico City. During his stay in the capital he visited the ruins of Tula, Hidalgo, which the younger Mexican archaeologists have conclusively demonstrated was the Toltec capital of Tula, and not San Juan Teotihuacán as originally held. The architectural

evidence shows a far closer connection between Tula and Chichén Itzá than between San Juan Teotihuacán and Chichén Itzá; indications are that Tula is pretty surely older than the Mexican Period at Chichén Itzá, and San Juan Teotihuacán is older than Tula.

The Hieroglyphic Dictionary was continued, Dr. Morley supervising and correcting the work of the dictionary draftsman, Sr. Isaac Esquiliano, who has been devoting his entire time to this project for the past four years. Most of the more than 400 known introducing glyphs and Glyphs G and F of the Initial Series, as well as Glyphs E, D, C, and X of the corresponding Supplementary Series, have been drawn, and it is hoped that all examples of the remaining two signs of the Supplementary Series Glyphs B and A, will be completed by the end of 1946, or early in 1947.

Some important discoveries of new epigraphic material by Mr. Giles G. Healey in the little-known region lying southwest of the Usumacinta River in Chiapas, Mexico, should be reported. At a new site, which he named Oxlahuntún, on the pilasters of a Palenque-type temple, he found the remains of an inscription in stucco, recording the Period Ending date 9.13.0.0.0, 8 Ahau 8 Uo; and at another new site named Lacanhá, near the Río Lacanhá, were found two inscribed stelae, one of which has the distinction of presenting three Initial Series, recording the following dates (Table 6.7.1):

Table 6.7.1. Calendrical Decipherments, Stelae, Lacanhá.

9.8.0.0.0	5 Ahau 3 Chen
9.6.(0).11.0	8 Ahau (18 Zac)
(9).8.12.11.(0)	8 (Ahau) (3 Kayab)

This condition is presented by only one other monument in the *Corpus Inscriptionum Mayarum* (Morley 1948; Altar 2 at Uxul, northern Petén, Guatemala, discovered by the Carnegie Institution in 1934).

Work on the reconstructed text of the Maya Chronicles by Professor Alfredo Barrera Vásquez and on the English translation of the Maya original by Barrera Vásquez and Dr. Morley has been completed, a draft of this manuscript is now ready for publication. Barrera Vásquez first made a translation of the reconstructed Maya text into Spanish, but it was found that for purposes of the English translation, a more faithful rendering of the original Maya could be achieved by completely by-passing the Spanish translation and putting the Maya directly into English. Indeed, it was found that the meaning of the original Maya could be more accurately rendered in English than in Spanish, because of the nondeclensional character of the Maya, which is probably closer in construction to English than to Spanish.

Last year Dr. Morley began to collect, classify, and list all known Maya inscriptions on stone, stucco, and wood, and a few engraved on jade, painted on pottery, or painted on the three known pre-Spanish hieroglyphic codices. The purpose of this project was to make a complete checklist of the *Corpus Inscriptionum Mayarum*; this is now ready for publication.

The manuscript of Dr. Morley's popular book entitled *The Ancient Maya* is now in course of publication, the English edition by the Stanford University Press, and the Spanish edition by El Fondo de Cultura Económica of Mexico City.

Dr. Morley's experience in translating the Maya chronicles in collaboration with Alfredo Barrera Vásquez had convinced him that for accuracy it would be necessary to be in closest contact with the translator of *The Ancient Maya*. He was particularly fortunate in obtaining for this the services of the Hon. Adrian Recinos. Mr. Recinos had previously made a distinguished Spanish translation of Dr. Morley's *Guide Book to the Ruins of Quiriguá*, which the Carnegie Institution published in homage to the Sociedad de Geografía e Historia de Guatemala. Mr. Recinos spent the three winter months with Dr. Morley in Mérida. The translation was completed and delivered to El Fondo de Cultura Económica early in March. Both editions are promised for early fall delivery.

Dr. Morley returned to his summer headquarters at Santa Fe, New Mexico, on May 24, to devote the summer and fall to reading proof on these two books.

6.8.

J. ERIC S. THOMPSON

Hieroglyphic Research

YB 45:208–209, 1946

During the past year Mr. Thompson has been largely engaged in writing the introductory volume to his survey of Maya hieroglyphic writing. This study has necessitated much research on specific problems of glyph formation.

The selection of some 2,000 individual glyphs for illustration and the checking of the artist's drawings with photographs have occupied much time but not been mere drudgery. Such work, in combination with general research on the subject, has revealed what may prove to be the closest approach to a key to Maya hiero-

glyphic writing which we are ever likely to have. The walls of Jericho will not fall at this blast, but the method may in time enable us to undermine the outlying fortifications in strategic locations.

This new attack, which is a development of those discussed in [Chapters 6.3 to 6.6], isolates synonyms in the main elements of glyphs and in their affixes. The system has to be used with some caution, for there is a danger of confusing synonyms with near synonyms. For instance, the various so-called ending signs are not true synonyms, but associated terms. Their meanings may be tentatively accepted as "completion of," "count of," "setting in order of," "expiration of," etc. On the other hand, we find a large number of elements which are always interchangeable. They apparently represent the same ideas and are true synonyms. The large group of symbols which represent water is a case in point, but the problem is not merely a question of identifying components of the group. A water element may often be added to a glyph to help in its identification. Thus, to a deity connected with rain may be added a water symbol as an attribute, more or less as St. Peter is painted or carved with his keys. Water is the precious object. Accordingly a water symbol could be used in that secondary sense.

Another large group of related symbols refer to the earth and the underworld. Maya deities have a disconcerting freedom of movement. Celestial deities make incursions into the realm of the underworld; terrestrial deities ascend to the skies. Symbols of the underworld serve as distinguishing characteristics of the gods of the nether regions, but they may also be attached to celestial gods to indicate a temporary abode underground. Thus, the sun god at night passes through the underworld on his journey from west to east. On such occasions he is decked with the symbols of the abode of the dead.

Clearly, if more symbols can be assigned to the groups already known, and new groups can be recognized, the problem of the glyphs will be much nearer solution.

One result of this work is to reduce the number of elements which can represent distinct ideas or words. This, of course, lessens the possibilities of much diversity in the still undeciphered parts of the texts. On the other hand, nearly 80 different affixes or pairs of affixes occur with a few of the most important main elements. Some of these combinations represent synonyms or near synonyms; but even allowing for synonymous affixes as yet unidentified, there must be a goodly residue with different meanings.

Maya hieroglyph writing cannot be attacked as an isolated problem. Religious beliefs, legends, associations of ideas, language structure, folkways, and related subjects are deeply involved. For a grasp of

them, it is necessary to delve deep in the mythology of the Maya and of their cultural coinheritors to the north. The phraseology of modern Maya prayers is also helpful in elucidating these matters. Collaboration with Ralph L. Roys in these and related problems has been highly rewarding.

6.9.

SYLVANUS G. MORLEY

Yucatán, Guatemala, Honduras

YB 46:187–188, 1947

On November 11, 1946, Dr. Morley reached Mexico City, where he remained for a week, most of the time in conference with the Hon. Adrian Recinos, former Ambassador of Guatemala to the United States, who translated his recent book, *The Ancient Maya*, into Spanish, and also with the staff of El Fondo de Cultura Económica, the publishers of the Spanish edition, which appeared in the late spring.

During the winter Dr. Morley was in Yucatán. In April he went to Guatemala, where he visited the ruins of Quiriguá, which, thanks to the care given them by the United Fruit Company he found to be in better condition, better bushed, kept in better trim, and the monuments better marked with descriptive signboards, than ever before.

Some fear has been expressed that the surface of the sandstone monuments at Quiriguá has been deteriorating because of exposure to the sun during the past 36 years. The high forest in which they were formerly buried in deepest shade was felled in 1911 by the School of American Research, to remove the danger of falling trees breaking the monuments, which had occurred in several cases previous to that time. A decade ago, Dr. Morley sprayed Stela K with an English preparation intended to protect sandstone buildings from deterioration, by sealing in the surface of the stone, thus preventing or retarding erosion. His examination of the Quiriguá monuments this spring convinced him that the spray had been most successful.

The local [United] Fruit Company officials were so co-operative as to carry out Dr. Morley's recommendation that the bushed area in the Great Plaza be extended. As cleared of trees many years ago by the School of American Research, only the western half of the Great Plaza had been exposed. This not only reduced

the apparent size of the plaza by half, but also failed to disclose its function as an amphitheater, a large three-sided enclosure surrounded by ascending tiers of stone seats. The Great Plaza now appears in its true character.

The new National Museum of Guatemala was not yet completely installed in April, but sufficient progress had been made in displaying the large amount of stone material, especially the Piedras Negras stelae and altars, to indicate that it would be one of the leading archaeological museums of America when finished.

The trip that Morley made to Copán in late March was his fifteenth. He found the ruins in a better state of conservation than ever before, owing to the extensive excavations, repairs, and conditioning operations of the Carnegie Institution during the past 12 years, and to the supervisory care given them by the government of Honduras.

A fragment of a new Initial Series was deciphered. This was discovered by Sr. Raul Pavón Abreú, Director of the Museum of Archaeology, History and Ethnology of Campeche, in the debris of Mound 7 at the western end of the Court of the Hieroglyphic Stairway. The inscription was very unusual in that its corresponding period glyphs faced to the right instead of to the left as is overwhelmingly the case in other inscriptions, and the corresponding coefficients were also on the right sides of their period glyphs instead of on their left sides. The reason for this inversion of the usual order was aesthetic, arising from the desire to have the hieroglyphs of this inscription face the central axis of the building on which they had originally been carved. Although the introducing glyph and the day and month signs are still missing, this whole Initial Series may be read as (9).8.8.16.10 (6 Oc 3 Kayab).

Before returning to Yucatán, Dr. Morley visited Tegucigalpa, where he called on Professor Angel Hernández, Minister of Public Instruction of Honduras, and congratulated him upon the splendid care the government of Honduras is taking of the ruins of Copán, perhaps the most spectacular archaeological site of the Maya Old Empire. Dr. Morley returned to Yucatán April 19 and to the United States at the end of May 1947.

Owing to the death of Dr. E. L. Hewett last December, the directorship of the School of American Research and the Museum of New Mexico, a joint institution at Santa Fe, became vacant. The managing boards of these two organizations had tendered this position to Dr. Morley, who has been associated with both organizations for many years. Dr. Bush gave Dr. Morley permission to accept the provisional directorship, to serve without salary so long as he should be connected with the Carnegie Institution of Washington, from which he retires July 1, 1949. With this understanding Dr.

Morley accepted the position offered him by Mr. Paul A. T. Walter, president of the managing board of the School of American Research, to take effect as of June 1, 1947, pending final approval at the annual meeting of the joint boards on August 23. It is hoped that an amalgamation of all the scientific organizations in Santa Fe, anthropological as well as historical, may be achieved under plans for reorganization already in course of being carried out.

6.10.

J. ERIC S. THOMPSON
Hieroglyphic Research

YB 46:188–189, 1947

During the past year Mr. Thompson has continued work on the introductory volume to his study of Maya hieroglyphic writing. This has entailed many unexpected forays into territories which, at the inception of the study, had been deemed sufficiently known to need no further exploration at this stage of the work, but which, it turned out, had to be probed in order to round out the introductory survey of the subject. Consequently, the first volume is not yet completed, but fuller information on specific problems compensates for the delay. For instance, as our knowledge concerning the subject of the hieroglyphic texts accompanying divinatory almanacs in the Maya codices appeared inadequate even for this initial stage, Mr. Thompson devoted much time to that matter, with the result that he now feels that he can get the general sense of most of those texts, and can offer specific translations of a number of the constantly recurring glyphs.

The problem of the hieroglyphic writing is not one that can be quickly solved. Progress in the past has been discouragingly slow, but now with each additional year of research, the speed increases slightly. During the past year a number of glyphs have been identified, and one or two additions have been made to the very small list of affixes of known meaning. Work on the illustrative material for the volume continues to be rewarding, and the linguistic side of the work has progressed, largely as a result of the very helpful co-operation of Mr. Ralph L. Roys. A point has now been reached at which the absence of full linguistic material on lowland languages and dialects related to Yucatec is making itself felt. It is not improbable that

good dictionaries of such Maya languages as Chol, Tzeltal, and Tzotzil would yield homonyms corresponding to apparent examples of rebus writing in the glyphs, for which homonyms are lacking in Yucatec. The situation is roughly what one might expect were one endeavoring to reconstruct Latin from modern Italian, but without access to full material in Spanish, Portuguese, and French. Members of the Summer Institute of Linguistics, who have much unpublished linguistic material from all lowland Maya groups except Chortí, have proffered their co-operation in this work, a generous offer which should prove most helpful.

One chapter and several appendixes of the introductory volume remain to be written, and, in addition, a very thorough revision will be necessary. The greater part of the glyphs to be used as illustrations have now been drawn, and it is hoped that the illustrative material will be completed by the end of the year.

Mr. Thompson was at Bonampak, Chiapas, in February and made drawings of such glyphs on the frescoes as were then visible. Among the sculptured dates recovered at that site are:

Table 6.10.1. Calendrical Decipherments, Bonampak.

Lintel 4	(9.8.9.15.11) or (9.11.2.10.11)	7 Chuen 4 Zotz
Stela 2	(9.17.5. 8. 9)	6 Muluc 17 Yaxkin
Stela 2	(9.17.18.15.18)	12 Etz'nab 1 Ceh
Stela 4	9.17.15. 0. 0	5 Ahau 3 Muan

There is also an Initial Series on the murals of Temple 1 which Morley has read as 9.13.0.3.4, 7 Kan 12 Zec. The lintels of this same temple have yielded two rather uncertain dates, and there is a badly weathered Initial Series of Katun 17 or 18 on the magnificent Stela 1. It is evident that Bonampak was a center of the hierarchic cult for a long period.

6.11.

J. ERIC S. THOMPSON

Hieroglyphic Research

YB 50:244-245, 1951

It had been Thompson's intention to study the Maya codices for the light they would throw on Maya life in the late period now engaging the attention of the Department. It became apparent, however, that in order

to achieve worthwhile results in that field it would be necessary first to make a dictionary of all Maya hieroglyphs other than the calendrical group. The need for such a dictionary has been noted over and over again in the past 40 years, but because of the magnitude of the task, no one has been willing to undertake it.

The noncalendrical glyphs of Copán, Palenque, Quiriguá, and part of Yaxchilán have been indexed. Photographs of texts or photostats of reliable drawings are cut up and the glyphs mounted on large cards. Similar glyphs are assigned to the same card with notations of two to four glyphs on each side of the glyph under study, and the associated date, for by noting the adjacent glyphs, clauses can be recognized.

Although this project is still in its early stages, and a full study must await the completion of the index, material of considerable importance is already coming to light which may supply information on the political organization of the Maya area and its linguistic divisions. Of interest in this connection are the many cases of glyphs which are frequent in one or more cities, but rarely or entirely absent in others. For instance, the bat glyph with *ben-ich* prefix occurs no less than 40 times at Copán, and there are doubtless many more examples in weathered texts at that site. It is also quite common at Quiriguá, but at Yaxchilán it is, somewhat rare, and at Piedras Negras, the glyphs of which have not yet been indexed, it is very rare or absent. At Palenque, with its long and well preserved inscriptions, it is not once found. Thus, as one passes westward the occurrence of this glyph diminishes from great abundance to complete absence. In contrast, other glyphs which are common at Palenque are absent in Copán. Yet some glyphs which are quite rare everywhere are represented by one or two examples in all the sites so far studied. Clauses, that is to say several glyphs found in association in several texts, seem to vary from city to city, for clauses which are very common at one site are not found in any other city so far studied.

It is too early to draw any conclusions from this material, but when the dictionary is finished, it should yield information on relations between one city and another, and may enable us to group various sites in sub-areas, perhaps in connection with studies of sculpture and architecture. Later, it should be possible to identify by glyphic correspondences the sites of the Central Area which influenced Yucatán, and perhaps identify the areas in which the surviving Maya codices were composed, although the poor condition of nearly all glyphic texts in the north Petén will handicap these lines of research. For example, one affix which is common in Codex Dresden would appear at this stage of the project to occur elsewhere only at Palenque. The inclusion of all Yucatecan sites as well

as the codical glyphs will lengthen this project very considerably, but at present it does not seem practicable to separate that material for treatment in a subsequent study. When the dictionary is completed, we shall know for the first time with what glyph every affix is used. Our previous studies lead us to believe that the affixes are the keys to the interpretation of the glyphs. Already much material on grammatical construction has come to light incidentally to the indexing of the glyphs.

6.12.

J. ERIC S. THOMPSON

Hieroglyphic Research

YB 52:287–288, 1953

The collecting of material for a catalogue of noncalendrical Maya hieroglyphs has continued [Chapter 6.11]. Having listed all legible glyphs from sites in the Usumacinta Valley, as well as from Copán, Quiriguá, and Palenque, Thompson is now starting on Petén texts. Unfortunately, Petén inscriptions are in considerably poorer condition than most of those already examined, with the result that much time is spent trying to identify weathered glyphs, and the rate of work is thereby retarded. Although texts are more numerous in the Petén than in the area so far covered by the study, the number of identifiable noncalendric glyphs will be markedly less, largely because of the present condition of the monuments, but partly because the percentage of noncalendric glyphs is lower.

The fact that Petén limestone is softer than the stone used in most sites already studied, together with the smaller proportion of texts sheltered from erosion by being placed inside buildings, will unfortunately distort the over-all picture of hieroglyphic writing which will finally emerge from this study. This situation has already been encountered at Cancuen, in the Upper Usumacinta Valley, for there the texts are so badly weathered that practically no glyphs could be catalogued.

In a previous report on this work, cited above, attention was drawn to the fact that some single glyphs and, most noticeably, nearly all glyphic clauses (glyphs up to seven or eight in number which occur together with slight variations in the order) are confined to an individual city. This condition has been found to apply to all other sites subsequently examined, and raises interesting questions. For example, the sudden adoption by most Maya cities of the uniform system of recording moons, as demonstrated by Teeple, points to unity in the Central Area at that point in the Classic period. Furthermore, the wide distribution of some rather rare glyphs, a number of which almost surely are those of gods, suggest that uniformity in religion was not confined to the worship of two or three of the most important deities, but extended to lesser members of the Maya pantheon. On the other hand, local glyphs and, even more so, local clauses seem to indicate a considerable degree of local independence.

Another factor is the borrowing of glyphs by one city from another. Occasionally, a single glyph, popular in the city of its presumed invention, was adopted by a neighboring center. One glyph which occurs a number of times at Piedras Negras appears once in a text at Yaxchilán, but nowhere else. Another, also of frequent occurrence at Piedras Negras, is found once at Palenque and once at El Cayo. The latter city, however, may have been a dependency of Piedras Negras, for it is less than 15 km distant. Texts at Bonampak confirm that city's close relation with Yaxchilán, previously deduced by Proskouriakoff from the art of the two cities. Such borrowings and connections may prove of considerable importance in assessing inter-city relations, especially as in most cases they can be dated closely.

There are now being drawn, under Thompson's supervision, all glyphic affixes so far listed. These are arranged to show at a glance what positions (left, right, above, or below the main element) each can occupy. The number of affixes so far isolated exceeds 200, although the tally includes a few forms which are probably variants of others. This listing is still incomplete, but it is of interest to note that the total in the codices is less than 100. The affixes, which roughly correspond to the articulation of the spoken language, are more generally distributed over the whole area than are complete glyphs, for few if any, are confined to a single city.

7.0. LINGUISTICS

7.1.

MANUEL J. ANDRADE

Linguistic Research in the Maya Field

YB 30:126–128, 1931

Our interest in the languages of the Maya peoples, aside from our concern with a number of linguistic problems involved in the study of Maya civilization, is but a manifestation of the desire which man has felt for centuries to understand the nature of language and its relations to many aspects of his experience, with which it seems to be so inseparably blended. The opinions of philosophers, logicians, psychologists and others on the relation between thought and language fill many a volume. Extensive chapters, articles and monographs on the origin of language can be counted by the score. But interest in psychological, social and historical problems involving linguistic phenomena is perhaps keener in our time than it has ever been. New lines of inquiry have developed, and questions which were considered settled have again been opened for discussion.

The criticism which has most frequently been leveled by writers on general questions pertaining to language is that their conclusions were based on too limited a number of types, chiefly on the languages of the

Indo-European and Semitic families. Aside from the fact that these were for some time the only languages which had received scholarly attention, there seems to have been a more or less manifest attitude that the languages of ancient literatures and those of modern cultured Europe were better specimens of genuine human speech than those of backward or savage races. A quotation from a primitive language was regarded by some as a piece of eccentricity. At present such an attitude would be as unjustifiable as that of a biologist who would infer general laws of life solely from a study of the commonly domesticated species. In his search for fundamental principles, neither the linguist nor the biologist can afford to neglect even the most exotic types.

From this point of view, the Maya languages are just as worthy of our attention as any others, but their connection with Middle American culture the highest accomplishment of aboriginal man in the New World, adds a particular interest to this field of research. It is to be expected that linguistic investigation will be helpful

in the solution of various problems of Maya culture, as it has been in the study of other civilizations. Moreover, owing to several fortunate circumstances, the Maya area offers special advantages to the linguist. We find 18 or 20 languages or groups of dialects in a continuous area, and one, the Huastec, which for many centuries has been isolated from the Maya region. This isolation is advantageous for the study of historical processes in the development of the various dialects from one ancient mother tongue from which we may present all of them have evolved. Thus upon finding, as we do find, elements which Huastec has in common with some dialects of the main group, we may safely infer that, either the elements themselves or the processes which produced them must have existed previous to the separation. Once the priority of certain elements has been established, we are in an advantageous position to trace various processes in those languages of the main group in which such old elements have disappeared or have been modified. On the other hand, we may profit by the fact that all but one of the Maya groups occupy one continuous area with hardly any natural barriers. Parallel to this geographical continuity we find, so far as we may judge from the scanty material available, a rather gradual linguistic diversification. In other words, between two distant and divergent languages we find a number of intermediate dialects whose mutual similarity is roughly proportionate to their geographical proximity. We are thus justified in expecting that the general absence of gaps may greatly facilitate historical reconstruction, as well as the study of mutual influences. However, for the study of these influences, even more favorable circumstances are offered by the presence of Spanish in this area. The Spanish language displaces the native idiom in the principal centers of Spanish culture, modifies it in the rural districts in proportion to their accessibility, and exerts, as one would expect, little or no significant influence on some isolated peoples. It is an excellent laboratory to observe the interaction of two totally different types of language in the midst of the continuous processes of cultural assimilation prevalent throughout this area.

Since linguistic affiliation coupled with geographical and cultural data has always revealed basic facts in the history of related peoples, one of the main objectives in our research should be to map out the genealogical tree, so to speak, of the Maya family, defining various groups of dialects, if their similarities and differences should so suggest, or we may trace the history of various elements or clusters of elements, if the facts do not justify any systematic grouping. The present classification of the Maya dialects is not reliable because it is based on observations from uncritical and scanty material for most of the dialects. Further-

more, what we have at present is simply a grouping without the proper weighing of the similarities and differences, with no attempt to trace significant processes. In order that a linguistic classification may properly serve historical interests, it is not sufficient merely to draw lines between languages which appear to have the greatest number of divergent elements. The similarities and the differences must be individually evaluated and accounted for so far as possible. Even in comparing vocabularies, for example, we all know that it is historically more significant to find that two different languages have a dozen words in common for parts of the body, than that they should have 100 identical words for objects and activities which one people could have transmitted to the other. Similar evaluations are necessary in comparing structural features, and it is on linguistic structure that our classification should rest primarily. It is obvious that a comparative study as outlined here may give us a different picture of the Maya linguistic area, and the consequent historical implications may throw light on the problems of Maya civilization, or raise new lines of inquiry.

Work on Maya linguistics with the modern method of approach was begun in February of 1930, under the auspices of the Department of Anthropology of the University of Chicago. The Carnegie Institution furnished informants and other generous aid while the work was done at the quarters of the Chichén Itzá Project in Yucatán. The writer worked in the states of Yucatán and Campeche till the latter part of June. Sufficient material was collected for an intensive study of the Maya spoken in that region. The months of July and August were spent in Tampico and in Chinampa, a Huastec village in the northern part of the state of Veracruz. A future field trip will be devoted to the closely related Huastec dialect spoken in various villages within the state of San Luis Potosí. The two Huastec dialects are locally referred to as Veracruzano and Potosíno, respectively. Abundant material should be collected on these two dialects due to the importance of Huastec in our comparative work, as suggested above.

In January of 1931, our work was extended to the Corozal district in northern British Honduras as a joint project of the Carnegie Institution and the Department of Anthropology of the University of Chicago. It was found that the Maya spoken there does not differ from that of Yucatán. One advantage derived from our visit to this region was our being able to study the speech of people from the interior of Quintana Roo, without the difficulties which an investigator would be likely to meet within that unfriendly territory. This was possible because of the continuous emigration of these people into the British colony.

From the Corozal district we passed to the south of the colony, and worked in San Antonio, a small village in the interior of the Toledo district. There we found the first variant of Yucatecan Maya which requires separate consideration. All the variations met with up to that time can be easily disposed of as mere colloquialisms, or as due to various degrees of Spanish influence. The founders of San Antonio came from San Luis, department of Petén, Guatemala, where, according to all reports, the same dialect is still spoken. They may, therefore, be considered as descendants of the Mopáns who, as the early historians tell us, were subjects of the Itzá ruler at Petén.

In the month of April we worked on Lacandon, a dialect spoken in one portion of the state of Chiapas, Mexico, and in scattered settlements in the surrounding country. This Maya variant proved to have a number of features in common with the Mopán dialect of San Antonio. Some of these features are not found in present Yucatecan Maya nor in the old Maya dictionaries and grammars. However, on the whole, Lacandon is closer to Yucatecan Maya than to Mopán.

Near the border line between Chiapas and Tabasco, the writer had an opportunity to study Tzeltal phonetics with two Bachajom Indians, from whom a vocabulary of more than 400 words and some grammatical material were collected. Additional Tzeltal material was obtained at the Department of Middle American Research of Tulane University, New Orleans, from a native of Chiapas.

By taking advantage of opportunities which presented themselves while traveling, similar material, though in smaller proportions, was recorded for three other members of the Maya family, namely, Kekchí, Palencano and Chuj, the latter also in New Orleans from a native of Guatemala.

The plan which seems advisable for future research in Maya linguistics is to complete an intensive study of Huastec, and then to proceed with a general survey of all the other dialects of the Maya family. This survey should include a careful study of the phonology, the collection of extensive vocabularies, sufficient material on grammar to obtain a general idea of the morphology, and some text material. This extensive study will offer suggestions as to the dialects on which further intensive work should be done. The intensive study should be applied to those languages which, from our general survey, may appear to be like points of departure from which a group of dialects may have evolved, or to those, if there be such, which may not naturally fit in any group. The main advantages of such a plan would seem to be a definite aim in each step, with a consequent economy of effort and, possibly, early results.

7.2.

MANUEL J. ANDRADE
Linguistic Investigations

YB 31:114–116, 1932

During the period under consideration no work was done in the field. It was thought advisable to devote this time to the study of the material collected in the two previous years, and to make preparations for future investigations. The usual routine of the morphological analysis of the hundreds of pages of texts and grammatical material, besides the various other procedures commonly employed in linguistic analysis, are the tasks which must be undertaken before a detailed account of the Maya language and its two closely related dialects, Mopán and Lacandon, can be given.

Part of the material recorded on dictaphone cylinders is now being analyzed with the aid of an oscillograph in order to obtain accurate measurements of certain tonal and duration factors which play an important part in the phonetic structure of the Maya language. Various technical difficulties had to be overcome before it was possible to obtain photographs of the sound waves recorded on the wax cylinders. Thanks to the expert collaboration of Mr. S. N. Treviño of the phonetics laboratory of the University of Chicago, the results are quite satisfactory. They will be the subject of a special article on the melodic patterns of Maya words.

Part of the preparations for future field work consists of the compilation of a linguistic questionnaire to be used in the study of all the languages and dialects of the Maya stock. A handicap with which students of comparative linguistics have frequently to contend is the omission of data in the material compared, which, in the course of the research, turn out to be the key to the solution of particular problems. Naturally, such gaps are more likely to occur when the information has been collected by different investigators. It may thus happen that it is not possible to trace the history, or map the distribution of a word connected with an important cultural fact because it is not found in the texts or vocabularies recorded in two or more of the languages compared. It seems possible to obviate such difficulties to a considerable extent by using a uniform set of questions for all the languages studied, in addition to the usual methods of collecting linguistic material. This questionnaire, to judge by the data thus far compiled, will consist of over 4,000 words comprising the names of the animals, plants, artifacts and other items of culture and physical environment which may be expected to be common to all the Maya-speaking

peoples. It will also include the current vocabulary essential in all human communication. Another portion of the questionnaire will be devoted to grammatical phenomena, the questions being designed to discover in each language the existence or absence of characteristic features observed in the related languages and dialects previously studied.

Other preparations are the selection and adaptation of apparatus to record and analyze speech sounds in the field. The collection of phonic material serves various important purposes. In the first place, it is desirable to have permanent phonographic records of the languages included in our project. The archaeologist and the student of material culture provide for future inquiry by storing in museums the products of the arts and industries of extinct civilizations as well as those of living cultures. The linguist, likewise, preserves his texts, a documentary evidence of the more important aspects of language, which facilitates future research by himself and others. However, his permanent records would be even more complete than those of the other students of culture were he able to file faithful reproductions of the phonic aspects of language. Until recently, the phonographic records which could be made in the field were very unsatisfactory for scientific purposes, and their permanency as material accessible to other investigators involves considerable expenditure of time and money. It is now possible to use in the field an electric apparatus to record speech on aluminum discs. Several copies can be made from one of these discs at a negligible cost, and it is claimed that each one of the aluminum copies can be played over two thousand times without any perceptible wearing. The Carnegie Institution has had such an apparatus constructed under specifications calculated to meet the requirements of our work. After a period of testing, it is now being improved under expert advice to provide against various difficulties encountered by the traveler in the less accessible parts of the Maya area. The apparatus reproduces, with more accuracy than has been possible heretofore, most of the physical aspects of sound which are of interest to the linguist. An archive of such records will doubtless be welcomed by students of aboriginal languages, not to mention others interested in problems of general linguistics.

Apart from its services for the above purposes, the writer believes that the use of such a machine will mark a distinct improvement in the technique of recording languages. As this is not the proper place to enumerate all its technical uses, it may suffice to mention one. A great deal of artificiality is introduced in the process of recording connected discourse in an unknown language. The informant must conform to the exigencies of the investigator by dictating at an unaccustomed slow speed, enunciating clearly, stop-

ping between the word groups of a given sentence if it happens to be long, frequently repeating some of the words before the sentence is completed, in order to facilitate phonetic observations, besides other disturbing factors familiar to all field workers. Many informants who can give valuable ethnologic information in their native tongue are not available to the investigator, because they can not adapt themselves to the unnatural conditions of dictation. If the informant is adaptable, the recorder may find it difficult to make various observations which may be of importance in some languages, as for example: the syntactic function performed by melodic aspects of the sentence, which may be evident only when speaking at a natural speed; word grouping- phonetic subordination, which may, occasionally decide whether a given morpheme is a proclitic or a prefix; and other points which may be negligible in some languages, but are always of interest to linguistic science in general. Such aspects of language can be more accurately and conveniently studied from the aluminum records mentioned above. It is true that the informant must at first become accustomed to speaking before a microphone, but this is rather simple in unsophisticated environments, especially if the native faces a group of his own people while recording. At least, such has been our experience in the use of the dictaphone in previous field work.

Another preparation which is now in progress is the selection of reliable instruments for the analysis of speech sounds, which can be adapted to field work. In recent times the physicist and the experimental phonetician have made considerable improvements in such mechanical devices, but practically all of these have been designed for the laboratory. Our task is to select the most essential of these modern inventions and to make such alterations as will facilitate their use where the conveniences of the laboratory are not available. Very little use of physical apparatus has been made in the past in the study of aboriginal languages. Most of the investigators have depended entirely on their auditory ability. Formerly this was due in part to the imperfection of the instruments that were at our disposal, and more recently, when such highly refined instruments as the oscillograph have been constructed, it is due, also, to the fact that they can not be used in the field. But besides these handicaps, there are also theoretical objections. Some investigators contend that speech sounds are essentially psychological facts, and hence observations on their physical aspects are irrelevant for linguistic purposes. In such extensive investigations as have been planned in our Maya linguistic project, it would not be advisable to neglect any aspect of the subject on theoretical considerations. The precise determination of the physical aspects of

speech in no way obstructs a psychological or purely linguistic interpretation. It may be argued further that, since it is the goal of every science to eliminate the personal equation to the greatest extent possible, it is desirable to avail ourselves of mechanical devices for the description of linguistic sounds, to the extent that the measurements thus obtained may be pertinent and reliable.

7.3.

MANUEL J. ANDRADE
Linguistics Investigations

YB 32:99–100, 1933

The first half of the period under consideration was devoted to the preparation of a description of the Maya language spoken in Yucatán and northern British Honduras. The completion of this work was postponed in order to concentrate on the analysis of the Huastec material collected in 1930, which had to be undertaken at this time in view of the fact that we intend to return to the Huastec region in the summer of 1933. Such preparatory work will enable us to enter the field with certain problems definitely formulated. It may thus be possible to concentrate our efforts on the collection of a sufficient amount of data to elucidate the most difficult aspects of this language.

So far as we may judge from the material in our possession, a thorough study of Huastec should throw considerable light on the history of the languages of the Maya stock. At present it is not safe to draw conclusions regarding the relation of Huastec to any other specific particular group of the Maya stock. Its structure is definitely Maya, but its vocabulary seems to contain many foreign elements, a study of which will doubtless indicate with what peoples this isolated member of the Maya family has been in more or less intimate contact. This will eventually necessitate a knowledge of such neighboring languages as Totonacan and Otomí. A study of Totonacan will be of particular interest, since it has been suspected by some writers, although on scanty evidence that it may be related to the Maya stock. However, the isolation of foreign elements in Huastec can not be undertaken with any degree of confidence until we can determine the phonetic and morphologic correspondences between this language and its cognates. Some words

which at first sight appear to be foreign may prove to be Maya. Such instances have already been observed in the limited comparative work which has been done.

In the summer and autumn of 1933, we shall for the first time use in the field the electrical apparatus designed for our future work in the Maya linguistic project. On that field trip we shall have an opportunity to try what may prove to be a more efficient technique of recording connected discourse than the usual method of dictation employed heretofore. Considerable time has been devoted to the perfection of the apparatus and to repeated experiments in conditions approximating those encountered in the field. It remains to be seen whether the equipment can be taken to the field without impairing some of its necessarily delicate mechanism.

7.4.

MANUEL J. ANDRADE
Linguistics Investigations

YB 33:103–105, 1934

In accordance with the plan outlined in a previous report [Chapter 7.3], the study of Huastec dialect spoken in the State of San Luis Potosí, Mexico, was undertaken during the summer and autumn of 1933. From the middle of August to the early part of December work was carried on in the village of Tancanhuitz and on two farms on the mountains that lie between Tancanhuitz and Tanlajas.

In Tancanhuitz, informants were chosen from the least assimilated of the Huastec residents and from those who came to the village to trade, some of whom could be persuaded to stay for three or four days.

The apparatus for recording speech, mentioned in a previous report, was given its first field trial on this trip. It proved to be an efficient instrument for field work, both with regard to its ruggedness and to its technical operation. The severe test it stood in transit to this region, and during more than 10 hours of exposure to the torrential rains of the cyclone that destroyed nearly half of the village of Tancanhuitz, dispels all doubts as to the possibility of recording speech by this means under ordinary field conditions. Another question which had been raised when we contemplated the use of this kind of apparatus in the field was whether the natives would speak freely in the presence

of a microphone and other devices equally mysterious to them. Our experience in this region is that they rather enjoy the performance, and that the inhibitions that some of us experience in such situations were not manifested even by informants who had never seen a common phonograph.

There were stated in a previous report [Chapter 7.2] the advantages it was expected would be derived from the use of this apparatus. It may now be in order to indicate the extent to which these were realized in the first trial, besides listing certain unanticipated advantages and disadvantages. It was found, as expected, that the number of individuals who can be utilized for the recording of text material, that is, connected discourse upon a subject of their own choice, is considerably greater when their speech is instantaneously recorded by means of this apparatus than by the usual process of recording by handwriting. This is so obvious that it hardly necessitated a test, were it not for the possibility that the presence of a strange apparatus might have been a disturbing factor. As indicated above, such a difficulty did not arise.

The possibility of recording speech instantaneously has also the practical value that advantage may be taken of the presence of an unusually good informant who may not be available to an investigator who records from dictation, for the simple reason that the native can not spare the time required by the latter process. On one occasion there were recorded three stories amounting to more than three thousand Huastec words from one individual who said he could spare only one hour. The actual recording of this amount of material must have been done within a limit of 36 minutes, since it filled six discs, and the time limit of one disc is six minutes.

One difficulty which had not been anticipated is that not all individuals can be used for the transcription of the records. Our procedure for this purpose consists in playing the record on a mechanical phonograph, reproducing one complete sentence at a time. The task of the native is to repeat what he hears. The investigator records his repetition phonetically, the object being to obtain a phonetic transcription of the record for the inter-linear translation and for other technical purposes which must be accomplished while in the field. The unexpected difficulty was that some individuals can not repeat the actual words reproduced by the phonographs, even for the records of their own recitations. It is much more natural for them to express the same or approximately the same sense in different words, result being a summary, or frequently an elaboration, of what they consider to be implicit in the original. In such cases we were not able to obtain the transcription with the help of the original speaker, but had to employ someone else. The errors in this pro-

cess are, of course, easily detected, for if a minor deviation is missed at the time that the informant repeats, it is a simple matter to check the transcription against the original record. However, individuals who can repeat properly are perhaps as easily found as those who can dictate satisfactorily for the procedure heretofore employed.

Although the original recitation is recorded instantaneously, and thereby one of the chief advantages is economy of time, the time required for the transcription of the record is generally longer than in recording directly from dictation. In our opinion this is a minor objection to the technique, if we consider the advantages above mentioned and the following.

By means of this technique we obtain a permanent record of some of the objective facts of the language investigated. At present such a record does not give us a complete reproduction of the original, but the accuracy of what it does reproduce can be determined by precise methods. Motion picture records are also incomplete reproductions of the original facts, but for the study of objects in motion their advantages over verbal or graphic records are quite obvious. A phonetic transcription of sound, as well as a description of objects in motion, contains no other basic facts than those which the investigator has observed, whereas a mechanical record may contain much which has escaped the attention of the original investigator, or which is irrelevant to his individual interests, but may be of value to others.

In December, as soon as the condition of the roads and bridges, consequent to the floods, permitted the transportation of our equipment out of the Huastec region, we went to Tampico, and sailed from that port for Yucatán to record, Maya-speech by means of our new device. Within two weeks we were able to fill both sides of 116 10-inch records, which was considered adequate for our purposes.

Thanks to facilities provided by the National Museum of Mexico and the Department of National Monuments, Professor Alfredo Barrera Vásquez, instructor in the Maya language at the University, spent two weeks in Tancanhuitz observing our methods of linguistic research. His knowledge of modern Maya, his native language, and his first-hand acquaintance with the flora and fauna of Yucatán were of valuable assistance in collecting Huastec terms pertaining to the latter subjects.

7.5.

MANUEL J. ANDRADE

Linguistics Investigations

YB 34:132–134, 1935

In January 1935 Dr. Andrade initiated a linguistic survey of the Republic of Guatemala. Lest it be not apparent how this undertaking fits into the general plan followed heretofore in his work on the language of the Maya stock, it may be desirable to refer briefly to the purpose which previous field trips were intended to serve.

The aim of the first field trip in 1930 under the auspices of the University of Chicago was to collect the data necessary to describe the aboriginal language of the Indian population of the peninsula of Yucatán, the language hereafter referred to as "Yucatecan Maya." Being aware of the historical interest connected with the study of this language, immediately after this first research, Dr. Andrade began his study of the Huastec language spoken present in the northern part of the state of Veracruz, and in the adjacent portion of the state of San Luis Potosí. The historical interests alluded to may roughly be specified as follows. Apart from the scientific interests which the description of a language can be expected to serve merely as a collection of facts, a comparative study of cognate languages not infrequently has thrown light on the history of the peoples who speak them. The circumstances that Huastec and Yucatecan Maya are evidently cognate, and that the peoples who speak them have not occupied contiguous geographical regions presumably for more than a millennium, are of the sort which have been particularly advantageous in other fields of historical inquiry. The possibility that such circumstances might be favorable has been realized in part and, although it is premature to make any pronouncement concerning further developments, it does not seem unlikely that future results may be illuminating. After this initial field research covering a period of seven months, further work on the Huastec language and on dialects closely related to Yucatecan Maya was conducted as a joint project of the Carnegie Institution of Washington and the University of Chicago. Up to this point the accomplishments may be thus summarized: 1. We have material for a detailed description of Yucatecan Maya and Huastec, two divergent members of the Maya linguistic family. 2. This material serves as a convenient yardstick, so to speak, to estimate the structural and phonetic divergences of any language of the Maya family which may be the object of future research. 3. The Huastec material is intended

to serve as a point of reference to determine under favorable conditions the relative antiquity of the linguistic facts observable in the present stage of the languages of this family.

This third particular has an obvious bearing on historical interests, while the second may, or may not have a direct bearing on such interests, depending on the nature of the facts which future research may reveal. The degree of linguistic divergence among geographically contiguous or remote languages can be indicative of historical events. So far as one may venture a conjecture grounded on the available data, it seems that, with few exceptions, linguistic divergences and geographical proximity or remoteness are roughly proportionate in the Maya area. If future research proves that such is actually the case, the facts may justify at least one historical hypothesis, namely, that it is probable that the peoples who speak the various contiguous and slightly divergent languages and dialects have occupied the same or similar geographical positions with respect to one another for a period of time proportionate to two factors: a. degree of divergence, and b. rate of divergence, that is to say, rapid or slow change. The latter factor is of difficult determination at the present stage of our knowledge of linguistic change, but under favorable circumstances and within wide ranges some possibilities may receive more support than others.

With this initial work, as a provisional basis, further steps in the Maya linguistic project follow the plan outlined in [Chapter 7.1], wherein it was stated that the plan which seems advisable for future research in Maya linguistics is to complete an intensive study of Huastec, and then to proceed with a general survey of all the other dialects of the Maya family. This survey should include a careful study of the phonology, a collection of extensive vocabularies, sufficient material on grammar to obtain a general idea of the morphology, and some text material. This extensive study will offer suggestions as to the dialects on which further, intensive work should be done. The intensive study should be applied to those languages which, from our general survey, may appear to be like points of departure from which a group of dialects may have evolved, or to those if there be such, which may not naturally fit into any group. Thus, Dr. Andrade's field trip to Guatemala during the period covered by this report conforms with the original plan, although the procedure to which we shall presently refer was suggested by the conditions disclosed in this last field work.

The conditions referred to are as follows. Several Quiché informants from the neighborhood of Chichicastenango asserted that the speech of certain other parts of the Department of Quiché was different from

theirs. The differences were characterized (as untutored individuals would generally be expected to do) on the basis of mutual intelligibility, or merely as "different" in various degrees. Thus, they would say, "We can not understand the people of X" or "The people of Y speak in a manner quite different from ours," or "We can communicate with the people of Z, but their speech is peculiar." Now, according to all the linguistic maps available, the people of X, Y and Z are supposed to speak Quiché. There is nothing unusual about this, of course, if we consider that a linguistic map of Europe may represent the Italian peninsula and some of the adjacent and more distant islands as having Italian for their common language, whereas a detailed map might show eight dialectal divisions of Italian and 16 subdivisions of these eight divisions. However, in view of the fact that the speech of the area labeled "Quiché" on the maps is not uniform and that the Quiché of some sections is easily intelligible to the Cakchiquel of certain sections but not to others, it would not be advisable to rely on the linguistic maps without examining the situation more closely. Specific instances are exemplified in the linguistic relations of Chichicastenango, Tecpán and Sololá. The peoples of the last two places are supposed to speak Cakchiquel, but, according to all the natives questioned, they can not understand each other's dialects. Whereas the natives of Chichicastenango, who are supposed to speak Quiché, can converse with the natives of Tecpán as easily or, according to some, more easily than with other Quiché peoples. The report that the Quiché of Chichicastenango can communicate in their own dialect with the Cakchiquel of Tecpán was submitted to a test during Dr. Andrade's stay in Chichicastenango, and its accuracy was corroborated in a rather conclusive manner. To what extent all the reports concerning differences and similarities of speech are true, and whether or not such situations obtain throughout the Republic of Guatemala are the queries which will guide our linguistic research in the immediate future.

The procedure will be as follows: 1. In a given community, A, a number of electric records of free speech will be made, in addition to and as a part of the material referred to in the above quotation of our original plan. As usual, the records are translated as accurately as possible with the aid of individuals of the community A. 2. As many individuals of community A are questioned as to the speech of neighboring communities. If their answers agree concerning the absence of dialectal differences in community B, but there is complete or partial agreement as to the dialectal differences in community C, we proceed to work in C and postpone our investigation in B, or devote sufficient time to it to verify the reports, provided, however, that favorable conditions obtain, such as, for example, the

location of B on the road to C. 3. In community C the natives listen to the reproduction of the speech recorded in A and if they claim to understand it, their translation is compared with that given by the natives of A. In brief, objective data are thus obtained as evidence that the people of C do or do not understand the speech of A, or understand it partially. If they do not understand it, community C is the immediate locus of our further research.

Within the confines of this report, it is not feasible to enumerate the technical advantages which are expected to result from the employment of this procedure in our survey, and the opportunities for the disclosure of information pertinent to the chief goal of the Maya linguistic project. To cite one particular, the survey is expected to give us what we may provisionally call a map of mutual intelligibility. Among the various uses of such a map, it may be pointed out that it can be a valuable aid to the ethnologist, besides providing organized material for a reliable genetic classification of the extant dialects of the linguistic family under consideration. In other words, it can be both an instrument of research and a useful by-product.

In this first field work in Guatemala, Dr. Andrade had opportunity to take notes on the Quiché dialects of Chichicastenango and Totonicapán, on the Jacalteco dialect of Santa Eulalia, and on the Mam of the neighborhood of San Juan Ostuncalco. The chief aim of the trip was to become acquainted with the linguistic situation in Guatemala, although the material collected in Chichicastenango may serve as the first sampling in the survey.

7.6.

MANUEL J. ANDRADE

Linguistic Investigations

YB 35:134-136, 1936

In the winter of 1936 the linguistic survey of Guatemala included the villages surrounding Lake Atitlán, and the Pokomam-speaking population of Mixco, Chinautla, and Palín in the vicinity of Guatemala City. Most of the field trip was devoted to the localities around Lake Atitlán.

According to the linguistic maps available, three languages are spoken on the shores of Lake Atitlán: Cakchiquel, Tzutujil, and Quiché. The results of the

survey, however, show that no Quiché is spoken in any of the villages surveyed. The localities where our material was collected are Panajachel, Santa Catarina Palopó, San Antonio Palopó, San Lucas Toliman, Cerro de Oro, Santiago Atitlán, San Pedro, San Juan, San Pablo, San Marcos, and Santa Cruz. The differences of speech among these localities are roughly proportionate to their geographical proximity. Cerro de Oro constitutes a special exception due to the fact that it was founded about two generations ago by Cakchiquel-speaking people who came from Patzicia. There is also a rather sharp distinction between San Antonio Palopó, where one language is definitely Cakchiquel, and San Lucas Toliman, where one of the variants classified as Tzutujil is spoken. On the other hand, it is difficult to decide whether the speech of San Pablo on the northwestern shore is Cakchiquel or Tzutujil. With respect to this village, we cannot say at present whether we are dealing with a Cakchiquel dialect which has been deeply modified by the influence of Tzutujil, whether it is a Tzutujil dialect modified by Cakchiquel, or whether its speech represents an older language or dialect spoken previous to the differentiation between Tzutujil and Cakchiquel. A careful analysis of the material collected and additional data to be collected in the future may or may not decide which of these three hypotheses is tenable, but for the present we can not venture even a conjecture. What can confidently be asserted about the localities surveyed is that the speech of any one of them differs from that of any other to the extent that the differences are evident even in data which can be collected two or three hours. And it should be noted that we do not refer merely differences of pronunciation. No two of the villages cited have identical series of personal pronouns, for example, and in two contiguous localities the names of such common animals as cat and pig are of different provenance in some instances. In Panajachel, Santa Catarina, and San Antonio, three contiguous localities on the northeastern shore, the word for "fish" has nothing in common with the word used in the rest of the places sited, nor is it conceivable in the light of our present knowledge of the Maya languages that the two words can be cognate.

In so far as diversity of speech is concerned, a similar situation was disclosed in the three Pokomam localities investigated. In the town of Mixco itself very few individuals speak Pokomam, Spanish having largely replaced aboriginal speech. That is not the case in Chinautla. There are differences between the Pokomam of these two localities, but they are negligible as compared with the Pokomam of Palin. Here we find again the general correlation between speech similarities and geographical proximity which is true for most of the places thus far covered by our survey of

Guatemala. The Pokomam of Palin differs less from Mam than that of Chinautla Mixco. Whether the speech of the last two localities is similar to that of the Cakchiquel villages near them we do not know. Those Cakchiquel villages have not been investigated, and, in view of the prevalence of diversity within the Cakchiquel region around Lake Atitlán, we can not venture to draw any conclusion on the basis of the material available.

The situation portrayed here is in agreement with that observable at the border line between Quiché and Cakchiquel, as stated in our report for 1934-35. The local diversities suggest the need of detailed research before names of the languages on our linguistic maps can have any precise significance. A comparative study of the languages of Guatemala can not be guided by the maps. An investigator who decides to write a description of Cakchiquel, for example, can not limit his research to any particular locality within the area assigned to this language on the maps. If he does so, he can not claim that he is describing the Cakchiquel language. Some of the facts he presents may be verifiable for the whole Cakchiquel region it is true, but many others may be observable only in the locality he studied.

In still another respect one can not be guided by the linguistic maps of Guatemala. For obvious reasons, historical facts have been taken into account in the delimitation of the various languages. The conventional distinction between languages and dialects is as misleading here as it has always been in Europe to anyone who is not acquainted with the linguistic facts. For example, Spanish and Portuguese are considered as being two languages, and not two related dialects, while Sicilian occupies the rank of dialect with respect to standard Italian. On the basis of purely linguistic criteria, either Spanish and Portuguese are two Romance dialects or Sicilia should be classified as a language. The linguistic atlases of Europe based on detailed research reveal the arbitrariness of dialectal delimitations conceived in the past. Cultural and political considerations are irrelevant in the proper application of the terms "language" and "dialect." With regard to Guatemala, it is quite evident that if Tzutujil and Cakchiquel are regarded as two languages, there may be many more languages in the Maya area than our traditional delimitations reveal. It is quite probable that the Maya of San Antonio, British Honduras, differs more from the of the northern portion of that colony than Tzutujil does from Cakchiquel. Also, according to several informants in Chinautla, the Pokomam of that village differs less from Pokonchi than it does from the Pokomam of Palin. With regard to other matters, the reports of the untutored native are not always accurate, but comparisons based on the possibility of understanding the speech of neighboring

localities are on the whole quite in conformity with the facts. We give considerable credence, therefore, to the report that Pokonchí and Pokomam are not different languages.

The historical implications of the gradual linguistic diversity observed in Guatemala are rather clear. They definitely suggest that the present distribution of languages and dialects is of long standing. That inference is equally valid whether we assume a long process of mutual influence upon languages which were at one time more divergent than they are now, whether we assume that the languages diverged from one common source at approximately the same places where they are spoken at present. In this respect, the apparently sharp differentiation of Mam from some of the contiguous languages must be significant, although for the present we can not venture to say what it indicates.

7.7.

MANUEL J. ANDRADE

Linguistic Research

YB 36:148, 1937

The chief aim in the linguistic research conducted in Guatemala during the first quarter of 1937 was to collect sufficient text material for a detailed description of the Mam language, the importance of which in a study of the history of the Maya linguistic stock has been pointed out in previous reports.

With the aid of the recording apparatus recently constructed for this purpose, it was possible to collect in one month texts conservatively estimated at more than 300,000 Mam words. This material is contained in 300 double-face aluminum disks, and consists of spontaneous discourse, mainly dialogues, representing the speech of informants from various parts of the Mam area, including the Tacaná region, wherein the speech is known to be like that of the Mam people of Chiapas, Mexico.

Considering that he was in possession of a rather unusual amount of text material to work out the description of Mam, Dr. Andrade moved his headquarters from the Department of San Marcos to that of Huehuetenango in order to continue the survey of the languages of Guatemala undertaken in 1935. He worked on the speech of Aguacatán, listed by Stoll as

one of the languages of the Maya family. Additional information was collected also on the speech of the villages north of Huehuetenango, a region concerning which Stoll's linguistic map of Guatemala is most inexact. The villages referred to are Solomá, Santa Eulalia, Barillas, San Miguel, Jacaltenango, San Juan, and others in their vicinity, where Solomec, Jacalteco, and Chuj are spoken, according to Stoll.

The language called by Stoll and others Aguacateca is spoken only in a small village named Aguacatán. Dr. Andrade has not studied the material collected sufficiently to pronounce on the classification of this speech, but it appears to be much like Mam, although it is totally unintelligible to a Mam. According to the native Aguacatec and their neighbors, the speech of Aguacatán is understood by no one outside their village. A similar condition exists, according to all reports, in Sipacapa, a village surrounded by Mam-speaking peoples. The speech of Sipacapa, however, has not been listed as a separate language, or even as a dialect. Of course, intelligibility cannot be the basis for determining whether or not it is justifiable to regard the speech of a locality as a separate language. If future research shows that the speech of Sipacapa is a Mam variant, that village constitutes a conspicuous exception in the Mam area, where local variants do not diverge to the point of being totally unintelligible in ordinary discourse.

7.8.

NORMAN A. McQUOWN

Linguistic Research

YB 46:193-195, 1947

Mr. McQuown undertook the continuation of the work on the Maya Linguistic Project on September 1, 1946. He devoted the first month to familiarizing himself with and making an inventory of the Maya materials collected by the late Dr. Manuel J. Andrade and elaborated by Abraham M. Halpern during the relatively brief period which he was able to devote to this task [Chapters 1.30 and 1.31]. A program of work for the year 1947 was sketched out. In this, Mr. McQuown was guided by the interim report on the state of the project prepared by Mr. Halpern in July 1946, before he left for duty with General MacArthur in Japan. The more important parts of this report are outlined here:

- A. The basic aims of the work on the Maya languages:
1. The glaring deficiencies in the amount and quality of available primary source material should be corrected.
 2. A certain amount of the material collected should be synthesized in the form of grammatical sketches.
 3. The material should be examined from the point of view of comparative linguistics, so that ultimately the general lines of development of the Maya language family could be laid down.
 4. In the course of the achievement of the first three objectives, special problems of particular interest, either for general linguistics or for workers in the related fields of Maya archaeology and ethnology, would at least be indicated, if not worked out exhaustively.
- B. The general goal of the Maya linguistic research: The research was designed not so much to produce the last word on all problems of Maya linguistics as to complete basic research and arrive at basic conclusions of a sort that would put Maya linguistic research on its feet scientifically.
- C. Necessity of the work: That this research was necessary is beyond all possibility of question. The available materials of a descriptive nature were thoroughly antiquated. In the field of comparative Maya linguistics, deficiencies in the descriptive data made it impossible to arrive at conclusions based on anything more than the most superficial kind of inspection.
- D. Status of the project at present: Of the objectives mentioned above (A), Andrade went a long way toward realizing the first, the compilation of material. With regard to the second objective, he had, before his death, almost arrived at the completion of a grammar of Yucatecan Maya, but had put nothing on paper with regard to the other languages. For all the languages except Yucatec, the material is in the form of raw field data. With regard to the third objective, Andrade accomplished little or nothing. With regard to the fourth, he called attention to the possibilities inherent in the application of dialect-geography techniques to at least the Guatemalan languages and had begun to collect materials on which such a study could be based, but he had not initiated the work of processing the materials toward this end.
- E. Materials collected by Andrade:
1. Huastec: a rather extensive body of text materials, vocabulary and paradigmatic material for the Potosíno dialect, and a relatively small body of material of the Veracruz dialect.
 2. Yucatán Guatemala languages: an extensive amount of material on Yucatec, Mam, and the Panajachel dialect of Cakchiquel; a moderately extensive amount of material on Quiché and Kekchí; small bodies of material on Pokomam, various Tzutujil and Cakchiquel dialects, Aguacatec, and Jacaltec.
 3. Chiapas languages: very small amounts of material.

- F. Condition of the materials: Linguistic materials in the form of raw field notes are rarely susceptible to immediate exploitation by anyone other than the original collector. The process of collection of field material is such that every investigator is forced to adopt certain expedients which depart in one way or another from standardized practice, and an investigator rarely leaves a complete record of such departures and the reasons for them. With Andrade's death, a great deal that he knew but had not written down was lost irrevocably.

There are certain inconsistencies in recording. In many cases one cannot be sure which of two or three variant recordings represents the norm for any given word and which are variations from the norm. In some cases, one can decide on the basis of the notes that the balance of likelihood is in favor of one variation rather than another. An unsolved phonetic question of major importance in all the languages is the presence or absence of phonemic length and accent. In most cases of variant recordings, different interpretations are possible, but if one operates entirely from Andrade's field notes, it is difficult, perhaps impossible, to decide which interpretation best fits the facts.

These difficulties exist if one relies exclusively on the field notes as they stand or on the phonograph records, which unfortunately fail one on many of these points. A short period of field work, in which an investigator would have the opportunity of observing the phonetics at first hand, would, however, be sufficient to settle all the doubtful points and would even enable the investigator to make use of untranscribed, phonograph records.

It is now customary among linguistic field workers to supplement text, material by extensive collections of paradigmatic material relevant to the analysis of the texts. Andrade's technique was somewhat different from this. His questions were standardized for all languages in order to facilitate comparison on certain specific points of grammatical structure. This material is extremely useful, but needs some supplementation.

- G. Recommendations for further work of compilation:
1. The investigator should have the opportunity to familiarize himself with the phonetics of the various languages through direct field work.
 2. The investigator should have the opportunity to collect further paradigmatic material.
 3. The investigator should devote some time to the collection of folkloristic texts where obtainable.
- H. Recommendations for further descriptive and comparative work:
1. The Yucatec grammar is already well handled, so little or no further work need be done there.
 2. A grammar of the Potosíno dialect of Huastec should be an immediate task.
 3. Concentration on Mam in the Yucatán-Guatemala area is recommended, since the Mam materials are among the most extensive in the collection, and one can expect to find certain archaic features

preserved in Mam which have been lost in some of the other languages.

4. If time permits, one of the Chiapas languages should be investigated intensively and the others merely surveyed.
5. The dialect study of the Cakchiquel and Tzutujil area should be carried out, but should be treated as a pilot study in which the objective would be to formulate the types of problems that arise and to indicate the methods which are applicable.
6. The elucidation of the internal relationships within the Maya family and the reconstruction of Primitive Maya should be prime objectives.
7. It is very probable that in the course of reconstructing Primitive Maya, the scholar engaged on this task will find leads indicating the direction in which external relationships must be sought.

Mr. McQuown accordingly devoted the following two months to getting acquainted with Andrade's phonetically and phonographically recorded Potosí Huastec materials, and with the dictionary materials compiled by Halpern from the raw data. It soon became apparent that a small number of fairly important phonological problems and a large number of morphological questions could not be solved on the basis of the available material. Accordingly, a field trip to Las Armas, San Luis Potosí, Mexico, was undertaken; nine days were devoted to the collection of a vocabulary of about 2,000 items, a considerable amount of paradigmatic material related to the verb, and a couple of texts. With this material, together with general notions obtained from the survey of the previously collected material, it was possible to work out the sound system and a beginning was made toward working out the morphology and syntax. The elaboration of the materials gathered on this field trip was continued during the first six months of 1947, when the major portion of Mr. McQuown's time was devoted to teaching linguistics in the Department of Anthropology at the University of Chicago. A start was made on the compilation of a Spanish-keyed comparative Maya vocabulary, from which will be drawn the cognate material to be used in working out the sound-correspondence matrix for the various languages of the family, and for reconstructing Proto-Maya.

Mr. S. L. Bradshaw, commissioned by the Institution to prepare the manuscript of Andrade's Yucatec grammar for the printer, completed his work and submitted the manuscript early in 1947.

It is hoped that by 1950, the general outlines of a comparative Maya grammar may be laid down.

7.9.

NORMAN A. McQUOWN

Linguistic Research

YB 47:221, 1948

Dr. McQuown spent the time from July 15 to December 15, 1947 on a field trip to Tancanhuitz, San Luis, Potosí, Mexico. The purpose of this trip was to gather material for the completion of the descriptive phase of the work on Huastec. A short field trip had previously been undertaken (November-December 1946), and the material gathered at that time was used as a basis for a phonemic analysis, which in turn made it possible critically to examine the Huastec materials collected by Andrade [Chapter 7.8]. This examination made it apparent that the transcription of the recorded text materials would have to be checked and completed in those aspects (stress, vowel length, glottal stop) in which it fell short, and that further paradigmatic material (without which it would be difficult or impossible to work out the grammar) would have to be obtained, working with an informant in the field.

During the four months actually spent in the field, the following was accomplished: 1. A Huastec grammar and dictionary file of approximately 10,000 entries was collected; 2. A Huastec grammar, in its essentials, was worked out; 3. The transcription and translation of the Potosí Huastec texts recorded (phonographically or phonetically in notebook) by Andrade were checked and completed; 4. A half-dozen new texts (of ethnographic or folkloristic interest) were taken down; and, 5. A short vocabulary of the Veracruz dialect was obtained.

The Potosí materials alone will constitute an adequate basis for comparison with the other Maya languages. The Veracruz materials (Andrade's and McQuown's) may be worked up in the form of notes to the Potosí materials, or may be used as a basis for eventual further study, pending the collection of additional data from Veracruz.

The major part of Dr. McQuown's time from January to June 1948 was taken up with the teaching of linguistics in the Department of Anthropology at the University of Chicago, the remainder with the elaboration of the Huastec materials.

In process, and near completion, is a Spanish-Huastec dictionary file, based on the collected materials. This will be incorporated into the Spanish-keyed comparative Maya vocabulary, together with materials from other Maya languages.

Now completed, in card file and in notebook, are:

1. A descriptive grammar of Huastec; 2. A collection of

40 Huastec texts, completely re-transcribed and re-translated from the phonetically and phonographically recorded materials; and, 3. A dictionary file (Huastec-Spanish) covering these materials. This concludes the descriptive phase of the Huastec work.

7.10.

NORMAN McQUOWN

Linguistic Research

YB 48:236–239, 1949

Dr. McQuown's primary purpose in his trip to Guatemala in the summer and autumn of 1948 was to educate himself with respect to the phonemics and a good part of the morphology and syntax of the Mam language. Among his secondary purposes were: to familiarize himself with the phonemics of the other Guatemalan, languages in which Andrade made phonograph recordings (Quiché, Kanjobal, Kekchí); to do the phonemics of Cakchiquel, for which Andrade gathered extensive written texts (transcribed by Juan Rosales); to take a look at Xinca, in order to get an outside check on Maya-non-Maya cultural contacts; and to make arrangements (both in Guatemala and in Mexico) for utilizing, so far as possible, the Maya materials already collected, or in process of being collected, by missionaries working with these languages in the field, and to ensure their collaboration and aid in further work on the languages of the family. A certain measure of success was attained in all these undertakings.

Five months were spent in Guatemala and Mexico, and the items listed were accomplished:

1. Three and a half months were spent in Guatemala City, working on Mam, with an informant generously furnished by the Instituto Indígenista; and one week was spent with Mr. and Mrs. H. D. Peck, at Txol Be, San Juan Ostuncalco:
 - a. A Mam grammar and dictionary file of some 7500 entries was accumulated;
 - b. The phonemics and a considerable portion of the grammar of Mam was worked out;
 - c. Some 10 Mam texts were collected incidentally, in the process of teaching the informant to write with a phonemic alphabet;
 - d. The Instituto Indígenista was provided with a Mam alphabet;

- e. Mutual orientation sessions were held with the Pecks, in which the problems of Mam phonemics and grammar were discussed;
 - f. Arrangements were made with the Pecks, with the informant, and indirectly with Mr. and Mrs. Edward Sywulka, to collaborate in the preparation of a Mam dictionary;
 - g. Arrangements were made with the Pecks to complete the transcription and translation of Andrade's 300 Mam recordings (all material to be phonemically transcribed according to a system worked out on this trip); they have already made great progress, and should be able to complete the work in another year;
 - h. Arrangements have been made with Mr. Edward Sywulka to have access to his master's dissertation, *A Morphology of the Mam Language*, recently completed at the University of Oklahoma. The continued collaboration of Mr. Sywulka and of the Pecks in working out unsolved problems of Mam grammar will probably make further actual field work on Dr. McQuown's part unnecessary for completing the descriptive phase of the work on Mam.
2. Two weeks were spent in becoming familiar with the phonemics of the Quiché, Kanjobal (Jacalteco), and Kekchí languages, in each of which Andrade made a fair number of recordings (55, 37, and 23, respectively).
 - a. Two days were spent in Chichicastenango, working on Quiché, with three informants from Chichicastenango and one from Totonicapán. A vocabulary of 1,000 items was taken and a tentative sketch of the phonemics was worked out (subsequent work in the Instituto Indígenista with another informant from Totonicapán verified the results of the first sketch and, in addition, established beyond question the phonemic status of the short and long vowels). Brief checking was done on a preliminary transcription of the Quiché recorded materials prepared by Andrade (the newly discovered feature of vowel length will make re-transcription of all materials necessary). The Instituto Indígenista was provided with a Quiché alphabet; on the previous trip to visit the Pecks, arrangements were also made with Mr. and Mrs. Stanley Wick, working with the Quiché of San Cristóbal, for future collaboration in all aspects of the work on Quiché;
 - b. Two days were spent in Huehuetenango, working on Kanjobal Andrade's Jacalteco) of Santa Eulalia, with the informant of Mr. and Mrs. Newberry Cox, at present in San Miguel Acatán. A vocabulary of some 1,500 items, a text, and some paradigmatic materials were recorded; a tentative sketch of the phonemics was worked out; vowel length was not found, but subsequent work with other Guatemalan Maya languages (Quiché, Cakchiquel, and Kekchí) which have it makes a recheck desirable (although there is

- evidence that some of the Chiapas languages do not have phonemic vowel length and that Kanjobal may belong with them rather than with the other languages in Guatemala). The collaboration of the Coxes will make this recheck possible without further fieldwork; they can also be counted on for help in the transcription and translation of that part of Andrade's recorded material which is as yet unworked. The Instituto Indígenista was provided with a Kanjobal alphabet;
- c. Two days were spent in San Juan Chamelco, working on Kekchí, with the informant of Mr. and Mrs. William Sedat. A vocabulary of some 1,000 items was recorded; a tentative sketch of the phonemics was worked out (phonemic vowel length was definitely established). The collaboration, of the Sedats can be counted on in the future for the working out of the grammar, and the transcription and translation of that part of Andrade's materials which is as yet unworked. The rechecking of the already transcribed materials will in the case of the Kekchí involve a minimum of effort, since Andrade indicated in these materials a fair portion of the long vowels. The Instituto Indígenista was provided with a Kekchí alphabet.
 3. One week was spent on the phonemics of Cakchiquel; one day was spent in San Pedro Yepocapa, working on the local dialect. A vocabulary of some 750 items was recorded, and a beginning was made toward teaching the informant to write; a tentative phonemic sketch was worked out. Subsequently, three days were spent in Panajachel, working on a slightly divergent dialect, with five informants. A vocabulary of some 1,300 items was recorded; a tentative phonemic sketch was worked out (subsequent work in the Instituto Indígenista with an informant from Comalapa, and in Mexico with Juan Rosales of Panajachel, confirmed the sketch, and established both short and long vowels as phonemic). The Instituto Indígenista was provided with a Cakchiquel alphabet. Juan Rosales, in view of the establishment of vowel length as phonemic, will have to recheck the texts written by him, indicating long vowels where they occur.
 4. The extra-familial check was accomplished in two days, which were spent in Chiquimulilla, working on Xinca, with an informant from Santiago and one from San Sebastián. A vocabulary of some 750 items was recorded and a tentative sketch of the phonemics was worked out. Instituto Indígenista was provided with Xinca alphabet. Subsequent inspection of the Xinca vocabulary showed some dozen loan words, some from Nahuatl languages, some from Maya; consideration of the Maya loans ("bean," "mat," "custard apple," "witch doctor," "ladino") shows that they were borrowed from Mam or from Kanjobal (or from one of the Chiapas languages), indicating a previous more northerly location for the Xinca; comparison of "bean" (from Maya) with "corn" (either a loan from Lenca or a loan into both Xinca and Lenca from a third language) would indicate that "bean" was acquired considerably later than "corn," and was introduced to the Xinca (and apparently to the Lenca and other Middle American groups) by the Maya. These "explanations" are only conjectures, of course, but they indicate how extremely fruitful further work might be. Xinca is rapidly going out; someone should do a thorough study before it becomes extinct.
 5. The fifth purpose was accomplished, by and large, in the personal meetings with individual missionaries. Collaboration has been secured with the Pecks and the Sywulkas for Mam; with the Coxes for Kanjobal; with the Wicks for Quiché, with the Oughtens for Ixil; with the Sedats for Kekchí; with Antonio Goubaud and the workers of the Instituto Indígenista for Cakchiquel, Quiché, and Mam; with the workers of the Summer Institute of Linguistics in Mexico for all the Maya languages there. In Mexico, materials for volume 26 of the University of Chicago's *Microfilm Series on Middle American Cultural Anthropology* (texts and dictionaries in Chol, Tojolabal, and Tzotzil) were obtained from the Summer Institute and were filmed; other Maya language materials of Summer Institute workers will be added to this series from time to time.

8.0. ETHNOGRAPHY

8.1.

ROBERT REDFIELD

Sociological Investigation; Yucatán

YB 30:122–124, 1931

There is a marked disposition among social anthropologists to make their work a contribution to the understanding and control of life; probably it does no harm to be a little presumptuous. At any rate, few students of the simpler peoples want their work to result in merely a miscellany of curious information, and many quite definitely strive to derive from it general knowledge of human ways. No behavior in nature so challenges the usefulness of the scientific method as does human behavior. Some of us are disposed to accept that challenge, and to turn our scientific interest toward the “what happens, and why” in the ways of men.

If we are interested in what happens, it seems best to study it while it happens. It is true that we want to know the history of the people we are studying, because that helps us to learn what experiences have brought about their present characteristic behavior. But the history of non-literate peoples is poor in intimate materials. Many more facts are knowable about changes that go on before one’s eyes.

There is reason to suppose that such changes may be more easily understood in simpler societies, where the factors in the situation are relatively few. This gives the student of the folk peoples an advantage. In Yucatán, we believe, for several reasons this advantage can be pressed. The essentially insular character of Yucatán defines the field of study. The history of the Maya and of the contact of Indian and Spanish civilization is being intensively studied by competent specialists. There exist within a small area communities exhibiting a range of civilization from the primitive tribe to the urban aggregate. And finally, many of these communities, under the influence of modern industrial civilization, are undergoing striking changes.

With this viewpoint and these hopes, we have begun the study of selected communities that lie along this range of civilization. We are seeking to make the studies of the separate communities comparable with one another and we are trying to describe changes that are going on. The entire resulting description

should have a dynamic character; it ought to sketch out a process, the process of becoming civilized.

This year Alfonso Villa and I pursued a study of Chan Kom, a village lying about 12 miles [19.3 km] south of Chichén Itzá. Circumstances there were extremely favorable, due to the goodwill gained in the neighborhood by Miss MacKay of the Chichén Itzá staff and to Villa's two years of selfless service in the village as a teacher. We were therefore able to study the community with the friendly cooperation of its inhabitants. Materials were collected representing the entire round of life of the people. Included are detailed materials on the utilization of the land and the expenditure and division of labor, and considerable information on both Christian and pagan elements in the religious belief and practice.

We tried, furthermore, to report not merely the abstract patterns of custom, but also the living community which is the carrier of those customs, and the changes which both customs and community are undergoing. The particular interest of Chan Kom in connection with the larger project lies in the fact that Chan Kom stands right on the frontier of changes now going on among the Maya. The people are still a homogeneous folk people, dependent upon oral tradition and largely isolated from the world. Yet they are deliberately seeking to relate themselves to the more modern civilization of the towns, encouraging education, sanitary reforms and horticulture. In organizing a cattle cooperative to care for cattle offered by the Socialist government of the State, the villagers arranged to have the shaman perform the ceremony of blood-sacrifice to exorcise evil spirits from the new herds. Chan Kom looks both forward and back.

This Chan Kom study is to be kept unfinished, for the full significance we would like it to have will be realized only if it fits into the series of similar studies forming a description of culture and civilization in Yucatán. A part of my time was therefore spent this year in preparing for these other studies. We wish to include some study of Mérida, for only there is the full participation influence of modern industrial civilization realized. Therefore I made acquaintance with that city and with Mrs. Redfield's help, investigated the sources of materials there available and collected documentary and statistical data. We made some study of the newspaper and other published materials, obtained data on the distribution of civilization within the urban area, and learned something of the location and nature of the sub-communities in the city. In January 1932, Dr. Asael T. Hansen is to begin field work on the project; he will carry forward the study of investigating one sub-community and will probably do the same in a village of peons near Mérida. We plan to include in later years one of the mestizo towns where

the simple folk culture tends to acquire some of the complexities of civilization.

Dr. Hansen's study will represent one step up from Chan Kom. One step down is represented by Indian villages in Quintana Roo. Villa and I visited the northernmost villages of this area in April 1931, and have laid plans to begin work in them in November or December of this year. The Quintana Roo Maya have customs much like those we find in Chan Kom, containing more archaic features, but the temper of the community is entirely different. Most of the people do not welcome modernization, and many of the villages are definitely hostile to it. These Maya face not the future, but the past. Their social milieu is not one of settled towns people much like themselves, as in Yucatán, but of traveling traders and migratory chicleros. They retain, therefore, their own intervillage organization; a sort of theocratic-military federation under the dominance of secular shamans and chieftains grown wealthy as chicle contractors. Here the Chan Kom study should find contrast; here Villa is to begin work next fall. Still later, we may step down again and study a still more primitive community farther south or southwest in the Maya area.

8.2.

ROBERT REDFIELD

Ethnological Research

YB 31:111-114, 1932

The studies we have begun of the contemporary people of Yucatán are guided by two primary assumptions. One assumption is that although scientific interest in the peninsula had its beginning in connection with the ancient Maya culture, and although it is certain that study of the present day Maya will throw light on, the Indians of the times before the Conquest, nevertheless, the ultimate aims of science are more likely to be served if the student describes what is actually before him. If a student of society should report only what is apparently aboriginal in the contemporary culture of Yucatán, he would be like one charged to study and describe the structural mechanics of a building, who would ignore everything in the house but heirloom's brought over on the Mayflower. To learn the rules by which a thing works, you have to study the thing as it works before your eyes. The Maya elements in the contemporary culture of Yucatán are now thoroughly in-

tegrated, with elements of European or modern American origin. The life in the villages is tied up with institutions that have their roots in the capital city, and with an economic system that includes the whole world.

The other assumption is to the effect that a description of contemporary Yucatán can be more than a mere depiction of a static condition, and that by virtue of the fact that the area, geographically homogeneous and racially simple, contains within it communities ranging in complexity from the family or tribal group of primitive Indians to the large urban aggregate which is Mérida, the capital, the description can, in effect, describe a process. If studies be made of communities along this range of sophistication, and these studies be made comparable, the comparison should constitute a summary account of how man gets to be civilized, or, what is the same thing, urbanized. Instead of making a picture, we will make a moving picture. It will show some of the changes that take place as the isolated community, economically independent and non-literate, gives way to the complex and heterogeneous city.

The ultimate importance of this description of process will result, we hope, from the interest we have in making the description a little more than the account of a unique series of events, more than a mere inventory of ethnographic fact. We should like it to emphasize the resemblances and the repetitions of the cultural process. We want it to group and to classify. We want to see what there is that is alike in the various instances of becoming civilized, both as among communities within the peninsula, and also as one compares the situation in Yucatán with similar situations elsewhere. We shall be describing one case, but always with an eye out for other cases of the civilization process in other places. The moving picture will, we think, have a certain flavor of familiarity to those who have seen the theme, folk-to-city, employed on some other stage. Our studies of this special concrete situation are made orderly and systematic by centering our attention upon the contrast and the transition between two ideal types of societies: the folk culture, non-literate, unsophisticated, with a simple division of labor and homogeneous and relatively immobile customs involving many sacred sanctions; and, on the other hand, the city civilization, literate, sophisticated, with a complex division of labor, heterogeneous moral and religious customs and a predominance of impersonal contacts and secular institutions. In this way a regional survey can become, in effect, a scientific hypothesis.

We have begun this task at the two ends, by initiating studies of Maya villages and by investigating the Yucatecan society as a whole, with special reference to the one large city. In 1930–31 Alfonso Villa and

I studied Chan Kom, a Maya village in the Valladolid region, and Mrs. Redfield and I began the study of Mérida. During the year 1932 Dr. Asael T. Hansen and Mrs. Hansen carried forward the work in Mérida. They concentrated special attention upon the barrio of Santa Ana, a part of Mérida that has undergone great changes due to the growth of the urban area and the introduction of recent elements of outside civilization. These changes have not gone on evenly, and have resulted in a condition of extreme diversity. A study of this barrio thus reveals the range of culture and social classes in the city. The old aristocracy are present, many of whom have traveled and studied in Europe and the United States and who participate in the currents of world civilization. Two streets in Santa Ana are occupied by middle and upper middle-class people, and in the rest of the barrio live lower middle-class and lower-class people. Here persist many elements of folk culture, such as the thatched hut and the mestizo costume. The herb doctor competes with the modern physician, and black magic is much feared. But elements of urban civilization are pushing in and displacing the folk culture. No one ever builds a new house of thatch; very few children dress in the mestizo costume; and black magic is becoming a superstition.

Dr. Hansen made an intensive study of one block on one of the middle class streets. Here his material is so complete that he can compare cultural features of the various households in tabular form. At the same time his less exact materials, derived from personal association with people in many walks of life, are being classified according to a scheme of presentation that is guided by the problem central to the various studies: the transition from folk culture to city civilization. It is Dr. Hansen's plan to spend the second half of 1932 living in and studying another Mérida area in which there is a higher degree of homogeneity. In this area dwell lower-class people who have not taken on so much of the urban civilization. Such an area will contrast strongly with the block already studied in Santa Ana. By judicious sampling of the metropolitan region, it is believed that we can fairly represent the situation in the city.

While Dr. Hansen and his wife have carried on the field work, Mrs. Redfield and I have been working on the project during the summer of 1932. Mrs. Redfield has undertaken the study of the Mérida press, daily, weekly, and monthly. From these periodicals she clips relevant materials, and classifies them according to the same scheme which the Hansens are using in the field. In this way it will become possible to combine two different sources of information: the materials gathered in field work, and published documents.

I have been employed, during the summer, in a study of the materials collected last year by Villa and

me in Chan Kom, and in writing them into an ethnographic monograph descriptive of that community and its culture. I plan to take this manuscript back to Yucatán next year, and by going over it in the field, substantially to extend its contents and to check its accuracy. The preparation of it has made it possible for me to see the weaknesses in the work already done. As it now stands the monograph is of value as a study of a peasant community. But the worth of this particular study will be increased as we make similar studies of other villages at different levels of economic and cultural development. Writing up these notes has helped to guide the other studies to comparable forms.

The next village study proposed is of a Maya settlement in Quintana Roo.¹ This work will be begun in December 1932, by Alfonso Villa, who, from his years of service, first as a rural teacher and then as an ethnological assistant, has already a knowledge of Maya customs and language. In preparation for intensive work, Villa made a five weeks' trip of ethnological reconnaissance in little known parts of the Territory. He traversed most of the region north of and including Petcacab, west to and including Xiatil (just east of Lake Chichancanab), and south of a line drawn from Valladolid to the south end of Cozumel Island. He visited 28 Maya settlements. Concerning this part of the Maya territory we have almost no ethnological information. Villa prepared a satisfactory map of the villages here, and made a good photographic and journal record. The villages are grouped into three political-religious divisions, each under the dominance of a native priest and a native chief, who are resident in one of three sacred settlements, each guarding a shrine in which is a cross that utters or writes oracular pronouncements and instructions. Villa visited one of these shrines, and determined the allegiance of each of the 28 villages to one or another of the shrines. The central of these three groups of villages is least affected by schools and other recent influences and Villa selected one of the villages of this group for future study.

Although most of his time was of necessity spent in traveling through the bush from one settlement to another, Villa collected enough casual ethnological information to suggest the existence of many problems for further investigation. It appears almost certain that the extended domestic family is much more important in the Territory than it is in Chan Kom, where we find that institution largely superseded by the small individual parental family. It is also probable that in some cases in Quintana Roo the young married man works for his father-in-law to earn his bride. Villa also received accounts of the New Fire (*Tumbul Kak*) ceremony held on Holy Saturday, when the fires are extinguished in all the houses and are re-lighted from a new fire, ceremonially kindled, at an hour announced from a

consultation of the stars, by means of a fire drill operated by certain personages known as Hot Hands (*Choco Cab*). Here we apparently have another interesting instance of the syncretism of pagan and Catholic custom.

NOTES

1. A determinant is any date which the Maya appear to have used to declare what addition should be made to the Long Count in order to bring any specified date in the 365-day year into the same relation with the tropical year as it was believed to have possessed at the mythical start of the calendar at 13.0.0.0.0, 4 Ahau 8 Cumhu.

8.3.

ROBERT REDFIELD
Sociological Study

YB 32:100-104, 1933

The culture of the present-day inhabitants of Yucatán is not Maya, in the sense that it does not represent the ways of life of the pre-Columbian inhabitants of the peninsula. The archaeologist, but not the ethnologist, deals with this ancient and extinct culture. There is, therefore, no Maya ethnology, strictly speaking, as there is a Maya archaeology. Ethnology deals with the cultures of living peoples, and in Yucatán this living culture is neither Maya nor Spanish. It is not even quite fair to the facts to say that it is part Maya and part Spanish. When two cultures are brought together, the new culture is not the sum of so much of the one and so much of the other, but a new third thing which is an original growth rather than a mere mixture. When we say that certain elements in this present-day culture are "Maya," such as rain-gods associated with the four directions, bark-beer and bee-hives we mean only that their presence in the contemporary culture is historically due to continuity with Indian tradition rather than Spanish; but each of these traits and every other, whether Indian or Spanish in origin, has been reformed and re-defined in terms of the new traits and the other changes that have taken place in Yucatecan life in 400 years. The contact between Spaniard and Indian resulted in a new culture, the Yucatecan folk culture. Looking at the facts, one gets the feeling that most of the changes and re-definitions of meaning took

place in the first few generations after the Conquest, and that this Yucatecan culture was not long in forming. Certainly today it is very widely and fairly uniformly distributed. And today it is often difficult to say to what extent contemporary customs are derived from a European tradition or from the Indian heritage. Shall we say, for example, that the custom of bleeding for illness is Indian or is European in origin, in view of the fact that both European and pre-Columbian Maya practiced such a custom? And if we say it is Indian in origin in the village and European in the city, then what is its origin in the intermediate town? Such problems do not easily lend themselves to solution.

The project upon which we are engaged turns aside from these problems of historical analysis, and takes the Yucatecan folk culture as its basic datum. Our task is double: first to describe this culture and then to study the changes that are taking place in it as a result of the impingement upon it of influences from the city and the wider world. For, in varying degrees, the communities of Yucatán are undergoing modification, due to increasing contact and mobility. Schools, moving pictures, social and political propaganda and economic exploitation tend steadily to modernize Yucatán. The plan of study proposes the simultaneous investigation of three or more communities, affected in varying amounts by these modernizing influences, and then the comparison of these communities. Such a comparison, it is assumed, will amount to a summary description of the process of civilization, or modernization, in Yucatán. We aim to describe, in the form of a concrete instance, the transition from primitive (folk) society to civilized (urban) society. Moreover, as this is a change that has taken place and is taking place in many parts of the world, it is hoped that by comparing this Yucatecan instance with others elsewhere, a more general (and in this sense more scientific) description of the process of civilization can ultimately be realized.

The study of this basic folk culture was initiated in 1930–31, when Alfonso Villa and I began work in Chan Kom, a village just south of Chichén Itzá. In the following year Villa undertook trips of ethnological reconnaissance among the still more isolated villages of the forest hinterland to the south, and Dr. Asael T. Hansen began the study of Mérida, the one city of the peninsula. The year just ending (1933) saw the work in Mérida carried forward by Dr. Hansen, while Mrs. Redfield and I added a fourth community to the series of comparable units by making a short study of Dzitas, a town of mixed bloods, situated on the railroad immediately north of Chichén. Mr. Villa made one extensive trip into (what was until recently called) Quintana Roo, and two shorter trips. He further strengthened his position among the suspicious Indians of this re-

gion, and secured some ethnological data, but the poverty of the natives there made it impossible for him to remain for more than a few days in his role of merchant, and indicated the advisability of postponing intensive work among them until chicle exploitation should be resumed. Accordingly, Mr. Villa spent six weeks making a survey of the Cobá-Yaxuná sacbé and devoted the remainder of the field season to beginning a study of the shaman-priests or *h-mens* of Yucatán, both of the role of these important personages in the village life and of the more or less esoteric specialized lore which they possess and transmit to their successors. In this he was greatly aided by the acquaintance he already had with several of these *h-mens* and by his knowledge of the Maya language. He visited seven or eight of the most renowned *h-mens* of the Valladolid region and began the collection of data which will make known to us the pagan religion as it is understood and practiced by these specialists.

Dr. Hansen, assisted by Mrs. Hansen, continued the study of Mérida, remaining in that field of work during the autumn of 1932 and the first eight months of 1933. The Hansens took up their residence in a different part of the city, on its western edge, and a study they made of the block in which they dwelt, compared with a similar study made the previous year in the barrio of Santa Ana, and with a shorter study made this year at their direction of a neighborhood in the south side of Mérida, enabled them to know something of the range of regional differences in culture and of local homogeneity within the city. These differences turn out to be fairly small. Indeed, as the work progresses we are struck with the essential uniformity of the basic culture. Traits found first in Chan Kom turn out to be present as well among the lowest classes in the city, even though these city-dwellers are from old urban families with much white blood and with Spanish surnames. The ideas of disease and its treatment, the practices at childbirth, even such apparently Indian customs as the little ritual known as *hetz mek*, wherein the infant is handed objects supposed to assure his success in later life occur in the city. But the linkages and emphases of the customs are very different as city is compared with village; and it is the definition of these differences that constitutes the description of the civilization process to which I have already referred as the goal of these investigations.

The Hansens' materials are particularly rich in respect to the topics of sickness and its cure and of the family. Here enough has been learned to permit of a statement with some assurance as to the essential attitudes and institutions, and of the variations in respect of these elements of culture as one social class in Mérida is compared with another. Furthermore, enough historical material, for the recent period, has been obtained,

either from informants or from documentary sources, to add a temporal dimension to the Mérida study. Dr. Hansen is preparing an historical account of recent changes in kinship and the family. In this investigation, the relation between technical changes (capitalistic exploitation of henequen; wealth and foreign travel) and familial attitudes becomes apparent. Dr. Hansen's investigation of sickness and its treatment in Mérida also begins to reveal how the folk practices, especially those carried on by the village h-men, have become assimilated with and modified by elements introduced from other sources, such as medieval European magical handbooks, and a spiritualistic cult introduced by the sophisticated but taken over and reinterpreted by the masses.

During the first month of this field season I was engaged in a revision of a manuscript prepared in 1932 and embodying the materials collected by Villa and me in Chan Kom. In this revision I was assisted by Don Eustaquio Ceme of that village, who spent the period with me in Dzitas. The last month of the season I employed in a visit of general reconnaissance in the highlands of Guatemala, with a view to the possible extension of the ethnological work into that field. The remainder of the winter and spring months Mrs. Redfield and I devoted to a brief study of Dzitas, as a town intermediate on the scale of modernization between Chan Kom and Mérida. Here the social and cultural range was explored by a preliminary house-to-house canvass to determine the name, occupation, language and costume, whether mestizo or *catrin* (folk costume or "store clothes") of the occupants. This census guided us to a fair sampling of the community in our subsequent more intimate dealing with informants and in our direct participation in domestic activities, and also led to an understanding of the interesting situation with regard to class and race in Dzitas. Here assimilation and amalgamation have proceeded so far that—setting aside the more sophisticated viewpoint of a few teachers and officials recently come from the city—all the people, whether predominantly Indian or predominantly European in blood, and whether Indian or Spanish in surname, participate in a single culture. Even in ceremonies held in the fields to the pagan agricultural deities, mixed bloods of Spanish surname take part along with those more apparently Indian. In spite of this, however, there endure the vestiges of a class system based on race, as socially defined: persons with Spanish surnames, no matter what their color or occupation, are *vecinos*; while those with Indian surnames are *indios*. The mobility of very recent years is bringing the *indio* into specialized occupation and into residence near the center of town, and the Revolution gave him the offices of municipal government; nevertheless the older *vecino* culturally much

the same as the *indio*, tends to resent this encroachment upon what two generations ago was recognized, by numerous social usages, as his superior status, and he thinks of the *indio* as a socially lowly class. Thus in Yucatán the class distinction between mixed-blood and Indian outlived the cultural differences between them; but this distinction, as a definite class distinction, has vanished in the city and is disappearing in Dzitas. The situation contrasts with that in Guatemala, where the difference between *ladino* (corresponding with *vecino*) and *indio* (*indígena*) is exceedingly sharp, and where it is a difference both of culture and of class. In Guatemala, contact between (Indian and Spaniard made two cultures; in Yucatán it has made one. This presents for investigation, a problem in the field of race relations.

During the season, Dr. Hansen kept in frequent communication with us, so that a beginning was made with the comparative treatment of the materials gathered separately in the three communities of Mérida, Dzitas and Chan Kom. Taking the chief institutions one by one, we began a tabular summary of the characteristics and functions of each. In this way differences between one community and another became sharply apparent; the summary comparisons became, in effect, hypotheses for further testing. The statement of this preliminary comparison must find a place elsewhere than in these pages¹ but among the general differences as one moves from village to town and then to city are: increasing cultural heterogeneity; increasing division of labor and the development of secular specialists at the expense of sacred and traditional functionaries; breakdown of a close familial organization appropriately supported by sacred ritual; decreasing influence of religious sanctions upon conduct; conversion of the annual fiesta from a sacred rite to a mere holiday or commercial opportunity; and the changing quality of the agricultural rites, which are acts of true piety in the village, mere magical acts of safeguard in the town, and disappear with agriculture itself, in the city, the deities to whom in the village these rites are addressed becoming mere evil or mischievous spirits, or characters in entertaining tales. Unexpected to me was the apparent increase of black magic as one goes from the village to the city. The applicability of this generalization with respect to other communities must be tested, and the reason for it is to be sought. It may be connected with the spread of foreign magic into Yucatán by way of the city, and it may also be any, in the 'city environment' of aspect of the increasing mobility and insecurity a people still primitive in their mode of thinking. And this double possibility in turn reminds us of the wisdom of using both historical and sociological approach in order to get a full understanding of a social situation.

NOTES

1. Culture changes in Yucatán, paper read June 22, 1932, before Section 11, American Association for the Advancement of Science. This paper was later published in *American Anthropologist* 36:57–69, 1934, and reprinted in *Contemporary Cultures and Societies of Latin America*, Dwight B. Heath, ed.; pp. 17–29 (New York, 1965), and *Selected Papers of the American Anthropological Association, 1921–45*, pp. 192–204 (Washington, D.C.: American Anthropological Association, 1976)[ed.].

8.4.

ROBERT REDFIELD, ASael T. HANSEN,
AND ALFONSO VILLA ROJAS
Sociological Study

YB 33:101–102, 1934

The study of the contemporary culture of Yucatán was planned by Dr. Redfield, who has directed it since its inception in 1930, to include descriptive surveys of four community types: city, town, peasant village and tribal village. It was proposed to compare the four resulting surveys, and thus to define some of the variations in the basic Yucatecan folk culture and to describe its progressive urbanization. Fuller statement of the objectives and methods of this very important research, and of its bearing on Maya history, has been made in earlier reports [Chapters 8.1–8.3].

July 1, 1934, saw one of these surveys complete; a second nearing completion; a third, much briefer study, complete subject to qualification in another short period of field work; and the fourth, that of the tribal village, deferred until 1935 or 1936.

Dr. and Mrs. Redfield returned from Yucatán in June 1933, with field notes representing their summary survey of Dzitas, the community chosen to represent the Yucatecan town. During the winter of 1933–34 Mrs. Redfield prepared a manuscript representing the study of myths and tales in the town community. In July 1934, Dr. Redfield began to work up the general materials on Dzitas. It is planned to take the tentative manuscript dealing with this community to the field for revision in the spring of 1935.

The study of the peasant village (Chan Kom) was committed to manuscript during 1933 and was sent to the press in the autumn of that year. It will appear in

September 1934 as *Chan Kom: A Maya Village*, by Robert Redfield and Alfonso Villa R. (Publication 448).

Dr. Asael T. Hansen, assisted by Mrs. Hansen, brought the results of his study of the city of Mérida nearer to formulation. Returning from Yucatán in August 1933, Dr. Hansen devoted the autumn months to a first draft of a manuscript dealing with the folk in a city environment. In January 1934, the Hansens returned to Yucatán. During the following months, Dr. Hansen worked on this manuscript, turning from it to the field for new data wherever in the course of writing the study called for further materials. There were notably enriched materials on the ecological history of the city and on the culture traits of the upper classes corresponding to the customs and institutions of the masses.

A particular interest has developed in the wide scope and variety of magic in the city environment. Dr. Hansen has been exploring this aspect of the problem and has disclosed a number of leads for further investigation. One such is the apparent competition among magical techniques in the city, so that magic takes on some of the characters of a commodity. This may be related to the secularization of the folk religion in the city. Another is the importance of “triangle” situations in connection with the practice of witchcraft, and the possible relation of this association to the predominance of women in the city, and to the disorganization of the family.

In the spring of 1933, the study of the Quintana Roo quasi-tribal village, upon which Mr. Alfonso Villa has made a small beginning, was deferred, due to the unfavorable economic and political situation in the area. Mr. Villa then began a study of the role and the esoteric knowledge of the shaman-priests of southeast Yucatán. This study was in turn interrupted when Mr. Villa came to the United States for work at University of Chicago in the summer of 1933.

8.5.

ROBERT REDFIELD, SOL TAX, AND
ALFONSO VILLA ROJAS
Ethnological and Sociological Research

YB 34:135–137, 1935

During 1935 the program initiated in Yucatán in 1930 was brought nearer completion, and a new enterprise was initiated in Guatemala.

The Yucatán project calls for the study of four types of communities chosen with reference to the degree to which modern urbanized ways of living have affected the Maya-Spanish folk culture which developed in the rural villages. These four types and the communities chosen to represent them are, in the inverse order of relative isolation: the city (Mérida), a railroad town of mixed-blood population with connection on the one hand with the city and on the other with the rural Indian village (Dzitas); a village of Indian agriculturists, independent of hacienda employment and incorporated into the political and educational organization of the state (Chan Kom); and a village of politically independent, on the whole tribally organized Indians in the remote hinterland of Quintana Roo (Tusik or X-Mahben).

At the close of 1934, Dr. Asael T. Hansen ceased the work of collecting field data relevant to his study of Mérida and returned to the United States. During 1935 he devoted time free to him from other obligations to the writing of a monograph on this urban community. The central problems to which his analysis is devoted are the relation between the culture of the urban masses and that of the privileged classes, the changes in the folk culture as it appears among the urban people, and the trend of change from the older society, involving fixed social classes and the dominance of personal and familial relations, to the newer, more mobile, secular and individualistic mode of living.

The materials which Dr. and Mrs. Redfield collected in Dzitas in 1933 have now been subjected to some study and a beginning made in the writing of a report based upon them.

In the spring of 1935 Dr. Redfield was for five weeks in Yucatán, revisiting Dzitas and securing materials necessary for the completion of the report on that community. He also spent some time in Chan Kom, and collected data on changes which have taken place in that village since his last visit. It has been suggested that a restudy, or repeated restudies of one community already studied, would give a "genetic" account of acculturative change which would be valuable in the further investigation of the characteristics of this kind of social change. The data collected this year can be used to guide the planning of such a restudy of Chan Kom.

Mr. Alfonso Villa continued his studies in anthropology at the University of Chicago until June 1935, when he returned to Yucatán. In August he went into the interior of Quintana Roo and began the study of the community chosen there, for which he had done the work of reconnaissance in 1932 and 1933.

The highlands of Guatemala, preserving the richest survivals of pre-Columbian Maya cultures, beside

furnishing material to supplement archaeological work, are exceptionally fertile for social anthropological research. The highlands, in pre-Conquest days probably marginal to the high civilizations, are today populated by over a million Indians who speak Maya languages and whose lives are relatively uninfluenced by the outer world.

Studies of these Indians in particular towns have already occupied some ethnologists, but the work now being initiated by the Division represents the first attempt at systematic and comparative research.

Dr. and Mrs. Tax undertook, in November and December of 1934, a preliminary survey of the western part of the highlands; from January to June 1935 they remained in Santo Tomas Chichicastenango for more intensive work. The program calls for this alternation of systematic survey and intensive study of chosen towns, always with the dual purpose of understanding the general configuration in the light of geography and history; and advancing the solution of sociological problems for which the region appears to furnish crucial data.

The use of comparative methods, toward the latter end, is much facilitated by the division of the population into easily defined units. Due probably to the irregular topography, the people, in dialect and culture, are split into a large number of small territorial groups. Each political *departamento* is divided into *municipios*, each of which is typically homogeneous in language and culture and all of which differ from one another in varying degrees. The *municipios* are effective social segments, each tending to be specialized economically, to have its own social and religious system, its own distinguishing costume, its own dialect; each has, in addition, a strong feeling of unity and a desire to be endogamous.

In addition to the graduated cultural differences that one expects to find between contiguous ethnic groups, there are in these highlands a number of startling and fundamental, even though sporadic, variations between *municipios*. These variations, which as additions to normal differences, imbue the region with its extraordinary sociological significance, may be classified roughly into geographical, racial and historical.

The geographic differences revolve about the fact that there are, in general, three types of *municipios*. One consists of a town, which may be simply an economic and religious center unpopulated except on certain occasions and surrounding country in which the people live on their scattered farms. A second type is like the first except that there are one or more smaller villages in addition to and dependent upon the town. In the third type all or most of the people live permanently in the town and leave it when necessary, for short periods, to work the surrounding fields.

The presence, of two wide-spread racial groups brings about the second group of differences. Living side by side with the relatively pure Indians are the ladinos, who represent an old mixture of Indian and Spanish. These racial groups are sociologically important because they are at the same time economic and social classes, and in some respects almost castes. Variations occur both in the distribution and position of these classes. There are municipios containing solely Indians and others with a high percentage of both Indians and ladinos. There are municipios in which even the small group of ladinos are politically dominant, and others in which the Indians share municipal responsibilities. Furthermore, there are towns in which the ladinos form a bourgeois class and others where, like the Indians, they work their own farms and do their own chores.

Variations derived from historical accidents are less easily cataloged. First of all, the superimposition of Spanish culture (and Christianity), especially since the Indian cultures were undoubtedly already different, could not have been uniform on all the groups, and the cultures today do not contain the same amount or kind of Spanish admixture. More recent contacts and changes are no more uniform: the introduction of commercial planting, drawing some Indians to new occupations, has affected some municipios greatly and some hardly at all; intermarriage between modern Europeans and the Indians, in some cases giving rise to new social classes, has occurred in important proportions in only one region; the recent introduction of foreign goods, as well as Protestantism, has had unequal effects in different parts; military service has made inroads in some municipios and none at all on their neighbors; and, the program of Indian education, successful in some municipios, has yet to be felt in others.

These differences are largely independent, and cut across one another; but since at the same time the municipios are brought together in a network of trade relations and exist under a common government and its political and economic system, the varieties must be studied in their common cultural matrix. Such problems, therefore, as the interrelations of geography, history, and culture, the formation of classes and castes, the influences of one culture on another, the differential effects on individuals of slightly differing social frameworks, for all of which the highlands furnish pertinent data require here the combination of survey and intensive study

Chichicastenango, the object of the first intensive study, illustrates a particular type of *municipio*, so large that personal relations can not be established among more than a fraction of the people; with a town occupied chiefly by bourgeois ladinos, the Indians living

scattered through the countryside most of the time; the idea of property strong, competition keen, and many Indians landless; with Indian self-government, but subordinate to ladino officials. Since they enter as factors in the distinctive customs, local politics and social relations in Chichicastenango, it may be presumed that were even one of these features different, the tenor of the whole culture would correspondingly be altered. It therefore now becomes desirable to study a community radically different.

A preliminary survey has suggested that some of the municipios on the shores of Lake Atitlán, hardly 10 miles [16.1 km] from Chichicastenango as the crow flies, are dissimilar to Chichicastenango in almost every factor mentioned above. Intensive work in one of them may demonstrate the limits of the effects of such factors, as constituting the general social, framework on culture. Meanwhile, further survey work should point out: first, types of variation between these extremes; second, strategic locations for further concentrated research. It is planned during 1936 to conduct this survey as a joint enterprise with that of the Linguistic Project under Dr. M. J. Andrade.

8.6.

ROBERT REDFIELD, SOL TAX,
ASAEL T. HANSEN, AND

ALFONSO VILLA ROJAS

Ethnological and Sociological Research

YB 35:131-134, 1936

The field workers of this group are making studies of a number of present-day Indian and mixed-blood peoples of the Maya area with reference to two projects, one in Yucatán, the other in Guatemala.

The method and the objectives of the Yucatán project have been outlined in previous reports.¹ Of the four communities which it was planned to investigate and compare, one still remained to be studied at the end of 1935: a village of those Maya who live between Ascensión Bay and Lake Chichankanab. These Indians have remained isolated and politically independent since the War of the Castes; they are the last tribally organized Maya in Yucatán. Of the three sub-groups into which they are divided, the middle group, centering around the shrine-village of X-Cacal, was selected

for study, because it is the least influenced by changes in recent years. The natives of these villages still refuse to admit school teachers or other representatives of the Mexican government.

Due to the contacts made by Mr. Villa in his trips of reconnaissance in 1932 and 1933, and to the tactful handling of Indians from these southern villages by Dr. Morley at Chichén, Villa and his wife were able, at the close of 1935, to establish themselves in Tusik, a village near X-Cacal, in a house built specially for them by the Indians. The difficulties of carrying on ethnological work were great: the uneasiness of the Indians and their hostility to any representatives of the government; fresh developments tending to open the territory to schools, roads and direct Mexican governmental control; the uncertainties of the chicle situation. Nevertheless, Villa was able to maintain relations of trust and cordiality with the people and to secure important information, much of which will, in a short time, become forever unavailable. He made a complete census and canvass of households, indicating origin and kinship connections of all persons, for the entire group of 723 persons, living in nine settlements. He witnessed and made notes on all the principal agricultural ceremonies and obtained data many other aspects of the culture.

A striking feature is the political-social-religious organization. The five "companies" into which the sub-tribe is divided are autonomous, except in tribal affairs. Each individual is responsible only to the chief of his own company. Membership is transmitted in the male line; the companies tend to be exogamous; a woman becomes a member of her husband's company. At the annual ceremony celebrated by the entire group at the capital village all the members of each company, whether residents of one settlement or of another, are quartered together in a single structure maintained for them only. Leadership of the entire sub-tribal group is provided by the dominant company chief and a supreme religious functionary, who carries on the ritual attending the adoration of a miraculous "talking" cross. The ties of company to company and of the individual to his "state" are at once political, military, and religious.

Mr. Villa observed and studied most of the agricultural ceremonies. Many of his notes on the religious beliefs and practices have been sent to Dr. Redfield, who will begin in July of 1936 the preparation of the comparative summary account of the four cultures and communities studied, taking advantage of these new materials from Quintana Roo, and placing them beside materials earlier collected in Mérida (the city), in Dzitas (a town of mixed bloods), and in Chan Kom (a peasant village of Maya).

As was to be expected, some elements of aboriginal culture survive in the Quintana Roo villages, but

not in Chan Kom or Dzitas. Such for example, are dual military-religious life-long chieftainship; a ceremony in which is erected a *yaxche* tree surmounted by a clown impersonating *coati*; and the use of special structures to serve as lounging places for the men of each company. But it turns out to be equally true that there persist in these remote villages elements of Catholic ritual that are not practiced in towns and villages nearer Mérida. In spite of the strong pagan character of much of the culture, the people are familiar with the principal prayers of Catholic liturgy, observe Catholic ceremonies almost daily, recognize the distinction between High and Low Mass, observe Lent, Holy Week and several saints' days, make a special Communion bread and a special Communion liquor of honey and water, and practice illustrative penance by approaching a shrine on their knees. It is fair to say that these Indians are, in respect to the forms of worship, at once more pagan and more Catholic than are the people of the other communities studied. Furthermore, the Christian and pagan elements are more closely fused into a single cult than is the case in Chan Kom. It appears that in their isolation of many generations, the mode of living, as remade by missionary a conqueror, has "shaken down" into a completely integrated single mode living. This is true, of course, in Chan Kom, but it is less true there, a progressively still less true in the town and the city. The summary volume upon which Dr. Redfield is now engaged will trace the changes in disorganization of the integrated folk culture, of mixed antecedents, which grew up in the isolated villages in the centuries following the Conquest.

During the summer, Dr. Hansen resumed work, temporarily interrupt by teaching duties, on the preparation of an account of culture and civilization in the city of Mérida, which is expected to be ready for publication before the end of 1937.

The first season (1934-35) of work in Guatemala established the highland municipios² as promising, if not unique, repositories of crucial data for the solution of such sociological problems as the interrelations of geography, history, and culture, the formation of castes and classes, the influence of one culture on another, the differential effects on individuals of slightly differing social frameworks. That season centered on Chichicastenango, a populous municipio, the Indian inhabitants of which live scattered on their farms, coming together on occasions to the central town which is otherwise almost depopulated except for a group of ladino (mixed-blood) middlemen.

It was proposed this year to study, for comparative purposes, a municipio, as different as possible in these objective features, from Chichicastenango, yet historically close enough to assure a common cultural

background. To that end the field season of 1935–36 was spent by Dr. and Mrs. Tax in studying the villages of Lake Atitlán.

Lake Atitlán is not large (its greatest diameter less than a dozen miles [19.3 km]) but its circumference is divided among no less than 11 *municipios*, ten of which have their principal town near the shore of the lake. The languages of the lake towns (and of Chichicastenango as well) are closely akin. The general culture, likewise, types of food, houses, and garments, political and religious organization, general economic basis and mode of life, differs but in detail from a general pattern. Such basic homogeneity one would expect from the geographic proximity; but in at least one respect of sociological significance, the similarity could hardly have been predicted. Noting last year the lack of communal life in Chichicastenango, and the paucity there of intimate social relations, it would have been expected that, on the contrary, in these small-lake towns (with as little as a 100 houses in all, and these crowded one almost on the other) communal participation and personal social relations would be strong and frequent. This is far from being the case, however. It appears likely now that there is in Guatemala a tradition of individualism and formalism so strong that it survives in seemingly the most adverse conditions. What is most remarkable at the lake, however, is not the fundamental sameness of the cultures but, considering that some of the towns are not a mile [1.6 km] apart, in fact are in plain sight of each other, the extent to which they differ from each other, marked linguistic differences, consistent dissimilarities in family, organization, in ceremonial life, in manners and etiquette, in morals and in morale, in kinship classifications, in land systems, standards of living and economic pursuits.

Striking differences in a setting as small and as self-contained as Lake Atitlán are certain to be spectacular. Also, they call for ready explanations. The difficulties involved, however, may be illustrated by differences in means of subsistence, which are usually tied more firmly to causes than are the others. Some of the economic differences are, indeed, attributable directly to geography. But the drastic limitations, as well, of this fact of, in history are conspicuously displayed here.

Panajachel, for example, the only town making a specialty, and this the virtual exclusion of all else, of intensive commercial gardening, has a river that makes irrigation practicable. On the other hand, the town of Santa Catarina makes a specialty of fishing and crab-fishing in the lake, but the inhabitants of neighboring San Antonio (agriculturists exclusively) with the lake at their doorsteps, are known to pass their lives, ignorant of swimming and canoeing, without ever ventur-

ing on its surface. Santiago Atitlán, located strategically in an opening to the coast, specializes in the transport of goods between coast and highlands; but to the villagers of San Lucas, even better located, commerce of this kind is "not the custom." San Pedro has most of the maguey (valued for the fiber of its leaves) that grows in the neighborhood, but the Pedranos, themselves cultivating corn and chick-peas, do little with it industrially; rather, they, sell it to the people of San Pablo, who employ themselves almost exclusively to turning it into rope and hammocks.

Nine of the 10 lake towns occupied about four months of the field season; the tenth town, Panajachel, was chosen to be studied intensively, and almost four months were thus spent. Researches in Panajachel need hardly be mentioned at this time apart from their bearing on the general study except to say that the problem, first suggested in Chichicastenango, of the races or social classes, was amended by the work in Panajachel. It now appears that there are not two classes, but three: Indians, working-class ladinos, and middle-class ladinos, the first two differing racially but both laborers and farmers, typically poor, rural, illiterate; the latter wealthy bourgeois, typically urban, well dressed, educated. Needless to say, the history of and the relations between the three classes in Panajachel demand comparative material from towns in Guatemala where one or more of the classes is living under different conditions. Meanwhile, it now appears desirable to divide the next field-season between Panajachel (and the other towns of Lake Atitlán) and Chichicastenango; studies in neither region are yet completed, and each may be expected to throw more light on the other. At the same time, it is planned to continue to undertake, each year, short reconnaissance surveys into territory still unvisited.

NOTES

1. See [Chapters 8.1 to 8.5], inclusive.

2. A *municipio* in highland Guatemala is a political unit more or less resembling a county, but at the same time an ethnic unit, the population of which is most comparable to a "tribe," with its own costume, culture, and identity. Each *municipio* has at least one "town," like a county seat.

8.7.

ROBERT REDFIELD, SOL TAX,
 ASAEI T. HANSEN, AND
 ALFONSO VILLA ROJAS
Ethnological and Sociological Research
 YB 36:145–148, 1937

Previous reports have described the two research enterprises I carried on by the above four men. One is a comparative study of four communities in Yucatán: the city of Mérida, a town on the railroad, peasant village, and a settlement of semi-independent, tribally organized Maya of east central Quintana Roo. The principal objective of this study is to trace change in and disorganization of the integrated folk culture, composed partly of Indian and partly of Spanish elements, which grew up in the hinterland after the Conquest. *Year Book* 35 [Chapter 8.6] contains a summary of the accomplishments in the field during the previous season of Mr. Villa, to whom has fallen the task of studying the Quintana Roo Maya. The studies of the other three communities were completed before 1936, and a monograph on the peasant village, Chan Kom, has appeared. Mr. Villa's field work was finished in the winter of 1936–37. As this brings to an end the collection of data required for the study as planned, no further reports on this project may be expected until the results appear in volumes now in preparation. These are three: a monograph on the city of Mérida by Dr. Hansen; a monograph on the X-Cacal cacicazgo of east central Quintana Roo by Mr. Villa; and a summary and comparative volume on culture and civilization in Yucatán by Dr. Redfield.

During the latter part of Mr. Villa's residence in Tusik, a village of the X-Cacal group, he completed the collection of materials in such a way as to insure a point-for-point comparison of the Quintana Roo culture with that represented in Chan Kom, the peasant village. Anticipating a more considered statement, one may set down some of the more important contrasts between these two societies:

1. The techniques practiced, the familial institutions, and the folk beliefs and other ideologies of the two peoples are so similar as to be almost identical.
2. But the political organization, and such structure as exists outside of the family, is sharply different in the two societies. The government of Chan Kom is a part of the state and national governments, and functions to express the wish of the people to identify themselves further with civilization and progress; the Quintana Roo natives rule themselves

and exclude the modern world through a theocratic military hierarchy of chiefs. This difference reflects the contrast in essential social objective, the one progressive, the other intensely conservative.

3. The religious rituals present some notable points of contrast in: a. the emphasis in Quintana Roo upon group ceremonies, especially those affecting the entire subtribe; b. the greater importance of Catholic ritual elements in Quintana Roo; c. the persistence of pagan features in Quintana Roo which are extinct in Chan Kom; but on the other hand; d. the absence in Quintana Roo of a number of pagan elements which are still present in Chan Kom. This last situation presents a special problem calling for historical explanation. Related to it is the relatively smaller importance of the shaman priest (*h-men*) in the more isolated and otherwise primitive community as compared with the corresponding situation in Chan Kom. The Quintana Roo people developed a paramount leader, sacrosanct, in the person of the functionary (*nohoch tata*) who maintains the tribal shrine and ritual. This is probably an adaptation of Christianity to primitive conditions, made in adjustment to the necessity for organizing the tribe against outside attack. Incidentally it may have brought about diminution in the authority of the more pagan *h-men*.

It should be reported that incidentally to his scientific work, Mr. Villa played a large role in negotiations between the Mexican government and these natives, leading toward a peaceful settlement of their differences with the Government, and the acceptance of ejidos, and eventually of schools. Thus the knowledge Mr. Villa obtained as to these people in the last years of their isolation became an instrument in the breaking down of that isolation. The change had to come; it is fortunate that Villa's experience could be used so that the transition might be effected with relative ease.

The Guatemalan project is formulated in more general terms. The task is to survey the cultures of the western highlands, to provide a first classification of the cultures and societies there to be found, and to define a few special problems for study. The field work has been done almost entirely by Dr. Tax. His paper (Tax 1937), published in the *American Anthropologist* for June 1937, established the municipios of the midwestern highlands as the essential natural societal and cultural units, in terms of which studies must be carried on. In 1934–35 Dr. Tax began work in the municipio of Chichicastenango. In 1935–36 he made brief studies of several of the communities adjoining Lake Atitlán, and initiated an intensive study of one of these, Panajachel. This study was resumed in the six months spent in the field from January to July 1937. The investigation this year proceeded from the general and statistical to a consideration of the more inti-

mate aspects of native behavior and belief. Living in a house not unlike those of the Indians themselves, and in the center of the Indian settlement, with the people already accustomed to the presence of strangers, Dr. and Mrs. Tax entered more fully than before into the native community. Trading with the Indians and helping them in their deals with one another, growing crops along with them, doing their bookkeeping for them and helping them in their own ways and means, all brought forth information that made more significant the market accounts and statistics, and the tables bearing on questions of production, consumption, and distribution that were otherwise prepared. Acting as godparents to Indian children, advisers to young people and their parents and in some cases even matchmakers, and aiding friends in times of sickness and death, gave the close and personal view which is essential to successful reporting of an alien social organization. Helping in, or at least witnessing, the meetings of the elders when political problems arose, did the same for political institutions. And of course participation in religious ceremonials of all kinds brought not only the natives' good will but understanding as to the relations of the sacred and the secular, of the religious and the political, and of the Christian and the pagan.

Perhaps in no branch of Indian culture, however, did the accumulation of two seasons of good will give better results than in that of folk tales. For the first time in Guatemala an aboriginal mythology was uncovered. Aside from its intrinsic interest and value (it includes origin myths, legends and tales of all kinds, and anecdotes about people living and dead) this folklore bared much of the Indian mentality difficult to uncover otherwise, and also furnished innumerable leads to previously uninvestigated fields of native belief.

Meanwhile the sociological problems previously defined were not neglected. Additional material bearing upon the nature of the municipio and the relations between municipios was gathered; also, of course, upon the nature of communal life itself in Panajachel. One important group of problems earlier recognized arises out of the fact that the midwestern highland societies are not composed solely of Indians, but also of those mixed bloods of Spanish language and (largely) Spanish culture called ladinos. Earlier work in Chichicastenango and in Panajachel had established the existence of a rough three-class system, consisting of the Indians, the rural agricultural ladinos, and the more commercial ladinos of the towns. It was desirable to get a view of Lake Atitlán society from the standpoint of some of the ladino communities. To this end Dr. Redfield, accompanied by Mrs. Redfield, spent nine weeks in Agua Escondida on Lake Atitlán, just above the Indian village of San Antonio and not far from Panajachel. This situation made possible frequent

interchange of questions and advice between, Dr. Redfield and Dr. Tax. Dr. Redfield made a short study of the ladino culture and society, with emphasis upon the roles of the Indians and ladinos in the common society they share. This resulted in the formulation of a number of perplexing questions, statement of which will have to be deferred. The most striking single observation is the relatively slight degree to which the Indians, numerically so superior to the ladinos, are at present affecting ladino culture, in spite of the absence of race prejudice and the intimacy, with which the two groups associate.

During the year two articles, summarizing results of work in the highlands, were prepared by Dr. Tax; and his plans call for the completion of a monograph on Panajachel before again taking the field. He then proposes to return to Chichicastenango for a season to complete, if possible, the work begun there in 1934–35; but whereas at that time residence was maintained in the town itself, it is hoped that now a suitable place in the country region, where the study may be rounded out, can be found. Dr. Redfield will probably not return to Guatemala until 1938–39.

8.8.

MANUEL J. ANDRADE, SOL TAX,

ASAEL T. HANSEN, AND

ALFONSO VILLA ROJAS

Ethnological, Sociological, and Linguistic Research

YB 37:162–164, 1938

As indicated in the preceding *Year Book* [Chapter 8.7], Mr. Villa's expedition to Quintana Roo in the winter of 1936–37 completed the field work for the study of village and city life in the peninsula of Yucatán. Mr. Villa spent part of the year 1937–38 in preparation of his report on the east central Quintana Roo villages; it is expected that this will be ready for publication by January 1, 1939. Dr. Hansen devoted part time to further work on his monograph on Mérida; this should be ready in 1939. In the summer of 1937 Dr. Redfield began the preparation of the summary and comparative volume on culture and civilization in Yucatán.

The comparative study of highland societies of Maya peoples was prosecuted during the year here

reported by Dr. Tax and by Mr. Villa. Dr. Tax's year was chiefly devoted to preparing for publication material collected during the two previous seasons in Panajachel, Guatemala. After returning from the field in June 1937, field notes and data contained in such forms as genealogies, schedules, and maps were organized. At the same time a draft of one chapter of the report was written to see if the purely cultural data, the knowledge, beliefs, technology, science, values, and modes of behavior, could not be best presented from the native point of view almost as if an Indian himself were writing it. Since the method appeared fruitful, it is being continued.

During the last six months of 1937 Sr. Juan Rosales, an Indian of Panajachel trained in field methods by Dr. Tax and Dr. Andrade, remained in Panajachel to collect additional data and to resolve questions put by Dr. Tax. This necessitated considerable correspondence. At the same time, Mrs. Tax devoted herself to notes transmitted by Rosales.

At the end of December, Dr. Tax left again for Guatemala, taking up residence in Panajachel. During the three months that followed, he accomplished three missions: first, he filled in and completed his studies of Panajachel culture, clearing up doubtful points for his report; second, he installed Sr. Rosales in the town of San Pedro La Laguna, there to do an ethnological study under his direction, and conferred with him a half-dozen times both in San Pedro and in Panajachel; and third, he made practical arrangement, for his and for Dr. Redfield's next field seasons. In the course of this work much was learned about house building and about the relations of Indian and ladino laborers and artisans in Agua Escondida; and as a house in Chichicastenango was taken only after many vain attempts to obtain land or a house owned by Indians, considerable new insight into Chichicastenango attitudes and modes of living was attained.

At the beginning of April Dr. Tax returned to resume work on his Panajachel report, now devoting himself to writing. By the end of June something more than 200 pages of typescript were ready and almost as many more in various stages of preparation. Plans call for the virtual completion of the report by the beginning of October, when Dr. and Mrs. Tax will resume work in Guatemala, returning to Chichicastenango to complete the study begun there in 1934-35.

By this time the sociological and ethnological problems to which attention is being directed are more clearly delineated, and the work should go on more rapidly. By the end of another year intensive studies of three communities (Panajachel, Chichicastenango, and San Pedro La Laguna), representing the three linguistic divisions of the midwestern highlands, will probably have been completed; it will then be possible to

undertake comparisons of a more intimate nature than those afforded by the reconnaissance and surveys of the past.

The work done in connection with this project, as well as that done by others, notably La Farge and Schultze-Jena, has indicated many common resemblances as well as certain important differences among the Mays of the highlands of Guatemala, and the facts available have further suggested that the peoples of eastern Chiapas form a part of the same general type, and region. Accordingly it is desirable to extend the guided sampling of Maya ethnology to Chiapas. Notes on the Tzeltal, Tzotzil, and Chol have been provided by Pineda, Starr, Blom and La Farge, Becerra, and others; but the information provided in their notes is inadequate to enable us to determine the significant problems in this area. Accordingly Mr. Villa spent two months early in 1938 making a reconnaissance of Tzeltal settlements. San Cristóbal de Las Casas served naturally as a base. Fifteen communities, from Amatenango on the south to Petalcingo on the north, were visited; these included both highland and lowland settlements. From a few hours to several days were spent in each community. Mr. Villa strove to secure his ethnographical information from the Indians, rather than from the ladinos, and to investigate matters such as type of settlement, Indian-ladino relationships, and form of government, as are summarized for the communities of the midwestern highlands of Guatemala in a recent paper by Dr. Tax (1937).

It is expected that the material secured by Mr. Villa will be published in a short article, but some of the suggestive findings may be mentioned here. Brief mention of Indian surnames among the Tzeltal is made by Starr; nothing is said on the subject by Blom and La Farge. Villa has established the fact that the highland Tzeltal have exogamous surname groups; the names are descriptive, or refer to animals or plants. Furthermore, certain of the highland villages are divided into antagonistic subcommunities (*calpules*), one with lands to the north, the other with lands to the south. In Oxchuc a principal annual ceremony attends the transfer from one calpul to another of a certain sacred book. This book, a manuscript containing apparently orders set down by Spanish authorities in the seventeenth century, is kept in a special sacred structure. Villa obtained further information on the 19-month calendar; it is apparent that it is still used in connection with the agricultural round.

It is expected that this reconnaissance will be followed by a more intensive study, to be carried on by Mr. Villa, of one of these Tzeltal communities.

Dr. Andrade continued the preparation of his linguistic manuscript of Yucatec; it is expected that it will be ready for publication in the spring of 1939.

8.9.

ALFRED V. KIDDER
Sociology and Linguistics

YB 38:254–258, 1939

Although the attention of the historians has naturally so far been focused largely upon the earlier phases of the post-Conquest period, their findings have cross-checked most interestingly with those of Dr. Redfield and his group, who, since 1930, have been observing and recording conditions among the living peoples of Yucatán and Guatemala.

At the time that arrangements were made with the University of Chicago for Dr. Redfield to devote some months each year to directing and taking part in the ethnological wing of the Division's program, he made it clear that the work (which began in Yucatán) must be guided by two primary assumptions. One assumption is that although the Institution's interest in the peninsula had its beginning in connection with the ancient Maya, and although it is certain that study of the present-day Maya will throw light on the Indians of the times before the Conquest, nevertheless, the ultimate aims of science are more likely to be served if the student describes what is actually before him. If a student of society should report only what is apparently aboriginal, he would be like one who, charged to analyze the structural mechanics of a building, would ignore everything in the house but heirlooms brought over on the Mayflower. To learn the rules by which a thing works, it is necessary to study the thing as it works before one's eyes. The Maya elements in the contemporary culture of Yucatán are now thoroughly integrated with elements of European or modern American origin. The life in the villages is tied up with institutions that have their roots in the capital city, and with an economic system that includes the whole world.

The other assumption is to the effect that a description of contemporary Yucatán can be made more than a mere depiction of a static condition, because the area, geographically homogeneous and racially simple, contains within it communities ranging in complexity from the family or tribal group of primitive Indians to Mérida, the large urban capital. If comparative studies are made of this series of communities, we shall acquire most valuable information upon a process of social evolution typical of large parts of Latin America and, indeed, in its trend toward urbanization, characteristic of the whole modern world.

In accordance with these principles, Dr. Redfield organized a survey of Yucatán which included re-

search upon groups at various stages of advancement. At the foot of the ladder were the Maya of the remote villages in the eastern forests, people who, since the general revolt against the whites in the 1840s, have never been reconquered and have held themselves aloof from Mexican influences. This work was carried on through several seasons by A. Villa R. The next upward stage was represented by Chan Kom, a small pure-Maya settlement which was just beginning to feel the impact of the outside world. Still farther within the zone of modern influences was Dzitas, a small town on the railroad, preponderantly Maya but with a sprinkling of Latins. There Dr. Redfield lived with his family for several months. Completing the ascent to urbanization was Mérida, the capital, where A. T. Hansen spent two years in studies of a class of society. A report upon Chan Kom by Dr. Redfield and Sr. Villa has been published and manuscripts upon the other communities are in preparation together with a concluding work by Dr. Redfield, summarizing the results of the whole investigation.

While the survey of Yucatán was still in progress a similar undertaking was begun in the highlands of Guatemala, a region largely populated by Maya-speaking Indians, but one in which environment, pre-Columbian events, and post-Conquest history have combined to produce modern conditions very different from those obtaining in the peninsula. Sol Tax, who joined the Division in 1934, has devoted himself entirely to the Indians of this area, and his work has been supplemented by investigations by Dr. Redfield of the life of the lower-class mixed-bloods or Ladinos, who form a connecting link, culturally, between the Maya and the ruling whites.

Dr. Tax, during the past five years, has made his headquarters in the central western highlands, studying, intensively Chichicastenango in the Quiché country and the Cakchiquel town of Panajachel on Lake Atitlán. He has also done comparative work at the several other communities of the lake district.

In the winter of 1938–39 Dr. and Mrs. Tax re-established themselves at Chichicastenango. Dr. Tax revised previously collected materials on this town, resumed preparation of a monograph on Panajachel, and supervised the activities at San Pedro, on Lake Atitlán, of Juan Rosales, an educated Panajachel Indian who has for several years been of great assistance in gathering linguistic texts for Dr. Andrade and ethnological data for Dr. Tax. Dr. Redfield devoted part of his time to further study of the Ladino culture of the lake area and part to work on the manuscript embracing the final results of the Yucatán project. Sr. Villa spent the year in Mexico and the United States, studying at the University of Chicago and completing his report on the primitive Maya-communities of eastern Yucatán. At

the request of the Mexican Government Sr. Villa has been detailed to assist the Mexican Department of Indian Affairs in a survey of the Totonac peoples of Veracruz.

With reference to the study of the contemporary Maya society of the Guatemala highlands, the present plan is for the preparation of from three to five publications: 1. A general monograph on Panajachel (Tax); 2. A special monograph on the economic life of Panajachel, to be prepared so as to bring it into comparable relation with similar studies of modern communities in other parts of the world (Tax); 3. A descriptive monograph, to be written in Spanish for the value it is likely to have for Guatemalan and Mexican students, on San Pedro Atitlán (Tax and Rosales); possibly, 4. A publication of such aspects of the life of Chichicastenango as are well represented in Tax's materials (Tax); and possibly, 5. A study of the Ladino-Indian community of Agua Escondida (Redfield).

The study of these present-day Guatemalan societies is in need of cooperative planning. In recent years ethnological research has been carried on in the highlands not only by this group of students but also by others not connected with Carnegie Institution. It is desirable that the knowledge obtained and largely unpublished by all recent workers in the field be brought together and exchanged. This can best be done in an extended conference. Such a conference should go far to clarify problems in the "field" by making more apparent than is now the case which elements are widespread in the area and which are local, and by emphasizing the more important lines of inquiry. Extensive survey should be combined with intensive research on selected communities. But until it is known what problems are important, it will not be possible to plan the survey wisely nor will it be possible to know which communities should be chosen for intensive study.

The experience to date of Dr. Redfield and Dr. Tax suggests that further prosecution of certain lines of research would go far toward providing better understanding of social conditions in the Guatemala highlands:

1. The Existence and Approximate Limits of Subcultural Areas in the Midwest Highlands. We do not know if the similarities and differences of the cultures of the municipios are such that the latter can be grouped into units of contiguous jurisdictions. Some of the facts which must be taken into account in approaching an answer to this question follow: a. In some municipios the Indians live in towns and work the surrounding fields by the day; in others, the Indians have their homes and their farms in the open country and come to town only on special occasions; in still others of either type there are settlements subsidiary to the town; and other municipios (in fact most) are combinations of the other types. In the

area so far visited and studied, there are three islands of the first kind of municipio in a sea of the second kind. One island consists of three towns south of Quezaltenango; another of the 10 towns of Lake Atitlán; the third of at least some of the towns of the department of Sacatepéquez, just west of Guatemala City. In at least the first two cases the condition of the Indians living in towns is probably explicable on the basis of peculiar topography; the third case has not been studied; b. Municipios tend strongly to be individually specialized with regard to the ways of making a living. Some of these distinctions are closely related to geographic differences, as that between coast lands and highlands, but others are not. We shall probably be able some day to mark off distinctive trade regions; c. Each municipio differs from many or all others in dialect, and general culture. These are not dissimilarities merely in costume and in saints' days but also in many details of social customs, in kinship classification, etiquette, and ideals of social behavior; d. Some of the differences in Indian culture are probably attributable to "ladinoization." It may roughly be said that there are areas where the Indian culture is "purer" than in others. The differences among the municipios studied appear to be in details, apparently in all phases of the culture. But in some details the variations seem important, as for example that between communal house building and individual house building (San Pedro vs. Panajachel and Chichicastenango); and in some phases of the culture the peculiarities seem greater than other phases (for example, there seems to be more to sorcery and shamanism in general Chichicastenango than in either San Pedro or Panajachel). Our problem is to plot differences, then with samples extend our studies to other towns (like border towns) of the region to see what kind of areal consistency they have; it is not unlikely that we shall find that subculture areas will coincide with language areas, in which case the come of ethnological (historical) importance.

2. The Fundamental Forms of Social and Politico-Religious Organization. In each of municipios that we know there is an institutional configuration consisting of a. formal kin and local groups and b. a structure consisting of separable but dovetailing political and religious organizations. In is probably the basic theory of Indian social organization, the two elements are inextricably bound together in one system which for its functions, first, the control of individual conduct and, second, the performance of services deemed necessary to the material and spiritual well-being of the community. In this frame of reference, the major problem is to determine by comparative (and, where possible, historical) methods what the basis system is and how and why its manifestations vary from municipio to municipio.
3. Economic Organization of the Region. One problem here is the distinction between the geographic and the more purely traditional factors in bringing about

the economic, specialization of Indian communities, aside from the effects of altitude, natural resources and quantity and quality of land, there are certain differences of economic organization which are not so directly attributable to the habitat. Contiguous municipios with closely similar resources vary sharply as to the extent to which these resources are exploited.

The full explanation of municipio specialization must take into account that, among other factors, a. the economic specialization of the municipio is an aspect of its general cultural individuality; b. the municipios are specialized with reference to crops, industries, trades, merchandizing, and labor, each of which requires separate treatment; c. in addition to special circumstances of resources and geographic position that must be taken into consideration in individual cases of specialization, there are some general factors encouraging or discouraging the adoption of new means of making a living. Among the discouraging factors is the endogamous tendency of the municipios, which, since arts and techniques are largely transmitted from parents to children, tends to perpetuate specialties. Another is the competition that the innovations meet in existing means that are supported by tradition. A third is the shortage of capital that can be risked in innovations in an economy so close to the subsistence level. On the other hand, among the factors encouraging change (and economic homogeneity) may be mentioned the continuing contacts with other municipios having more profitable specialties, especially since such contacts exist in a free capitalism and together with the desire of individuals to improve their positions.

4. Problems of Ethnic Relations Between Indian and Indian, and Indian and Ladino. Consideration given by this group of workers to the latter half of this problem suggests the following two broad generalizations as a basis for the study: a. The Ladinos and Indians of the region have at one and the same time characteristics of distinct cultural groups in process of assimilation, and characteristics of social classes. An investigation of the situation in this regard in other selected communities in Guatemala should provide us with a series of instances ranged in an order of difference as to the two characters: separate cultural groups or well-defined status groups in a society with a single culture. Comparison of such instances would give knowledge as to how this transition, which we know to have occurred a great number of times in the recent history of our Western world alone, may come about; b. The relations between Ladinos and Indians in this area are substantially without conflict. Nor is there any apparent disposition for the Indians to be held in a caste-like status of lasting inferiority. The region is occupied by two ethnic groups, of which one maintains a culture much like that of the original conquerors, its members tending to identify themselves with these conquerors, while the other

group are known as natives and so know themselves. Yet they live amicably in a common territory. Why they live together so amicably, why is ethnic membership of so little social consequence, why are there no taboos or rituals or myths to maintain the superior status of the one and the inferior status of the other?

5. Problems of Culture Type and Culture Change. The general questions may be asked: To what extent do elements of culture and society found in Guatemala have a necessary or natural connection with one another? What are the factors which have favored the spread of certain elements of culture and society in Guatemala and have limited the spread of others? Suppose we are able to say: The highland cultures are highly commercial and individualistic; exterior, impersonal institutions are important in social control; there is abundant practical magic; the treatment of the supernatural is magical and practical, and does not characteristically involve strong personal experiences with the supernatural. Then it should be possible to make it clear which of the institutions and elements of culture are consistent with, perhaps functionally related to others. A detailed comparison of certain Indian cultures, selected to represent differing degrees of intimate contact with the Ladinos, would probably give us some understanding of characteristic ways in which older culture elements (in some cases aboriginal elements) in this area changed their nature under modifying influences. For example, in Panajachel the group of beliefs about the beings inside the hill exists in a form which apparently identifies the hill with hill and the lord of the hill with the devil. In San Pedro the hill beliefs exist without this evidence of fusion, with European notions. Certain cosmogonic beliefs probably exist in San Pedro in a more nearly aboriginal condition than in Panajachel. The point to be stressed here is not a hope that we shall find any village in which pre-Conquest culture is approximated, but rather that by comparing the varying forms of what must be basically the same idea or institution we shall learn something of how culture changes under certain sorts of influences. It may not be impossible to learn, by such comparisons, something about the progressive disappearance of collective community ownership of agricultural land, which has probably occurred at least in the lake region.

The comparison of municipios already made, slight as it is, raises the question: What truth often made that the Guatemalan highlands constitute a region of great cultural diversity? It now appears that the local differences are accompanied by widespread and very important uniformities. Apparently the local variations in culture are of a sort that strike the observer in the first stages of his understanding of the highlands, while the uniformities appear greater after a more intimate understanding is reached. The

municipios differ in features that are conspicuous: costume, dialect, traditional dances, local products, special forms of ritual. These contrasts make the highlands appear a crazy quilt of cultures. The visitor is struck by the way in which, within a few miles, he may pass from Indians who wear one kind of costume, make houses of one form, and speak a certain language, to Indians who differ in all these very apparent respects. But it now appears to us that these obvious diversities are relatively exterior, and that with respect to characters which make for the maintenance of a common life together, the Indians, and the rural Ladinos too, may be much more alike than they are different. It might be enlightening to study some of these societies in terms of those institutions which are recognized by Indians of all communities and by Ladinos too, and which make it possible to establish relationships across local communities: buyer and seller; *recomendado*; *posada*; complaint before the *intendente*; godparent-compadre, etc. Other problems under this general head are the following: How is it that the sharing of so many common understandings between Indian and Ladino does not necessarily require that they come to agree with reference to understanding of the supernatural and as to the interpretation of Nature? To what extent is the overt rational life of the expression of personal religious sentiment and to what extent is this ritual magic initially executed by professionals? This is the question: How is the religion of the people adjusted to their highly practical and highly commercial manner of life

During 1939–40 Dr. Redfield and his associates will devote themselves to the analysis of materials, writing, and conference, in an attempt to organize themselves with reference to problems such as those above.

8.10.

ROBERT REDFIELD, SOL TAX, AND
ANTONIO VILLA ROJAS
Sociology and Linguistics

YB 39:280–281, 1940

During the year the ethnologic and linguistic research of the Division was advanced chiefly by the study of materials already collected, and by their preparation

for publication. No field work, directly within the research program of this group of workers, was carried on during the period. Dr. Redfield devoted much time to the manuscript summarizing the comparative study made of four communities in Yucatán. This manuscript has now been completed. Dr. Redfield also wrote and published a general paper, "The Indian in Mexico," for the *Annals of the Academy of Political and Social Science* (March 1940) and, with Mrs. Redfield, wrote "Disease and its treatment in Dzitas, Yucatán." Dr. Tax's presence in Chicago during the year allowed Drs. Tax and Redfield to collaborate in the review and annotation of a number of manuscripts in the field of Maya ethnology or that of Guatemala or Mexico generally: manuscripts by Professor C. L. Jones, Dr. Ruth Bunzel, and Messrs. R. Stadelman, O. LaFarge, C. Wagley, and F. W. McBryde. Dr. Tax did the greater part of this work, and in connection with the manuscript of Dr. Bunzel, on Chichicastenango, prepared, for purposes of comparison, a reorganization of data collected there by himself in 1934–35 and 1938–39; this work will continue. A major enterprise brought to completion by Dr. Tax was the editing and preparation for the press of a manuscript by Mr. Charles Wisdom on the Chortí of Guatemala.

Dr. Tax devoted most of his time, however, to preparation of his own materials. Attention was given chiefly to two monographs on the town of Panajachel, the first on economics and the second on the general culture of the community. The economics paper, initiated at the beginning of the year, was about half completed; two-thirds of the other were completed except for final revision and typing. In all, some 400 pages of typescript were prepared for the press; it is expected that by October this number will be increased to nearly a thousand. In connection with connection with conflicting data on land utilization in Panajachel, a short conference with Mr. F. W. McBryde was held in Columbus, Ohio, in March; notes were compared and difficulties successfully resolved. The only other departure from Chicago was a trip to Indianapolis in April 1 when Dr. Tax read a paper on "Acculturation in Guatemala" before the American Anthropological Association.

During the year supervision of the researches of Sr. Juan Rosales on the town of San Pedro was continued by correspondence. Sr. Rosales made Sololá his headquarters. The introductory sections of a joint monograph in Spanish were completed, but progress on this manuscript was continually interrupted by acquisition of new data on both San Pedro and Panajachel. Sr. Rosales made several trips to Panajachel, and also received informants from there, to confirm and elaborate items of information received in connection with the preparation of the two Panajachel monographs. He

also made extended visits to San Pedro, and spent considerable time with San Pedro informants in Sololá. Two opportunities in this connection were especially fortunate. First, the complete confidence of a San Pedro shaman was won, and for the first time in our experience in Guatemala full and reliable information on the esoteric aspects of his profession was obtained. Second, a literate Indian working in the town hall of San Pedro was employed to keep full daily records of court proceedings; the resulting material is an invaluable supplement of cases dealing with most phases of local Indian life. In all, no less than 700,000 words of type-written notes on San Pedro culture have now been collected.

Sr. Alfonso Villa was occupied chiefly with the preparation of his monograph on the Maya of the X-Cacal region of east central Quintana Roo. The composition of a long historical section required Sr. Villa to devote much time to the consideration of documentary sources. The Quintana Roo manuscript is nearing completion. For about two months Sr. Villa interrupted work in order to participate, as field assistant investigating the general social structure of certain villages, in the Tarascan project operated by the Mexican Government, under the direction of Dr. Morris Swadesh and Dr. Rubin de la Borbolla, in connection with its recently adopted policy of developing methods of writing and teaching in native Indian languages. In this connection Sr. Villa spent some weeks in Michoacan. He attended the First International Indianist Congress at Patzcuaro, and presented a paper on "The social organization of the Tzeltal of Chiapas."

In the spring of 1940, a Social Science Research Council fellowship was awarded to Mr. Benjamin Paul, student in anthropology at the University of Chicago, for ethnological work in Guatemala. His enterprise will be supervised by Drs. Redfield and Tax and coordinated with the field program of the Institution.

It proved impossible to assemble for a proposed conference most of the workers of the country who are active in Maya ethnology. Members of the interested group have, however, agreed to prepare topical memoranda to be used as a basis for discussion when, probably next year, the conference is held.

Dr. Andrade also remained in the United States during the year. Work on the linguistic project consisted mainly in the analysis and organization of data gathered in previous field trips. The grammar of Yucatec is almost finished.

8.11.

ROBERT REDFIELD, SOL TAX, AND
ALFONSO VILLA ROJAS

Social Anthropology and Linguistics

YB 40:306-309, 1941

Beginning in October 1940, Dr. Tax spent eight months and Dr. Redfield five months in Guatemala resuming field work among peoples of the midwest highlands. In previous seasons Dr. Redfield had studied the mode of living of the Ladinos of the village of Agua Escondida, on the eastern side of Lake Atitlán. This year he devoted his attention to the San Antonio Indians, whose pueblo is the most important settlement in the municipio wherein Agua Escondida is but a recent hamlet of invading Ladinos. The materials obtained from the San Antonio Indians have two principal uses for the Institution's ethnological project. Combined with the data obtained from the Ladinos, they will make possible a monograph on the entire municipio community, which includes within it the three principal kinds of people living in the midwest highlands: Indians native to the municipio, invading Ladinos, and Indians who have moved into the municipio from other communities. It is proposed to describe the life of the municipio in terms of its bi-ethnic, or multi-ethnic, population, using ethnic differences, resemblances, and relationships as a general theme in terms of which to examine customs and institutions. It is expected that understanding will thus be increased of some of the basic features of midwest highland life: its commercialism, its secularism, and its general dependence on formal regulation and control. To this end Dr. Redfield visited almost every part of the municipio, and mapped the residences, and lines of communication in the most rural corners of the community as well as in the pueblo and hamlets themselves.

In the second place, the work with San Antonio Indians closed one link in a developing chain of comparisons. Previously we had knowledge of the customs of several Indian communities situated along the lake, of the Ladinos of Agua Escondida, and of the Indians of Chichicastenango to the north. But we did not know which elements of culture were to be attributed to Ladinos *per se* and which to local differences among Indians, differences which Ladinos might to some extent share. Now that we have knowledge of the Indians and Ladinos of the same municipio, distinction may be made with some confidence between local and ethnic culture variations, and at the same time one may begin to see where are to be found the

frontiers of diffusion and culture change, between Indian and Indian, and between Indian and Ladino.

Dr. Tax returned for his third field season at the village of Panajachel, with two main objectives: to obtain data needed to complete his monograph on the economics of the Indian community, and to determine the degree to which material on the mental life of individual Indians is representative of that of the whole community. For the second purpose, a sample of over 400 items of belief was tested on at least three, usually four or five, and sometimes more, selected Indians. Conclusions in this study, which will form the substance of a second monograph, are still to be worked out: In addition, some quite new information was obtained, and considerable work was done with informants never previously engaged. Noteworthy is a life history obtained from a middle-aged Indian with whom Dr. Tax was especially intimate.

Dr. Tax also devoted some time, with Sr. Juan Rosales, to the preparation of their report on the town of San Pedro, where Rosales did the field work. This report, of which some 200 typed pages are now ready, is being written in Spanish. Rosales spent most of the year in Sololá, writing the monograph, but he continued to collect material until the end of 1940. Since then, his chief contact with San Pedro has been through Sr. Agustín Pop, the Indian interpreter who has been writing a diary and collecting courthouse records for Rosales. In order to finish the report on San Pedro, which requires their constant collaboration and to obtain training that will add to his value, Rosales accompanied Tax to Chicago at the end of May for a stay of about a year, aided by funds of the Rockefeller Foundation.

Early in January was inaugurated the experiment in ethnographic method conducted by Mr. Benjamin Paul (Social Science Research Council Fellow) under the direction of Redfield and Tax. Mr. Paul is in San Pedro engaged in an independent study of the community for comparison with that of Rosales. Since Rosales kept a record of origins of his data, and Paul is doing the same, a comparison of information and conclusions may well yield very significant information for the study of field techniques.

Besides the work on selected communities, advances were achieved this year in extending and systematizing the more comprehensive study of all Indian Guatemala into which the community studies fit as special parts. Taking advantage of several years of experience in villages and towns of western Guatemala, Tax and Redfield developed, a schedule, on which may be quickly recorded a great many of the basic and readily comparable facts about local communities. As the municipios are both natural culture groups and also administrative units of the Guatemalan government, it is possible to use the municipio

as a unit of investigation, and to combine on a single schedule and program of survey both material taken from formal government records and information obtained orally from informants. In order to make the best use of the former class of material, Redfield and Tax first spent some time in Guatemala City and in offices of municipal government in order to understand the machinery of that government and the records in which its doings are set down. The resulting schedule passed through several stages of revision, and was worked out in municipios in the area where the principal field work has been done. It is 'now' ready for general systematic use in a survey of this part of Guatemala, or, indeed, for surveys in other parts of the country.

As one means of extending the general background of knowledge of Guatemala, and with the incidental objective of giving the schedule a further trial, Tax and Redfield made five-day trip of reconnaissance into eastern Guatemala. The itinerary included communities in the territory of the Pokoman and of the Chortí, and extended to Esquipulas, near the Honduran border. The trip resulted in a number of achievements. The worth of the schedule was demonstrated in San Pedro Pinula, where reliable and detailed information was obtained from municipal authorities in complete response to the schedule in less than two hours. Later in the afternoon and evening an excellent sampling of ethnographic data was obtained from an Indian family of the town. A very creditable paper on this municipio could be written from this single day of work. In the second place, confirmation was given to a hypothesis carried into the field (from a reading of Wisdom's report on the Chortí) that Chortí culture is more like that of Yucatán than it is like that of the western highlands of Guatemala. Furthermore, what was learned on this trip gave weight to the suggestion that the Indian societies of eastern Guatemala are more sacred and personal, and less formally institutionalized, than are those of the midwest highlands with which the project began. And, finally, there was discovered, or rediscovered, an excellent series of adjacent communities, between Guatemala City and the Pokoman villages, within which to study the progressive ladinoization, or de-Indianization, which is generally taking place in Guatemala.

In 1940 Dr. J. S. Lincoln received from the Carnegie Corporation a grant for ethnological studies among the Indians of the Nébj region in the Department of El Quiché, Guatemala, a group which has had relatively little contact with European culture. Dr. Lincoln's work, carried on under the auspices of the Division of Historical Research, proved so interesting that a small further grant was made by the Division for its continuance in 1941. Dr. Lincoln was engaged on this research

when he was taken seriously ill. He was brought with great difficulty over the mountains from Nébjaj to Sacapulas by Indian porters and by motor to Guatemala City, where he died on May 2, 1941.

Dr. Lincoln had completed an extremely thorough study of the calendar system now in use by the Indians of Nébjaj, showing it to retain many important elements of the ancient Maya of reckoning time. A manuscript embodying his findings was received shortly before his death, and will be made ready for the press. Dr. Lincoln's voluminous notes on social, religious, and political organization and material culture are being studied by Mrs. Lincoln with a view to their ultimate publication.

The untimely death of Dr. Andrade has, of course, halted field investigation of the Maya languages. As stated, in the introduction to this report, however, Mr. Bradshaw has been engaged to put in final shape for publication Dr. Andrade's almost completed monograph on Yucatec, a work in which are exemplified his remarkable abilities as a logician and as an analyst of primitive tongues. Attempt is also being made to arrange for the continuation of the research. That it should go on is most essential, not only for the light which it can shed on problems of Maya history, but also in order that the vast body of materials so meticulously recorded by Dr. Andrade may be augmented, and synthesized as a contribution to linguistic science in general. The first step must, of course, be a thorough study of those materials, in order to determine how they may best be utilized and to ascertain what additional field work be necessary. This stock-taking has been entrusted to Dr. Abraham Halpern of the University of Chicago. On receipt of his report, in about a year's time, it will be possible to give consideration to plans for the future.

8.12.

ROBERT REDFIELD, SOL TAX, AND
ALFONSO VILLA ROJAS

Social Anthropology and Linguistics

YB 41:273-275, 1942

The program in ethnology and social anthropology this year consisted of desk work rather than field enterprises. *The Folk Culture of Yucatán*, a book by Dr.

Redfield summarizing the results of the research carried on in Yucatán from 1931 to 1936, was published in July 1941. Dr. Tax completed his report on the economy of the Indian community of Panajachel. This will form the first of three volumes on that community. The other two volumes are in preparation: that dealing with the Indian world view is about half done; that concerned with the social organization is in its inception. Dr. Tax also wrote a short article on race relations in Guatemala, prepared a short manuscript—to remain unpublished until further developed—dealing with what appear to be important differences between highland and lowland Maya cultures, and organized materials on Middle American ethnology in connection with a course on that subject, which he and Dr. Redfield taught in the spring at the University of Chicago. At the end of the year, Dr. Tax left for Mexico City, where he was to teach a course in Maya ethnology, with special reference to ethnographic field techniques, at the Escuela Nacional de Antropología. It is his plan, following the termination of the course, to take a group of students to the Tzotzil community of Zinacantan in the state of Chiapas, to do field work in that little reported Maya group. For these purposes the services of Dr. Tax have been lent by the Carnegie Institution to the Escuela Nacional.

With the assistance of their class at the University of Chicago just mentioned, Dr. Tax and Dr. Redfield began a collection and comparison of material on Middle American ethnology which might ultimately become a contribution to a handbook on that subject. It is planned also to prepare a selected bibliography.

Sr. Alfonso Villa R. spent most of the year in revision of his manuscript on the Quintana Roo Maya, which is now ready for the press. In May, Villa reached the small Tzeltal community of Dzajalchen in the municipio of Oxchuc, near Tenejapa, in Chiapas, with the intention of remaining there several months carrying on a general ethnological study of these Indians, who had been the subject of a brief published report based on a reconnaissance of their villages made by Villa in 1938. His first report from the field contained maps and censuses of the community chosen for study and information on social organization. Of interest is the fact he reports that each settlement takes its name from a cave wherein is housed a cross at which members of that settlement perform their religious rites; each tract of land in the settlement is considered the permanent property of this cross; the son (never a daughter) inherits the land with obligation to keep up the prescribed rites, and sale of a tract does not change its belonging to the traditional cave.

Sr. Juan Rosales, field assistant to Dr. Tax, spent the year in Chicago, continuing the preparation of his monograph on the culture of the Maya of San Pedro de

La Laguna in midwest highlands of Guatemala. He was aided, by support from the Rockefeller Foundation. He has completed the introduction to his work, and the chapters on technology and material culture, comprising almost 500 typescript pages. He will remain in Chicago at least until January 1, 1943.

As was recorded in the preceding annual report, Benjamin Paul, a fellow of the Social Science Research Council, went to San Pedro de La Laguna to study the same community investigated by Rosales, as an experiment in ethnological method.

Mr. Paul spent a year in that village, and returned to the United States in December 1941. Having received funds from the University of Chicago to enable him to prepare his report, he set about this task at the beginning of the new year. Mrs. Paul, who accompanied him and did field work under provision made by the Committee for the Study of Dementia Praecox, Scottish Rite Fund, brought back unusual and interesting material on the socialization of the child.

A further contribution to the ethnological work of the Institution was made by the University of Chicago when it supplied a sum of money enabling Rachel Reese Sady to make a study of certain official Mexican records, with an evaluation of their usefulness to ethnologists. Mrs. Sady examined and, when necessary, transcribed or summarized the formal records made by national, state, and municipal governments pertaining to two communities known to contain a large Indian element but differing in most other respects. She then did enough field work in the first community (Ocotopac, in the state of Morelos) to enable her to form a judgment as to the extent to which conditions therein were reported in such records. The other community was one in Chiapas to which it is expected Dr. Tax will go in the winter of 1943. Mrs. Sady is writing a report which it is expected will be a guide, for the investigation of Mexican aboriginal communities, to students who may wish to take advantage of formal governmental records as a part of their work.

Beginning July 1, 1942, the program of field research will be strengthened as the result of an important addition to the Division staff. Through an arrangement with Duke University, Dr. John P. Gillin, of that university, has become a Research Associate of the Institution and a participant in its program of social anthropology and linguistics. Dr. Gillin is to spend the summer of 1942 initiating studies among the Pokoman of eastern Guatemala. This group, concerning which there is almost no information, was briefly visited by Dr. Redfield and Dr. Tax in 1941. Dr. Gillin has been informed as to the special interest this Maya group have for the general project, with regard to their critical position in connection with the supposed dichotomy of the Maya peoples. Into lowland and high-

land divisions, their interest for students of Indian-Ladino relations, and the possible interrelation of market systems, or their absence with other elements of Indian society. Dr. Gillin will, however, develop his research along such lines as seem most promising after his preliminary survey.

Melvin Marvin Tumin, a student of anthropology at Northwestern University, received a fellowship from the Social Science Research Council to enable him to acquire field experience in Middle American ethnology. This he will do in the eastern highlands of Guatemala, where his work will be supervised by Dr. Redfield.

While Mr. Samuel L. Bradshaw worked on the grammar of Yucatec left unfinished by Dr. Andrade at his death, Dr. Abraham M. Halpern continued the comparative study of other Maya languages. His initial task was to examine and organize Dr. Andrade's field notes and to review all published materials bearing on the linguistics of the Maya and their neighbors, with a view to estimating the present state of the study and recommending a course to be pursued in carrying it forward. In the year just ended, Dr. Halpern went through the notes and catalogued the phonograph record material. With the kind assistance of Mr. Edward F. Sywulka, a dictionary file was started for the Mam language. A beginning has also been made on a comparative dictionary file. The work was discontinued when Dr. Halpern took leave of absence as of April 1, 1942, in order to undertake studies of an Oriental language important in connection with the war effort.

8.13.

ROBERT REDFIELD AND ASSOCIATES *Social Anthropology*

YB 42:180-181, 1943

Dr. Tax spent most of the year in Mexico. From July through November he taught at the Escuela Nacional de Antropología; December and January he spent with nine students in the Tzotzil community of Zinacantan, Chiapas, instructing them in techniques of ethnographic field work. February he also devoted to this work, assisting the students in preparing a report on the work of the expedition. The next months, to the middle of June, were devoted chiefly to making last revisions of his manuscript on the economy of the In-

dians of Panajachel, Guatemala. While in Mexico, Dr. Tax began, with the cooperation, of the Escuela Nacional de Antropología and the collaboration of its cartographer, Sta. Rita López de Llergo, a large-scale language-density map of the Maya area. This map makes use of data from the original schedules of the 1940 Census of Mexico, furnished through the courtesy of the Department of Statistics of the Mexican Government, to spot the population, classified by language reported spoken, as accurately as possible. When the Mexican part is completed, it is hoped to extend the localization on the map to Guatemala, British Honduras, and the Republic of Honduras. As projected and begun, this map will be an improvement not only over previous linguistic maps of the area, but over population-density maps as well, since the population is spotted by the smallest local units. Sta. López de Llergo has adapted to cartographic purposes a decimal system of indicating the numbers of people.

Dr. Tax, while in Mexico was in contact with the group of linguistic missionaries from the Summer Institute of Linguistics. This organization has trained linguists stationed in many Indian communities in the country, including some in outlying Maya communities on which there is almost no ethnological information. Finding them eager to be of assistance, Dr. Tax took time to instruct many of them in methods of obtaining reliable ethnographic data.

The expedition to Zinacantán, although primarily a training enterprise for students of the Mexican Institute of Anthropology, furnished a considerable body of data on this hitherto unknown community. The whole Tzotzil group has been almost untouched by scientific research. In conjunction with the results of Sr. Villa's work among the Tzeltal, the results of the expedition give us a good start in understanding the ethnology and sociology of the Maya groups in Chiapas. The report of the expedition is still incomplete, but will probably be published in Mexico within a year. As a further result of this expedition and of Dr. Tax's teaching program in Mexico, a new research project, in which three of the students will return to the same region of Chiapas for six months each to work on problems of social anthropological interest, is under serious consideration. As planned, it will be financed cooperatively by the Instituto Nacional de Antropología e Historia, the State of Chiapas, and the University of Chicago, and will get under way in the autumn of 1943.

Sr. Rosales remained in Chicago until January, when he returned to Guatemala to continue the writing of his report on San Pedro La Laguna. Plans for publication of the first volume on the technology, in Guatemala are going forward while he is working on the chapters on the economy.

Sr. Alfonso Villa R. spent about 10 months studying Tzeltal communities (Dzajalchen, Yaxanal, and Tzuib). His wife accompanied him, and a field residence and "branch office" of the Institution was built in Dzajalchen. In spite of difficulties the absence of Indian men for periods of work on fincas, poor food, sickness, and the hostility of the Indians toward whites, Sr. Villa recorded excellent and abundant material. The institutions of these Indians include exogamous patrilinear groups, cross-cousin marriage, a dual division with ritual functions, and a remarkable form of witchcraft in which the sorcerer (in many cases) causes illness as a punishment for a sin committed by the sick person or a relative, and in which cure follows confession and illustrative whipping of the sinner, after divination, or diagnosis, by "pulse-takers." Villa will devote the summer and autumn to preparation of a report, and to giving a course in ethnological field method in the Escuela Nacional. His manuscript on *The Maya of East Central Quintana Roo* has been submitted for publication.

During the year plans to undertake a study of nutrition in Guatemala, to begin this summer, matured. Dr. Tax will direct the project, and the field work will be done by Srs. Antonio Goubaud Carrera and Juan Rosales. Sr. Goubaud, like Sr. Rosales, is a Guatemalan; this will be his first official connection with the Institution's program, although relations between him and members of the staff have been close since 1934 and he has spent the past years at the University of Chicago working partly under Dr. Redfield. In 1942 he participated in a nutrition study, jointly sponsored by the Office of Indian Affairs and the University of Chicago, in New Mexico. Plans call for study of the diet of both Indian and Ladino communities in every region of Guatemala.

During the summer of 1942 Dr. Gillin, under a cooperative arrangement with Duke University, engaged in a preliminary study of San Luis Jilotepeque, a Pokoman community of eastern Guatemala. Mr. Melvin Tumin then spent about nine months in the same community working especially on problems of acculturation and the relations of Indians and Ladinos. Supported by the Social Science Research Council, with collaboration of the Institution, he did his work under the direction of Drs. Redfield, Gillin, and Tax.

8.14.

ROBERT REDFIELD, SOL TAX, AND ASSOCIATES

Social Anthropology

YB 43:176–178, 1944

Because of duties connected with the war activities of the University of Chicago, Dr. Redfield was unable to take the field. He remained, however, in close touch with the ethnological work of the Division. The principal, undertaking of the period under review was a survey of the food consumption and food habits of the nonurban people of Guatemala. The project is designed to complement a similar study carried out some years ago by the Division in cooperation with the Nutrition Laboratory among Maya living under very different conditions, both of climate and of soil, in northern Yucatán.

By far, the most important of the manifold practical problems of human existence is that of filling the stomach. Men must be fed before any other activity can be undertaken. The quality and quantity of their food determines their health and vigor; the ease or difficulty of its attainment regulates the amount of effort they may put into activities beyond and above the mere business of keeping alive. Food supply, and physical environment interlock to produce the most cogent conditioning factors of any people's career. No anthropological or historical investigation can therefore strike very deep without taking them both seriously into account.

From the archaeological point of view, studies of food and cooking among the living Indians of Middle America are necessary in order to give us information on former times. This is needed to make clear the uses of utensils found in excavation. Of greater importance is knowledge of the nature and amount of food required by the ancients, in order to permit estimates of the number of people who could have supported in various sorts of country. That modern data will be, so to speak, retroactively reliable is indicated by the strong conservatism of the Maya in other regards as, for example, in clothing, in agricultural practices, and in house building. And for present-day needs the survey will furnish basic data on the food of the country as a whole for comparison with that of other countries and regions and for determining the nutritional factors in problems of public health in Guatemala; as well as for comparisons of foods consumed in different type of Guatemalan communities in order to weigh the geographic, agronomic, economic, and cultural factors involved in such differences.

Plans for the survey were drawn in August 1943 following a conference in Guatemala City between Dr. Tax and Srs. Goubaud and Rosales, and field work was begun the next month by Srs. Goubaud and Rosales and Sr. Agustin Pop, a young Guatemalan who has been Sr. Rosales' assistant in San Pedro La Laguna.

Since the attempt is to determine the kinds and quantities of food consumed, with little or no immediate reference to causes and effects, or to the chemical composition of the foodstuffs, the data that are being collected are limited to detailed records of the daily consumption of individuals of sample families, to recipes (to make the consumption records exact and intelligible), to information on kitchens and utensils and customs relating to food, and to a general index of foodstuffs used throughout the year, with information on prices, seasonal variations, etc.

Considerable attention is paid to obtaining a scientific sampling of families for study within each community. The importance of getting an adequate cross section made it advisable to choose, so far as possible, communities in which ethnological studies have already been made, so that the economic and social distinctions that must be taken into account can be known without further extensive work. In regions where no such investigations have been undertaken, more time was allotted for the survey. Otherwise, the communities were chosen to represent regional, geographical, cultural, and social differences in the country as a whole.

By the end of June, Sr. Goubaud had completed work in five communities: those of Ladinos and Indians in San Luis Jilotepeque (Pokoman) and Jocotán (Chortí) in eastern Guatemala, and in the coffee plantation "Nueva Granada" in the southwest extremity of the country, where the Indians are largely of Mam origin. Simultaneously, Srs. Rosales and Pop completed studies in another five communities, all in Central Guatemala: the highland Indian towns of San Pedro La Laguna (Tzutujil) and Panajachel (Cakchiquel), the Ladino communities of Sololá and Agua Escondida, and the lowland colony of San Pedro Indians in the village of Cutzan. By the end of 1944 Sr. Goubaud is scheduled to finish work on the Indians of San Miguel Chicaj (the easternmost Quiché town, in Baja Verapaz) and on the Indians and Ladinos of San Juan Chamelco (a Kekchí town of Alta Verapaz). In the same period Srs. Rosales and Pop will study in Aguacatán (southeastern Huehuetenango), where there appear to be two possibly distinct Indian groups as well as a settlement of Ladinos, and in the Mam Indian town of Santiago Chimaltenango (western Huehuetenango); if they have time, they will also collect food data in Santa Eulalia, a Chuj town in northern Huehuetenango.

Field studies will be finished by the end of 1944, and during the first months of 1945, Sr. Goubaud will compile and correlate the data and draw conclusions. Sr. Rosales, meanwhile, can return to his report on the culture of San Pedro, work on which was suspended to permit his participation in the food survey.

Partly to choose communities to be studied in the food survey, partly to obtain first-hand knowledge of northern Guatemala, a month's reconnaissance of Huehuetenango, northern Quiché, and Verapaz was undertaken in April. Dr. Tax entered Guatemala from Chiapas at the extreme northwest corner of Huehuetenango, where Srs. Goubaud and Rosales met him. Together, by horseback and automobile, they then traveled across the whole of northern Guatemala almost to the Lago de Izabal, stopping on the way in about 40 communities. Besides obtaining a general idea of the geography and sociology of the area, for comparison with that to the south, they were able to trace the changing religious complexes and other cultural differences by fixing attention upon a small number of specific cultural traits.

Work in Chiapas made great strides during the year. It has been mentioned that Sr. Villa completed a second season in Oxchuc, this time accompanied by four students. In addition, three of the students who last year were trained in Zinacantán by Dr. Tax, returned to Chiapas in December 19 after six months' field work in the region. Sra. Calixta Guiteras Holmes, whose special interest was the family and clan organization, worked especially in San Pedro Chenalhó (Tzotzil) and in Cancuc (Tzeltal); Sr. Ricardo Pozas Arciniegas, specializing on the economy, studied chiefly in Chamula (Tzotzil) and Huistan (Tzeltal) and Sr. Fernando Camara Barbachano worked in Tenejapa (Tzeltal), and San Miguel Mitontik (Tzotzil), especially on the politico-religious organization. Funds for their work were supplied equally by the Instituto Nacional de Antropología e Historia (Mexico), the state of Chiapas, and the University of Chicago, but the project was consummated under the direction of Dr. Tax, with advice from Dr. Redfield and Sr. Villa. Sr. Villa had numerous contacts with the three field workers. Dr. Tax directed the work by correspondence, and before making the reconnaissance of Guatemala, in April, he spent a week in Chiapas in consultation with Sra. Guiteras and Srs. Pozas and Camara.

As a result, comparatively full information about the whole highland Tzeltal-Tzotzil region of Chiapas is now at hand; during the next year the field notes will probably be organized and one can expect that for the first time real understanding of the ethnology, sociology, and economy of this hitherto unknown region will emerge. Indeed, within the space of two years we have probably obtained as much information about

this area as there is available about any similar area in all of Middle America. The region appears to be of extraordinary importance ethnologically, with a social organization of a type more primitive than any hitherto encountered, in Middle America.

To facilitate the elaboration of all the materials collected in Guatemala and Chiapas during the past 10 years, both by members of the Instituto staff and by others, a project to microfilm manuscript material, which can then serve as a basis for specialized publications, has been inaugurated. It is hoped to gain the cooperation of institutions and individuals that possess unpublished materials on Middle American ethnology, social anthropology and linguistics, in order to obtain a complete library of microfilmed materials that can be used by all concerned. Plans already under way include the microfilming of a large body of manuscript materials; Mr. Melvin Tumin is assisting with the editorial work. The more difficult problem is that of obtaining means to index all the materials to make them easily usable by scholars in the field. If the project comes to fruition, it will solve the dilemma posed by the practical impossibility of publishing all field data collected, on the one hand, and on the other the desirability of publishing conclusions and interpretations without making available the material on which they are based.

8.15.

ROBERT REDFIELD AND ASSOCIATES
Social Anthropological Research

YB 44:173-177, 1945

No notable single accomplishment marked the advance made in social anthropological research of the Division during the past year; no outstanding discovery in the field is to be reported; and no new unit of investigation was begun. The members of the group were engaged in terminal or transitional activities. Dr. Redfield made a short visit to Yucatán and to Guatemala; in Yucatán he reviewed the circumstances that would attend a proposed restudy of Chan Kom, one of the Yucatecan communities studied a decade ago; and in Guatemala he carried forward, in consultation with members of the staff and with representatives of the new government of the Republic, various pieces of

business incidental to the Division's research program in that country. Dr. Tax's time was borrowed in large part by the University of Chicago; nevertheless, for Carnegie Institution he brought nearer completion a non-technical book on the Indian culture of Panajachel. Sr. Antonio Goubaud concluded a period of special employment, and completed a monograph containing the results of the study of diet in rural Guatemalan communities which he carried on in the field in 1944 with the assistance of Sr. Juan Rosales and Sr. Agustin Pop. Sr. Alfonso Villa Rojas prepared for microfilm reproduction his extensive notes on Tzeltal communities of Chiapas, and in June came to Chicago to write comparative monographs. The publication, during the year, of Sr. Villa's book, *The Maya of East Central Quintana Roo*, provides the student with the last expected monograph resulting from the Yucatán project, the first of the two research programs carried on by this group of workers, and so brings this first project to a close, while the Guatemalan project is still in progress.

The brevity of this annual report provides opportunity here to review what has been done during the past 15 years.

By 1930 the Institution had already for many years been carrying on researches in Maya archaeology. In that year, there was initiated a new program in which problems of the Maya area were to be attacked by specialists representing many kinds of scientific interest. Ethnology was included, and Dr. Redfield formed a plan to study the living people of Yucatán. Because the Maya of Yucatán are all much the same in language and in native custom, a project was proposed, and carried out, to investigate four communities chosen to represent different degrees of exposure to modern urban influence. The project was so conceived as to serve two interests: that in the ethnography of the Maya, and that in the effects of contact with modern civilization of simpler and more isolated societies. The program was realized in every particular except that a promised publication on the city of Mérida was not produced. There were published: a monograph on a peasant village (Redfield and Villa Rojas 1934); another on a tribal community (Villa Rojas 1945); publications on a town of mixed population and marginal in character to village and city (M. Redfield 1935; R. Redfield and M. Redfield 1940); and, in 1941, a summary and concluding volume expressing the more general conclusions of the study (*The Folk Culture of Yucatán*, University of Chicago Press).

This project had the following principal results. Sources of information on the present-day Yucatec Maya were provided that exceed in both quantity and quality everything else on the subject that had previously appeared or has since been published. The eth-

nography of the region was assembled in a single synthesis, in *The Folk Culture of Yucatán*. The student of Maya history was provided with a full account of the present-day pagan cult, including texts of prayers. It was fairly well established that the culture of Quintana Roo is a reintegration of elements of custom both pagan and Christian, and it was shown that processes of culture growth which move toward consistency operate indifferently on European and on Indian elements. From ethnographic facts almost exclusively, a historical hypothesis was offered as to the course of development of conventional attitudes between racial groups and status groups in the peninsula. For what was probably the first time, a study of a regional American Indian field was (virtually) opened with a project directed by concepts and questions of general interest to students of society and of social change and was carried through to completion. Conceptions and hypotheses as to the natural association of certain characteristics of human living in isolated folk societies, formed by earlier writers, were restated and clarified, and the power of these ideas to guide the acquisition of new knowledge was demonstrated in terms of a large body of well reported fact. A number of general propositions as to society and its changes were enunciated and given some support from this body of fact. Interdependence between heterogeneity of population and the secularization of life was demonstrated for this case, and it was shown that in Yucatán religion has tended to pass over into magic. The role of sorcery in expressing the insecurity of a member of a disintegrated society was strongly suggested. These are some of the many conclusions of general interest which were reached.

While the Yucatán project was still in progress, the work of this group was extended into the western highlands of Guatemala, then into the adjoining highlands of Chiapas, and finally into the eastern highlands of Guatemala, so that all parts of America occupied by Maya-speaking peoples, save the Huastec area of northeastern Mexico, were included in the field of study. In the development of the Guatemalan investigation, the principal part has been played by Dr. Tax. Beginning in 1934 with Santo Tomas Chichicastenango, Dr. Tax, with or without associates, studied Cakchiquel or Tzutujil communities on Lake Atitlán, and made briefer studies of Chortí, Pokomam, and Mam communities in Guatemala, and of Tzotzil communities in Chiapas. To Alfonso Villa fell the task of making studies, of long duration and intensity, of the difficult Tzeltal Indians of Chiapas. In 1942 Dr. John Gillin, of Duke University, became associated with the ethnological program of the Institution, making observations on Pokomam communities in eastern Guatemala. His work there was supplemented by that of Dr.

Melvin M. Tumin. Dr. Gillin extended his research to a non-Maya people, Xinca of Guazacapan, Guatemala.

The extraordinarily diverse local variations of culture in Guatemala made impossible any such single theme of investigation as had been possible in the relatively uniform Indian country of Yucatán. Dr. Tax accordingly devised and put into effect methods for representative sampling of the area included, and for making verifiable and comparable the reports of the several investigators. In 1934 the municipio was identified as the basic unit of study, and principal types of municipios were recognized. In succeeding years outlines were prepared to guide the junior investigators; a survey of eastern Guatemala was made by Drs. Redfield and Tax in which a schedule was worked out for the quick reporting of certain information according to municipios; the preparation of community maps was systematized; a method for comparing local cultures quickly according to sample elements of belief and custom was tested; and a project for the preparation of field notes in more or less uniform manner for microfilm reproduction and general distribution among all research students of the area was put into effect.

The problems guiding the later stages of investigation were developed in the course of the ethnographic exploration. These problems are in part ethnological, in part historical. Dr. Tax is determining the distribution of the principal ethnographic types among the Maya peoples, and is bringing this descriptive classification into comparison with linguistic classifications offered by students of Maya languages. Identification is being made of regions in which certain elements of culture (calendar, pagan fertility rituals, sorcery, and nahualism) are strongly emphasized, as compared with other areas in which these elements are absent or unimportant. Problems of much general or sociological significance are receiving great attention. The conclusions reached in Yucatán as to the interdependence of individualization and secularization with loss of isolation and homogeneity have been tested and revised in the light of facts from Guatemala. The west highland communities of Guatemala have been recognized as providing an exceptional and important societal type: highly commercial and individualized societies with local cultures and with people maintaining a primitive world view. The lack of dependence of secularization upon technological revolution has been brought to the attention of those who have studied secularization from the history of western Europe alone. Dr. Tax has completed a monograph in which for the first time the economy of a nonliterate farming and trading people has been reported with the facts and figures of cost accounting. He has also written monographs on other aspects of the Indian culture of

Panajachel, and monographs by other investigators on Tzutujil, Pokomam, Tzotzil, and Tzeltal communities are in preparation.

The studies described above have contributed significantly to the development of social anthropology in Mexico and in Guatemala. It may be claimed that 15 years ago this sort of research was entirely unrepresented in these two countries, that it, is now being effectively carried on in both by their own citizens, and that the work of the Carnegie Institution group has been the chief instrument of this change. Soon after its publication in English, *The Folk Culture of Yucatán* was issued in Spanish translation; a Portuguese edition is now under discussion. In 1942 Dr. Tax taught for a semester in the National School of Anthropology of Mexico, and then took to Chiapas a group of Mexican students whom he trained in field methods. Certain of these students then continued field research without direct guidance. In 1943 Alfonso Villa taught in the School, and he too supervised the work of Mexican students in the field. Villa himself had been brought to the United States in 1933 to study anthropology at the University of Chicago. He was followed by Antonio Goubaud of Guatemala. Later Juan Rosales, whose gifts as a field investigator had been discovered by Dr. Manuel Andrade, was also brought to the United States for training; after returning to Guatemala he was sent by the government of that country to the School in Mexico for thorough preparation as an anthropologist.

The Division's work in social anthropology has included many activities marginal to the main lines of investigation, and has drawn within its program many enterprises carried on under auspices other than those of Carnegie Institution. In 1939 Villa participated in a study of the Tarascan Indian carried on for the Mexican government. The work of Sr. Julio de la Fuente in Oaxaca was done partly under the influence of the Carnegie group, and in 1943–44 he came to Chicago to write under its guidance. In 1944 and 1945 the Institution carried out a study of diet of rural Guatemalans; the results will be published by the government of Guatemala. The students of Drs. Redfield and Tax at the University of Chicago have written monographs on subjects of Middle American anthropology and social anthropology; these papers are in substance contributions to the program of the Institution; they include works on the following topics: the mayor-domia, the concept of the evil eye, collective and cooperative labor, godparenthood and related institutions, the relations between Indians and Ladinos. Two fellows of the Social Science Research Council have carried on field research in the Maya area under direction of Drs. Redfield, Tax, and Tumin. There have been edited and prepared for publication half a dozen manuscripts

on Middle American ethnology written by persons outside the staff of the Institution. Two of these may especially be mentioned: Charles Wisdom's *The Chortí Indians of Guatemala* [University of Chicago Press, 1940], and Oliver La Farge's *Santa Eulalia* [University of Chicago Press, 1947]. Finally, it may be mentioned that the very considerable expansion of the program of research on the living Maya has been accomplished without corresponding increase in the budget provided by the Institution. The work has been aided by contributions from other sources, including the Viking Fund, the Rockefeller Foundation, the University of Chicago, Duke University, the Social Science Research Council, the National Institute of Anthropology and History of Mexico, and the government of the Mexican state of Chiapas.

8.16.

ROBERT REDFIELD AND ASSOCIATES *Social Anthropological Research*

YB 45:215–217, 1946

The activities of the group working in this field during the period under review took the form, for the most part, of publication or of preparation of manuscripts for publication. A principal exception was the work accomplished by Dr. John Gillin of Duke University, who returned in the summer of 1946 to San Luis Jilotepeque, in eastern Guatemala, to resume his studies of the Chortí. He has taken with him Mr. William Davidson, a student who will make personality studies among the Indians. In March, Calixta Guiteras Holmes returned to Chiapas, Mexico, to continue work in the area, and especially in the hitherto unstudied Tzotzil town of San Pablo Chalchihuitán. Ricardo Pozas Arciniegas also returned to Chiapas to continue his study, especially of Chamula, during the months of December 1945 and January 1946. These Mexican field investigations are under the direction of Dr. Tax.

Dr. Tax, while devoting half his time to teaching at the University of Chicago, carried forward various research and publication projects. In the autumn of 1945, he delivered a series of eight lectures on, the Indian cultures of highland Guatemala, the materials of which constitute a part of his book on the Panajachel Indian community. During the summer of 1946 he will devote

most of his time to completion of that work, which should be ready for publication by the end of the year.

During the year the first series of eight manuscripts of the *Microfilm Collection of Manuscripts on Middle American Cultural Anthropology* was published and distributed. Although the University of Chicago Library is actually publishing the series, and funds for editing the manuscripts were supplied by the Viking Fund, this microfilm project had its origin in the ethnological work of Carnegie Institution. Under the editorship of Dr. Tax, who consulted with Dr. Alfonso Caso in the inception of the project, there has been created a continuing library of ethnological and linguistic material which any individual or institution can buy as a series of books. This form of publication brings into quick circulation among scholars the results of field work in relatively unelaborated form, so that specialists may study not only the investigator's conclusions, but also the primary data, and may do so without having to wait for more formal publication. The project is also designed to improve methods of research. In some other sciences, the report of the results of an experiment can be verified by repeating the experiment; but field research in the social sciences cannot usually be repeated. The scholar must therefore, in most cases, accept or reject interpretations and conclusions on the basis of what the field worker chooses to publish. The printing of all field materials in as nearly their original form as possible is impracticable; not only is it costly, but since only a few specialists would ever read the original materials, it is wasteful. Thus, the reporter publishes only what he judges is pertinent to his thesis, and the reader must take on faith the writer's competence to present a fair account. But now the *Microfilm Collection* makes available the full field observations, even though in their original rough form.

All eight of the items of the first series now published contain notes on investigations in which the Institution has had a hand. They include J. S. Lincoln's posthumous report on the study of the Ixil Indians, which was partly financed through the Institution; Melvin M. Tumin's study of San Luis Jilotepeque, which was done with the advice of the Institution staff; Dr. Redfield's notes on Agua Escondida and on San Antonio Palopó; Mr. Villa's notes on Oxchuc; and three of the studies resulting from the Chiapas expeditions directed by Dr. Tax, two by Fernando Cámara Barbachano and one by Calixta Guiteras Holmes.

The response to the *Microfilm Collection* on the part of other research institutions and libraries has exceeded expectations. Within a few weeks after the preliminary announcement, more than a dozen subscriptions had been received.

Mr. Villa began the large task of writing up the results of the studies of the Tzeltal and Tzotzil Indians

which he has carried on for several years. To do this he came to Chicago and remained there during the year. He first studied and annotated the great body of ethnographic materials at the University of Chicago (over 6,000 pages), which were obtained from Indians of these two groups by students who worked under Dr. Tax. This done, he began the preparation of a book that will present the life of the Tzeltal community of Oxchuc and, with this as the central point of reference, the comparative ethnology of the entire Tzeltal-Tzotzil area of Chiapas.

Mr. Villa's work was interrupted by an accident in which his leg was broken, but two chapters and certain tables and maps were finished. In the course of his study, he became especially interested in problems of kinship terminology and practice and began work on a special monograph on this subject. Restudy of the kinship system characterizing the ancient Maya, and those of the Lacandones, the Tzeltal, and the Tzotzil of ancient times, led him to the conclusion that the systems of totemic clans found among the Lacandones is but a local variant of a social and kinship system derived from a system general in the Maya area in pre-Hispanic times and represented also in the communities recently studied in the field by Mr. Villa. The development of this investigation should clarify our understanding of the form of social structure which anciently prevailed among the Maya.

During the year the results of the food survey of Guatemala, which was conducted by Srs. Goubaud, Rosales, and Pop under the direction of Dr. Tax in 1943-45, were put in manuscript form. They are to be published by the new National Indian Institute of Guatemala, of which Mr. Goubaud is the director.

Also during the year, Sr. Rosales, who is now studying in Mexico City while continuing his work for the Institution on part time, completed his second volume on San Pedro La Laguna. The first volume, on the technology of the community, is being prepared for publication by the National Indian Institute, which will probably also publish the subsequent volumes. The second, on the economy of San Pedro, was prepared by Sr. Rosales with the assistance of Sr. Julio de la Fuente, the Mexican anthropologist, who, it is expected, will continue to collaborate with Sr. Rosales in subsequent volumes. The third will contain an account of the social organization of the community, including the familial, local, political, and religious organizations; the fourth will be a study of social control, and will include the large body of court records obtained over several years in San Pedro. The last volume will be a statement of the mental life, the folklore, and beliefs of the Indians.

The manuscript of Mr. Oliver LaFarge on the Indians of Santa Eulalia was edited for publication under

the direction of the Institution staff and Dr. Melvin M. Tumin. It is being published by the University of Chicago Press.

8.17.

ROBERT WAUCHOPE

House-Type Studies in Yucatán

YB 33:100-101, 1934

The spectacular religious structures of the Maya have to date almost monopolized the attention of archaeologists. Furthermore, the living quarters of the pre-Columbian Maya, with the possible exception of the so-called "Palaces," were built of perishable materials and are now represented only by the low mounds upon which many of them seem to have been built. Because of their inconspicuousness and because they yield little in the way of specimens, few of these mounds have been excavated. The result is that we know next to nothing of the ancient dwellings, nor of the objects made and used by the common people. Our picture of Maya life is thus very one-sided. Also, lack of precise information regarding the real meaning of the house mounds prevents interpretation of the significance of their distribution and judgment as to the very important question of whether the Maya "cities," as represented by the temple-groups, were actually urban communities or whether they were merely ceremonial and market centers.

Investigation of the location and number of house mounds in a given area at Uaxactún by Mr. Smith [Chapter 28.10], and subsequent excavation of some of them by Mr. Wauchope [Chapter 1.19] indicated the great possibilities of research upon these hitherto largely neglected remains. Mr. Wauchope's digging, however, revealed many archaeological features, such as post holes, ash-beds, etc., which were not understandable because so little was known of the structure and interior arrangements of the houses which had stood upon the mounds. It therefore seemed best, before making further excavations, to attack the problem, so to speak, from the other end by studying modern Maya houses which, according to historical accounts and a few fresco representations, are similar to those of ancient times. It was thought that if we knew how the present-day domiciles were located, how they were built and

how furnished, and if we could determine how they disintegrated, valuable clues might be provided for future archaeological work. And quite aside from its archaeological implications, a thorough comparative study of domestic architecture among the various Maya groups is needed for ethnographic purposes.

Mr. Wauchope accordingly reviewed the archaeological literature on house mounds and that bearing on houses of the early historic period and of the modern tribes. In the winter and spring of 1934 he began his field survey in Yucatán. From Chichén Itzá as a base, trips were made to the neighboring towns of Pisté, Xocenpich and Dzitas to the north, and Nictenhá, Ticimul and Chan Kom to the south; to Valladolid and some of its neighboring towns, Chichimila, Tikuch and Yalkom; to Tizimín toward the northeast; to Temax and Dzilam González, Motul and Telchac in the north; to Mérida, Chicxulub and Hunucmá in the northwest; to Izamal and Sotutá in the central part of the state; to Muna, Ticul and the neighboring settlements of Tab and Sabachché to the southwest; to Peto in the south and to Catmis, Tzuiche and Lake Chichankanab farther south (in the former state of Quintana Roo); to Campeche, China and Huayamon in northwest Campeche; and farther southeast by boat from Campeche to Champotón. The east and northeast coasts were visited, but information concerning the houses in these regions is being sought from other people who have had occasion to see them.

A minute study of every detail of house construction was made, with especial reference to the manner in which abandoned houses fall to pieces and to the nature of the traces left by various house features after all perishable materials have disappeared. In addition, the results of fire and hurricane were recorded, so that indications of these destructive agencies may be recognized in future excavations. The investigation also included other types of structures associated with dwellings: boundary walls, kitchens, storehouses, beehive shelters, ovens, steam baths, tanneries, water sources, milpa shelters and corn bins. The interior arrangement of the house and its furniture was recorded, especially those things which might leave traces in ruined houses; fireplaces, household pottery, manos and metates, implanted metate and storage tables; wash troughs and ash heaps.

Expecting that traces of the various features mentioned above will some be found in ancient house sites, Mr. Wauchope also made note of their social implications so that by comparison or contrast something of the former life of the common people might possibly be deduced.

One of the more puzzling historical problems that was encountered, and with some archaeological significance, was that of the rounded ends which, in

Yucatán, are almost invariably added to a basically rectangular house framework. All the houses excavated at Uaxactún were rectangular in plan, but believing that the ancient Yucatecan houses must have had rounded ends, Mr. Wauchope spent two days in the environs of Chichén Itzá examining examples of what may have been the ancient house sites of that city. Unlike the house sites at Uaxactún, these were not entirely covered by mounds, and walls could be traced by clearing away the surface underbrush and vines. But every one of the 13 sites so examined seemed to be rectangular. So superficial an examination can not yield positive evidence that the ancient Chichén houses were all rectangular, but this seems probable, for none of the frescoes shows recognizably rounded ends of the modern type.

At the close of the period under review in the present report Mr. Wauchope had finished his work in Yucatán and had begun a similar study in the highlands of Guatemala.

8.18.

ROBERT WAUCHOPE

House-Type Studies in Guatemala

YB 34:128–129, 1935

The study of modern Indian house types, initiated in Yucatán and Campeche during the months of February to June 1934, was continued Guatemala until the middle of August.¹

Houses were investigated in the non-Indian lowland settlements from Puerto Barrios southwest to Quiriguá; in the semi-arid and semi-mountainous country from Zacapa south to Chiquimula, San Esteban and Elena, then east to San Juan Ermita and north to Jocotán, near the Honduran border; in the highlands from Guatemala City west to the Lake Atitlán villages, to Quezaltenango and San Pedro Sacatepéquez, and north west to Chichicastenango, Santa Cruz del Quiché, Huehuetenango, and Chiantla. On the return to Guatemala City two days were spent at Santa Apolonia and Tecpán. A week's stay was made in the Alta Verapaz at San Juan Chamelco, Cobán and San Cristóbal, the Baja Verapaz being observed on the return trip south to San Agustín on the railroad. From Guatemala City the railroad was followed west to

Retalhuleu and its neighboring Cakchiquel town, San Sebastián; then northwest to the Mexican border at Ayutla. The final trip was to Cuilapa, southeast of Guatemala City. The Petén had already been visited by Mr. Wauchope in 1932.

Besides making a detailed study of actual house construction, Mr. Wauchope recorded the way in which abandoned houses fell to pieces and what clues to the nature of their perishable superstructures remained on sites where the framings themselves had disappeared. The geographic distribution of variable features, such as ground-plans, was recorded an information as to the relative antiquity of these variations was obtain whenever possible. Word lists of the names of various parts of the houses were collected in Chortí, Quiché, Cakchiquel, Tzutujil, Mam, Jacalteco, Kekchí and Pokonchí. Attention was also directed to house furnishings, to surrounding property, and to the social significance of boundary walls and of the allocation of space within the house itself. Any related items of sociological, religious or psychological interest were also noted.

The Guatemalan house was built on the same fundamental structural plan as the Yucatecan house. Practically the only differences between houses of the two areas were minor. In Guatemala, for example, wall plates rested in the forks of the main posts; in Yucatán they were carried by cross-beams which rested in the main post forks. In Guatemala the pole plate was usually a large and additional member of the house framing, and, distinct from the wall plate, it was carried by cross-beams; in Yucatán the same timber often served in both capacities, or if distinct the wall plate was much smaller and lashed to the under side of the common rafters. Again, Guatemalan main rafters were not always forked like their Yucatecan counterparts, and were footed differently to the nuclear house framing.

The wide-spread use of adobe brick wall masonry and of adobe mud daubed over a cane or light wooden wall framing was another point of difference between the houses of the two countries, for Yucatecan "bush house" walls, with a few exceptions, were built of heavy vertical wall poles, or of light wattle (both horizontal and vertical), or of dry rubble masonry.

The outstanding difference, however, was that of ground-plan. Guatemalan houses were invariably either square or rectangular, but in Yucatán there were no square houses at all and rectangular houses were distinctly localized in their sparse geographical distribution, being in most cases correlated with non-Indian populations. The characteristic apsidal house of Yucatán

was entirely absent in Guatemala. There was some hearsay evidence in Guatemala that the square house plan and the resulting pyramidal roof were older and possibly more nearly aboriginal forms than the rectangular houses with longer ridgepoles. This evidence was corroborated to a certain degree by a correlation of these forms with those the more isolated, purer-Indian populations, such as those of Santiago Atitlán, San Pedro de Laguna, San Lucas Toliman, San Sebastián and Santa Apolonia.

Throughout the investigations, comparison with or contrast to the ancient house types excavated at Uaxactún, Guatemala, and examined in the environs Chichén Itzá, Yucatán, was kept in mind. Platform substructures, terraces, ground-plans and household furnishings were the outstanding possibilities for this phase of the study.

Data for further investigation of the "temple prototype" theories were collected, this subject to be discussed in full in a forthcoming publication on the season's work.

The word-lists present some interesting subjects in linguistics. The wide-spread distribution of words having similar literal translations in many languages was significant; "Mouth of the house" for "door," "road of the rat" for "roof purlin," and "leg of the house" for "main post" are examples. The almost complete displacement of an aboriginal word for "main rafter" by the Spanish word *tijera* (scissors) or some Indian corruption of this word, as wide-spread, not only in Guatemala but in Yucatán also. Mr. Wauchope is at present going through early Indian dictionaries and relaciones in the hope of finding linguistic solutions to some of the historical problems arising from the seasons work. Whether or not, for instance, the rounded ends of Yucatecan houses are aboriginal or are intrusions from another area may be revealed by the finding of a sixteenth century Indian word for some part of the house essential to this type of house-plan. Many early Spanish records are also being searched for any references to the Indian dwellings of those times.

Mr. Wauchope hopes that future investigators in the Maya field will help in this survey by observing the native dwellings of any areas unrecorded for house types, with especial reference to substructures, ground-plans and wall construction.

NOTES

1. The purpose of the house-type survey is explained in [Chapter 8.17].

9.0. ETHNOHISTORY

9.1.

FRANCE V. SCHOLES

History of Yucatán

YB 30:155–157, 1931

Historical studies, as a part of the general Yucatán Project, have not advanced beyond the preliminary stage. A statement of the general problem and a brief outline of some of its special phases must, therefore, take the place of a report of actual research.

The history of Yucatán from the period of the Spanish Conquest to the present time has a definite importance not only in relation to other phases of the Yucatán Project, but also for the general field of Latin American history. The significant problems of the history of those Latin American countries where the Indian has survived in any considerable numbers are essentially social problems. Latin America may be regarded as a laboratory in which vast experiments cultural and sociological in character have been carried out. Aboriginal civilizations, varying in achievement, flourished over a period of many centuries in several parts the Latin American area. In the sixteenth century these civilizations were submitted to a rude shock with the conquest of America by European races, but neither the Indian nor his culture was wholly destroyed. The

Indian survived, and today Indian blood, pure or mixed with European or Negro blood, is the predominant strain in the population of many Latin American countries. Elements of aboriginal culture also survived, either in the form of imposing ruins, which are witnesses of former achievement, or in living culture elements such as language and old folkways. To these living Indian elements have been added many characteristics of Hispanic culture. The four centuries since the Conquest have been characterized, then, by a long process of culture fusion, conflict and amalgamation, resulting in the evolution of a Hispano-Indian civilization, varying in type depending upon geographic conditions, the virility of the old Indian culture, and the policies and prowess of the conquering race. The survival of the Indian and of phases of his culture, fused with and modified by European elements, is the basis of many of the major modern Latin American problems of political and social significance, such as the distribution of wealth, land tenure, general economic progress, education and public health. In recent

years, moreover, the art and literature of Latin America, especially of Mexico, have been vitally affected by the same influences. The study of Latin American history is, therefore, essentially a study of the fusion and conflict of cultures. A sympathetic understanding of these processes of social and cultural evolution is essential in any just estimate of contemporary Latin American politics.

The history of Yucatán from the time of Conquest to the present offers an important opportunity for study and research in these processes of historical social evolution in Latin America. The aboriginal civilization of Yucatán was virile and highly developed in its several aspects, architecture, religious ceremonial and priestly learning. The modern population of Yucatán is still largely Indian, and, although present-day conditions of culture vary from an urban, partially industrialized center, such as Mérida, to the outlying, inland villages of the bush, there is a large content of Indian influence and old native folkways present everywhere. The archaeologist studies the aboriginal civilization as it existed in the centuries preceding the Spanish Conquest. The ethnologist describes modern village and city life and folkways. Studies in Yucatecan history, beginning with establishment of Spanish domination and reaching down to recent times should tie together and give unity to the researches of the archaeologist and the ethnologist, as well as serve as a notable chapter in the general comprehensive story of the evolution of a Hispano-Indian civilization in Latin America. Such is the general thesis which will determine the character of historical research as a part of the Yucatán project. A brief outline of some of the more important special problems to be studied as aspects of the general process of social change in Yucatán follows:

1. The character of the military conquest of Yucatán by the Spanish monarchy in the sixteenth century.
2. A description and estimate of the Spanish civilization introduced into Yucatán subsequent to the Conquest, with reference especially to: a. the general scheme of government introduced in the Indies and the social and political principles to which it gave expression; b. the character of local provincial administration and justice in Yucatán; c. ecclesiastical organization; d. relations of church and state; and e. the counter-influence of Indian customs in Spanish life.
3. The legal, economic and social position of the Indian under the new regime: a. Spanish Indian policy and its practical application in Yucatán, with special reference to the *encomienda* and the exploitation of Indian labor; b. Changes wrought in the distribution and amount of Indian population; c. land tenure and village organization under the new conditions; d. the policy of Spain with regard to race fusion and actual conditions of fusion in Yucatán.

4. The influence of the Church on aboriginal life: a. organization of the missions; b. methods employed in converting the Indian; c. influence of the Church in destroying the old aboriginal ceremonial; d. the Church as protector or exploiter of the Indian; e. general estimate of the permanent character of the conversion of the Indian; f. evidences of the fusion of Christian and pagan rites.
5. Economic life and material culture in post-conquest Yucatán, with especial reference to the introduction of new foodstuffs, tools, clothing and to changes wrought in agriculture.
6. The intellectual life of the Hispano-Indian community: a. schools and general intellectual activity; b. problems of language and the study of native linguistics; c. the role of the civil government and the Church in preserving or destroying aboriginal antiquities.
7. Social classes in Yucatán.
8. Yucatán's place in the general scheme of Spanish enterprise in America; a. Yucatán in relation to Mexico, Central America and Caribbean; b. problems of defense; c. colonial commerce.
9. Indian uprisings and the general problem of the maintenance of Spanish supremacy.
10. Yucatán during the Mexican wars of independence, and its politico-social evolution in the first generation after independence.
11. The War of the Castes in the mid-nineteenth century.
12. The development of a sentiment of Yucatecan separatism, or quasi-nationalism.
13. The politico-social evolution of Yucatán in recent times, especially since 1910.

The sources to be utilized in the prosecution of this rather ambitious program of research exist in part in the printed histories, documents and reports that have made their appearance from the sixteenth century to the present; and, in part, in extensive manuscript collections in the United States, Mexico, Central America, Spain and other countries. For the present a preliminary survey is being made of the collections, manuscript and printed, in the libraries of the United States. Research in the archives of Spain and Mexico will be started in the year 1932.

9.2.

RALPH L. ROYS

Books of Chilam Balam and Their Translation

YB 30:157–158, 1931

Yucatán is perhaps the only region in Spanish America where an authentic aboriginal literature flourished throughout the entire colonial period. It is true that during the earlier years of this period we find elsewhere in Mexico and Central America the beginnings of such a literature, but only among the Maya Indians of Yucatán did it continue for centuries to play a real part in the lives of the people. For the ethnologist, the philologist and the historian the importance of such a record can scarcely be overrated.

A large part of this literature consists of the so-called Books of Chilam Balam, which are distinguished from one another by adding the name of the town where the book was written. *Chilam*, or *chilan*, designates a spokesman of the gods, and in this case Balam is probably the family name of the old Maya prophets. This Chilam Balam lived at Maní during the second generation before the Spanish Conquest and foretold the coming of bearded strangers from the east who would establish a new religion. What he doubtless had in mind was the long predicted return of Quetzalcoatl with his Toltec priests, but some rumors of the arrival of the white men in West Indies probably gave to his prophecy a definite character lacking in the prognostications of his predecessors. At any rate the Spaniards arrived in Yucatán at about the appointed time, and thereafter Chilam Balam never ceased to rank as the greatest of the Maya prophets. Inasmuch as prophecies predominated in many of the older manuscripts, it was natural to name these books after the famous soothsayer.

Besides the prophecies, the Books of Chilam Balam also contain brief chronicles, fragmentary historical narratives, creation stories, catechisms for aspirants to chieftainship, and native almanacs. As time went on intrusive European material was added. Sometimes this took the form of the ritual of a hybrid religion in which Christianity was strangely blended with the old native cult, but more often it consisted of translations into Maya of Spanish religious teachings and astrological treatises taken from the European almanacs of the time. We even find the translation of part of one of the Spanish romances and a European agricultural treatise wholly unsuited to the climate and products of Yucatán. Medical prescriptions also occur in some of these books.

There can be little doubt that many of the passages which are purely Maya in character were originally taken from hieroglyphic manuscripts. We know positively that in the years 1685 and 1689 Don Juan Xiu of Oxkutzcab and Diego Chi of Maní transcribed in "letters" certain parts of an old book written in "characters." None of the Books of Chilam Balam which have come down to us today are older than the last part of the seventeenth century, and most of them date from the eighteenth century. Nevertheless the writer is convinced that many passages were copied verbatim from sixteenth and early seventeenth century originals.

During the eighteenth century probably most of the towns of Yucatán had their own Books of Chilam Balam, but the texts of only eight of these are known to us at the present time. We have photographic reproductions of those of Chumayel, Tizimín, Kaua, Ixil, Tekax, and Nah, and copious extracts from the Maní and Oxkutzcab manuscripts. The latter are in the Berendt Linguistic Collection of the Museum of the University of Pennsylvania. Possibly seven more such books are known to us by reputation. The bibliography of this literature is fully treated in Professor Tozzer's *A Maya Grammar* (1921).

The most valuable of the manuscripts mentioned above are those of the Chumayel, Maní and Tizimín. Second only in importance to these the series of chronicles of the Spanish Conquest written by various members of the Pech family and the so-called *Crónica de Calkini*. These last, however, can hardly be classed as Books of Chilam Balam.

The chronicles found in the Chumayel, Maní and Tizimín books been translated and published by D. G. Brinton and Juan Martínez, but the numerous untranslated prophecies found in those same books contain a wealth of historical allusion which may reasonably be expected to go far toward filling the gaps with which the rather meager chronicles abound.

These books are, needless to say, very difficult to read. Many words are misspelled, the syllables are wrongly joined in words and the capitalization and punctuation are rarely of any value. Sometimes the text is illegible along the edges of a damaged page. Also a number of words are neither current in modern Maya nor to be found in the older dictionaries. We have, however, the Berendt copies of some of the books which were made at a time when the manuscripts were in a better condition than at present.

The writer is at present engaged in editing and translating the Chumayel and has adopted the following methods for overcoming these difficulties. Before beginning the actual translation, the text is rewritten with the aid of the Berendt copy and corrected by comparing it with parallel passages or similar phrases

found elsewhere in the related material. This also frequently reveals the significance of a word of doubtful meaning. Deviations from the actual text and the sources of the corrections are recorded in footnotes after the manner of the Oxford editions of the classical texts. Also the text is consistently spelled, punctuated and divided into words, sentences and paragraphs. Finally recognition is given to names of places, personages and gods. All this is only possible by means of the constant use of photographic reproductions of the large body of related material, little of which has ever been published.

Once the above procedure has been followed, some of the apparent difficulties disappear, but the translation still remains difficult enough. This is partly due to the indefinite style of writing followed by some of the Maya writers, and partly because the eighteenth century native compiler was sometimes more than a little uncertain as to the precise meaning of the text he was copying.

As no dictionary of Maya antiquities is available for the reader, the translation must be accompanied by documented footnotes identifying proper names and explaining references to old Maya customs and ceremonies whenever possible. The sources of such explanations are the early Spanish accounts, the works of modern ethnologists, the Maya manuscripts themselves and the archaeological evidence. Maya names of fauna and flora should also be scientifically identified when possible.

Doubts have been expressed in the past as to the possibility of translating these manuscripts. In view of the deficiency of material at the time, such doubts were not unreasonable, but during recent years so much related material has been made accessible to the student that the writer is convinced that the task is now practicable.

9.3.

ALFRED V. KIDDER

Historical Research

YB 31:123-124, 1932

Mr. France V. Scholes, who is engaged in researches upon Latin American history, with special emphasis upon the history of Yucatán from the time of the Conquest until the present, devoted the period under re-

view to completing an earlier investigation of the relations between church and state during the Spanish régime in New Mexico. He also continued a preliminary check, begun last year, of the printed sources for Yucatecan history, working principally in the library of Harvard University. Mr. Scholes has now gone to Spain for an extended stay, where he will search the archives at Seville and elsewhere for documentary materials upon Yucatán. He will also visit France, England, and Italy. Assisting Mr. Scholes, on a half-time basis by arrangement with Harvard University, is Mr. Robert S. Chamberlain. Mr. Scholes reports that he has found the Archives of the Indies at Seville enormously rich in papers bearing upon all periods. These he is reproducing, by photostat and Leica photography, to bring to the United States for study.

Mr. Ralph L. Roys has undertaken a study of the *Crónica de Oxkutzcab*, also called the *Xiu Chronicle*, which is the book of *probanzas*, or proofs of nobility, of the Xiu family of Oxkutzcab. During the entire colonial period the descendants of certain ruling Maya Indian families in Yucatán were considered to be *hidalgos* and "native lords" and enjoyed many privileges. They were exempt from tribute, and the local community was compelled to cultivate their lands, garner their crops, rebuild their homes when necessary, and supply them with domestic service. Such a procedure kept the most influential native families loyal to the Spanish government, and the policy was a notably successful one.

Believed to have been of Mexican origin, the Xius were noted for their political shrewdness prior to the Spanish conquest, and in their papers we find much evidence of the same judicious opportunism in their relations with the Spanish authorities and missionaries.

The documents consist of Maya petitions from the heads of the family confirmed by the Defender of the Natives, Spanish decrees by the Governors, often accompanied by Maya translations, and a confirmation of the latter in Maya signed by the local officials. There is a Xiu family tree beginning five or six generations before the Spanish conquest, and the map and Maya minutes of the famous Maní land convention of 1557, which contain much ethnographical material hitherto unpublished. On the back of an interesting personal letter is a Maya chronicle of the time of the Conquest, stated by its writer to have been transcribed from a hieroglyphic codex. This contains data which make it the basis of one of the important correlations of Maya and Christian chronology. We also find a wealth of detailed information as to the manner in which Maya local institutions were adapted to the needs of the Spanish colonial administration.

The collection has great linguistic value, as it presents a series of dated Maya texts covering the greater

part of the colonial period. Here we may trace the changes which occurred in the language at a time when a certain amount of European culture was being introduced into Yucatán and combined with or superimposed upon the native customs and beliefs. The series should also constitute a standard by which we may approximately determine the age of other Maya texts which bear no date.

Mr. Roys has completed the transcription of all the documents of this collection, many of which are faded, torn, or badly written, and the material has been translated and annotated down to the year 1738. The series ends in 1817. The publication of the *Crónica* will contain, by way of introduction, a history of the Xiu family compiled from other sources and something of Spanish ideas regarding the status of "native lords" in New Spain. An appendix will present other versions and one other map of the Maní land convention; another will discuss the meaning and possible origin of the Maya family names occurring in these papers.

9.4.

RALPH ROYS

Family Histories in Yucatán

YB 32:104–106, 1933

In addition to reading the proof of the *Book of Chilam Balam of Chumayel* [Chapter 9.2], have made a preliminary survey of a large number of Maya texts from the Spanish archives at Seville which have been discovered and photographed by Mr. F. V. Scholes. These consist chiefly of letters from Maya chiefs to the King of Spain and complaints by the natives of Yucatán of abuses committed by certain Spanish Governors. These promise to be of the greatest value to the study of the linguistics and the history of Yucatán,

Much of the year has been spent in work connected with the collection of Xiu family documents now in the Peabody Museum and known as the *Crónica de Oxlutzcab*. The general character of these papers has already been outlined in a previous report [Chapter 9.3]. This work has involved a comparison of the material with the published and manuscript sources for the history of Yucatán. Unpublished documents have been found in the libraries of Tulane University and the University of Pennsylvania which parallel and

amplify the ethnographical data occurring in the Xiu collection; these have also been edited and translated and will form a part of the Xiu publication.

The Xiu papers come to an end with the fall of the Spanish regime in Yucatán. They present an unbroken history of this famous family from about the year 1400 A.D. until 1817. This is a unique record, as no other aboriginal American family, not even those of the Montezumas or the Incas, can be traced in this manner. Accordingly, a field trip to Yucatán was made for the purpose of continuing the history of the Xiu down to the present time. The complete record of this family is of especial interest, for they flourished as rulers for at least five and one-half centuries, were privileged nobles for the next 2080 years, and now for more than a century they have earned their bread by the sweat of their brow.

Other objects of this trip were a study of the extent of the former native states as outlined in the sixteenth century Maya land treaties and an examination of the parallels existing between the Books of Chilam Balam and the archaeological remains in Yucatán.

In Yucatán a personal search of the Church and municipal archives, supplemented by interviews with many members of the Xiu family, resulted in the acquisition of a large body of genealogical material. This is very complete for the descendants of the last noble head of the family, of whom 111 persons, living or dead, were found in the sixth generation alone. Also practically all the living Xiu who could be located were traced back to ancestors listed in the 1817 patent of nobility, the last of the collection. The pedigrees obtained offer much that is of interest to students of genetics. The ages of mothers at the time of the birth of their oldest children should have a bearing on the theories of embryologists regarding puberty, adolescence and maturity. The material collected also furnishes information regarding size of families, child spacing, percentage of illegitimate births, infant mortality and comparative ages at death. Causes of death were noted wherever possible. The direct descendants of the last noble head of the family have not done particularly well during their century of economic struggle, for they are less prosperous and show a higher family groups which were the rate of infant mortality than the collateral subjects of this study. The ethnographical material is of especial value and its study was greatly aided by the field trip. Journeys were made along the borders of the ancient native kingdoms as indicated by the documents, and it was discovered that a strong feeling of sectionalism still exists and follows the lines of the old frontiers. Not only was this feeling reflected in the Maya land documents of the colonial period, but it has persisted down to the present time. A considerable portion of the country traversed was practically

depopulated for many years during the War of the Castes, the inhabitants having retired to more protected centers of population. Inquiries at the towns and hamlets on both sides of the line elicited the information that the present inhabitants had returned from their own side of the old frontier stopping short at it and rarely penetrating the territory of what had been the neighboring state in pre-Columbian times. The Spaniards found Yucatán divided into a number of independent states, which were believed to have dated only from the fall of Mayapán in the middle of the fifteenth century A.D., but conditions suggest that a sectionalism, which has persisted in spite of almost 400 years of political unity under foreign rule, must have required a much longer time for its development than the comparatively, short period which elapsed from the destruction of Mayapán until the Spanish Conquest.

A search was made for the site of the ancient town of *Cetelac*, which is said by the Book of Chilam Balam of Chumayel to have been a depot for the collection of tribute at the time of the conquest of Chichén Itzá by Mayapán about the end of the twelfth century A.D. A place of this name was located only a kilometer from the ruins of Yaxuná, the western terminus of the famous causeway and closer to the ruined city than the town from which the latter takes its name.

A visit to Mayapán, the former capital of northern Yucatán was of great interest. Mexican architectural features, such as triple doorways and serpent columns, correspond to the Maya tradition which associated the Nahuatl term, *tecpan* (government house), with this city. Although the mere use of columns does not necessarily imply a *tecpan*, the large number of columned structures at this site are of such a character as to indicate their resemblance to the council halls described by the Spanish conquerors on the highlands of Mexico. They are too numerous to have belonged only to the Mexican mercenaries stationed at Mayapán but correspond rather to the presence of the headchiefs of northern Yucatán, all of whom were said to have been obliged to reside at the capital and govern their own districts from a distance.

It is at Chichén Itzá, however, that we find the greatest number of analogies between the Books of Chilam Balam and the remains; and these strangely enough, are largely confined to the Mexican period of this city. It shows the strong influence exerted by this foreign culture upon the native population, when we find these alien traditions still preserved in the Maya literature of the Spanish Colonial period, in spite of the hatred with which the Mexicans were regarded in Yucatán.

Some of the statues at Chichén Itzá amply justify the Maya reproaches that the Itzá were immodest and indecent. Here, too, are sculptures of the animals which

symbolized the Toltec warrior orders, the four trees and birds of the creation story, the rattlesnake and the "house of skulls" (the *tzompantli*), all of which figure in the Books of Chilam Balam.

The examination of the local archives, as well as interviews with a large number of the native population, afforded an opportunity to make a study of Maya family names and their distribution. Some are confined to certain localities, while others are widely spread over the entire country. The meanings of some of these names, which are those of mammals, birds, insects, trees and plants, suggest a former clan organization among the Maya. A few are Mexican, while others, difficult to translate, seem to correspond to the names of certain tribes or nations. The value of these names to the study of ethnology is apparent, and this material will be presented in an appendix to the Xiu Chronicle.

9.5.

FRANCE V. SCHOLES

History of Yucatán Project

YB 32:114–119, 1933

The general program of research for the History of Yucatán Project was discussed in the *Year Book* for 1931 [Chapter 9.3]. The first group of studies which has been started as part of that general program will deal with the Spanish Conquest and with the development of a Hispano-Indian society during the succeeding century and a half. The sources on which these studies will be based consist of printed chronicles and documents and of unpublished papers preserved in public and private archives and libraries in Europe and America. Most of the year 1931–32 was given over to a survey of the available printed materials in preparation for a comprehensive program of research in European archives and libraries. Archive work was started in April 1932, and the past 15 months have been devoted to an intensive search for manuscript materials for the history of the general Yucatecan area in the major collections of Spain.

As the result of a cooperative arrangement by Harvard University and the Carnegie Institution, I have had the active assistance, since June 1932, of Mr. Robert Chamberlain, graduate student in Harvard, who is making a study of the career of Francisco de Montejo,

Adelantado of Yucatán, for his doctoral dissertation. Mr. Lewis Hanke, also a graduate student in Harvard and Amherst Memorial Fellow for the year 1932–33, who is writing a dissertation on theoretical phases of Spanish Indian administration, rendered valuable assistance on numerous occasions. Acknowledgment should also be made of the courtesy of Professor C. U. Clark, formerly on the staff of the Smithsonian Institution, who gave me access to his notes on Central Americana in European collections, accumulated during two years of research for the Smithsonian.

The most important Spanish depository of manuscripts relating to America is the Archivo General de Indias in Seville. For the history of Yucatán during the period of Spanish domination it is especially rich, and a conservative estimate of the total bulk of papers directly relating to Yucatán would not be less than half a million pages. Besides searching the files of the strictly Yucatán papers, it has been necessary also to run through the vast series that pertains to general colonial policy and to the history of New Spain proper and of Guatemala. The sheer bulk of the materials made necessary the use of rapid methods of reproduction of the more important documents for future use and reference at home. Photostats were made of certain items, but the major portion of the reproductions were made with the Leica camera and 35 mm moving-picture film. Enlarged prints have been made of a part of the films, but the amount of enlarging has been limited by budgetary considerations. Part of the unenlarged films can be read from projection, but this method has distinct limitations, of which not the least important is eyestrain. To the officials of the archive and especially to the director, Sr. D. Juan Tamayo, the Institution is deeply indebted for their kind consideration and sympathetic cooperation in making possible such rapid reproduction of materials essential to the success of the project.

The nature and contents of the materials which have been reproduced up to the present time are briefly indicated as follows: 1. Letters and reports of the provincial governors of Yucatán for the period to 1660; 2. Letters of the treasury officers of the province to 1660; 3. Correspondence of the cabildos of Mérida, Valladolid, and Campeche to 1700; 4. Letters and papers of the bishops of Yucatán and the cathedral chapter, of Mérida to 1700; 5. Selected letters and petitions of private individuals, secular and ecclesiastical, taken from the general series of private correspondence for the viceroyalty of New Spain and the presidency of Guatemala; 6. Selected correspondence of the Audiencia of Guatemala, the governors and bishops of Honduras, and the treasury officers of the Guatemala district for the period prior to 1550; 7. Registers of royal orders for the province of Yucatán for the sixteenth century; 8.

Treasury accounts for the province of Yucatán for the sixteenth century and the first two decades of the seventeenth; 9. A book of tribute assessments for Crown and encomienda towns in Guatemala, Honduras and Yucatán made at the end of the 1540s; 10. Selected parts of a series of more than a 100 legajos of papers relating to confirmations of encomiendas in Yucatán, sixteenth to eighteenth centuries; 11. The residencias of Montejo, Loaisa, Quijada and Céspedes, governors and alcaldes mayores of Yucatán in the sixteenth century; 12. Linguistic materials from the residencias of seventeenth century governors; 13. Trial records of private and state lawsuits illustrating phases of the career of Montejo, and the practice of encomienda administration in Yucatán; 14. The file of papers relating to Landa's *auto de fe* against Indian idolatry in 1562 and Bishop Toral's investigation of the same; 15. A matrícula, or village by village census, of encomienda Indians in Yucatán for the early 1680s; 16. Four sets of documents on the theory of Indian administration, especially the problems of personal-service, perpetuity of encomiendas, and levy of tithes, reproduced in cooperation with Mr. Hanke; 17. Part of a long series of documents dealing with the Petén expeditions of the 1690s.; 18. Memorials, reports and lawsuits relating to a serious controversy between the Protector of the Indians and leaders of the Spanish ruling minority in the decade of the 1570s.

Work in the Archivo General de Indias has been carried forward without interruption during the past 15 months. Meantime, investigations have been made in other Spanish collections. In the Archivo Histórico Nacional, Madrid, search was made in four sets of documents. In the papers proceeding from the Mexico tribunal of the Inquisition a few references to inquisitorial trials relating to Yucatán were found and will serve as a guide to future investigation in the papers of the Inquisition in the national archive of Mexico. A cursory examination was made of the residencias of late eighteenth century governors of Yucatán in the Council of Indies section. Groups of Franciscan papers were examined in the hope of finding information concerning Fray Diego de Landa during his residence in Spain in the 1560s, but the results were entirely negative. In the unpublished parts of the *Cartas de Indias* series several valuable items were found, of which the most interesting are a letter of Fray Luis de Villalpando denouncing the conduct of Yucatecan encomenderos and a brief survey of mission organization in Yucatán in the second half of the sixteenth century. Mr. Chamberlain also made a careful examination of the unpublished parts of Ayala's famous dictionary of government and legislation for the Indies and of parts of the *Cedulario Indico* of which it is the index.

The manuscript division of the National Library, Madrid, possesses a rich collection of Americana, but it contains little of special interest for Yucatán. In the library of the Academy of History, the most famous item for Yucatán is Landa's *Relación de las Cosas de Yucatán*, many times published. Nothing more of vital importance for Yucatán was found. Mention should be made, however, of the copy, partly abridged, of Lic. Tomás López. López was a judge of the Audiencia of Guatemala and special visitor of the province of Yucatán in the early 1550s. His labor in Yucatán had to do mostly with Indian affairs and his name is always associated with a famous set of ordinances for the regulation of the same treatise on the climate, geography, flora and fauna, and aboriginal customs of the Indians of Middle America. This treatise has no great value as a whole, but the chapter on heathen gods and ceremonial practice, especially the short section on sacrifices at the cenote of Chichén Itzá, has some interest for the Americanist. The author of this report plans to publish this chapter. Due to the kind intervention of Professor Antonio Ballesteros and the Duke of Alba, Mr. Chamberlain was permitted to spend several days in the private archive of the Duke of Fernán Núñez examining a series of papers relating to the Montejo family and later holders of the title of adelantado of Yucatán. He found important materials concerning the ultimate disposition of the lawsuit between the Montejo family and the Crown resulting from the removal of Montejo as governor of Yucatán in 1549, and also detailed reports of the tributes of certain Indian villages in Yucatán later enjoyed by the Duke of Montallano, in whose family the title of Adelantado is still held. The Palace Library, formerly the private library of the kings of Spain, has been opened to students, and preliminary investigations have been made by Mr. Chamberlain and myself, but no report can be submitted at present concerning possible Yucatán manuscripts which it may contain. Finally, inquiry has also been made at the Convento Grande de San Francisco, the Naval Museum, the Ministry of Hacienda, and the Delegación de Hacienda, in all cases with negative results.

Brief visits have been made to a few collections outside Madrid: the Escorial; the provincial library, cathedral library, and Delegación de Hacienda in Toledo; and the Archivo de Simancas. The provincial library in Toledo possesses an interesting original manuscript on Vera Paz and the Petén written in 1635 by the alcalde mayor of Vera Paz. Permission to reproduce this manuscript has been sought. In Simancas the Yucatán materials are few and scattered for the sixteenth and seventeenth centuries. The most important are in the diplomatic series and relate to the intrusion of foreign corsairs and traders in Yucatecan waters.

The archive researcher is always inspired by something of the spirit of the professional prospector. He lives in the hope of finding some unexpectedly rich collection of letters, or of rediscovering some long lost chronicle. For the student of Yucatecan history there are many "finds" still to be made, for the list of missing manuscripts, linguistic and historical, is long. Realizing that the major Spanish collections had been combed many times for these lost manuscripts, I hoped that in ecclesiastical archives, especially the archive of the Franciscan Commissary General of the Indies, if still intact, some of them might be brought to light. To this end I sought the aid of my colleague, Dr. Stork, in order to obtain introductions to Spanish churchmen who might assist me in obtaining access to important collections. At his request His Excellency the Nuncio in Dublin sent me letters of introduction, one of them to the Nuncio in Madrid, who, in turn, put me in contact with several learned Spanish Franciscans. Unfortunately, the result of all this courteous cooperation has been only to indicate beyond any doubt that the once great Franciscan archives, especially the papers of the Commissary General formerly kept in the Convento Grande de San Francisco, Madrid, have been hopelessly dispersed, or in considerable part lost or destroyed. The same is true of the archives of those Franciscan houses which sent forth such men as Landa and Villalpando to labor in the missions of Yucatán. Fragments of these archives are now deposited in the Archivo Histórico Nacional, Madrid, but the legajos that were examined contain nothing of value for the Yucatán project. Thus was dashed to the ground my greatest hope of finding any of the important missing linguistic and historical writings of those Franciscan scholars who illumined the intellectual life of Yucatán in the colonial period.

In the Archivo General de Indias a few minor "finds" have been made. The most important is the relación of the customs of the Indians of Yucatán written in 1582 by Gaspar Antonio Chi, often regarded as the chief authority on whom Landa relied when writing his *Relación de las Cosas de Yucatán*. The nature of Gaspar Antonio's 1582 treatise has long been known through Cogolludo's use of it, but it was hoped that the original, if ever found, would contain much new information not used by that indefatigable ecclesiastical historian. The signed manuscript of Gaspar Antonio's treatise has been found in a series of miscellaneous papers in the Archivo General de Indias. Unfortunately it consists of only two folios, of which half of each has been torn away. Comparison with Cogolludo will make possible the reconstruction of almost every mutilated line in the original; in fact, Cogolludo used the original so well that its rediscovery will add little to our present stock of knowledge.

The general objective for which this archive program is merely the preparatory stage is a rounded study of Hispano-Indian society in Yucatán during the sixteenth and seventeenth centuries. It was during that period that colonial society took form and the fundamental patterns of the culture of Hispanic America were permanently fixed. The eighteenth and nineteenth centuries witnessed the culmination of certain trends and the reorientation of others, but the basic elements of society and culture were determined in that early period of readjustment during the first century and a half subsequent to the Conquest. Such a general view of Hispano-Indian society in Yucatán prior to 1700 must, however, presuppose the execution of certain preliminary and specialized studies in the form of articles or monographs in which the available materials can be dealt with in adequate detail.

1. A thorough study of the career of Montejo is needed in order not only to do justice to one of the great figures in the conquest of Spanish North America, but also to set the Yucatán phases of it in proper relation to the whole. Mr. Chamberlain's work on Montejo will fill this need. It will be based on all the available manuscript and printed sources, and will deal with Montejo's labors as an associate of Cortés, the preliminary expeditions to Yucatán and Tabasco, his term as governor of Honduras and Chiapas, the final conquest of Yucatán, and the organization of provincial administration and society to 1549.
2. Another figure in the early history of Yucatán whose career requires critical revaluation is Bishop Diego de Landa. Landa is known to us mostly for two things: his treatise on the Indians of Yucatán and the early history of the Spanish province and the famous *auto de fe* against Indian idolatry in 1562. The story of the Maní incident has never been properly presented, although J. T. Medina (1905) dealt with certain phases of it in his book on the beginnings of the Inquisition in America. Fortunately the Archivo General de Indias possesses the complete record of this affair, as well as numerous supplementary letters and reports, so that a critical study of this celebrated case is possible. Equally important is a survey of Landa's episcopate and of those conflicts of interest in which he took a leading part. A critical estimate of Landa's career may thus be made the basis of a detailed survey of the fluctuating conditions of provincial development during the first generation subsequent to the Conquest.
3. A brief monograph on the population of Yucatán in the sixteenth and seventeenth centuries will be valuable both for the historian and the ethnologist. An adequate estimate can be made by using the tribute payments as a basis, comparing the results thus gained with two or three special estimates that were made during the first century following the Conquest and with the matrícula of encomienda Indians for the early 1680s.
4. Adequate materials are now available for the investigation of numerous phases of Indian administration, of which the most important is the problem of the encomienda. The encomienda was introduced in Yucatán with the Conquest, and it lasted as a vital element of provincial life until the last quarter of the eighteenth century. Moreover, the proportion of encomienda villages to those administered by the Crown was approximately 12 to 1, at least during the sixteenth and seventeenth centuries, so that it is difficult to overestimate the overshadowing importance of this institution in provincial society. In its ramifications, it was related to every other element of Yucatán life; in fact, analysis of this institution and its workings may be regarded as the warp on which the story of provincial society must be woven. The Archivo General de Indias contains more than a 100 legajos of documents relating to the encomienda in Yucatán, of which selected parts have been reproduced.
5. Treatment of the subjugated Indians is but one phase of the general Indian problem. The unconquered and fugitive Indians of the interior of the peninsula of Yucatán were always a matter of serious concern to both State and Church. Series of manuscript materials now brought to light make necessary a re-examination of this entire question, not only in relation to some of its earlier phases, but also for the classic Petén expeditions of the late 1690s as related by Villagutierre. The original materials from which Villagutierre wrote his history of the conquest of the Itzá are preserved in the Archivo de Indias, and reproduction of these papers for the use of the project has already been started.
6. For ecclesiastical affairs, there are several topics which call for special treatment. I mention only three: a. The beginnings of ecclesiastical organization and government; b. Statistical studies of missionary enterprise; c. The role of the mission friar as defender and exploiter of the Indian.
7. Although the materials which have been reproduced are essentially historical, they contain valuable information, direct and incidental, for the ethnology, ethnography and linguistics of Yucatán, Tabasco and the Petén. The survival of Indian ritual and ceremonial practice is discussed in several groups of papers. It is hoped that some contribution may be made to the knowledge of the shifting Indian groups in the interior of the peninsula, especially in the area between Campeche and Tabasco. Mr. Roys has found the cacique names that appear in numerous letters and legal documents valuable for his own studies. A document concerning the services of Gaspar Antonio Chi contains a few details concerning the Xiu family. Rather full information concerning Indian family names is found in the matrícula of encomienda Indians noted above. Numerous incidental statements will help to illustrate the character of Indian village organization and the agricultural bases of Indian economy. But the most important materials are linguistic. Approximately

three thousand pages of new Maya text, Spanish translation and accompanying explanatory documents will be available as soon as the program of reproduction is complete. A few of the new Maya texts date from the sixteenth century, but the major portion are found in the residencies of seventeenth and eighteenth century governors, and consist of Maya translations of official decrees, depositions of Indian witnesses and related items. Much of this materials of a routine sort and there is considerable duplication of phraseology. On the other hand, a considerable number of the texts seem to have been written by native scribes, and Mr. Roys has informed me that some of the texts are unique in that they may serve as examples of the language for areas for which no known specimens have been available heretofore.

The archive program will be continued throughout the year 1933–34, with investigations in Spain, France, Italy and England.

9.6.

SYLVANUS G. MORLEY

History of the Xiu Family

YB 33:105, 1934

An activity which has engaged the attention of Dr. Morley in such time during the past three years as he has been able to spare from administrative duties and preparation of his monograph upon the hieroglyphic inscriptions of Petén has been study of the history of the Tutul Xiu, the former ruling family of Uxmal, one of the largest pre-Columbian sites in the Maya area.

The head of the family at the time of the Spanish Conquest, Ah Kukum Tutul Xiu, lent effective aid to Francisco de Montejo, the conqueror of Yucatán, and, later, Ah Kukum's Tutul Xiu grand-nephew was ennobled because of the services of his great-uncle to the Crown. Ah Kukum Xiu, later baptized as Francisco de Montejo Xiu, made a genealogical tree of his family, going back four generations before himself, which was later carried forward another, four generations by his great-great-grandnephew. This tree, compiled about 1560, gives the main line of descent for nine generations from about 1418 to about 1622. The family papers accompanying this tree cover slightly more than two centuries, 1608 to 1817. They consist chiefly of petitions of

successive heads of the Xiu family to colonial officials throughout the Spanish Colonial Period requesting confirmation of their titles of nobility and the corresponding tax exemptions, rights of personal service, etc. These papers begin with the petition of the grand-nephew of Ah Kuku, one Pedro Xiu, and come down to the petition of Antonio Xiu II in 1817; they present a total of eight generations and 11 heads of the family. There is a satisfactory overlap of three generations between the tree and the family papers, the last three heads of the family on the tree being the same as the first three as given in the papers.

Finally, from living informants, chiefly a Felipa Xiu, who died during the present year at the age of 67, the family history was secured back as far as her great-grandfather, Andrés Xiu, born in 1789. Both her great-grandfather, Andrés, and her grandfather, Buenaventura, appear in the last family paper, the petition of Antonio Xiu II, dated in 1817, so that there is an overlap of two generations between the family papers and the data derived from living informants. These three sources, the family tree (1418–1622), family papers (1608–1817) and the information received from living Xius (1789–1934), cover slightly more than five centuries of the family history, a total of 20 generations in the main line of descent. No other aboriginal New World family, with the possible exception of the Incas of Peru, can boast so long a recorded genealogy.

In collaboration with Ralph L. Roys of the Division staff, Dr. Morley is preparing a history of the Xiu family, which it is hoped will be published in 1935.

9.7.

RALPH ROYS

Researches in Maya Life in the Sixteenth Century

YB 33:105–108, 1934

Genealogical data previously collected in Yucatán for the history of the Xiu family [Chapter 9.3] have been prepared by Mr. Roys for publication. He has tabulated, annotated and charted these pedigrees in a form suitable study and comparison. Dr. Morley, who is collaborating in this work, completed a historical account of the family down to the Spanish Conquest and has compiled a large master-chart of the genealogy of the family the early fifteenth century to the present time.

Besides the documents already transcribed and translated for publication, an extensive study has been made in collaboration with Dr. Morley of historical sources connected with the history of the Xiu. This comprises the published histories and relaciones as well as many Maya and Spanish manuscripts. As the Xiu were one of the most prominent native families in Yucatán, both before and after the Conquest, the historical ramifications of their annals are wide-spread. One especially interesting example of such historical sources is the collection of probanzas, or proofs of nobility, Gaspar Antonio Chi, whose mother was a Xiu and whose father and uncles played an important part in the events leading to the Spanish Conquest. We are indebted to Mr. Scholes for the opportune discovery and reproduction of the probanzas [Chapter 9.3] as well as for the census lists and many other Maya texts and Spanish documents cited in this report.

Both the examination of the Xiu records and the study of the Books of Chilam Balam have brought out the need for a closer investigation of Maya proper names. The list of Maya family names which still survive in Yucatán [Chapter 9.3] has been greatly amplified from signatures to Maya document and census rolls of the colonial period. Such records are more dependable for linguistic purposes than most of the Spanish documents, as they were written by native scribes. Even the notations to the census rolls were frequently written in Maya. From these and other sources, it has been possible to compile a list of 250 Maya family names. A considerable proportion of them has been translated and classified according to their meanings, and they have been compared with Maya place-names, an amazingly large number of which still survive in Yucatán. A classification has also been made of the latter.

The Maya family name, which was perpetuated in the male line, survived the Conquest, but the old pagan pre-names were abolished and replaced by Spanish Christian names when the Indians were baptized. Two varieties of pre-names are well known: one indicating a man's profession or office, and the other, derived from his mother and preceded by the prefix *na*. The Maya called the latter the *naal*, and there were also two other classes of pre-names, which they called the "boy-name" and the "jesting-name." Many of the "boy-names" are referable to fauna-names, especially those of birds, while some of the "jesting-names" appear to be descriptive. It seems to have been possible for a single person to have borne all four names. The *naal* names of 146 persons have been tabulated and classified according to the localities where they lived. "Boy-names" of 50 individuals were collected, but it was impossible to identify more than six "jesting names."

The preservation and the legal recognition of the native Maya nobility during the entire Spanish colo-

nial period have hitherto received little attention. Some time was spent at the Huntington Library, where a study was made of the legal standing and history of Maya nobility. The sources for study had been suggested by Mr. Scholes and were the collections of statutes enacted for the Indies and the works of Solórzano, the famous commentator on Spanish Colonial law; and the information gathered forms an introduction to the legal papers of the Xiu collection.

Beginning with the Laws of Burgos enacted in 1512, we are able to trace in the subsequent legislation for the Indians the development of a policy which finally became an accepted institution and was admitted without question by the later colonial administrators. In Yucatán, as elsewhere, it was found convenient at first to allow the former native rulers and their descendants to continue to govern their people under Spanish supervision. Later they were deprived of their hereditary political power, but the old nobility continued to form a privileged class, exempt from taxation and personal services and sometimes still supported by the community in which it lived. Although such a policy increased the burden laid on the taxpayers, it kept the most influential Indian families on the side of the Spanish regime.

In addition to their linguistic and historical value, the records from the Archivo General de Indias continue to furnish ethnological material of considerable interest. Little has been known of the extended households composed of a number of families, which were observed by the first missionaries. This manner of living was soon abolished, and only one family was permitted to live in each house. A 1570 census of two towns on the island of Cozumel, however, reveals the survival of this important social feature, due no doubt to the fact that missionaries rarely came to this island. Here many of the notations are in Maya, but with it we find the Spanish report of a Franciscan friar describing conditions.

Husbands and wives are listed according to the house in which they lived, each house containing from one to seven families. Some of them have the same family names as that of the owner of the house; while these may have been brothers and sisters of the head, it seems more likely that they were sons and daughters, since Landa states that the newly married lived close to the homes of their fathers or fathers-in-law. There were also other inmates of these houses whose connection with the head of the household is difficult to explain.

Another apparent survival of these large households is indicated in the 1571 census of Tixchel, a Chontal town in southwestern Yucatán and close to the border of the Maya speaking area. Here we find many groups of persons, usually sons-in-law and

brothers-in-law of the head of the group, whose relationship is actually stated. Only rarely are sons, brothers or nephews mentioned. The names themselves are of especial interest. Some are the same as those found among their Maya neighbors; nevertheless their system of nomenclature seems to be different from the Maya. It is noteworthy in this connection that a Chontal relación by the governor of Tixchel reports that his ancestors originally came from Cozumel.

Just as the non-Spanish documents from the region of Lake Amatitlán are found to be written in both Pokomam and Nahuatl, so the reports from the Chontal speaking area are written in both Chontal and Nahuatl. This confirms the observations of sixteenth century missionaries, who noted that many Central American Indians were bilingual and communicated with the Spaniards and other foreigners in Nahuatl. From the Yucatecan Maya area, however, we have only Maya and Spanish reports. Here Maya was the only native language spoken, and Nahuatl ceased to be the *lingua franca* of the country.

9.8.

FRANCE V. SCHOLES

History of the Yucatán Project

YB 33:115–117, 1934

During the past year the general program of archive research in Spain, as described in the last annual report, has been carried forward without interruption, and by September 1 most of the work will have been finished. Most work during 1933–34 has been carried on in the Archivo General de Indias in Seville. Series of papers in which investigation had been started during the preceding year were completed, and progress was made in sorting some of the long series of Indiferente General in which the findings were numerous but sometimes important. Sr. Santiago Montero, an investigator of long experience in Seville, was employed for several months in this dreary task of sorting and searching. Reproduction of materials by Leica camera and by photostat was continued during the entire year, and a considerable quantity of enlarged prints was made from selected parts of the Leica films. The most important groups of papers reproduced during the past year were: a. Correspondence of provin-

cial governors of Yucatán for the period 1660 to 1700; b. Correspondence of treasury officers of Yucatán for the period 1660 to 1700; c. Additional portions of the Yucatán encomienda series d. Additional legajos on the conquest of the Petén; e. A considerable quantity of materials on Spanish policy relating to the aboriginal population of America, especially questions of encomienda, tribute and personal service, from the Patronato and Justicia sections and from the Santo Domingo, Mexico and Guatemala parts of the Audiencia series; f. The remainder of the Maya texts and accompanying Spanish documents from the residencia series; g. Selected parts of the general registers of cédulas and from the special registers for Mexico and Guatemala; h. Probanzas of services of conquerors of Yucatán. Perhaps the most interesting find was a Chontal text of seven pages describing the history of certain towns and chieftains of the Tixchel area.

In collaboration with Mr. Hanke several items relating to general Indian policy were photographed in the National Library and the Palace Library, Madrid, the Cathedral and Public libraries in Toledo, the library of the Escorial, and the National Library, Paris.

Mr. Chamberlain spent several weeks in Simancas, Valladolid, Burgos and Salamanca searching for materials on the Montejo family. In the summer of 1933 he also had the opportunity to examine portions of the archive of the Duque de Fernán Núñez which contain important Montejo records, but when he wished to re-examine some of the papers in June 1934, he was informed that the archive was closed and that the Montejo papers would be published some time in future by the Duque de Fernán Núñez himself.

In October 1933, Mr. Scholes spent a day in Cifuentes, the ancestral home of Bishop Landa, but no papers of any importance were found.

As a result of the past two years of intensive archive and library work, there has been accumulated a vast body of source material for the history of Yucatán during the century and a half succeeding the Spanish Conquest and for related general problems of colonial administration. The immediate task ahead is to study and digest these materials. Mr. Chamberlain has made rapid progress on his study of Montejo, and he expected to have completed his reading in the manuscript sources before leaving Spain in August. The problems on which Mr. Scholes expects to begin intensive work during the coming year deal with the history of Yucatán in the second half of the sixteenth century, especially problems of population, the introduction of Spanish institutions and the Catholic faith, and the career of Bishop Landa.

It must be stated that many important sources, noted in older writings on Yucatán or in the well-known bibliographical lists, are still missing. But it is

increasingly clear that these missing items are not likely to be found in great collections. There remains, of course, the possibility that in some of the hundreds of lesser archives and libraries, state and private, lay and ecclesiastical, some of these long lost manuscripts may some day be found. But the task of journeying from town to town in search of lesser collections was so great and the chance of success so remote that it was neither expedient nor feasible to test out more than a few places where definite leads had indicated the possibility of success. Late in June a rumor was received that some of the Avendaño manuscripts had once been in the archive of the Depósito Hidrográfico; which is now part of the Museo Naval, Madrid, but inquiry at the Museo Naval brought the reply that the collection contains no Avendaño papers at the present time. It is known that important groups of Americana are still in private hands, but discreet inquiries, official and private, made it clear that access to such collections will not be given at present. The problem of the archive of the Franciscan Commissary General of the Indies is still an unsolved riddle, but it is sincerely hoped that this important collection will some day be discovered and put at the disposal of scholars.

In conclusion, it is only fitting to express the sincere thanks of the Carnegie Institution to the librarians and archivists of the collections in which work been carried on during the past two years, and in particular to Sr. D. Juan Tamayo, chief of the Archivo General de Indias. The courtesy and loyal cooperation of these scholars contributed much to the successful completion of the general archive and library program.

9.9.

FRANCE V. SCHOLES

History of the Yucatán Project

YB 34:146–148, 1935

During the year 1934–35 considerable progress has been made on the following special studies on the history of Yucatán since the Spanish Conquest: 1. The life of Francisco de Montejo, Adelantado of Yucatán; 2. Estimates of the population of Yucatán during the colonial period; 3. The beginnings of the encomienda; 4. The history of the cacicazgo of Acalán-Tixchel, 1526–1612; 5. Landa and the *auto de fé* of 1562; and 6. Problems of Indian labor, especially during the decade of the 1570s.

Francisco de Montejo deserves to rank with the half-dozen greatest captains in the conquest of Spanish North America. His sphere of action was not limited to Yucatán and Mexico. During the years 1536–39 he served as governor of Honduras, and he was recalled to activity in that area in the 1540s after the death of Alvarado. It was his ambition to govern a vast area stretching from Copilco to the Río de Ulúa, and by a cédula of 1533 he was actually given authority over this entire region which comprises a large part of the Maya area. The forces of nature, reverses of various kinds, the rivalry of Alvarado, and the ultimate restriction of his authority by the Crown made it impossible, however, for him to assert control over this huge principality. Montejo was an enlightened administrator of the Cortés type, and his government of Honduras, especially his policy regarding the Indians, is a bright spot in an otherwise sordid story. Mr. Chamberlain hopes to have his biography completed in 1936.

The remaining five studies listed above are being prepared by Mr. Scholes. The nature of the manuscript sources makes it possible, in fact necessary for the sake of efficient use of the documents, to carry on the several investigations at the same time. Estimates of population, especially during the sixteenth and seventeenth centuries, must be based in part on the levy of tribute, and inasmuch as more than 90 percent of the villages of Yucatán were held in encomienda, the close relationship between the problems of population and encomienda is obvious. We have tribute rolls and, in some cases, rough census reports at conveniently placed intervals, 1549, 1606, 1689, 1789. Supplementary partial reports are available for some of the intervening periods. Students of archaeology often postulate a dense population for Yucatán in ancient times. During the period since the Spanish Conquest, however, the population has never been large. In 1549 the number of tribute payers was probably between 57,000 and 60,000. Estimates of 50,000 tribute payers are found for later years of the sixteenth century. In 1789 the population of Yucatán and Tabasco was reported to be 364,621, classified as follows: Spanish and mestizos, 54,465; Indians, 264,955; negros and mulattos, 45,201. The population of Tabasco was 30,640.

The history of the encomienda requires a preliminary statistical study of the individual holdings and a detailed list of villages, the amount of tribute paid by each, and the encomenderos to whom the payments were made is being prepared. This list used in connection with the documents on the sale and transfer of land in the notary records in Mérida will provide working basis for the formulation of valid conclusions on the moot question of the relation of the encomienda to the development of the hacienda system Yucatán.

The monograph on the cacicazgo of Acalán-Tixchel will clear up certain phases of the history of the region south, east and northeast of the Laguna de Términos. At the time of the conquest the cacicazgo of Acalán (the town of Acalán being the same as Izancanac) was an area close to the Laguna de Términos. After the conquest some of the Indians were moved Tixchel between the laguna and Champotón, and the government of this pueblo was taken over by Pablo Paxbolon, descendant of the caciques of Acalán. The later history of the Tixchel area deals mostly with the services of Paxbolon and of Francisco and Martin Maldonado, his son-in-law, and grandson, in the conversion and reduction of Indians in the interior of southern Yucatán. The story as told in a series of detailed reports raises one interesting problem. A probanza of the services of Paxbolon and his ancestors is given in an Indian language, said to be Chontal. This confirms the statement in the Ponce relación that the Indians of Tixchel spoke Putunthan, or Chontal.¹ The modern Chontal area, however, is usually located west of the Laguna de Términos. It is proposed to publish facsimiles of the Chontal text and a transcription of the Spanish translation which accompanies it, with a minimum of comment so that linguists may have this important document available for study. The remainder of the monograph will deal with post-Conquest problems.

The *auto de fé* of Maní of 1562 and the problem of personal service in the 1570s relate to the most important phases of the career of Bishop Diego de Landa. The account of the Maní affair which will be based on the reports and investigations of Landa and Bishop Toral and on the residencia of Diego de Quijada, the alcalde mayor, will present the first thorough discussion of this most famous incident in the history of Yucatán in the second half of the sixteenth century. The controversy over personal service involved Landa because of his active support of Francisco Palomino, the defender of the Indians, who denounced the exploitation of the Indians by the encomenderos. Discussion of the problem is necessary, not only in fairness to Landa whose reputation, has suffered because of the Maní incident, but also as an introduction to one of the ever present problems of colonial administration in Yucatán, the problem of Indian labor.

Mr. Lewis Hanke, instructor in Harvard University, has a temporary part-time appointment under the Division for the purpose of continuing his studies in the juristic and theoretical phases of Spanish Indian policy in the sixteenth century. A grant from a research fund administered by Harvard University has made it possible for him to spend the summer in South America searching for unpublished materials relating to the subject of his investigations.

NOTES

1. A little more than 14 leagues farther toward Mexico, on the same sea-coast is another town called Tixchel of Indians better-looking and a little more polished and diligent than the Maya, who speak a different language called *Putunthan*, by another name *Chontal*, although in many words it agrees with Maya, and so knowing the one the other is easily understood" (Ponce 1932:347).

9.10.

RALPH L. ROYS

Study of Maya Colonial Documents

YB 34:148-150, 1935

Following the consideration of family documents and related papers [Chapter 9.7] a study has been made of various collections of Maya land documents, particularly the *Crónica de Calkini*, *Documentos de Tierras de Sotutá*, and *Títulos de Ebtún*. These, together with portions of the Pech and Xiu papers, constitute a documentary history of Indian land tenure from the native point of view during the colonial period.

In the winter and spring of 1935 a trip was made to Yucatán to locate and map the places cited in these papers and continue the task of tracing the frontiers of the former native states. Observations of the country, especially of the location of the more fertile areas, the watering places and evidences of pre-Conquest occupation aided in the understanding of the documents.

The purpose of this research is the application of Maya literature and the documentary sources written in that language to the history of the Yucatecan Maya. The method pursued is the comparative study of this material and its presentation in as adequate form as possible.

Colonial Maya documents contain much concerning the pre-Conquest Maya. They also bridge the gap between modern ethnological studies and the pre-Conquest data, much of which is still in a disordered state. In Maya literature, besides the chronicles and historical narratives there is a wealth of historical allusion in the prophecies, since it was believed that what occurred in a certain katun would recur in another katun of the same name and number. We have still to place many of these events chronologically and to coordinate them.

This, we believe, can be done by further documentary studies with the necessary aid of archaeology (especially ceramic sequences and architectural comparisons), ethnology and economics. The importance of the first seems axiomatic. That of economics has long been recognized in theory; but it is doubtful if the incompleteness of our knowledge was fully realized prior to recent ethnological and agricultural studies.

The importance of the social and political background of hereditary rank also seems obvious. One land agreement even states that "it is in order that our nobles may sustain themselves in time to come." Besides the "Indian *hidalgos*" and "native lords" recognized by Spanish law, we now find mentioned in the Maya documents other nobles, who did not enjoy this distinction. Most of these were local authorities, but the noble Dzul family who lived at Chichén Itzá at the beginning of the nineteenth century were, so far as we can learn, neither "*hidalgos*" nor officials.

Philosophical historians are turning to Maya history for analogies to support their conclusions as to the causes of the origin, growth and decline of civilizations. Such analogies, in a sphere so far removed from the currents of activity which swept over the Old World, should, when valid, go far to confirm a fundamental similarity in the development of peoples. The question arises whether the comparisons undertaken do not assume a certainty regarding Maya history which we do not as yet possess. Many facts are recorded, the sequence of which is insufficiently established, and their critical examination continues to be an important task.

Perhaps the best exposition of this aspect of the situation would be a concrete illustration. In the past, misleading analogies have been drawn from Old World history, but it must be admitted that our documentary material on Yucatecan Maya history appears to lend itself readily to one of the formulae of an eminent philosophical historian.¹

The Spaniards found a "composite society" fundamentally Maya but modified by Mexican ideas. This "affiliated civilization" might be traced as arising from the penetration of northern Yucatán, already an "outlying province" of the "apparent" Old Empire civilization, in the tenth century by intruders (an "external proletariat"?), who were the bearers of a Nahuatl culture and became the "dominant minority" in their new home. The result was a brilliant hybrid civilization. Late in the twelfth century occurred the "time of troubles" (a definite stage in the history of a civilization), during which Chichén Itzá was conquered by Mayapán. The "time of troubles" was succeeded by a "universal empire" (another normal development), in this case the domination by Mayapán of the entire

north, which finally ended in a revolution about 1450; and the country broke up into a number of warring independent states. The decline in civilization, which had already set in during the hegemony of Mayapán, became even more marked in the period which followed, and the conditions prescribed by the formula were not lacking. The "dominant minority," which was the repository of the culture, was separated from the "internal proletariat" by tradition and religious cult (the worship of Kukulcan), in which the latter did not share.

However, as we have already noted, our organized material is somewhat scanty and such an interpretation may be invalidated by new data and a coordination of the many uncorrelated facts which we already possess.

Maya culture did not cease with the Spanish Conquest, in spite of the important changes which ensued. Territorial government and religion were the institutions most rapidly affected, but an unconscious recognition of the old frontiers still exists and the modern ethnologist finds religious survivals today. The persistence of the Maya language, even among a large mestizo class, is very significant historically. The Indians were many and the Spaniards were few. Local government, even under Spanish supervision, continued in the hands of the Indians. Changes due to importations of European material culture came slowly; and agriculture, on the whole, still remains very much what it always was.

Any emphasis on the importance of the colonial Maya documents as a connecting link between the present and the more remote past should not obscure their value as a historical source for the period they actually cover. Even the most indispensable Spanish documents were, after all, written from the standpoint of our own European culture. Those written by the Indians in their own language show the native reaction to European ideas and institutions.

Maya documents of the Colonial period might be roughly divided into two classes. Those cited above are chiefly concerned with the relations of the Indians with one another. The much larger body of Maya texts discovered in the Seville archives by Mr. Scholes appear to deal with the relation between Indians and Spaniards. Both classes furnish much information about the Indians and each supplements the other. The advantage of record written by Indians for Indian readers is somewhat offset by the fact that many of the older documents exist only in the form of eighteenth and early nineteenth century copies. The Seville texts, on the other hand, are originals, which gives them more authority as linguistic documents. These rank with the Xiu papers as a source for the history of the Maya language during the last four centuries.

NOTES

1. In what follows we have departed somewhat from Professor Toynbee's (1934) application of his formula to Maya history.

9.11.

A. POGO

Maya Astronomy

YB 34:151–152, 1935

A survey of the contributions to the study of Maya chronology by Förstemann, Goodman, Thomas, Bowditch, Morley, Meinshausen, Spinden, Willson, Guthe, Teeple, Thompson, Martínez Hernández, Ludendorff, Palacios, Roys and Beyer, revealed the possibility of a new approach to the problem of correlating Maya and Christian dates.

In 1913, Meinshausen recognized that the pages 51 to 58 of the Dresden Codex contain a table of eclipse syzygies. Willson's attempt to derive a day-by-day correlation based on this table was unsuccessful; the posthumous publication, in 1924, of Willson's unfinished investigation conveyed, unfortunately, the impression that his negative results were final. Two erroneous assumptions underlying Willson's unfinished investigation ought to be mentioned here: first, that partial eclipses of the sun may be disregarded; and, second, that lunar eclipse's do not have to be considered; moreover, he overlooked the existence of the tenth "picture," at the bottom of page 58 of the Dresden Codex. An example of a part territory is quoted in the bibliogra-

phy accompanying this report; examples of lunar eclipses at Dresden "picture" intervals will be found in the table below.

In 1925, Teeple published his paper on the Glyphs C, D and E of the Supplementary Series of the inscriptions, a short and brilliant paper equaling in importance that of Meinshausen. Teeple's subsequent investigations of the lunar calendar of the Maya led him to consider the Dresden table of the eclipse syzygies, but he did not attempt to exhaust the correlation possibilities it offers; incidentally, he disregarded or overlooked, like Willson, the existence of the tenth, "picture."

A study of the periodicity of groups of eclipses had to be made, in order to bring out the correlation possibilities offered by the pages 51 to 58 of the Dresden Codex, on the one hand, and by the Supplementary Series, especially by Glyph C, of the inscriptions, on the other. Cylindrical diagrams based on the Mec (Maya eclipse cycle of 11,960 days = 405 lunations = 69 eclipse semesters = two double tzolkins) were-constructed; they permit us to trace the development of the ideas which led to the introduction of Supplementary Series and to the compilation of tables of eclipse syzygies. [Table 9.11.1] may be used as an example of the periodicity of groups of lunar eclipses which were visible in the Maya territory and occurred at Dresden "picture" intervals.

The total solar eclipse of -43 October 11.9, preceding the first group lunar eclipses of the table, was visible in the Maya territory, at sunset; the close conjunction with a Librae offered an opportunity of counting lunar cycles from a definite point in space as well as in time.

A preliminary survey of the correlations derived from groups of eclipse separated by Dresden "picture" intervals shows that a considerable amount of work will be needed in order to eliminate the spurious solutions; the final day-by-day correlation based on the Dresden table of eclipse syzygies and on the lunar

Table 9.11.1. Periodicity of Groups of Lunar Eclipses.

Lunar Saos Series	Group at "Picture" Intervals	First Exeligmos Return	Second Exeligmos Return	"Picture" Numbers	Intervals in Days
L 76	-43 Oct 27.4	11 Nov 29.5	65 Dec 31.5	X	
L 93	-41 Mar 13.6	13 Apr 14.5	67 May 17.5	I	502
L152	-37 Dec 19.2	18 Jan 20.3	72 Feb 22.4	II	1742
L187	-34 Oct 18.3	20 Nov 19.3	74 Dec 22.3	III	1034
L 5	-30 Feb 10.2	24 Mar 14.2	78 Apr 16.0	IV	1211
L 64	-26 Nov 18.4	28 Dec 20.5	83 Jan 22.6	V	1742
L 99	-23 Sep 16.1	31 Oct 19.1	85 Nov 20.2	VI	1033
L140	-19 Jan 9.2	35 Feb 11.2	89 Mar 15.2	VII	1211
L193	-15 Apr 23.5	39 May 26.4	93 Jun 27.4	VIII	1565
L 11	-12 Aug 16.1	42 Sep 18.1	96 Oct 20.2	IX	1211
L 35	-10 Jul 26.3	44 Aug 27.2	98 Sep 29.2	X	709
				11960	

cycles recorded in the Supplementary Series of the inscriptions must be compatible with a simple interpretation of the Venus table of the Dresden Codex and of the Venus dates of the inscriptions.

9.12.

RALPH L. ROYS

Study of Maya Colonial Documents

YB 35:144–146, 1936

During the period under review Mr. Roys has been engaged in translating and editing for publication the *Títulos de Ebtún*, which are the archives of an old Indian town in eastern Yucatán. These papers have proved to value not only for the history of the immediate area, but also in their relation to other activities of the Division, for although Ebtún is situated Valladolid, its lands were scattered westward over a considerable area; and the *Títulos* contain information regarding a region, extending almost to Chichén Itzá in the north and along the ancient roadway to the ruins, of Yaxuná in the south. This includes, wholly or in part, the field of Dr. Redfield's and Alfonso Villa's ethnological study at Chan Kom (Redfield and Villa Rojas 1934), Dr. Shattuck's medical survey (Shattuck 1933), Dr. Steggerda's anthropometric work [Chapters 10.6 and 10.9], and Alfonso Villa's survey of the roadway (Villa Rojas 1934), not to mention the archaeological work at Chichén Itzá, practically on the edge of this area.

Consequently the *Títulos de Ebtún* furnish a valuable historical link between the pre-Conquest inhabitants and their descendants, who still constitute the bulk of the population of the region. The recent studies of the physical environment, mentality and daily life of the modern Maya have added considerably to our understanding of the significance of the archaeological remains; and if the present is to continue to illuminate the more remote past, it becomes increasingly important to trace the connection between them.

Photographs of the documents have kindly been loaned by the Peabody Museum of Harvard University, and Tulane University has permitted use of materials gathered during a preliminary study made under its auspices.

The original documents have also been consulted by Mr. Roys at Ebtún; and it has been possible to map nearly all the many localities cited in them with topo-

graphical data previously collected by Dr. Redfield, Alfonso Villa, the writer, supplemented by subsequent information from J. I. Rubio Mañé and Lawrence Roys.

The earliest Ebtún document, dated 1561, has been found in another collection, and the archives now at Ebtún begin in 1600 with a series of boundary treaties. These were concluded between Ebtún and four other associated southern Cupul towns, on one side, and their western neighbors of the former independent state of Sotutá on the other. Certain Sotutá documents will also be presented containing the Spanish translation of a boundary survey made by Nachi Cocom in 1545. As this date is believed to be the writing of Maya in European script, the original record was probably one of the *pinturas*, which we find mentioned, or a hieroglyphic map.

Among the 1,600 documents, some of the most interesting are those which tell in considerable detail of the scattered villages and hamlets whose rural population was concentrated in the five towns under Tomás López about the middle of the sixteenth century. Here occur the pagan names of the last inhabitants of these places and those of their Christian descendants in the towns. Ancient ruins are still to be found on a large number of these sites, or "old towns" as they are called in the documents.

There are indications that land ownership in such rural settlements may have been largely a family affair. This is of interest in view of Gaspar Antonio's statement that lands were held in common. Family ownership of land used for farming certainly goes back to 1561 in some cases, and how the presumed change from communal ownership came about is not yet entirely clear.

Sometimes, either by direct transfer or through a temporary Spanish owner as intermediary, land passed from one town to another. This usually caused trouble. In the case of the Tontzimin tract near Chan Kom, its sale by an Ebtún man to a resident of Cuncunul in 1638 resulted in a series of bitter disputes and lawsuits which ended only in 1820.

The many land transfers and surveys constitute in themselves a documentary history of the town of Ebtún. We find individual and communal ownership of lands existing side by side. Although the higher municipal offices were usually held by a limited number of prosperous land-owning families, it was always the policy of the town to increase the communal holdings, apparently for the benefit of the poorer inhabitants.

Frequently these documents tell how and from whom the vendor acquired the property, whether by purchase, gift, or inheritance. Sometimes the reason for the sale was a famine, when people had gone to the forest to live on wild fruits and roots. More often it was due to poverty arising from sickness or old age,

especially when the owner had neither sons nor sons-law to cultivate the land. Occasionally the vendor invokes such penalties as fine and flogging, if he should ever afterward question the validity of sale. In a few cases there is even information as to how the buyer acquired the purchase money.

Among these papers are a number of wills listing the possessions of more well-to-do members of the community. Bequests were mostly of beehives, tools, household paraphernalia, forest lands, fruit-trees, town lots the home of the testator. Lands were often bequeathed as joint property of all the children, but we sometimes later find them subdivided or the various interests bought up by one or two of the heirs. Few horses and practically no cattle were willed. Cattle raising, with the resulting damage to unfenced crops, was very unpopular, although it was extensively practiced by Spanish land-owners.

Other documents are Maya translations of proclamations by the governor, a few complaints of ill treatment by Spaniards, records of purchase of municipal supplies and commitments to jail, usually for wife-beating or disrespect to the local authorities.

Among the people of the region today, Ebtún is noted as the mother of colonies; and it was due to her land policy that a number of villages, Chan Kom among them, have since sprung up on what were formerly the communal lands of this town.

9.13.

FRANCE V. SCHOLES

History of Yucatán

YB 35:150–151, 1936

The documentary research for the monograph on the cacicazgo of Acalán-Tixchel has been completed, and it is hoped that the manuscript will be finished by the end of 1936. This volume will contain: 1. The history of the *cacicazgo* over a period of 90 years beginning with the of Cortés to Honduras and ending with the removal of the Ichbalche, Tzuctoc, Ichmachich, Chunhas, etc., to the region of Sahcabchen in 1615; 2. Facsimile reproduction of the Chontal text describing the history and services of the caciques of Acalán-Tixchel; 3. An annotated Spanish translation of this text; and 4. A brief statement concerning the aborigi-

nal history, ethnography, and linguistics of the area comprising the cacicazgo. Miss Adams, Mr. Roys, and Mr. Scholes are collaborating on this work.

Although this monograph will throw a flood of light on the Acalán-Tixchel area, the lack of adequate geographical and archaeological information concerning the region makes it difficult to form definite conclusions on essential points. Perhaps no part of Spanish North America has been less explored in recent times than this area, which lies east of the Usumacinta and south of Laguna de Términos. An expedition of reconnaissance archaeological and geographical purposes is greatly needed.

Considerable progress has been made on the documents dealing with life of Fray Diego de Landa and the beginnings of the Inquisition in Yucatán. The materials from the Archivo General de Indias in Seville, especially those which relate to Landa's investigation of Indian idolatry in 1562, are being thoroughly studied by Miss Adams and Mr. Scholes, and Sr. Rubio Mañé has started work on the Inquisition papers in the Archivo General de la Nación in Mexico City. By the end of December 1936, the documentary work prior to 1571, when a formal tribunal of the Holy Office was established in Mexico, should be completed.

This monograph and the study of the materials dealing with Landa's career in Yucatán during the 1570s will pave the way for a needed biographical sketch of the bishop. Such a study will be prepared by Mr. Scholes as part of a volume containing an annotated translation of Landa's *Relación de las cosas de Yucatán* to be published by Professor A. M. Tozzer under the auspices of the Peabody Museum.

Materials are accumulating for the history of the encomienda in Yucatán; the first section covering the beginnings of this institution prior to 1550 is rapidly taking form.

Sr. Rubio Mañé has continued his work in the local archives of Yucatán. In October 1935, Mr. Scholes spent a week with him in Mérida in conference concerning phases of his investigations. The survey of the parish records in Mérida and Campeche has been completed, and considerable time has been spent in searching through the records in other towns in connection with investigations for Mr. Roys and Dr. Morley. At the request of Mr. Scholes a test study was made of the first volume of the marriage records of the Negro parish in Mérida, covering the years 1568 to 1610, in order to obtain information concerning the intermarriage of Indians and Negroes. Sr. Rubio Mañé summarized his findings as follows: 1. Marriages: Negroes with Negroes, 19; Negroes with Mulattos, 16; Negroes with Indians, 42; Mulattoes with Indians, 27; Mulattoes with Mulattoes, 11; 2. Number of Individuals Mentioned, Slaves: Negroes, 105; Mulattoes, 29–134. Free: Negroes,

8; Mulattoes, 19–27; and, 3. Number of slaves mentioned, 65; average number of slaves per owner, 2+.

These investigations in the records of the Negro parish will be continued when Sr. Rubio Mañé returns to Yucatán at the end of 1936. It is obvious that they will not provide a complete picture concerning the Negro and Mulatto population of the province, but they should provide valuable data concerning the amount and rate of mixture of the Negro and Indian races.

During the past year Dr. Chamberlain's work on the Spanish archive materials for the life and times of Montejo was practically completed. In June 1936, he left for Mexico and Central America, where he will explore the local collections for documents on the history of Central America prior to 1550. In view of the fact that the career of Montejo in America extended to 1550 and was so intimately related to the whole Maya region, it is hoped that Dr. Chamberlain may be able to expand his work on the Adelantado into a general history of the conquest of the region from Tabasco to the Río de Ulúa, roughly the entire Maya culture area. It is also expected that as a result of his investigations in Guatemala the Institution will have definite information concerning the general content and volume of the local archives, on the basis of which a decision may be reached with regard to further historical research in the Guatemala area.

Dr. Hanke has carried forward his research on theoretical phases of Indian legislation and policy in the sixteenth century.

9.14.

ALFRED V. KIDDER

History of Yucatán

YB 36:155–157, 1937

Dr. Robert S. Chamberlain, who is preparing a detailed study of the conquest of the entire Maya area, spent the summer of 1936 in Yucatán and Guatemala carrying on investigations in the local archives. In March 1937 he returned to Central America to continue his investigations. The reorganization of the archives of Guatemala now in progress made it impossible to search certain local collections, but except for these Dr. Chamberlain's work in the Guatemala archives has been completed. A rapid survey of the principal archives of Honduras and El Salvador has also been

made. Although the materials for the period of the Conquest in these collections are not numerous, important documents have been found that fill in lacunae in the papers in Seville.

The archives of Guatemala City are rich in materials for the later colonial period, and Dr. Chamberlain has prepared a brief report dealing with archival organization at the present time and indicating the general nature of the contents of the individual archives. This report will be extremely useful for students of the local history of Guatemala and for those interested in general problems of Spanish colonial policy and administration in the New World. It will be printed in the *Handbook of Latin American Studies* for 1937.

During his stay in Yucatán in the spring of 1937 Dr. Chamberlain spent some time at Chichén Itzá in conference with Dr. Morley and Mr. Roys, and together with Mr. Roys he made a brief reconnaissance of the area east of Tizimín. At the site of Dzoonot Aké ruins were found. Information was also received which should be useful in identifying the site of Chuac-há.

In April Dr. Chamberlain and Mr. Ruppert visited Tixchel near Sabanquy. Tixchel was an important pre-Conquest site resettled during the second half of the sixteenth century by groups of Chontals from the Acalán area. The exact location of the village of Acalán is still undetermined. Documents of the sixteenth century clearly indicate that the Candelaria drainage formed an important part of the cacicazgo of Acalán-Tixchel. Chamberlain and Ruppert made a short trip up the Candelaria. Although ruins exist at several points on the middle and upper parts of the river, none could be identified as Acalán.

Dr. Chamberlain will spend the summer of 1937 working in the archives of Mexico City. He also hopes to visit Chiapas, before he returns to the United States in the autumn.

Sr. J. Ignacio I. Rubio Mañé has spent the year 1936–37 in Mexico City carrying on investigations in the Archivo General y Público de la Nación and in the Biblioteca Nacional. The Inquisition papers in the Archivo General contain a mass of Yucatán material, and copies or extracts have been made of all the documents ante 1580. These data will be incorporated in the volume on the life and times of Fray Diego de Landa being prepared under the direction of Mr. Scholes.

The Sección de Civil of the Archivo General contains 2,302 volumes of uncatalogued papers for the entire district administered by the audiencia of Mexico. They consist of suits before the audiencia, residencias, reports, etc., that are of great value for every phase of the administrative history of New Spain. Up to the present time Sr. Rubio Mañé has examined 1,250 volumes in this series and has found important items for the history of Yucatán. The most valuable finds to date

are: 1. Records of the Palacios visita in the 1580s, and 2. Documents pertaining to the Yucatán phases of the visita of New Spain by Gálvez in the eighteenth century. In addition to these outstanding groups of papers there is a mass of material on encomiendas, Indian labor, and land administration. The Sección de Tierras, consisting of 3,692 volumes, of which 2,971 have been catalogued, supplements the materials in the Sección de Civil. Most of the Yucatán documents, as indicated by the catalogue, deal with the eighteenth and nineteenth centuries.

In the Sección de Historia items have been found dealing with the population of Yucatán in the late eighteenth century and with the organization of schools during the same period. In the Biblioteca Nacional the most important find was a report on general conditions in Yucatán made as the result of the visita of the province in the time of Gálvez. This document which supplements similar papers in the Sección de Civil, is being published by Sr. Rubio Mañé in the *Diario de Yucatán*.

Mr. Scholes and Miss Adams have been engaged in preparing several groups of materials for publication. In collaboration with Sr. D. Carlos Menéndez, editor of the *Diario de Yucatán*, a volume of documents on the history of Yucatán, 1550–61, has been published, and a second volume of documents on the organization of the Church and the missions, 1560–1610, is now in press. Two volumes of documents dealing with the administration of the alcalde mayor Don Diego de Quijada, 1561–65, and with the famous *auto de fé* of 1562 will be ready for the press in October. These volumes will provide the documentary background for the essay on the life and times of Fray Diego de Landa to be issued in conjunction with the translation of Landa's *Relación de las cosas de Yucatán* to be published by Professor A. M. Tozzer, of the Peabody Museum of Harvard University.

Work on the Acalán-Tixchel volume was postponed pending the report of the reconnaissance of Dr. Chamberlain and Mr. Ruppert up the Candelaria River. It is now clear that a thorough exploration of the area south of Términos will be necessary before the Acalán question can be finally solved. Inasmuch as such a reconnaissance will not be made for some time, the volume on the cacicazgo of Acalán-Tixchel will be pushed to completion during the coming year.

Dr. Chamberlain and Mr. Scholes are collaborating on a paper on population problems in Yucatán prior to 1550 which should be completed within a few months. Progress has been made on the first section of the study of the encomienda in Yucatán.

All these documentary publications and monographs are preliminary to the first two volumes of the general history of Yucatán, 1550–1810, which forms

the major objective of the researches of Mr. Scholes, Miss Adams, and Sr. Rubio Mañé. But the discovery by Sr. Rubio Mañé of such a large mass of documentary material in the archives of Mexico means that a thorough going examination of these papers will be necessary before this larger study of Hispano-Indian society and administration in Yucatán can be put in final form.

9.15.

RALPH L. ROYS

Study of Maya Colonial Documents

YB 36:157, 1937

Much of the period under review has been spent by Mr. Roys in completing the translation and annotation of the papers found in the municipal archives of Ebtún in eastern Yucatán [Chapter 9.12]. An introduction has been written summarizing the historical and ethnological material contained in these documents and reviewing the social, economic, and local political development of this region during the Spanish colonial period.

In collaboration with Mr. Scholes, a preliminary study of the Acalán-Tixchel area has been made, also annotations to the Spanish version of the history and service record of the caciques of this region [Chapter 9.12] in the light of a comparison of this document with the original Chontal text.

During the late winter and spring of 1937 Mr. Roys was in Yucatán. Accompanied by Dr. Steggerda, he made a journey along the border of the southern Cupul area and the former Province of Cochuah. The line was found to extend from a point about 10 km south of the west end of the ancient Cobá-Yaxuná road in an easterly and southeasterly direction.

This old frontier was located from watering places and other sites hitherto unmapped but cited in the early post-Columbian Maya documents. Many portions of the former boundaries separating the Provinces of Ah Canul, Maní, Sotutá, and the Cupuls are remembered by the present-day Indians; but consciousness of a geographical division between the southern Cupul and the Cochuah areas no longer exists among the present Indians living in this region. During the War of the Castes the native rebels occupied this part of the Cochuah area for a considerable time. Finally,

when the remainder of them retreated to the forests of Quintana Roo, the district was settled by immigrants from the neighborhood of Valladolid. People interviewed at Chikindzonot and Ekpedz, formerly important Cochuah towns, had come from near Valladolid and were apparently unaware that their new homes were in what had formerly been a separate territorial entity.

Some time was spent at Chicxulub and Yaxkukul in northwestern Yucatán, in order to locate the boundaries of their lands. These are described in the sixteenth century Maya manuscripts of the Pech family, photographs of which were secured by Dr. Morley during the past year. Although the chief interest of these papers lies in the important historical material which they contain, they were primarily land documents; and an adequate presentation of them is hardly possible without a topographical knowledge of the territory which they cover.

This district is now given over to the cultivation of sisal hemp, and the old agricultural life, so much in evidence in many parts of Yucatán, has greatly changed. Maya is still the language of most of the people, but a considerable Spanish admixture is to be seen in the population. There is even an occasional structure of sawn lumber among the Maya pole and thatch houses and the stone buildings of Spanish type.

9.16.

ALFRED V. KIDDER

History of Yucatán

YB 37:166–169, 1938

During the past year Sr. J. Ignacio Rubio Mañé has continued his search for materials on the colonial history of Yucatán in the Archivo General de la Nación in Mexico City. The volume-by-volume survey of the *Ramo de civil*, which had progressed as far as volume 1,250 by July 1, 1937, was carried through to volume 2,302, the last in the series. The uncataloged part of the *Ramo de tierras*, volumes 2,972 to 3,623, has also been searched. In these two ramos a mass of new material for the history of Yucatán, especially for the eighteenth century, has been found. The documents deal with governmental organization and administrative policy, ecclesiastical affairs, Indian administration, encomiendas, the economic history of the province, suits over

lands, and private business transactions. A series of expedientes relating to the abolition of the encomienda system in 1785–86 deserves special notice. Photographic reproductions of several important items have already been made and others will be reproduced during the year 1938–39. After completing his work on the above-mentioned series, Sr. Rubio Mañé started a survey of a number of less extensive series, such as Arzobispos y obispos, Real audiencia, Expolios, Real acuerdo, etc. He will be engaged in this work during the greater part of the coming year.

Dr. Robert S. Chamberlain spent two months (July 17–September 24, 1937) in Mexico City, after completing his investigations in the archives of Guatemala, El Salvador, and Honduras. During this time he examined several sections of the Archivo General de la Nación, especially the papers of the Hospital de Jesús, as well as parts of the Archivo de Notarios, the Archivo del Ayuntamiento, and the Cathedral archive. Unfortunately, very few documents pertinent to his investigations on the history of the conquest of the Maya area were found.

Since his return to the United States in October 1937, Dr. Chamberlain has been engaged in the preparation of certain materials for publication. A résumé of the history of the conquest of Yucatán, based on the more extensive and detailed sections of his projected history of the conquest of the Maya area, has been largely completed. This will be incorporated in the introductory section of the work on the life and times of Fray Diego de Landa being prepared by Mr. Scholes. Dr. Chamberlain has also written a preliminary draft of a chapter on the exploration and conquest of the Acalán-Tixchel area which will form part of the larger work on the cacicazgo of Acalán Tixchel on which Mr. Roys and Mr. Scholes are also collaborating. During the last three months of the year 1937–38, Dr. Chamberlain devoted most of his time to the preparation of a short monograph on the Castilian origin of the encomienda system, which should be ready for publication by the autumn of 1938.

Mr. France V. Scholes and Miss Eleanor B. Adams gave most of their time during the past year to the preparation of two volumes on the administration of Don Diego Quijada, who served as alcalde mayor of Yucatán from 1561 to 1565. It was hoped that the manuscript of this work would be finished before the end of 1937, but the decision to add a considerable number of documents to the series as originally planned made it necessary to carry the work over into 1938. These volumes, which are now in press, will contain 85 documents and a lengthy introduction. The latter will describe the development of Yucatán from 1550 to 1561, the beginnings of the Quijada regime, the famous investigation of Indian idolatry made by Quijada and

Fray Diego de Landa in 1562, the increasing resentment inspired by Quijada's government, especially his attempt to abolish burden bearing, the residencia of the alcalde mayor, and the final vindication of Landa for his share in the unhappy events of 1562. As stated in the *Year Book* for 1937 [Chapter 9.16], the material published in these volumes will provide the documentary basis of part of the work on the life and times of Landa being prepared by Mr. Scholes with the collaboration of Dr. Chamberlain, Miss Adams, and Sr. Rubio Mañé.

Mr. Scholes spent part of November and December 1937 in Mexico City in conference with Sr. Rubio Mañé and in negotiations with the editor and publisher of the Biblioteca histórica mexicana series, in which the two volumes on Quijada are to appear. Late in June 1938, Miss Adams left for Mexico City, where she will spend several months carrying on investigations in the Archivo General de la Nación in collaboration with Sr. Rubio Mañé.

During the past year volumes 2 and 3 of the *Documentos para la historia de Yucatán*, edited by Mr. Scholes, Sr. Carlos R. Menéndez, Sr. Rubio Mañé, and Miss Adams were published. Volume 2 contains a series of 44 documents illustrating ecclesiastical organization, and the development of the missions from 1560 to 1610. Volume 3 contains a report on general conditions in Yucatán in 1766 entitled *Discurso sobre la constitución de las Provincias de Yucatán y Campeche*. Included in the volume are two appendices, the first describing the government of Campeche in 1746, the second being a census of Yucatán for 1790. In the *Handbook of Latin American Studies*, 1936, pp. 387–432, Dr. Chamberlain published "A report on colonial materials in the government archives of Guatemala City."

Mr. R. L. Roys devoted the first part of the period under review to revision and completion of maps of the prehistoric Yucatecan Maya states, or so-called provinces, of the Cupuls, Sotutá, and Maní, from topographical material gathered during the spring of 1937 and described in a previous report [Chapter 9.15]. The first two will appear in *The Titles of Ebtún* (Roys 1939), and the last will accompany the publications of the Xiu probanzas and related documents.

The two series of documents mentioned above constitute a general history, from the native point of view, from the Spanish Conquest down to the period covered by the ethnological studies of the modern Maya. These papers deal principally with the more material facts of existence and may be supplemented in course of time by a study of native intellectual and religious life during the colonial period. Some of the material for this will be found in the mixture of Spanish astrology and Maya science, both of which were closely bound up with religious ideas, recorded in the Maya language in the later Books of Chilam Balam.

At the present time, however, it has seemed desirable to inquire more closely into what the white man found when he arrived in the various parts of the Maya area: the state of affairs at the time of this contact, as distinguished from subsequent developments influenced by European culture, on one hand, and previous conditions no longer existing but disclosed by archaeological investigation, on the other.

There are some indications that more or less similar conditions may well have existed for at least three centuries prior to the Conquest in the highlands of Guatemala and perhaps considerably longer in regions between that area and Yucatán. In Yucatán, however, there was a great political and social revolution about the middle of the fifteenth century. Its more conspicuous effects were the breaking up of a centralized government and the abandonment of the stone-vaulted buildings, which were replaced by more or less perishable structures with thatched roofs. In the Old World such a decline in architecture has been either more gradual or the result of invasion and in the prayers of the modern native herb doctors.

Now that photographs of the oldest copies of the Pech documents have been acquired, Mr. Roys has undertaken a new transcription and annotated translation of these papers. They consist of two collections, one from the town of Chicxulub and the other from Yaxkukul.

These towns formed the subject of a topographical study [Chapter 9.15] in 1937. Brinton published the text and translation of the most important Chicxulub document in 1882, and Martínez' did the same for all the Yaxkukul papers in 1926, but did not include the official Spanish translation made in 1769.

These important documents are probably the earliest Maya narratives written in European script that have come down to us and include immigration by less cultured peoples, which was not the case in Yucatán at this time. Much of the previous state of affairs, which reminds us in some respects of the conditions in the highlands of Guatemala at the time of the Conquest, was still a matter of general knowledge when the Spaniards conquered Yucatán, so it may be possible to trace the causes and effects of this famous crisis in aboriginal American history.

New documents discovered by Mr. Scholes in the archives of Mexico and Spain have not only added to the sum of our knowledge, but also required a fresh examination and reinterpretation by Mr. Roys of historical sources which have long been known.

For the *Report and census of the Indians of Cozumel, 1570*, already mentioned in a previous report [Chapter 9.7], the introduction has been enlarged and rewritten from the study of a considerable number of related documents furnished by Mr. Scholes.

An ethnological study has also been made by Mr. Roys of the proceedings of Landa's inquisition in 1565, which furnishes a very appreciable amount of new material. In Mr. Roys' opinion, the human sacrifices and other pagan ceremonies performed in Christian churches during the second decade after the Conquest suggest that temple ritual had continued to retain much of its importance; in spite of the decline of temple architecture and the prominent part played by the private oratory.

Sacrifices were made to bring rain and favorable weather for the crops, to avoid recurrence of hurricanes, and for the benefit of ailing chiefs. It is of especial interest to learn that the *cenote* cult was not confined to Chichén Itzá. While some victims were still taken to that site, in numerous cases the bodies were cast into local cenotes in the Sotutá district. Although Christian influences are already seen in the crucifixion of some victims, a logical development since the cross was a Maya religious symbol, the details of other forms of sacrifice are invaluable to the ethnologist.

We are introduced here to a new category of Maya deities, the gods of the different lineages or name groups. The greatest of these, Zacalpuc, we already know as one of the early Mexican invaders of Yucatán and the head of a lineage. Indeed, he still figures accounts of the Spanish Conquest by two native chiefs who were allies of the Spaniards. In consideration of Dr. Chamberlain's current study (if the conquest of Yucatán and a number of later documents from the Pech are discovered by Mr. Scholes in the Archives at Seville, the publication of the entire series of the Chicxulub and Yaxkukul papers, with new annotations seems desirable at this time.

from native and Spanish chronicles such information regarding the social, economic, and religious life of the Maya as will aid in explaining many puzzling aspects of the archaeological finds. The second, and this of course is in the historian's own province, is to reconstruct as fully as possible the events which shaped the destiny of the Maya from the Conquest to the present day. The third is to erect for the ethnologists and other students of the living Maya the same sort of background that the archaeologist provides for the historian.

The Division entered the documentary field in 1931 with the appointment of F. V. Scholes. With him have since been associated R. S. Chamberlain, Eleanor B. Adams, and the Mexican scholar J. I. Rubio Mañé; while R. L. Roys has devoted himself to the translation and interpretation of the Maya's own literature, the so-called Books of Chilam Balam.

The history of the Maya from the period of the Spanish Conquest to the present time has a definite importance not only in relation to other phases of the Yucatán Project, but also for the general field of Latin American history. The significant problems of the history of those Latin American countries where the Indian has survived in any considerable numbers are essentially social problems, Latin America may be regarded as a laboratory in which vast cultural and sociological experiments have been carried out. Aboriginal civilizations, varying in achievement, flourished over a period of many centuries in several parts of the Latin American area. In the sixteenth century these civilizations were submitted to a rude shock by the European conquest, but neither the Indian nor his culture was wholly destroyed. The Indian survived, and today Indian blood is a predominant strain in the population of many Latin American countries. Elements of aboriginal culture also survived in language and old folkways. To these have been added many characteristics of Hispanic culture. The four centuries since the conquest have thus been characterized by a long process of fusion, conflict, and amalgamation, resulting in the evolution of a Hispano-Indian civilization, varying with geographic conditions, the virility of the old Indian culture, and the policies and prowess of the conquering race. The survival of the Indian and of modified phases of his culture is the basis of many of the major modern Latin American problems of political and social significance, such as the distribution of wealth, land tenure, general economic progress, education, and public health. In recent years, moreover, the art and literature of Latin America, especially of Mexico, have been vitally affected by the same influence. The study of Latin American history is, therefore, essentially a study of the fusion and conflict of cultures. A sympathetic understanding of these processes

9.17.

ALFRED V. KIDDER

History of Yucatán

YB 38:248-253, 1939

The Division's archaeological activities, already discussed, have added much to our knowledge of the Maya of ancient times. To carry their story another step farther is the task of the documentary historians. Their work has triple aims. One of these is to glean

is essential for any just estimate of contemporary Latin American life.

The sources for historical research upon the Maya are partly printed: accounts of the discovery and Conquest, histories of the Colonial period, and works dealing in a more general way with Spanish policy toward the Indians. But by far the greater amount of material still lies buried in the archives of Yucatán, Mexico City, and Guatemala, and particularly in the enormous repository of the Archive of the Indies at Seville. The word "buried" is used advisedly, for not only are the desired papers often difficult of access, but pertinent facts must be gleaned from countless thousands of manuscripts: records of the church and of the courts, tribute rolls, and the multitudinous reports of officials. From this mass of at first sight mostly sterile, routine stuff come not only solid factual data, but also flashing side lights which often illuminate the life and events of the times more clearly than do the pages of the formal histories.

A preliminary survey of the archives of Yucatán made by Mr. Scholes in 1931 revealed that a large part of the local papers, especially for the Colonial period, had apparently been lost or destroyed. Consequently it was decided to postpone a detailed study of the local documents until considerable work had been done in the central archives of Spain and Mexico. Mr. Scholes and Dr. Chamberlain spent two and a half years (1932–34) in Spain, and Dr. Chamberlain has also worked in the archives of Mexico City, Guatemala, and Salvador. In 1936 Sr. Rubio Mañé started a survey of the Yucatán materials in the Archivo General de la Nación in Mexico City. Photostats and Leica films of important documents relating to the Maya have been brought back for study. These are gradually being digested, materials of value to other scholars are passed on to them, and information is steadily accruing for the two major histories which will be produced by the Division: that of Yucatán by Mr. Scholes and that of the conquest of Central America by Dr. Chamberlain.

During the past year Sr. Rubio Mañé continued his investigations in the Archivo General de la Nación in Mexico City, and Miss Adams, who spent several months (July 1938–May 1939) in Mexico, also gave part of her time to research in the same archive. Most of the important *ramos*, or sections, open to investigators have now been searched for documents on the Colonial history of Yucatán. During the year 1939–40 Sr. Rubio Mañé will assist in the cataloguing of a large section that heretofore has been closed to investigators, and it is expected that additional materials on the history of the province will be found in this collection.

The local Yucatán collections have not been entirely neglected, however, during the past eight years. In 1935–36 Sr. Rubio Mañé made a survey of the

Archivo de Protocolos in Mérida and the parish records in Mérida and Campeche. Mr. Roys and Sr. Rubio Mañé have also worked in the parish archives of some of the Indian towns. During the summer of 1936 Dr. Chamberlain examined materials in the Biblioteca Çepeda and the Museo Arqueológico e Histórico in Mérida.

In the Archivo de Protocolos in Mérida, which contains registers of deeds, mortgages, wills, etc., nothing remains for the period prior to 1689. Beginning with the eighteenth century, however, this archive is fairly complete and will be the source of much information concerning the economic history of Yucatán during the past 200 years. The parish records of Mérida have been preserved in almost complete form; those of Campeche, although less complete, are fairly extensive. These documents have little value, however for the study of political and administrative history.

During February, March, and April of the past year Mr. Scholes, assisted by his nephew, Mr. W. V. Scholes, made a survey of the Archivo General de Estado and the documents in the Museo Arqueológico e Histórico in Mérida.

The Archivo General del Estado contains several thousand bundles and volumes. These papers, formerly kept in the Museo Arqueológico e Histórico, have recently been transferred to another building and set up as a separate archive. At the time of Mr. Scholes' visit last spring the newly appointed custodian than had not been able to begin arduous task of classification, but mission to make a search for colonial materials was granted. It was hoped that this collection, the official papers of the province and state of Yucatán, would contain local administrative documents of the Colonial governors and other local officers, especially for the sixteenth and seventeenth centuries, but this hope was not justified. Search by the Messrs. Scholes revealed only a very small amount of Colonial material, dating from the last half century of Spanish period. One group of papers, however, is worthy of special notice, *viz.*, an almost complete town-by-town census of the province for the years 1809–11. These census reports and a few other documents were photographed. For the nineteenth century the collection is remarkably complete, with long series of administrative decrees, correspondence of local officials, special reports, journals of the local legislative bodies, vital statistics, etc. These materials will provide the documentary basis for the history of Yucatán since Independence.

The colonial archives of the cabildo of Mérida are now kept in the Museo Arqueológico e Histórico. Unfortunately the documents of the sixteenth and seventeenth centuries have been lost or destroyed. The earliest cabildo books begin with the decade of the 1740s, and for the remainder of the colonial period the series is fairly complete. The Museo is sole custodian of an

important collection of registers of military decrees, local correspondence, and other administrative papers for the last two decades of the colonial period and the first half century after independence. During the past spring photographs were obtained of a large part of the cabildo documents for the eighteenth century.

During the past spring inquiry was made concerning the archives of Valladolid. Only a few documents (all of recent times) were found in the Ayuntamiento, and it appears that the Colonial archives and most of the papers for the nineteenth century have been destroyed. There is also little hope of finding important early administrative documents in Campeche.

The fragmentary character of the local elections increases the importance of Spanish and Mexican archives as the principal storehouses of documents on the colonial history of Yucatán. We are also brought face to face with certain definite problems. Some of the most important aspects of the Colonial history of the province, as of other parts of Spanish America, are those relating to Indian labor, land tenure, and the government of Indian towns. For these questions, local administrative documents would naturally constitute one of the principal sources of information. Unfortunately the major local collections that have been examined contain very little material of this kind for the sixteenth and seventeenth centuries. With regard to land tenure the gap can be filled in part by the hacienda papers in private hands, some of which go back to the sixteenth century. Mr. Scholes and Sr. Rubio Mañé have been permitted to examine and copy certain documents of this kind. During the past spring photographs were also obtained of a privately owned document of great historical value for the Calkini area. And there is always the possibility that some new collection of administrative papers may be found in Mérida, although the fragmentary character of the archives that have been surveyed offers little hope that early documents have been preserved in considerable quantity. For many problems, we must turn to the archives of Mexico, where early administrative papers for other parts of New Spain are available, and generalize, at least in part, on the basis of practice in these areas. Study of administrative practice in other areas would have been important in any case, in order to form valid conclusions concerning Yucatán problems and as a means of providing bases of comparison; for the history of Yucatán during the Colonial period must be projected against the background of general Spanish colonial policy and achievement. But in view of the present lack of early administrative documents available in Yucatán, this procedure has become a positive necessity.

To this end Mr. Scholes and his assistant spent several weeks in Mexico City in May, June, and July,

during which time investigations were carried on in the Archivo General de la Nación in collaboration with Sr. Rubio Mañé. Copies were made of numerous documents illustrating administrative practice in New Spain with regard to Indian labor, the functions of local Indian officials, land tenure, stock raising, local industries, the social status of Indians, mestizos, Negroes, etc.

During the past year two volumes of documents, edited by Mr. Scholes and Miss Adams, were published in Mexico City. These volumes, entitled *Don Diego Quijada, alcalde mayor de Yucatán, 1561-65*, contain selected parts of the contemporary records of the investigation of idolatry made by Fray Diego de Landa in 1562, letters describing conditions in the province, documents on the problem of forced Indian labor, and official papers relating to the residencia of Quijada. A brief résumé of the idolatry proceedings was also embodied in a paper written by Mr. Scholes and Mr. Roys.

Conditions in Spain made it necessary for Dr. Chamberlain to postpone his trip to Seville to complete his investigations relating to the conquest of the Maya area. During the past year, therefore, he has carried on a series of lesser investigations. He has published a short study on the Castilian origins of the encomienda system and a paper on the concept of the *señor natural* in Spanish and Indian law. In February he gave a lecture in Washington on Spanish methods of colonization as illustrated by the history of Yucatán. The text of this lecture was published in the *Scientific Monthly*. At the end of the year 1938-39 he was at work on a survey of pre-Conquest tribute systems.

In the autumn of 1938 Dr. Hanke resumed his investigations on theoretical aspects of Spanish colonial policy and administration in the sixteenth century, after an interval of 20 months during which he held appointment as research fellow of the Social Science Research Council. During the past spring he was appointed Director of the Hispanic Foundation of the Library of Congress.

During the period under review Dr. Morley and Mr. Roys have continued their research on the Xiu, the pre-Spanish lords of the great New Empire city of Uxmal, who retained for many years after the Conquest the status of nobles and whose descendants are still living in Yucatán. The story of this family through the centuries illustrates, and in some ways epitomizes, the whole later career of the Yucatecan Maya.

Mr. Roys spent the late winter and the spring of 1939 in Yucatán working with Dr. Morley, gathering linguistic data, and, alone and in company with Mr. Scholes, visiting various parts of the peninsula in order to locate and study the environmental conditions at a number of sites which were of importance during the Conquest and in the days of colonization.

From Motul, as headquarters, a number of towns were visited in the east portion of the former province of Ceh Pech. Like the western part of this province, the country around Chicxul and Yaxkukul, which had previously been examined [Chapter 9.14], the rocky land is flat or slightly rolling and now given over to the cultivation of sisal hemp. Little maize is raised, and where it is, the production is low; so it seems not unlikely that the prosperity and thick population of this region at the time of the Conquest should be ascribed to salt production, fisheries; and commerce. There is a handsome Spanish colonial church in every town, but unlike the western part of the province, where ruins are frequent, no pre-Spanish remains were seen except at Uci, a short distance north of Motul. Here, from the top of the highest pyramid, seven other mounds, large and small, could be counted, and there are two cenotes in the center of the group. A survey was also made of a part of the northern coast of the province of Cehech. The site of Maxtunil, which figures prominently in the Pech papers and as a town of about 2500 inhabitants in 1549, could not be located; but the long, narrow lagoon inside the sand dunes was followed with considerable interest, as we believe it to have been an important commercial route in former times.

Mr. Roys also made a journey in search of the former town of Hunacti, a capital of what appears to have been a semi-independent subdivision of the Xiu state, but lying outside the province of Maní proper. It was governed by a member of the Xiu family, an intimate associate of the last Xiu ruler. This figures in the Chumayel migration narrative, one of the Maya chronicles, the Maní land treaty of 1557, and Landa's inquisition proceedings in 1562, and then completely disappears from all the records. Inquiries during previous years at Tekax, Peto, and Tadziu had elicited no information, and it was decided to go to Tixmeuac and start from there in the direction indicated by the Chumayel narrative. No one at Tixmeuac had ever heard the name, but some 6 km to the northeast a group of out 15 platforms and the ruins of a Spanish church were found. These are generally known as the ruins of Sisbic, but local Indian farmers stated that among themselves the place always been called *Hunacti*.

From Tixmeuac a number of border sites of the province of Maní, mentioned in the treaty of 1557 and shown in the native maps, or diagrams, of the province, were located and plotted. Several of these were found to be Maya ruins, which are fairly numerous in this region.

With Mr. Scholes a visit was made to Calotunil, which, together with Peto and Tzucacab, formed another semi-independent subdivision of the Xiu state. A site of this name near Catmis sugar plantation had

been reported to Sr. Rubio Mañé. Catmis, when visited, was found to correspond to what we know of this Calotmul; there are several Calotmuls in Yucatán. Here, too, was found a Spanish church and cistern among a large group of ancient mounds.

The former site of Tixel was also visited [Chapter 9.14]. It was situated on an estuary of Laguna de Términos and commanded the principal commercial route between Mexico and Yucatán in pre-Spanish times. The place figures prominently in the Paxbolon relación [Chapter 9.7 and 9.10]. The Chontal-speaking Acaláns once lived here until driven out by their neighbors of Tabasco and Champotón; and their descendants resettled on the spot in the middle of the sixteenth century. A few mounds, one fairly large, were found on the shore of the estuary, while there is a slightly larger group about 4 km inland. The two groups are connected by a paved road, which crosses the mangrove swamp lying between them, and it is difficult to determine which was the pre-Spanish Acalán town. The region is of interest, as it represents the northernmost extension of the Maya Chontal at the time of the Conquest. It is now Hispanicized, but a possibility exists that a few Chontal-speaking families were still living not far from Tixel down to a generation ago.

9.18.

FRANCE V. SCHOLES,
R. S. CHAMBERLAIN, AND R. L. ROYS
History of Yucatán

YB 39:277–280, 1940

In September 1939 the headquarters of the History of Yucatán project were transferred from Cambridge to Washington, D. C., where offices were provided for Mr. Scholes, Dr. Chamberlain, and Miss Adams in the Administration Building of Carnegie Institution. Mr. Roys has continued to reside in Vancouver but he plans to move to Seattle about September 1, 1940.

As stated in earlier annual reports, the lack of published documentary sources, as well as detailed monographic studies, on the colonial history of Yucatán has made it necessary to devote a long period of time to preliminary archival investigations. The study of Latin American history as a whole is characterized by these

same limiting factors, although the printed materials, both documents and monographs, are more extensive for other areas than for Yucatán. It is this state of affairs that makes many phases of Latin American history virgin fields for research, and at the same time imposes definite conditions on the character of investigations. In other branches of history, such as that of the United States, England, or modern Europe, students have the advantage of a large accumulation of detailed monographs and special articles summarizing spade-work research and serving as basis for works of synthesis. The Latin American field has lagged behind the others in this respect, with the result, that there are few major topics on which sound generalization is possible except after prolonged research in the original, documentary sources. This is particularly true of the colonial history of Yucatán, for which the available published sources that have merit consist of a few volumes of early chronicles and documents.

Publications by members of the History of Yucatán Project up to the present time have consisted in reproduction of documents and short papers on special topics. The immediate future calls for the publication of four or five monographs on special problems or limited chronological periods. These publications, completed and in preparation, will lay the foundations for the writing of the general history of Yucatán which is the chief aim of the project.

During the past year progress has been made in the preparation of the monographic publications. Mr. Scholes has pushed forward his investigations on the life and times of Bishop Landa. Miss Adams has extracted a mass of documentary material, consisting of royal decrees, lawsuits, petitions, and administrative orders on the *encomienda* system, forced labor, village government, and other phases of Indian administration in Yucatán. Materials of special interest for the research of Dr. Morley and Mr. Roys have been made available to them. Miss Adams and Mr. Scholes collaborated with Mr. Roys in the preparation of the paper on the early history of Cozumel, published during the year as *Contributions to American Anthropology and History*, no. 30. The monograph on the cacicazgo of Acalán-Tixchel, on which Mr. Scholes, Mr. Roys, and Dr. Chamberlain are collaborating, will be completed within a few months.

Dr. Chamberlain has been engaged in the preparation of the final draft of his study of the conquest of Yucatán. It was his original intention to approach this subject as a principal phase of the career of the Adelantado Francisco de Montejo, who also played an important role in the early history of Honduras and for a time was governor of Chiapas. The method thus envisaged was biographical and required that the history of Yucatán and Honduras should be wo-

ven about the figure of Montejo. As the preparation of his manuscript advanced he became convinced that such a method was not only illogical but lacking in unity. In view of the detailed treatment required, a narrative of events in Yucatán and Honduras drawn up on a biographical basis tended on the one hand to submerge Montejo as an individual and, the other, to distort the history of the two provinces. This would be unfortunate, since no exhaustive biographical study of Montejo, one of the outstanding lesser conquistadores of Spanish America, has yet appeared and little has been written concerning the history of Honduras during his years in authority there. In view of these considerations, Dr. Chamberlain has decided to divide his study into two separate monographs, one on the conquest of Yucatán and the closely associated province of Tabasco, and the other on the history of Honduras through the establishment of the Audiencia de los Confines. Each will be a unit in itself. At a later date he proposes to publish a less detailed study of Montejo as one of the founders of the Spanish empire in the New World. Preparation of the manuscript on the conquest of Yucatán now in its final stages. Dr. Chamberlain also published during the past year a short paper on the lineage of Montejo. Much of the past year has been occupied by Mr. Roys in seeing through the press *The Titles of Ebtún*; "Report and census of the Indians of Cozumel, 1570"; and "Personal names of the Maya of Yucatán."

The annotation of the Xiu family papers has been reviewed and completed; and for the introduction to these documents Mr. Roys has made a study of Indian nobility during the colonial period [Chapters 9.3, 9.7, and 9.15].

When the Spaniards arrived in Yucatán, they found a hereditary ruling class of long standing; but instead of attempting to destroy it, they appear to have seen in this Indian aristocracy a parallel to certain features of their own feudal system, which they preserved and encouraged. The Xiu probanzas, or proofs of nobility, constitute the chief evidence of the manner in which this institution was maintained in Yucatán but occasional references to it occur elsewhere. Mr. Scholes has also furnished copies of many documents from the National Archive of Mexico, which have aided greatly in understanding the situation in Yucatán.

In both Yucatán and Mexico the Spaniards called the higher nobility caciques and some times natural lords; lesser nobles were designated as hidalgos in Yucatán and principales in Mexico. As early as 1512 special treatment was prescribed by Spanish law for Indian chiefs in the West Indies; and later Philip II and his successors issued cédulas maintaining the rank privileges of caciques generally.

In colonial Yucatán the hereditary caciques were usually descendants of the pre-Spanish *batab*, or local head of a town; but some, like the *Xiu*, who were also called natural lords, were descended from the *halach uinic*, or territorial ruler. The cacique had the title of *Don* and was exempt from tribute and forced labor. His town was obliged to support him, rebuild and repair his home when necessary, and furnish him with domestic service. His precise functions are somewhat uncertain, as there was also an Indian governor in the town. We are told that the hereditary cacique had charge of and governed his town and was obeyed by the governor, but the functions prescribed in the latter commission are so numerous that it is difficult to determine what was left to the cacique. The Laws of the Indies confuse the two offices.

The cacique, however, had a place in the town corporation, where he doubtless exercised much influence. In Yucatán the *Xiu* caciques captured and returned fugitive Indians to their communities; they were also sometimes sent to other towns and appointed governor in place of an incumbent who was neglectful of his duties. In Mexico *Don Francisco Montezuma* was empowered by the Viceroy to protect his people from abuse by Spanish and Mexican shepherds. We find other caciques taking over the governor's duties during disputed elections, and successfully appealing in behalf of their towns for relief from illegal taxation, too frequent official visits of inspection, and interference by the clergy in local elections. From such activities as we find recorded, the cacique appears to have been more concerned with emergencies than with the usual procedure of municipal government.

Hereditary caciques apparently enjoyed more prestige and power in Mexico than in Yucatán, possibly owing to their superior economic position. We have little evidence of wealthy caciques in Yucatán, but in Mexico we find them owning extensive tracts of land, large herds of cattle, and various industries.

In Mexico the distinction between the caciques and lesser nobility continued to be observed down to the end of the colonial period; but in Yucatán after the middle of the eighteenth century they were all called *hidalgos*. They retained their exemption from tribute and forced labor, but the title of cacique had been appropriated by the town governor, although his office was only temporary. With the end of the Spanish regime in 1821, Indian nobility lost its legal standing, but some of the baptismal records of Yucatán continued to designate certain infants as *hidalgos* down to the middle of the nineteenth century.

By preserving and conciliating the Indian nobility the Spanish administration appears to have awarded its own interests as well as those of the class so favored. The conquerors were few in number com-

pared with the native population, and such a policy, in spite of some defection on the part of individuals, tended to keep the natural leaders of the Indians loyal, or at least acquiescent, to the Spanish regime. In Yucatán, the subject of this study, we believe that it aided greatly in controlling the natives and lessened the chances of insurrection. In any case the institution of native nobility in Yucatán and New Spain assumed an importance in the life of the Indian communities which has been very little realized by historians.

9.19.

FRANCE V. SCHOLES

Post-Columbian History

YB 40:309–310, 1941

Continued study of the documentary sources for the colonial history of Yucatán constituted the major activities of Mr. Scholes and Miss Adams during the past year. Most of these documents consist of series from Spanish and Mexican archives, of which photographs or typewritten copies had been made in former years. It may be recorded, however, that despite unsettled conditions in Europe, film copies of extensive series in the *Archivo General de Indias* in Seville have been received during recent months.

Most of the source materials studied during the year consisted of lawsuits, administrative reports, private petitions, and official correspondence which illustrate the following problems: 1. The preconquest political geography of Yucatán; 2. The government of Indian pueblos subsequent to the conquest; 3. The early history of the *encomienda* in the peninsula; and 4. The schedules of tribute payments. Notes and extracts based on the sources, together with similar data previously accumulated, have been carefully classified pueblo by pueblo, and this elaborate note file is producing dividends in the form of clues or answers to many hitherto unsolved questions in the early history of Yucatán.

For example, the tribute roll of 1549, the most important source of information for the beginnings of the *encomienda* in Yucatán, lists many pueblos which have been difficult to identify and locate. The accumulated pueblo by pueblo data have made possible positive identification of most of the doubtful entries. In the same way several questions concerning the pre-

conquest cacicazgos and their respective boundaries have been solved. Finally, the documents are yielding more and more information concerning the details of pueblo government and the functions of pueblo officials subsequent to the conquest.

These problems have great importance for the studies of Mr. Roys and Dr. Chamberlain, as well as for the investigations of Mr. Scholes and Miss Adams. In the summer of 1940, Mr. Roys came to Washington for a series of conferences with his colleagues, during which the documentary evidence relating to questions of common interest was thoroughly reviewed. These conferences proved extremely valuable, and satisfactory answers were worked out for many moot points. It was clear, however, that first-hand information, obtainable only in the field, will be required to supplement the documentary data on several questions relating to preconquest political geography, or to make possible more accurate interpretation of such data. For this reason Mr. Roys and Mr. Scholes plan to spend a few weeks in Yucatán during the winter of 1941–42, in order to visit certain key areas, especially in the eastern part of the peninsula.

During the past year, Mr. Scholes has also completed a series of articles on the history of New Mexico in the seventeenth century, which have been published serially in the *New Mexico Historical Review*. These articles are based on source material obtained from foreign archives prior to the time he joined the staff of the Division. During 1941–42 Mr. Scholes will serve as visiting lecturer at the University of New Mexico. The program of research on the history of Yucatán will be carried on as usual, however, except that headquarters for the year will be established in the Southwest instead of in Washington.

Dr. Chamberlain has devoted most of the year to further revision of his manuscript on Montejo and the Spanish conquest of Yucatán, preparatory to publication of this important study, which will be the first in a series of volumes on the colonial history of the province. Mr. Roys has also actively collaborated with Dr. Chamberlain by preparing materials for a survey of Maya institutions and culture on the eve of the conquest, to be incorporated in Dr. Chamberlain's volume.

In Mexico City, Sr. Rubio Mañé has continued his survey of a section of the National Archives known as the *Papeles de Bienes Nacionales*. The great volume of documents in this series, which consists of ecclesiastical archives, has made the survey a longer task than was expected, but when the work is completed, Carnegie Institution will have made a valuable contribution to the work being carried on by the archive, which contains the greatest collection of colonial materials in North America.

9.20.

FRANCE V. SCHOLES, AND R. L. ROYS
History of the Maya Area

YB 41:275–278, 1942

Mr. Scholes spent most of the past year in Albuquerque, New Mexico, with headquarters at the University of New Mexico. For several years the university, which is strategically located in an area which has strong historical and cultural ties with Hispanic America, has stressed Americanist studies, and in 1941 a School of Inter-American Affairs was created to give direction to this program. Mr. Scholes, who had been head of the History Department of the University prior to joining the Division of Historical Research of the Carnegie Institution, was invited to serve as Lecturer in History for the academic year 1941–42 and to give a graduate course in the bibliography, methods, and problems of Spanish colonial history. Instruction in this course was given once a week for two hours throughout the year. Mr. Scholes also served at times as an adviser on problems relating to the general program of inter-American studies.

Research under the History of Yucatán Project was carried on as usual by Mr. Scholes and Miss Adams in offices at the university library. Progress was made in exploiting a large accumulation of archival materials from Spain, Mexico, and Yucatán, especially with reference, to studies being made in collaboration with Mr. Roys, and it is expected that these will be completed, by the end of 1943. It was Mr. Scholes' intention to visit Yucatán between the first and second semesters of the university term, but this plan was abandoned early in December.

In October Dr. Chamberlain was granted leave of absence from the Carnegie Institution to permit him to accept an appointment as Senior Cultural Assistant at the United States Legation in Guatemala City. Consequently his work on the conquest of Yucatán has been temporarily suspended.

The employment of Sr. J. Ignacio Rubio Mañé terminated December 31, 1941. Since 1935 he had been engaged in archival investigations in Mérida and Mexico City. As a result of his researches a vast amount of new documentary material relating to the history of the Yucatán peninsula has been made available. In accordance with an agreement made in 1939 by Mr. Scholes and the officials of the Mexican National Archive, Sr. Rubio Mañé spent the past two years on an inventory of the *Papeles de Bienes Nacionales* section of the Archive, which contains almost 2,000 bundles of ecclesiastical papers of the colonial period, notably

materials for the archdiocese of Mexico City. The inventory, which Sr. Rubio Mañé completed in December, is now available for use by all students of the colonial history of Mexico. Carnegie Institution wishes to take this opportunity to express its appreciation to the Director and other officials of the Mexican Archive for courtesies extended to Sr. Rubio Mañé and other members of the Division staff during the past few years, and to record its thanks to Sr. Rubio Mañé for his loyal service in connection with the History of Yucatán Project.

Much of the past year has been spent by Mr. Roys in the completion of a survey of the institutions and culture of the Yucatecan Maya during the period immediately preceding the Spanish conquest. New documentary sources discovered and made available by Mr. Scholes and a closer study of other Maya documents have been found to supplement and cast increasing new light on the published reports of the earlier Spanish writers.

Evidence is accumulating regarding a ruling class in Yucatán, apparently composed of families claiming to be descended from former Mexican invaders. This group not only controlled the political organization, but also monopolized the priesthood. Since a knowledge of hieroglyphic writing was confined to the priests and some other members of the nobility, we have an anomalous situation, in which the principal key to Maya science was in the hands of a class of allegedly foreign origin.

In contrast with conditions reported as widely prevalent in the highlands of Mexico, in at least four, and probably more, of the native-states of Yucatán we find what appears to have been a genuine territorial government, in which the head of the principal town not only confirmed and controlled the heads of the other towns of his area, but also frequently put his own appointees into such positions. Although the local head acted in a judicial capacity in his town, he was obliged to refer certain serious cases to the territorial ruler. Finally, the latter kept track of the boundaries of his state, inspecting them personally from time to time to prevent trespass on the part of aggressive neighbors. Other states, however, had no single ruler, but consisted of allied towns or groups of towns, in which the local head was likely to belong to the most prominent lineage group of the region.

A third point of interest emphasized by the more recently discovered source material is the extensive trade which existed between Tabasco, Yucatán, and Hibueras-Honduras, the last being the northern coast of what are now Guatemala and Honduras. Although the languages of the Maya stock largely spoken in all three areas were very similar, scattered Mexican speaking colonies were also found in Tabasco and

Honduras which were especially active in trade. Notwithstanding such differences in language and culture as existed, commercial relations appear to have been so close that the three countries could well be considered a single economic area. Campeche people had trading posts on the Ulúa River in Honduras, and the Chontal-speaking Acaláns of southwestern Yucatán occupied an entire quarter at Nito, a famous commercial center near the mouth of the Río Dulce. Generally speaking, the Yucatecan Maya exported cotton cloth, salt, honey, and slaves to their neighbors on either side and received in return metal objects, cacao, feathers, precious stones, and other luxuries. That these commercial relations created a certain community of interest is shown by the evidence of military alliances, which appear to have existed between some of the Yucatecan towns and those near the coasts of Tabasco and Honduras.

Many of the articles imported into Yucatán by way of Tabasco and Hibueras came originally from the inland neighbors of the last two. Early in 1942 Mr. Roys went to Guatemala, where a study was made of the region in which Nito was said to have been situated, and of what appear to have been two of the most important natural trade routes into the interior. One was the Motagua River, on which merchandise could be transported by canoe to the foot of the rapids not far below Gualan. The other was the water route formed by the Río Dulce, Lake Izabal, and the Río Polochic. Passenger launches now operate on the latter from the sea to Panzos, beyond which the river is navigable for canoes as far as La Tinta. Cacao plantations were reported on both the Motagua and Polochic by the first Spanish explorers; and the maize land in the valley of the Polochic is still considered to be especially good. The navigable part of the Motagua furnished access to the Chortí country, and on the Polochic canoe traffic reached the Pokonchí area and probably also the Kekchí. Regarding the Chortí, it is of interest to note that recent ethnological investigations indicate that their culture resembles that of Yucatán more than it does that of the western highlands of Guatemala [Chapter 9.19].

Mr. Roys, in company with J.E.S. Thompson, visited a number of archaeological sites along the Pacific slope of Guatemala formerly occupied by Mexican speaking immigrants. Many of these people were still living in various parts of the region at the time of the Spanish conquest, and a colony of them existed in central Guatemala. The language, known as Pipil, is still spoken in Salvador, but seems to have disappeared in Guatemala within recent years. Their sculpture has significance for the history of Yucatán because of its resemblance to that of the Mexican period in the latter country. In both cases, as Mr. Thompson has recently

shown, various features of the culture reflected by the sculpture appear to have been brought from a common source in southern Veracruz.

Such analogies seem less noticeable in the western highlands of Guatemala, but here, as in Yucatán, native historical legends indicate that the ruling class believed itself to be descended from people who had come from the Gulf Coast of Mexico. A considerable number of archaeological sites were visited in this region, particular attention being given to those which were occupied at the time of the conquest, among them Utatlán, Chuitinamit on Lake Atitlán, Iximché, Zaculeu, and Rabinal. The ruins of Rabinal are the best preserved, and its remains are imposing. Situated on a high, barren ridge above a large, fertile valley and well protected from attack by its location, the site consists of eight ceremonial plazas, two containing excellently preserved ballcourts. One of the latter is set into the upper floor of a plaza which was laid out on two different levels. In each complex the most prominent buildings are a central temple and a long, narrow house at one end. Both are set on substructures and have walls of rough, flat stones laid in mud mortar but covered with a thick coat of lime plaster. The dimensions and general appearance of these buildings suggest that they had borne flat, beam-supported roofs. Although a number of house sites were observed on the slopes adjoining the plazas, the location is such that it seems unlikely that a large population resided permanently at the site.

At Salama, a short distance east of Rabinal, there was formerly a group of Mexican-speaking Indians, who have been completely absorbed by the local Ladin population. Two days were spent in questioning a number of the older people, who remembered this group, and a few of their Hispanicized descendants. It is of interest to note that they were apparently little influenced by their Rabinal-Quiché neighbors. Although the latter, especially those of the nearby town of San Miguel Chicaj, have always visited the Salama market regularly, it is generally agreed that the local Indians had little to do with them.

Returning to the United States through Mexico, Mr. Roys visited Teotihuacán and Tula, the latter being of especial interest to the student of Yucatán because of the remarkable resemblance of the sculptures recently uncovered there to those of the Mexican period at Chichén Itzá.

9.21.

FRANCE V. SCHOLES, AND
RALPH L. ROYS

History of the Maya Area

YB 42:181-183, 1943

During the past year Mr. Scholes has devoted a large part of his time to preparation of chapters for the volume on the history of the cacicazgo of Acalán-Tixchel to the early seventeenth century. In the spring of 1943 Mr. Roys, who is collaborating in this work, spent four weeks in Albuquerque with Mr. Scholes, during which time various problems connected with preparation of the manuscript were ironed out. The volume will be ready for the press not later than the autumn of 1943.

From time to time during the past year documentary materials relating to other topics have been studied and extracted. Papers based on these sources will eventually be prepared for publication, but certain points should be noted at this time because of their obvious interest for specialists in Maya studies.

One series of documents contains data concerning native ruling families in the Chancénote area, or cacicazgo of Tazees. We learn that a certain Ahau Chan was lord of eight towns in this region prior to the conquest and for some years after the arrival of the Spaniards. He was succeeded by his son, Don Juan Chan, and the latter, in turn, by Don Juan Chan the Younger who was cacique and governor of Chancénote for almost 30 years during the latter part of the sixteenth century and the early years of the seventeenth. Chan the Younger married Doña Isabel Tzeh, daughter of Don Fernando Tzeh, who was natural lord of the other towns in the Chancénote area and "descended from the ancient lords of Mayapán." Thus we have record of other Maya families which, like the Xiu, the Pech, and the ruling house of Acalán-Tixchel, were able to retain a measure of power after the conquest, and we learn of another line of rulers which traced its ancestry back to chieftains resident in Mayapán prior to the disruption of the confederacy and the abandonment of the city. The name *Tzeh* suggests that the cacicazgo of Tazees derived its name from this family.

During his term of office as governor of Chancénote, Don Juan Chan the Younger received various commissions from the governors of Yucatán and performed numerous services which contributed to the advancement of the missionary program. He took an active part in the resettlement of fugitive and heathen Indians in the eastern and coastal areas of the province, and on one occasion collaborated with Dr. Pedro

Sánchez de Aguilar, cura of Chancénote, in the extirpation of idolatry. The Chan papers are supplemented by the probanzas, or proofs of services, of Sánchez de Aguilar, which also mention the idolatry incident. Although the two sets of papers do not contain, much detail concerning this episode, it is recorded in one place that during the affair, which occurred about 1604, Sánchez de Aguilar destroyed more than 20 idols and "three books of heathenism and idolatry written on the bark of trees with the figures of devils which they worshipped." So it appears that Sánchez de Aguilar must share with Landa and others responsibility for the destruction of many of the ancient hieroglyphic writings of the Maya. In later years Sánchez de Aguilar wrote the well known treatise *Informe contra idolorum cultores del obispado de Yucatán*, thus emulating in another respect the example of Bishop Landa, author of the famous *Relación de las cosas de Yucatán*.

Another series of documents describes the serious disorders which occurred in the pueblo of Sahcabchen, southeast of Champotón, and in adjacent areas in the 1660s and 1670s. Although the major causes of unrest were abuses committed by provincial authorities and raids by English ships along the Gulf Coast, we are also told that one source of trouble was the activity of certain Indians, including a native priest, who went about preaching that according to prophecies the time had come for the Indians to abandon their settlements and take refuge in the bush, and forest regions of the interior. Interpretation of these data will require considerable study, for the information is by no means explicit. The testimony may refer to one of the year prophecies, but it seems more likely that a k'atun prophecy, such as we find described in the books of Chilam Balam, is indicated. These documents and the idolatry episode mentioned, in the preceding paragraph serve to illustrate the survival of Maya religion and the influence of the native priesthood.

From the Sahcabchen papers and the documents which comprise part of the source for the Acalán-Tixchel volume we are able to glean interesting data concerning settlements of fugitive and apostate Indians in the central and southern part of the peninsula in the seventeenth century. Some of these settlements were located in the Matamoros-Cilvituk-Chan Laguna region, and chapter 9 of the Acalán-Tixchel volume will deal with missionary enterprise in this area from 1604 to 1615.

Perhaps most interesting, in view of the growing interest in the archaeology of southern and southwestern Campeche, are references to the site called Bolonpetén. Maler was the first person in modern times to mention this place. In his *Explorations in the Department of Petén, Guatemala, and Adjacent Regions* (1910:146), he described his journey through central Yucatán, and

in connection with his account of the Cilvituk ruins he wrote:

Incidentally . . . about the middle of the nineteenth century, many free Maya families still dwelt in the precincts of Chanlaguna and Cilvituk. Their principal settlement is said to have been at Bolonpetén, some two leagues west of Chanlaguna. This is a swampy region containing islands, hence the name, "Nine Islands." Many pottery sherds are said still to lie around there, but the people themselves have totally disappeared.

Andrews (1943:37) gives additional information concerning this swampy area. He states that it is called *Isla Pac*, which "means in Spanish-Maya 'island with walls,' or 'island with ruins.'" Continuing the discussion, he notes that the ruins at Isla Cilvituk and Las Ruinas north of Isla Pac are "among the last products of indigenous architecture," and states the belief that the ruins in Isla Pac, or Bolonpetén, if found, "might well bridge the gap between our knowledge of late pre-Spanish archaeology and early historical information. Or they might prove that the two overlap."

From the documentary sources we learn certain facts concerning this place. A document of 1605 refers to it as an old site (*asiento antiguo*). The exact meaning of this phrase is not clear, but the context implies that the place was not occupied in 1605. The Sahcabchen papers describe it as a place "surrounded by nine small islands (*islotes*)," from which it was possible to go by canoe to Popolá, located on or near the lower course of the Mamantel River. It was inhabited at this time (1670) and its cacique was one of the leaders of the malcontent Indians of the interior. We have no positive record that the place was occupied at the time of the conquest, but there is some evidence that when the Spaniards arrived some of the Cehache settlements may have extended as far north as the Cilvituk region. Data on this point will be presented in the Acalán-Tixchel volume.

Dr. Chamberlain, who is on leave of absence, continued to serve as Senior Cultural Assistant of the United States Embassy in Guatemala City.

9.22.

FRANCE V. SCHOLES, RALPH L. ROYS,
AND ELEANOR B. ADAMS*History of the Maya Area*

YB 43:178–184, 1944

During the past year Mr. Scholes and Mr. Roys have devoted a large part of their time to the volume on Acalán-Tixchel. Mr. Roys was also occupied with details of proofreading and indexing his recently issued work entitled *The Indian Background of Colonial Yucatán* (1943; 1972).

In the course of the year various series of documents relating to the colonial history of Yucatán have been extracted in preparation for other studies in progress. Two groups of these papers deserve notice at this time.

Of special interest to the historian and the ethnologist is the probanza of services of Padre Antonio de Arroyo, a native of Yucatán, who served for seven years (ca. 1586–93) as cura and vicar of Chancénote, and later (ca. 1593–96) in a similar capacity at Peto. From 1597 to 1603 he officiated as a cura in the cathedral of Mérida, and in 1598 was appointed visitor general for ecclesiastical affairs in Tabasco by the bishop, Fray Juan Izquierdo. In 1603 he also had charge of the parishes of Santiago and Santa Ana in Mérida.¹

In 1592, while serving at Chancénote, Arroyo was authorized by the episcopal authorities (Bishop Izquierdo and his vicar general, Br. Pablo de León) to make an investigation of idolatry in the pueblos of the Chancénote area, where it was reported that many Christian Indians still practiced the “rites, ceremonies, and sacrifices of idolatry as in ancient times.” He was instructed to find out who these Indians were and the number of idols they possessed, and he was particularly charged to discover who served as *ah kins*, or native priests, “and the artisans who make the idols . . . and the [persons] who serve as *chaques* [*chacs*].” If possible, he was also to learn where the Indians kept their “books of idolatry” and where the idolatrous ceremonies were held. It should be noted, however, that his instructions expressly stated that he should proceed “with piety and mercy,” imposing no pecuniary penalties and assuring guilty parties that if they would be good Christians in future a just and mild penance would be granted. In the case of the native priests and the artisans who made the idols, the bishop reserved to himself the right to pronounce sentence.

The probanza indicates that numerous procesos were formulated as the result of these orders, and there is evidence that many of them were left on file, prob-

ably in the episcopal archive, a decade later. Unfortunately copies of these procesos were not incorporated in the probanza proceedings, and we assume that they are now lost. But the probanza records certain details which illustrate Arroyo’s activities and the prevalence of idolatry in certain towns of the Chancénote district.

In Nabalam, where an investigation was made with the aid of Don Marcos Copul, cacique and natural lord of the pueblo, a considerable number of “*hechiceros, sortilegos y idolatras*” were punished. In the pueblo of Tixholop the cacique, Juan Tzama, was found guilty of idolatry, and we are told that the village of Tixmucul was “almost lost” because of the widespread practice of native religion there. Two native priests of Tixmucul are mentioned by name (Pedro Cocom and Juan Hun), and the testimony also states that Arroyo went in person to the milpas of the town; where he removed many clay idols, “which [the Indians] worshiped as gods.”

In 1595 Arroyo made a similar investigation in the pueblos of the Peto district. Again we have references to the large number of procesos that were formulated and sent to Mérida, but, as in the case of the proceedings at Nabalam, Tixholop, and Tixmucul, the actual documents are missing. It would appear, however, that in the Peto area idolatry was even more widespread than in the northeast.

Don Melchor Xiu, governor and cacique of Calamud (Calotmul), who later gave testimony as a witness for Arroyo, stated that in his own pueblo “almost all the citizens [*vecinos*] were public and secret idolaters.” Here the priest punished many “*hechiceros*,” both men and women, and removed more than 600 idols. The probanza also tells about a certain Juan Puc, “was bishop . . . who, as chief of the said idolatry, was respected and obeyed.” This “bishop” made use of a miter, described as being made of a manta painted yellow, a cope (*copa*), hyssop, “and other trappings of a pontiff and bishop,” and he also had certain “books of idolatry.” He was assisted by four other native priests, Juan Huh, Juan Na, Diego Chan, and Juan Mo, “who in the ministry of idolatry had divided the said pueblo of Calamud into barrios (*parcialidades*) and *cofradías*.” From all these leaders Arroyo took away numerous “idols, trappings, and offerings of copal incense, *cuzcas*, *piedras*, cacao, and clothing which had been offered to the idols.”

Don Antonio Pot, cacique and governor of Dzitnop, and Don Gaspar Chan, cacique and governor of Chunhuhub, were also guilty of idolatry and were publicly punished along with many other Indians of their towns. Many other natives confessed in secret and handed over their idols.

It is evident that although a large number of Indians in the Chancénote and Peto areas were publicly

chastised, the punishments were not severe. The bishop's instructions, as noted above, forbade the use of stern measures, and the testimony recorded in the *probanza* tells how Arroyo, by persuasion and mildness, induced the Indians to abandon their idolatrous practices. This is in sharp contrast with the record of Landa's investigation of 1562. It is true, of course, that we have no evidence of human sacrifice in these later documents, so that there was not the same need for drastic measures. Nevertheless, it seems clear that the bishop and his agent, Arroyo, consciously adopted a policy of persuasion and mild punishments, and this may indicate a new tactic in dealing with Indians who had reverted to their old religion and ceremonial practices.

The actual *procesos* in these idolatry cases of 1592 and recorded a considerable amount of data concerning Maya religion and the manner in which it was carried on in post-conquest times, but the documents are apparently irretrievably lost. Above all, it is unfortunate that the "books of idolatry written in figures and characters" that were taken from the Indians, and were still preserved in Mérida in 1603 are now missing.

During the year Miss Adams has been making a study of numerous documents relating to French corsairs in the Yucatán area. The activities of these corsairs on the coasts of Yucatán and Campeche during the sixteenth century form an integral part of the whole history of the operations of French and English privateers and pirates in the Caribbean in that period. Although the commercial importance of this province and its principal port, San Francisco de Campeche, was comparatively small, their location, in close proximity to Cuba, Florida, and the New Spain port of San Juan de Ulúa, made the possibility of any serious foreign encroachments there a potentially great danger to Spanish supremacy in the whole region. Moreover, the New Spain fleet passed close to these coasts, and if the Mainland fleet was to touch at Havana, it also had to pass near the Yucatán peninsula. The presence of corsairs along the Yucatecan shore was also a menace to all local coastal trade from New Spain to the Río de la Hacha, and to the trade carried on with the islands.

Although French adventurers, especially Norman sailors, were the first to challenge Castilian monopoly in the Caribbean, the story of the most important period of their piratical activities, which began in the 1530s and continued into the 1590s, has been told only in part. During his researches in the Archive of the Indies at Seville and the Archivo General de la Nación in Mexico City, Dr. Scholes photographed a number of documents dealing with French attacks on Yucatán and Campeche which contain a large amount of new material concerning French depredations there and also supply hitherto unknown details illustrating the cooperation between French and English corsairs in

their voyages to the Guinea coast and thence to the Spanish Main, during which they engaged both in illicit trade and in outright piracy. The most extensive of these documents make an interesting addition to the known accounts of Francis Drake's voyage to the Indies of 1571, when he apparently joined with the French for a time in harassing the Spaniards at the Chagres River. These papers, which consist of the trials by the Tribunal of the Holy Office in Mexico City of a number of French corsairs captured at Cozumel in 1571, supplement the accounts given in Wright (1932) of the operations of the English and French on the coast of Tierra Firme in that year.

The first time the French appeared in Yucatán was in the port of Campeche in 1559 after attacks on Santa Marta, Cartagena, and Puerto de Caballos. Although the details are not clear, it seems that they were driven back to Yucatán by a storm and voluntarily gave themselves up, stating that they had received news of the peace between France and Spain. Some of them were sent to the viceroy in Mexico City, and we do not know what was done about this group. The chief account we have of this incident is in the Inquisition trial of 12 who remained in Yucatán. The Tribunal in Mexico City had not then been created, and proceedings were instituted by Fray Francisco Navarro, guardian of the Mérida convent and commissary general of Yucatán, as ecclesiastical judge ordinary in accordance with the papal bulls which allowed the Franciscan prelates to exercise such jurisdiction where there was no bishop. As in all such instances, the main interest of the ecclesiastical authorities was in the heretical beliefs of the culprits, and their crimes of robbery and arson were investigated merely as proof of their pernicious lack of orthodoxy. Because of this attitude, the records of this trial and of those of other Frenchmen tried in later years before the Tribunal in Mexico City are tantalizingly difficult to use for our purposes. No attempt was made to compile a complete account of their piracies. The examinations of culprits and witnesses were all based on the desire to find out whether the accused belonged to the followers of Martin Luther (to the Spaniard of that time the term "Lutheran" included all Protestants), whether they had shown in word or deed any disrespect for the teachings of the Holy Mother Church, and whether they had committed sacrileges.

In Yucatán in the early months of 1560 fear and hatred of the foreign heretics had not yet reached the heights to which they were to mount within a very short time. Local citizens were appointed to defend the Frenchmen and seem to have taken fairly seriously their obligation to present a good case for their charges, aided in this by prudent professions of penitence for their errors on the part of the accused. The sentence

imposed public penance, varying according to the degree of guilt, and only one man was condemned to corporal punishment. In addition to public penance, he was sentenced to 100 lashes and one year of service in the Mérida cathedral. Whether any of these men were able eventually to return to France is a question.

The names of some appear on a list in the Cathedral at Mexico City, where they are described as heretical pirates reconciled in the Year 1560. In August, 1561 the Spaniards were greatly alarmed by an attack on Campeche by three ships from Dieppe. The inhabitants of the villa fled to the bush, and some of the French went ashore, took everything of value they could lay their hands on, set fire to the town, and carried off five women. About 15 citizens and an equal number of soldiers from Florida, who had arrived opportunely the day before, went out in pursuit of the French and were able to kill some and take five prisoners. The rest fled to their ships in a small boat, leaving their booty behind. The prisoners were hanged without delay, and warnings were dispatched to Veracruz.

Although no other major incidents occurred on the coasts of the peninsula until 1571, from 1561 on the Spanish residents were greatly concerned about the danger from such attacks. Throughout the rest of the century representations were made to the Crown at frequent intervals, urging the need of fortifying the more vulnerable points, especially the villa of Campeche, and of providing arms and munitions for defense. It was not until the early seventeenth century, however, that the fortifications at Campeche were begun, although various defense measures of lesser importance were adopted from time to time. Such information as we have for the period 1562–70 comes from widely scattered sources; these accounts are usually brief and unsatisfactory and often give no dates or exact detail.

In 1571, however, the citizens of Yucatán again had the satisfaction of capturing some of the Norman heretics who had kept them so uneasy about their vulnerable coast line. French corsairs appeared at Cozumel during Holy Week and seized a vessel which was on its way to Honduras with a cargo of mantas, wax, and honey.

A few days later some of the French landed at Sisal and went inland as far as Hunacama. A force sent from Mérida when the alarm was given was too late to overtake them, and shortly thereafter Governor Céspedes sent three boats to search for them. During the following weeks the corsairs were reported from various places, and in late May they turned up at Conil, where they seized a vessel from Trujillo, Honduras, with a cargo of wine, oil, and other merchandise. Some days later about 20 of the pirates, were surprised at Ecab by a force sent out from Valladolid. The French ships sailed away, and the men who had been

left behind fled along the coast to Pole. Meanwhile a second force was sent from Mérida to aid the one from Valladolid, but by the time they reached Pole the Frenchmen had crossed to Cozumel, where the Spaniards finally overpowered them. Nine or 10 were killed in the battle, and 10 were taken prisoner. Four of the latter were tried and hanged in Mérida by the civil authorities, but we have no record of the proceedings. The other six remained in Yucatán until they were sent to Mexico City in 1572 to the newly established Tribunal of the Holy Office. The mass of confusing testimony in the cases against these men touches on their exploits from the time they sailed from Honfleur until they were deserted by their companions at Ecab. Their confessions show that all were natives of Normandy and that some had taken part in the Civil Wars in France on the Huguenot side. So much prejudice and vengeful feeling enters into the testimony against them, and their own admissions are so colored by their efforts to make a favorable enough impression upon the Inquisitor to save their skins if nothing more, that it is difficult, to determine just what can be relied upon as fact. The study of these papers is still in its preliminary stages, but after comparing them with the documents published by Miss Wright and her valuable introduction to them, it is already clear that these Frenchmen belonged to the same group who were harassing the coast of Tierra Firme independently and with Drake in 1571, for many names and events correspond.

French corsairs continued to turn up in the vicinity of Yucatán until the early 1590s, for besides preying on local shipping, they found the stretches of sparsely inhabited coast useful when it was necessary for them to put in for repairs or to obtain food supplies from the Indians. Most of the information we have about their activities after 1571 is of the same sketchy and unsatisfactory nature as that for 1562–70, but there is no doubt that the necessity for being constantly on the alert against them was a continual problem for the residents of Yucatán. By the end of the century the French incursions in the Yucatán area had practically ceased, and the great period of the English and Dutch buccaneers was dawning.

In addition to his study of the pre-Spanish history of the Acalán, Mr. Roys has investigated the implications of this material for the history of northern Yucatán and Tabasco. The Acalán ruling class was a mobile group, presumably from Tabasco originally, and the bearers of a more or less modified Mexican culture. During the course of the narrative that has come down to us, they moved first from northeastern Yucatán to the Usumacinta River, and finally to the Candelaria basin in southwestern Campeche, where they carried on an extensive commerce reaching from the Gulf of Mexico to the Caribbean Sea.

On the basis of the native historical legends, the observations of the first Spaniards, and the result of modern archaeological investigations, a tentative effort has been made to trace the effects of an intrusive Mexican culture in the northeast and along the Caribbean coast of the Yucatán peninsula, as well as in Tabasco.

Though the influence of this culture is evident in all three regions, it appears to have been strongest in Tabasco, where, even within the Chontal area, a number of Nahuatl-speaking towns existed. In Acalán it lessened somewhat; and in northern Yucatán, although its effects are evident, it appears in a much more attenuated form, particularly during the period immediately preceding the Spanish conquest.

Acalán was closely associated with Tabasco, where the same Chontal language was predominant. Comparatively little information has come down to us concerning the latter area until very recently, but with the aid of a number of early Spanish documents brought to light by Dr. Scholes, it has been possible to draw a more intelligible picture of this rich and important country, as it was at the time of the Spanish conquest. In addition to our previous general knowledge of the visits of merchants from Mexico, we are informed of their warehouses in certain Chontal towns and of the retail distribution of goods from these depots to the consumer. More detailed information is now available concerning the activities of the Tabasco traders, who ranged from southern Veracruz to the Ulúa River in Honduras, and of the Yucatecan Maya towns in various parts of the peninsula, whose merchants had also established factories in the latter area. The historical importance of Tabasco has become increasingly apparent with the growing belief among archaeologists that the Mexican invaders who so strongly influenced a great part of the Maya area passed largely by way of this region.

It has long been known that nearly all the Chontal-speaking towns in Tabasco have been designated only by Mexican names ever since the conquest; but it is surprising that the documents give only Nahuatl personal names for the inhabitants of these towns. In the case of converts this often became a surname, and was preceded by a Christian name. In the Acalán records, however, the place names are all Chontal, but the personal names are a mixture of Chontal and Mexican, the latter often in a corrupted form. Some of these cast new light on a number of Yucatecan Maya names of doubtful origin. A tentative analysis of an early Tixchel list of tributaries will be presented, as an appendix to the forthcoming volume on Acalán-Tixchel.

As yet this list is the earliest extensive compilation of native names from the lowland Maya area that has come down to us. The ethnological and sociologi-

cal implications have been studied, and it offers certain puzzling features. Chief among these is the apparent evidence of a much stronger tendency toward matrilineal residence than we should expect in this region. Some possible explanations have been suggested, but these are not conclusive, and the attempt has been principally to formulate the problem involved.

NOTES

1. The probanza is in Archivo General de Indias, Mexico, legajo 294.

9.23.

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History of the Maya Area

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During the past year additional manuscript sources have been examined and extracted in preparation for studies on the colonial history of Yucatán. A brief review of certain data of interest to workers in other branches of Maya research will be made at this time.

The survival of native religion in postconquest times, concerning which other materials have been summarized in previous reports, is further illustrated by documents relating to the visita of Yucatán made in 1583 by Dr. Diego García de Palacio of the Audiencia of Mexico. In a letter to the Crown dated at the Villa de Valladolid December 26, 1583 (AGI México, legajo 70), Palacio stated that the practice of idolatry was widespread throughout the entire Valladolid district. At Tzamá and Polé on the East Coast and also in the towns of San Miguel and Santa Maria on Cozumel Island, all the Indians "without exception" were said to be idolaters. At Tzamá there had been a "temple of idols" where the Indians gathered to celebrate "festivals, dances, and other ceremonies as in ancient times." We surmise that this place was simply the *popolna*, defined in the Motul dictionary as the "casa de comunidad," where certain dances were taught. In such case, the Indians no doubt had regular temples in the bush, as was true on Cozumel Island (Roys, Scholes, and Adams 1940:27). This "temple" at Tzama had now

been burned, presumably by order of Palacio, and all the more than 500 idols had been smashed and cast into the sea.

Palacio goes on to state that the common people guilty of idolatry had been given mild punishments, but the caciques, native priests, "and the *maestros* who made the statues (*estatuas*) and figures" had been arrested and would receive more severe punishment; "because in view of the boldness and excess with which they have lived in this sin, it is necessary, in order that henceforth mercy should not give them reason for greater obstinacy, as apparently has been the case up to the present time. The reference to *maestros* (masters, teachers, artisans) who made the idols is of some interest. The word *estatuas* usually seems to mean wooden idols, and Landa gives an account of the making of such figures. Palacio's letter and a supplementary report refer, however, only to clay idols, so in this case the *estatuas* were apparently of this kind.

The prevalence of idolatry on the east coast and Cozumel is not surprising, since the towns of this region were located at some distance from the nearest mission centers. Palacio's letter states, however, that in towns situated only one, two, or three leagues from the Villa de Valladolid similar conditions prevailed. On one journey outside the villa he had collected 1,160 idols, in addition to many others that were destroyed, and had punished more than 600 idolaters. He had also banished from this area certain "dogmatizers, priests, and *maestros*" of these idolaters.

A supplementary report (Valladolid, 12 diciembre, 1583; in AGI Mexico, leg. 70) describes some of these 1,166 "*quiçines*," or idols, that had been gathered up. Some were said to be as large as children 3, 4, and 5 years old. Others were "figures of men with emblems (*divisas*) of animals on their heads, and others with miters and tiaras and other headdresses of men and women according to ancient custom, which the said Indians were accustomed to wear . . . in their sacrifices, festivals and rites when they performed their idolatry."

Figures of men with "emblems of animals" on their heads are familiar in the Maya codices and on the monuments. Some of the animal headdresses have been thought to be carved wooden helmets. Clay figures of this kind were probably gods, including deified men. The "miters" suggest Mexican tradition, and figures with such characteristics may have represented deified lineage ancestors, old invaders (?). The significance of "tiaras" in the case of gods is not clear. Gem studded-bands seem to be found on both gods and warlike men at Chichén Itzá: on caryatids, "chacmools," and relief figures. The first Spaniards found gold headbands in chests in the temples of northern Yucatán and obtained others in Tabasco. We are in-

clined to associate them principally with deified heroes or lineage ancestors, but they may have a wider scope.

The report describing these idols also mentions figures of "*leones*, *tigres*," and dogs, and "temples (*cues*) of different plans and forms." The pumas and jaguars of architectural sculptures evidently represent the military orders, but here we presumably have actual gods. The "*leones*" may have represented the war god, *Cit-chac-coh* ("father-red-puma"). The Book of Chilam Balam of Chumayel mentions a *Chac-bolay-balam* (*chac-bolay* means "*tigre bermejo y bravo*") and a *Chac-bolay* also figures in the Tizimín manuscript. We find no mention of dog gods in the colonial literature, Maya or Spanish. Figures of dogs are familiar, however, in the codices, and in the Dresden 7a, a dog appears in a long row of deities. Dogs were also a favorite sacrifice, and Landa tells of offerings of clay dogs with bread on their backs. The figures mentioned in this 1583 report may have been something like votive offerings, if they were not idols of a dog god.

Despite the punitive measures imposed by Dr. Palacio, idolatry continued to exist in the Valladolid area and other parts of the province. A letter of Bishop Vázquez de Mercado dated May 2, 1606 (AGI México, leg. 72) records that "Indian idolaters were daily being discovered in various towns of this diocese." During a visitation made by the bishop in the Valladolid district "there were discovered and punished more than 80 Indians who, in gangs (*cuadrillas*), assembled in different pueblos to perform the said idolatries." Moreover, a benefited priest in that area had recently sent a report of 56 other idolaters whom he had found in the towns of his benefice. They had clay idols "*de mallsimas figuras . . . que a unos llamaban Dios Padre, a otros Dios Hijo y a otros Dios Espiritu Santo y Santa Maria y a otros muchos nombres de santos, y santas como a ellos les parece, teniendo los dichos sus sacerdotes que hacian las ceremonias y sahumerios cuando todos se juntaban a idolatrar.*"

This reference to clay idols called God the Father, God the Son, God the Holy Spirit, Holy Mary, and other names of saints is reminiscent of a report by Francisco Hernández in 1545 (Las Casas 1909; Saville 1921). Hernández reported that God the Father was *Içona* (*Itzamná*); the Son was *Bacab*, son of a virgin named *Chibirias* (*Ix-chebel-yax*, according to Seler); the Holy Spirit was *Ekchuuah* (Tozzer 1941:310). Tozzer also discusses a report of 1913 by Bartolomé del Granado Baeza which records saint names for three of the *Pauahtuns*. The bishop's letter of 1606 indicates that the naming of certain gods by the names of saints started early, and it continues to the present day (Gann 1918:46-47). Deities with saint names appear, however, to have retained their pagan functions and

characteristics. The bishop, of course, was well advised in condemning the practice.

The bishop's letter of 1606 was written in response to an inquiry from the Audiencia of Mexico, which in turn was prompted by a *royal cédula* of April 24, 1605, asking for information concerning the practice of idolatry in Yucatán "and why it is more prevalent in that province than in others." The bishop stated that it was not because of lack of instruction in the elements of Christian faith and doctrine, for he had personally examined some of the idolaters and they had given adequate answers to all questions of faith. It was his opinion that there were two major causes for the continued practice of the native religion. The first was the mild punishment that had been imposed, even in the case of the caciques and native priests. It is known, of course, that Landa used stern measures during the investigation of 1562. Although the latter investigation put an end to the practice of human sacrifice, the severe punishments and torture employed by Landa not only caused serious unrest in Yucatán, but also aroused unfavorable criticism in high Spanish quarters. Consequently, in later years the clergy tried another tactic, employing public or private admonitions or some form of mild punishment in dealing with the idolaters. As already noted, Dr. Palacio proposed to deal more harshly with the caciques and native priests than with ordinary offenders, but in general the local authorities apparently tried to cope with the situation without resort to stern measures. But this method had failed, for, as the bishop said, Indians who had been punished on other occasions had continued their idolatrous practices, "the cause of which, I understand, is the mild punishment they have received for this great offense against God." "It appears to me therefore that it would be suitable for Your Majesty to order . . . that the leaders and priests, especially those guilty of second offenses, should be given the most severe penalty."

The second cause noted by the bishop was the lack of compact Indian settlements, "because in all this diocese there is no well formed town; on the contrary, each household lives by itself scattered among the bush in such a way that a town of 100 citizens may occupy a district of half a league because of the scattering of the houses." This statement probably exaggerated the situation, but it indicates, nevertheless, that the policy of congregating the Indians into compact towns instituted by Tomas López in 1552 had not been effectively carried out, or that during the later decades of the sixteenth century there had been considerable laxity in regard to town organization and control. To remedy the situation the bishop recommended that effective measures should be taken to reassemble the Indians "in streets and squares surrounding

the church, so that in this way there would not be such freedom for their debaucheries and other sins, and so that they will be better indoctrinated."

The *definitorio* (governing council) of the Franciscans also made a statement on the subject which supported the bishop's views. The Franciscans, however, added another point of vital importance: the fact that the Indians of settled towns in northern Yucatán maintained contacts with the "gentiles" of the interior, with whom they carried on trade, selling them such articles as salt, knives, axes, machetes, and similar goods. As a result of this trade and commerce they learn the idolatry and ancient rites which they may have forgotten as a result of evangelical teaching." The Franciscans might also have added that the bush country of the interior was also a convenient place of refuge for groups of Indians who, for one reason or another, wished to escape Spanish control, civil or religious. Throughout the entire colonial period the Spanish authorities sought to bring the interior under effective control, but in the main they never achieved more than temporary success. The bush and forests of central and southern Yucatán were always a haven for Indians who wished to escape oppression, or to live according to the old native customs.

During the past year Mr. Roys has continued and nearly completed the transcription of a Maya manuscript known as the *Ritual of the Bacabs*. This document of 237 pages consists mostly of medical incantations, although some directions for treatment are also included. The last page is written, on the back of a printed Indulgence dated in 1779. Although much of the manuscript is not difficult to read, on many pages there are water stains or the writing has faded, so it has been necessary to make a preliminary study of the more legible parts in order to complete the transcription.

In spite of the late date of the manuscript, these incantations are practically free from European influence. With the exception of an occasional "Amen" and very rare mention of the Spanish *Dios*, no reference to the Christian religion has yet been found. "The four gods, the four Bacabs," who were prominent deities, are often invoked, and it is from these that the manuscript was given its title by its discoverer, William Gates. The Pauahtuns, believed to be wind gods, are barely mentioned. As might be expected, the Maya goddess of medicine also plays a prominent part; but she is usually cited in a twofold phase, as *Chacal* ("the red") *Ix Chel*, and *Sacal* ("the white") *Ix Chel*. Only once have we noted an *Ekel* ("black") or a *Kanal* ("yellow") *Ix Chel*. The distinction may indicate a reference to the four world quarters, to which these colors were ascribed.

A number of other deities are invoked or cited. We find the 13 sky gods known as *Oxlahun-ti-ku*, and the

nine deities of the underworld, *Bolon-ti-ku*, which are occasionally mentioned in the Books of Chilam Balam, but the others appear only rarely in colonial Maya literature.

Several times there is an invocation to the little-known *Colop-u-uich-ku*. The name strongly suggests a sun god, and in the Vienna dictionary he is described as "the principal god . . . from whom they said all things proceeded and who was incorporeal, hence they made no image of him." We also find a mention of *Kin-ich-kak-mo* ("sun-eyed fire parrot"), a more familiar deity associated with the sun.

The sky god *Itzamná*, usually considered the head of the Maya pantheon, also appears in these incantations. We read of "the home of the father (or lord?) of the sun, *Chac Ahau Itzamná*." This name could be translated as "great (or red?) lord *Itzamná*." There is an obscure reference to "the thigh of *Hun Itzamná*," and a *Kanal* ("yellow") *Itzamná* is also cited. Associated with *Itzamná* are the iguana (*huh*) and another lizard (*Itzám*).

Frequent accessories, apparently in the ceremonies which accompanied these incantations, were a green human figure of wood (*yax uinicil te*, or *che*) and a similar one of stone (*yax uinicil tun*). In the treatment of a sore foot, we infer that changing the dressing is symbolized by what is called changing the bed covers of these figures. These coverings are alleged to be the tails of the quetzal (*yaxum*) and the macaw. In this manner, states the healer, "I remove the great causer of pain."

The disease is often personified and is informed that 4 Ahau, or sometimes 1 Ahau, was the day of its birth. The healer addresses it with authority and threatens it. To one disease he says: "Thus I throw you down. I am your mother, I am your father; I cast you into the midst of the sea." To another he claims a similar relationship and condemns it "to the evils of the underworld."

Many of these incantations have a genuine poetic quality and abound in graceful figures of speech. In treating various feverish skin eruptions the healer states that he is cooling the throbbing pain with his red, white, and black fountains and with cenotes, forest ponds, and hailstones of these colors.

Some of the incantations are ordinary magic, such as charming a scorpion or cooling water while it is on the fire. The most interesting and poetical is that of the birth of the spider, which has been published by J.E.S. Thompson (1939b). Here a green wooden spider and one of stone appear to take the place of the human figures in the other incantations.

The language of this manuscript is often obscure, and a complete translation will be very difficult.

In view of J.E.S. Thompson's approach to the problems of hieroglyphic writing by seeking parallels be-

tween such texts and certain passages in the colonial Maya literature written in European script [Chapter 6.4], we have searched the latter for chronological expressions or figures of speech which might easily lend themselves to pictorial representation. Their precise significance is not always clear, since they have come down to us mostly in manuscripts of the eighteenth century. By this time the copyists, who occasionally interpolated their own comments had forgotten or become confused over some of the details of the old calendar system. We even find the katun explained as being a period of 24 years. The following excerpts have been selected from a series of yearly prophecies covering 20 years, which are recorded in the Books of Chilam Balam of Tizimín and Maní. They are given here as examples of phrases which we might expect to find expressed in hieroglyphic writing, but it does not, of course, necessarily follow that such will prove to be the case.

These prophecies begin with a statement of "the taking of *lac* of Katun 5 Ahau." The *lac* today is a shallow bowl, and the term has also been defined as a clay idol, but we infer it was an effigy bowl, possibly an incense burner. There are occasional references to the "burden" or "charge" (*cuch*) of the katun. In one of these the number 5, the coefficient of the day for which the katun is named, is said to be its burden; and we are reminded of a full-figure Initial Series inscription at Copán, although here it is not the coefficient which is represented as being the burden.

One of the year bearer's is "the day of setting in order the bird (*ch'ich'*) of the katun." Since we find elsewhere the "bird" of the day closely associated with its augury, the term probably has the same meaning for the katun.

For the tenth year there is a reference to the fan and bouquet of the ruler, presumably the god presiding over the katun, who "points his finger at the day he takes over his government." He is set up at his cup, (*luch*), on his throne or dais (*dzam*), his mat (*pop*), and his seat (*kanche*); and this establishment of the lord of the katun was very probably a chronological ceremonial.

For the year in which the last hotun begins we find a reference to the "binding of the burden of the katun." Here, instead of the coefficient, the burden appears to symbolize the destiny of the katun, which consists mostly of various misfortunes. This meaning is confirmed by the Motul dictionary. In the following year the burden is bound again, and the "rulers of the land" are said to be blindfolded. Whether earthly rulers or gods are meant is a little uncertain. Elsewhere in these Maya manuscripts the blindfolding of a deity appears to symbolize the loss of his power. Here it seems to indicate the approaching end of the katun, an event which concerned both gods and men.

At the end of these prophecies we are told that on a day 13 Oc "the katun is paced off" (*u chek oc katun*). This is evidently a play on the day name can also mean "foot." In the Codex Pérez, however, the "pacing off" of the katun appears to begin on the day Oc, which falls just 10 days before the end of the katun.

Mr. Thompson has noted a danger in this approach because of the uncertainty as to the language of the people who carved the inscriptions. A large proportion, though by no means all, are found in areas where either Yucatecan Maya or one of the Choloid languages was spoken at the time of the conquest. The latter comprise Chontal, Chol, and Chortí, and it has been shown that these three are hardly more than dialects of the same language, which, indeed, the sixteenth century Spaniards considered them to be (Scholes and Roys 1948, 1966, 1968; J. Thompson 1938).

Philologists have established a close relationship between Yucatecan Maya and Choloid, and it has long been known that for a person who knew one, the other was not very difficult to learn. Nevertheless, how close the resemblance was for practical purposes is a matter of some consequence. It is certainly closer than would appear from the comparative word lists that have been published, and to form some idea of this a comparison has been made between Becerra's large vocabulary of Palenque Chol (1937) and the Yucatecan Maya. Many words are almost identical and have the same meaning in both languages. In other cases the words are the same, but they have a slightly different meaning. Becerra's bush is defined as an ordinary gourd (*calabaza*), whereas the Maya *bux* (pronounced the same) in northern Yucatán was a small wild variety. There are also numerous instances where a Maya would understand a Chol term in spite of its difference from the word used in northern Yucatán. In Maya a skull is *tzek*, and although the Chol equivalent is *bukel jol*, it resembles the Maya *baac* ("bone") and *hol* ("head"). Similarly, the Chol word for heel, *yitkok*, would be understood by a Maya as meaning the bottom of the leg or foot. There are certain sound shifts, but it seems unlikely that they would cause much difficulty. For consonants the two most frequent shifts are those in which Maya *can* ("serpent") and *che* ("tree") correspond to the Choloid *chan* and *te* or *tie*.

A comparison of the first 400 words of Becerra's Chol vocabulary with their various Maya equivalents or near equivalents suggests strongly that a Yucatecan would either understand or have an approximately correct idea of the meaning of 50 to 60 percent of them. Available Choloid texts are few and brief except for the long Acalán Chontal narrative, which contains a very considerable variety of subject matter. Here the sentence structure is very similar to that of Yucatecan Maya. The tentative conclusion of this inquiry is that

whatever its origin, Maya hieroglyphic writing was probably adequate for the use of both these linguistic groups.

9.24.

FRANCE V. SCHOLES,
RALPH L. ROYS, ELEANOR B. ADAMS,
AND ROBERT S. CHAMBERLAIN
History of Yucatán

YB 45:217-221, 1946

The volume on the history of the Chontal Indians of Acalán-Tixchel, on which Messrs. Scholes and Roys have collaborated, was completed during the past year. The work is now in press.

During the year Mr. Scholes and Miss Adams have also carried forward the documentary research for the general history of Yucatán and its environs in colonial times. Although the greater part of this work will deal with northern Yucatán, sections of it will also be devoted to developments in the interior of the peninsula and the many efforts to pacify the unconquered Indians in the regions bordering on the frontiers of Tabasco, Chiapas, and Verapaz. The documentary sources, printed and manuscript, dealing with the Indians of these frontier districts are numerous and have not been fully exploited by historians and ethnologists. In the present report, it may be of interest to give advance notice of an unpublished manuscript on the history of Verapaz, Guatemala, and adjoining areas compiled by Don Martin Alfonso de Tovilla, who served as alcalde mayor of Verapaz in the early 1630s. A complete account of this work, with translations of its more important sections, is being prepared for publication by Mr. Scholes and Miss Adams.

Tovilla was appointed to the office of alcalde mayor of Verapaz on December 18, 1629. The following year he sailed with the fleet for America, taking passage on one of the ships bound for Honduras, and finally reached Cobán, the administrative center of Verapaz, early in 1631. Fray Francisco Ximénez (1929-31, Bk. 4, Ch. 68) mentions Tovilla but tells little about his activities as alcalde mayor. From Tovilla's own account we learn that he had a keen interest in the history and customs of the Indians and made some effort to pacify

certain groups of Manché Chol on the frontiers of Verapaz. Little is known concerning his later career. His treatise entitled *Relación histórica dyscreptiva de las provincias de la Verapaz y de la del Manché de el Reyno de Guatemala*, is dated at Cobán, May 17, 1635.

The *Relación* is divided into two books, the first containing 26 chapters, and the second, 14 chapters. Extensive sections, especially those dealing with the early history of Verapaz, are taken largely from Remesal and have little merit. On the other hand, the chapters dealing with Tovilla's own activities and the descriptions of native life recorded in various parts of the work have genuine value.

Book 1, Chapters 1–6 record the story of Tovilla's journey to America in 1630–31. Here we find an interesting account of the long voyage to the West Indies, a description of the city of Trujillo in Honduras, and the narrative of the author's trip from Trujillo to Cobán by way of Santo Tomás de Castillo, Golfo Dulce, and the Río Polochic. After describing his arrival in Cobán, the author interrupts the account of his own activities to give a lengthy statement concerning the early history of Verapaz (Bk. 1, Chs. 7–23). As already noted, this account is based largely on Remesal. In Chapter 22, however, he includes the text of ordinances for the government of the Indians of Cobán formulated in 1625 by Juan Maldonado de Paz, oidor of Guatemala. This document throws light on native life and customs. In chapter 23 the author gives a brief account of "the fruits of the land and the festivities which the Indians observe."

On arriving in Cobán, Tovilla obtained information from the missionaries concerning the Manché Chol and other Indian groups on the frontiers of Verapaz. Missionary activity among these Indians was begun in 1603, and considerable progress was made during the succeeding quarter century. But conditions in the Manché district were far from stable, and Tovilla formed plans for the founding of a new settlement in that region as a means of imposing a greater measure of Spanish control. In March 1631 he went to Guatemala City to obtain authorization from the superior governmental officials for the enterprise. In Book 1, Chapters 24–27 we have a record of the events of this journey, a brief account of Guatemala City, and the texts of the orders issued by the captain general of Guatemala naming Tovilla commander of the proposed expedition to the Manché country.

In April-May 1631 Tovilla and a small group of soldiers advanced into the interior from Cobán. They were accompanied by Fray Francisco Moran, prior of the Cobán convent. On May 17 Tovilla founded a settlement named Toro de Acuña near the site of San Miguel Manché. Soon thereafter the alcalde mayor returned to Cobán (Bk. 1, Chs. 27–28; Bk. 2, Chs. 1–6).

During succeeding months Tovilla made a visitation of his province and adjacent areas. His account of this trip (Bk. 2, Chs. 7–12) includes data concerning various Indian groups on the northern frontier, an interesting account of the Lacandon, and also information on the Quiché. Toward the end of 1631 it became apparent that the new settlement of Toro de Acuña would need reinforcement, for the region was subject to attack by the Itzá. After considerable delay the captain general of Guatemala authorized Tovilla to take necessary measures. Before Tovilla's plans could be carried out, however, the Itzá raided the frontier, forcing the soldiers and Father Moran to withdraw in haste to Cahabón. Although Tovilla again appealed to the captain general, the latter refused to act until the matter was referred to Spain for decision. This apparently occurred in 1633, and it seems likely that Ximénez' account of a Manché rebellion in that year actually refers to these developments. Tovilla's account of Verapaz ends with this episode. The last chapters of the *Relación* contain a description of the coasts and ports of America (Bk. 2, Chs. 13–14).

As a historical source Tovilla's report is interesting chiefly because it records certain facts hitherto unknown concerning the Manché missions. The ethnological data scattered through the *Relación* have even greater significance. For purposes of illustration the following quotations are taken from the author's account of the customs of the Manché Chol:

These Indians of Manché have many idols. Three are their principal gods, which they call *Man Canam*, *Chuen exchel*. When [the Indians] perform sacrifice and celebrate feasts to them they set up a large bower (*enramada*) in an arroyo, and they paint themselves, the married men red and the youths black. They set up an altar in which the idol is placed. Then comes the priest, whom they call *acchu*. He wears painted vestments made of the bark of trees. On the sides of the altar are placed two wooden [an illegible word here] with shallow dishes full of incense. In another dish the priest collects the blood which all draw in sacrifice from their ears, arms, and thighs, and he offers it to the idol. Then all leave together, and in another place they become intoxicated with a very strong drink called *chicha*. Those who serve this drink are all maidens, adorned with feathers, strings of beads, and garlands. They are accustomed to spend two or three days in this drunkenness.

In view of the fact that other early writers state that the Manché Chol did not have idols, the foregoing passage has considerable interest. The names of the "three principal gods" are recorded exactly as they

stand in the manuscript. It may be noted in passing that Moran's dictionary of Chol gives the term *Mam* for idol. Thompson (1938:599) has called attention to another refer ceremonial intoxication among the Manché Chol.

Thompson (1938:599) has noted that other early accounts contain no mention of a Chol calendar, "except that the new year celebration at Dolores was called *Chuntal Cutaz*." Tovilla describes the Manché calendar as follows:

[The Manché] divide the year into 18 months of 20 days each, and the 20 days all have their name . . . The month is called *uinal*. The 20 days are divided into four divisions of five days each, and the first four days of these four divisions change position annually to begin the months. According to what [the Indians] say, [these four first days] are those which direct the way (*toman el camino*) and bear the burden of the month (*cargan el mes*), changing in turn. These 18 months comprise 360 days, at the end of which are five which they call [days] of great fasting, days which have no name. With these five days are completed the 365 days [of the year]. The only error I have found in this count is that [the Indians] are ignorant of the leap years. This is not surprising, since for so many years we erred in this until the Church corrected it, adding a day every four years in the month of February because of the six hours by which each year exceeds 365 days. In the count of the Chol these 18 months end on June 28 . . . and then come the five days of great fast. This lasts until July 3, and it is a vigil of great veneration among them. Thus on July 4 begins the first day of the year according to their count.

From Tovilla's date July 3 one must subtract 10 days to reduce it to Julian. If 21 days are added from the elapsed leapdays, not recorded in the Maya calendar, the new year of the Chol would have fallen on July 14, 1553 (Julian), whereas Bishop Landa gives the start of the Yucatec year, for what can be deduced to have been 1553, as July 16 (Julian).

In view of the discrepancies which occur in the parts of the books of Chilam Balam relating to chronology and history, Mr. Roys has undertaken a comparative study of these manuscripts. Although it is evident that they contain many extracts from earlier manuscripts, nearly all of them apparently were compiled between the middle and end of the eighteenth century. Besides being of linguistic value, they serve a double purpose. Not only do they furnish a very considerable amount of ethnological and historical material for the study of the preconquest Maya, but they are also valuable for the colonial history of Yucatán, since they contain an admixture of European ideas and in-

formation which help greatly in making an appraisal of the acculturation of the Yucatecan Maya in the eighteenth century.

Some of the ancient lore recorded in these books appears to have been copied verbatim from earlier sources which show little Spanish influence, but much of it is interspersed with explanations, comments, and possibly even alterations by the later compilers. This is not always a defect. Sometimes the copyist explained obscure expressions and statements, which would otherwise be difficult to understand. Only too often, however, the interpolations are confusing.

A large number of the compilers of these manuscripts were more concerned with European lore of the sort found in the contemporary Spanish almanacs than with their own customs and traditions. The Book of Chilam Balam of Ixil, which probably dates from the late eighteenth century, is an excellent example of this tendency. Of its 88 pages, a little more than half contain copies of Maya translations of European material. There is a Catholic calendar, which is not translated, giving the days of each month, together with the pacts and dominical letters. Except for a few church festivals, the saint for each day is named, which was no doubt useful in selecting names for children. Accompanying this calendar is a dissertation in Maya on the European zodiac. Beneath a picture of each sign is the usual information, found in European almanacs, such as the day when the sun enters the sign, the number of stars in it, the hours of daylight and darkness, and other information for the guidance of a person born, under this sign. To this are added a chart with some tables, and other material on zodiacal anatomy, so that a healer might avoid bleeding any part of the body while the sun is passing through the sign of the zodiac ascribed to that part. Since bloodletting was a traditional remedy among the Maya, it is easy to understand their interest in this matter in colonial times. We also find a diagram and explanation in Maya of the medieval cosmos. The remainder of the part of the book which is European in content consists of Maya translations of sacred history. These are based on Genesis, but they contain a number of details which are not recorded in that book. Additional material of this sort, including passages from a popular Spanish romance dealing with astrology, is to be found in other Books of Chilam Balam, especially those of Kaua and Maní, although the latter two differ from the Ixil in that they contain more of the old native lore. That so much European material was translated into Maya is evidence of the extent to which a large and important element of the native population had become Hispanicized in spite of their ignorance of the Spanish language.

Nearly one-half of the Ixil manuscript is devoted to material which is essentially Maya, but modified by

European ideas. Here we find a correlation of nine months of the European calendar with the corresponding Maya days. A similar calendar was adapted, by Pío Pérez to the years 1841–1942 and published a century ago (Stephens 1843:1:449–458), and others occur in most of the Books of Chilam Balam. They contain weather predictions, prognostics of “good” or “bad” days, warnings of sickness and death, and various other portents, some of which are very difficult to translate. There is also a faulty correlation of the Maya *uinals*, or 20 day months, with the native day names. At the end of the Ixil manuscript are 27 pages of medical prescriptions. They are ascribed to a Moorish physician, a slave of the Cid Campeador, but they are largely Maya in content, although they contain a sprinkling of European remedies, and a good many names of plants and diseases are given in both Spanish and Maya.

There are only a few pages in the Ixil of material that is purely Maya. A little of this is astrology and the remainder is concerned with Maya chronology. There are two of the so-called calendar wheels, one of which represents an alleged “katun” of 13 years. Apparently this part of the book was copied from an earlier Maya manuscript written in 1701, but the errors strongly suggest that the Ixil copyist did not understand his subject. The inference is that by the last quarter of the eighteenth century many people were losing their former interest in the Maya sciences and historical traditions. This was not yet everywhere the case, however, as we see by comparing the Ixil manuscript with the Book of Chilam Balam of Chumayel, written in 1782. Here, it is true, there are a few translations or paraphrases of Spanish material but most of the book consists of Maya rituals, catechisms, prophecies, historical narratives, and chronicles, although we find in places some admixture of European ideas. The selection of the material in the Book of Chilam Balam of Tizimin is even more conservative and it contains fewer references to things Spanish, but it was probably composed at least a generation earlier than the Chumayel. The book of medical incantations known as the *Ritual of the Bacabs* is almost entirely pagan in character, although it was actually written no earlier than 1779.

The last important Book of Chilam Balam is the Kaua, written at about the end of the eighteenth century. It contains medical prescriptions, prophecies, and Maya astrology, and there is a rather unsatisfactory explanation of Maya chronology written in Spanish. A large part of it, however, is devoted to European astronomy and astrology and to the Christian religion.

The conclusion Mr. Roys has drawn from this study is that, valuable as these sources are for the study of Maya civilization, in their present form they come down to us from the hands of writers who were removed by at least two centuries from the Spanish con-

quest, during which time they were subject in varying degrees to European influences, and the chronological information and historical traditions they present should be used with considerable caution.

Mr. Chamberlain, who served as cultural attaché in the United States Embassy in Guatemala for four years (1941–45), resumed work as a staff member of the Division on October 1, 1945. His volume on the conquest of Yucatán is now nearing completion. He has also written a large part of a supplementary study dealing with the Adelantado Francisco de Montejo as governor of Higueras-Honduras, 1535–39. Two shorter papers, one relating to the early history of the town of San Miguel in southern Salvador and the other to the government of Montejo in Chiapas, should be ready for press in the autumn of 1946.

9.25.

RALPH L. ROYS

History of the Maya Area

YB 46:197–198, 1947

During the past year the comparative study of the Books of Chilam Balam has been continued. Especial attention has been given to the *Codex Pérez*, and a guide to this manuscript has been prepared to accompany the reproduction in the Peabody Museum of Harvard University.

The *Codex Pérez* consists of extracts which J. Pío Pérez copied from various Maya manuscripts, apparently during the second quarter of the nineteenth century. A large part of it was taken from the lost Book of Chilam Balam of Maní. There have been transcriptions, but only in recent years was Dr. S. G. Morley able to obtain a photograph of the original for the Carnegie Institution of Washington.

The first third of the manuscript is composed largely of Maya translations of European astrological and calendrical material [Chapter 9.24], which appealed to the interests of the more Hispanicized element of the Indian population; but most of the remainder is devoted to the native lore. The *Codex Pérez* covers a wide range of Maya learning and pays much attention to the augural or divinatory aspects of the Maya calendar. Here are predictions of the coming of the Spaniards and the new religion, prophecies for the

tuns or years, and others for the 20-year periods called katuns with their valuable historical allusions. Of especial interest are the famous Maní Chronicles, several isolated historical narratives, and a version of the creation story differing in some respects from any that has been published. As in other Books of Chilam Balam, we find indications of the close association between history and prophecy in the Maya mind. One passage presents an important aspect of native Maya astrology, and there are several long explanations of Maya chronology. In spite of some chronological errors, these disquisitions add considerably to our knowledge of the native terminology and the point of view of the Indians who were endeavoring to preserve the old traditions. Besides the material not found elsewhere, there are parallels of passages in other Books of Chilam Balam; but in general the Codex Pérez versions are fuller and furnish more details.

In a previous report [Chapter 9.23] attention was called to chronological concepts expressed in certain prophecies in the Books of Chilam Balam of Tizimín and Maní. For the better understanding of this aspect of Maya science, a tentative translation has been made of a series of prophecies for the 20 tuns of Katun 5 Ahau alleged to begin in 1593. In its present form the series is the work of eighteenth century compilers, and the chronological setting is incorrect; but the greater part of the content appears to have been copied from earlier manuscripts. Although it seems plain that the prophecies really apply to the tuns, more emphasis is placed on the year-bearers. It is true that pessimism predominates in other Maya prophecies, but here the news is almost invariably bad. The language is often symbolic. Mythological allusions are frequent, but only rarely are they to the better-known and more important deities. A number of the names, such as *Chacuayab-xoc* (Great Demon Shark?) and *Chac-mumul-ain* (Great Muddy Crocodile?), suggest fabulous monsters. Fauna names are sometimes preceded by a numerical coefficient, such as *Ah Uucte-cuy* (7-Owl) and *Ah Uuc-ch'apat* (7-Centipede). These may be mythological personages, but the close association of the name. *Ah Buluc-am* (7-Spider) with Montezuma suggests that it was considered to be the Maya name of the latter.

During this period work has been done on collecting and cataloguing material from sixteenth century sources for a study of the political geography of the Yucatán peninsula at the time of the Spanish conquest, a joint project of Dr. Scholes and Mr. Roys. Time has also been devoted to reading proof of the history of the Chontal Indians of Acalán-Tixchel.

9.26.

FRANCE V. SCHOLES AND
ELEANOR B. ADAMS
History of the Maya Area

YB 46:198, 1947

Work has been done on collecting and cataloguing material from sixteenth century sources for a study of the population and political geography of the Yucatán peninsula, a joint project of Mr. Scholes and Mr. Roys. This work has included the study of data previously assembled, and the investigation of additional documentary series, chiefly encomienda papers and proofs of services of conquerors, soldiers, and early settlers of Yucatán. The collection of the data is now nearing completion, and during the coming months the final study should begin to take form.

Miss Adams has carried forward her investigations of the foreign corsairs who scourged the coasts of Yucatán in the sixteenth century. The spadework research for this study, which has necessarily included the study of a wide range of supplementary sources in addition to those directly relating to events in Yucatán, is now virtually complete. Miss Adams will spend a considerable part of the coming year in writing up the data as a separate monograph.

These two studies will help to lay the foundation for the general history of Yucatán in the sixteenth century, the major project of Mr. Scholes at present. For this larger work some documentary research remains to be done, but the major series of documents have been rather thoroughly surveyed or extracted. The general plan of the history has also been worked out in some detail, and outlines have been made for several chapters.

Finally, considerable time has been devoted to the reading of the proof of the history of the Chontal Indians of Acalán-Tixchel, now in press.

9.27.

ROBERT S. CHAMBERLAIN
History of the Maya Area

YB 46:198–200, 1947

Mr. Chamberlain's work has consisted of an investigation of the Spanish conquest period, roughly 1517–

50, in Yucatán, Tabasco, Honduras, Chiapas, and adjacent territories. His writing is based primarily on extensive research in documents existing in the Archivo General de Indias de Sevilla, the Archivo Histórico Nacional, Madrid, the Archivo General del Gobierno, Guatemala City, and to a lesser degree in the Biblioteca Nacional, Madrid, the Archivo General de Simancas (Spain), and the Archivo General de la Nación, Mexico City. This research has helped to close important gaps in the history of the former Spanish provinces named above, to correct earlier accounts, and to re-evaluate, or evaluate for the first time, the course of events.

Mr. Chamberlain's research has made possible the preparation of two major works, one on the conquest and colonization of Yucatán, and the other on the conquest and colonization of Honduras, for publication by the Carnegie Institution of Washington, and brief monographs and articles for publication by the Carnegie Institution of Washington and by various historical journals. Because of the interlocking nature of much of the documentary source material, the preparation of the manuscripts of the two major studies was carried on concurrently, the manuscripts being completed some months apart.

The principal new contributions to Spanish colonial history resulting from Mr. Chamberlain's work have been: 1. The history of the conquest of Yucatán has been corrected, amplified, and reinterpreted. 2. The history of the conquest of Honduras has been fully told. Five unknown years, 1539–44, important for the governmental evolution of Honduras and for the extension of the conquest, have been added to the history of the province. The conquest of Higueiras, the western and, in the colonial period, the most important part of Honduras, has been more fully told, and new interpretation has been given to the early history of the province as a whole. 3. Four years have been added to the history of Chiapas, 1541–44, when Francisco de Montejo, who was also Adelantado of Yucatán and Governor of Honduras, was governor of that province. This has been done in a brief monograph which is being published as Contribution 46 in the *Contributions to American Anthropology and History* (Chamberlain 1948b). 4. Through the histories of the conquest and colonization of Yucatán and Honduras, Francisco de Montejo has been revealed as one of the truly great Spanish conquistadors and administrators. Montejo's career has hitherto been neglected. He was a man of great stature and vision, an empire builder in the real sense. Mr. Chamberlain is drawing up an outline on which to base a biography, as such, of Montejo.

In addition, on the basis of documents from the Archivo General del Gobierno, Guatemala City, it has been possible for the first time to give an account, even

though a very brief one, of the early history of the town and province of San Miguel, now the southern part of the Republic of El Salvador.

During the period which Mr. Chamberlain has had under study, fusion of European culture, as represented by the Spaniards, with native New World cultures, and mixture of European and Indian races not only began but progressed rapidly. Spanish governmental, religious, economic, and social forms, institutions, and attitudes were speedily imposed on the Indians. At the same time the Indians sought tenaciously to cling to their own cultures. It is this continuous and fundamental clash and fusion of European and native American cultures and races which have given most of the Spanish American countries their past, present, and future form and aspect. It scarcely need be pointed out that greater knowledge of the past and present of the countries and peoples of Latin America is becoming increasingly important in view of the fact that the United States is now forging more closely than ever before its political, economic military, and cultural bonds with the other nations of the western hemisphere.

9.28.

RALPH L. ROYS

History of the Maya Area

YB 48:239–241, 1949

During the past year, *The Prophecies of the Maya tuns or years in the Books of Chilam Balam of Tizimín and Maní* has been completed for publication, and some time has been spent in reading the proofs of this Contribution and the *Guide to the Codex Pérez*.

The source material for the history of Mayapán has been assembled and translated into English from the Spanish and Maya, where such translations were not already available. The sources quoted are accompanied by commentaries, in which they are compared and discussed and some of the more important implications are noted.

There is fairly good evidence that the area ruled by Mayapán included most of the Yucatán peninsula north of Campeche, although the evidence for the northeast and east coasts is conflicting. Nothing has been found about Campeche in this connection.

Taken as a whole, the references to Mayapán indicate the need of a new interpretation of the source

material. In the past, historical reconstructions have been based principally on the chronology of the Maya Chronicles in the Books of Chilam Balam, but with unsatisfactory results. Uxmal, Chichén Itzá, and Mayapán were long considered to have been contemporary capitals in Yucatán, but archaeologists have found that their more important buildings occurred at three different periods in the order named. J.E.S. Thompson has noted the weakness of this chronology, and a comparison of all the historical sources suggests that the accounts by Gaspar Antonio Chi offer a framework in which Landa's narrative and the episodes related in the Chronicles could more easily be reconciled with the archaeological findings. This compilation also presents evidence that the important Xiu family became a political factor in northern Yucatán only in the late fourteenth or early fifteenth century, and not in the eleventh century as previously believed.

The late winter and spring were spent in Yucatán continuing previous studies of the political geography at the time of the Spanish conquest [Chapters 9.14 and 9.17]. One purpose of the present survey was to see what indications exist that the modern towns are situated at conquest sites of the same names; another was to locate historic sites that are no longer shown on the maps.

A search was also made for conquest sites which would be likely sources for the recovery of late preconquest and early colonial pottery. Although ceramic sequences have been established from very early times down to the fall of Mayapán, about the middle of the fifteenth century, it has been difficult to find sherds which could be identified as belonging to the period following that time. It seems possible that this is partly due to a Spanish policy of replanning the Indian towns, by which it is known that the houses were concentrated nearer the church and central plaza and for the first time arranged along regular streets with smaller yards and gardens than previously. Several centuries of occupation in colonial and modern times have further aggravated this disturbance of the topsoil containing the sherds which had accumulated during the last pre-Spanish period and that of the conquest. For this reason particular attention was paid to historic sites from which the people had been removed at a fairly early period. A few of these, Hunacti, Calotmul, and Cauich, had been located during previous visits to Yucatán. This, year four more were visited and identified: Kanchunup near Sotutá, Tecoh near Izamal, Tuchicaan near Maxcanú, and Quizil near Uman. Hunacti and Kanchunup were subject to European influence for the shortest time, since they were left deserted prior to 1582, and very possibly as early as the 1560s. The churches of these two towns, as well as at Tecoh and Quizil, were of an early type. Only the

chancel, sacristy, and priests' quarters were built of masonry. There was no nave, and the congregation evidently occupied an open structure of pole and thatch, called a *ramada*, of the sort described in various sixteenth century Spanish reports. It seems probable that all four sites were abandoned at an early date. Since there are cenotes at three of them and a pond of potable water at Tecoh, they would appear to be promising sources of late preconquest and early colonial pottery. Tuchicaan and Tecoh are of especial interest, since both played an important part during the Spanish invasion of Yucatán. There are still extensive Maya ruins at all seven sites mentioned above except Kanchunup and Cauich.

Indications exist that a very large number of the colonial churches in Yucatán were built partly of hewn blocks taken from ancient structures in the immediate vicinity, although such material apparently was sometimes supplemented, as at Kinchil and Kaua, by hewn stone from other sites as far as 6 km distant. Two of the oldest convents, at Mérida and Izamal, were built on the summits of fairly high substructures, and in the northwestern and the northern parts of the state, as far east as the vicinity of Izamal, a great many churches are set in spacious patios which are raised from 1 to 2 m above the level of the town. In such cases this platform appears to have been constructed from the rubble fill of a large Maya substructure. Possibly it consisted partly of the flattened base of a pyramid and was completed from other neighboring mounds. There is some evidence of this at Hunucmá and still more at Chuburna. Raised platforms on which the churches stand are much rarer in the Sotutá and Valladolid areas farther east, and in the former Xiu Province of Maní to the south.

These raised church patios are frequently enormous structures, although they probably average only about 1.5 m in height. Roughly paced off, those at Hunucmá, Kinchil, Hocaba, and Humun have an average surface of about 8,000 sq. m. The platform at Humun is 3 or 4 m in height, but here it is partly formed of a low rocky knoll. Nowhere did there appear to be a depression from which this material might have been excavated. There are still many large Maya ruins in northern and northwestern Yucatán, but this use of the substructures for church platforms probably explains why they are not so numerous today as would appear from the sixteenth century Spanish reports. In spite of the important fisheries and salt industry in former times, agricultural conditions in northwestern Yucatán are such that it is difficult to explain the great building activities which evidently existed. Apparently there was a highly developed social organization over a very long period of time, and in this connection it seems relevant to note that some sherds gathered at

Caucel, when submitted to Dr. G. W. Brainerd, were identified as corresponding in age to the Chicanel phase at Uaxactún.

In a number of towns, where the site of the church is raised but little or not at all above the surrounding area, some of the old pyramids or other substructures were left standing in the immediate vicinity. This has been recorded of the cathedral at Mérida and the church at Motul. It is still the case at Ucú and Caucel, both of which might be considered sites of some promise for recovering sherds of the conquest period. Other instances can be cited at Yaxkukul, Acanceh, Sotutá, Dzan, Chapab, and Teabo. At Sotutá a large substructure near the church is surmounted by a fortified colonial building. Similar remains are also to be seen at Chicxulub, Ticul, Oxkutzcab, and near Tekax, but like many others reported from Yucatán towns, they lie at some distance from the church and the center of town.

Visits were made to the ruins at Aké, Acanceh, Izamal, Uxmal, Chichén Itzá, and Mayapán, and to the town of Champotón, all of which figure in the historical legends of the Books of Chilam Balam. At the time of the Spanish conquest Champotón was a large and commercially important town with many stone buildings. Although the architectural remains are scanty, there are still a number of scattered drums of cylindrical columns. They are rather roughly hewn and are reminiscent of those at Mayapán. Surface sherds are abundant in the streets, and the gullies which intersect the town seem to offer some promise of stratified deposits.

9.29.

ROBERT H. BARLOW

History of the Maya Area

YB 49:206–207, 1950

In the search for the missing fragments of the Maya record, one obvious approach seems to have been ignored. The collection and comparative study of folktales and beliefs in the Maya language have scarcely been attempted, despite the evidence of a 100 years of study to the effect that old religions and histories wear down in time to seemingly idle tales. No single old man, probably, is going to tell us the precise meaning of a frieze at Chichén Itzá, but a number of narratives

from a number of old men, accumulated and worked together in accordance with the Finnish technique, will certainly throw some light on the movements of peoples and concepts in prehispanic Yucatán. That very old materials survive orally is evident: in Guerrero State, Barlow has heard a witch woman pray in Nahuatl to the Thirteen Heavens; as recently noted by Professor Miguel Barrios E., the Nine Cardinal Points survive in agricultural ceremonies of Colima; and in the high Sierra Madre del Sur a detailed migration legend at least 700 years old is familiar conversation among the rustics. The present work in the Maya or Yucatecan language is aimed at the compilation of all folktales, beliefs, and traditions not evidently European, for the reconstruction of their prototypes.

In language study, the following approach has produced in the year since Barlow entered the field, the knack of conversing adequately. With the collaboration of a native speaker who has had training with the Summer Institute of Linguistics, a series of dialogue units on the model of the U. S. Army wartime language-teaching projects was blocked out, and the collaborator worked these up with grammatical commentary. Together with this introduction to the tongue, an infinitely more rewarding one than plowing through Latinizing grammars of centuries back, a series of texts on themes ranging from how to kill an armadillo to the folktales referred to was acquired from informants hailing from the regions of Peto, Chichén Itzá, Tekax, and Motul. It has seemed wise to await greater fluency in Maya before undertaking trips to the wholly monolingual zones, where the take should be rich indeed. Field trips to Yucatán were made in May 1949 and June 1950.

Published folktales from Yucatán are nearly all in Spanish or English and are nearly all concerned with European themes, apart perhaps, from a scrap collected by Berendt about the time of Maximilian and republished with such assiduity that one might think there were no live Maya and no living oral tradition to explore. It is improbable, according to D. Juan Martínez and other eminent students of the old texts, that much in the way of historical documents remains unknown in Yucatán.

9.30.

RALPH L. ROYS

Documentary Research

YB 50:245–247, 1951

During the past year the pre-Spanish history of Yucatán has been investigated from the standpoint of the historical allusions in the katun prophecies in the Books of Chilam Balam. Among the Maya, history and prophecy were closely associated; indeed, the same word is sometimes defined as a history, sometimes as a book of prophecies. This was evidently because what occurred in one katun was expected to recur in another of the same name. A katun contained a little less than 20 years, and the cycle, or katun round, covered about 256 years.

Our knowledge of the history of Mayapán is very incomplete. We have an excellent account of its government and customs; there is a brief mention of the founding of the city; something more is recorded about the later years preceding its fall and destruction. This leaves a gap of perhaps 160 years of which we know little. About all that we have been told is that there was a joint government over a wide area; a group of newcomers called the Xiu were given a share in the government; and the Cocom, the most powerful of the rulers, introduced Mexican allies from Tabasco and oppressed the people. Consequently any additional information that we can glean from the prophecies is of considerable importance. In the latter sources there are also many references to religion, especially in its relation to chronology and astronomy, but this sketch will be confined to the historical allusions.

Most of the versions of these 13 prophecies begin with Katun 11 Ahau. Each katun is partly designated by a numerical coefficient two less than the preceding, 13 being considered two less than two, and 12 two less than one. One version, however, resembles several of the chronicles in beginning the cycle with a Katun 8 Ahau, and the latter system will be followed here.

The prophecy for Katun 8 Ahau contains references to the expulsion of the Itzá from Chakanputún, probably Champotón; to the arrival of Kinich Kakmo, elsewhere reported to have been the founder of a dynasty at Izamal; and to the destruction of Mayapán. The time of the first two events has been a matter of controversy. It could have been either in 948 or in 1204, but the latter date seems preferable. The fall of Mayapán occurred in the katun which ended in 1461. For Katun 6 Ahau, which could have ended in 1224, there is an account of insolent-faced rulers whose speech is

shameful. We are told of purse snatching and other minor violence; the *halach uinics* of the town are beheaded. Finally, it is stated: "Very evil is the rule of the three occupants of the mat and throne on the dais." This number is rare for administrative divisions in Yucatán, and we cannot but be reminded of Landa's account of three brothers who ruled at Chichén Itzá not long before the coming of Kukulcan, although he states that only two of them acted badly and were killed.

In Katun 4 Ahau, the second after the Chakanputún episode, we read of the arrival of Kukulcan and the Itzá. That of Kukulcan is said to be for the second time, which would account for earlier representations of this culture hero at Chichén Itzá. There is also, however, a reference to a well known epidemic which occurred in a later Katun 4 Ahau (1480–1500). Katun 2 Ahau is associated with the first coming of the white men in the decade preceding 1520, but even this is compared with the earlier arrival of the Itzá. One of the Chronicles states that the town of Mayapán was founded in a Katun 13 Ahau and the only katun of that name consistent with the ceramic evidence ended in 1283. Unfortunately no allusions to this event are apparent in the prophecies, but they contain references to an erotic cult of the *plumeria* flower and to some ill-behaved "two-day" rulers who do not respect their parents. These were evidently the Itzá, who were somewhere in the picture at the time.

The two following prophecies, for Katuns 11 and 9 Ahau, are chiefly concerned with the coming of the Spaniards, the building of Mérida, and missionary activities (1539–79). There are, however, brief allusions to the *plumeria* cult and moral laxity at an earlier period.

In Katun 7 Ahau, ending presumably in 1342, the Itzá, who had settled at Chichén Itzá a century before, are extending their influence and corrupting people everywhere with their erotic *plumeria* cult. They are lewd rascals who "twist their necks, they twist their mouths, they wink the eye, they slaver at the mouth," and they even make light of the *halach uinics*. In 5 Ahau (1342–1362) things have gone from bad to worse. The Itzá are now actually ruling the country, and perversity is open and unashamed. The principal men have turned to sorcery and are transforming themselves into lynxes. This condition continues throughout most of the following Katun 3 Ahau, until there is a political upheaval, apparently about 1382, when the evil rulers are beheaded.

Soon after, early in Katun 1 Ahau, an unidentified ruler visits a savage retribution upon the local *batabs* who had achieved their position under the evil rulers. This is confirmed by two passages in the Books of Chilam Balam of Chumayel, which tell how it came about. The remainder of the katun, however, is a time

of troubles, and we read briefly of affliction by the Canul. There is evidence that the Canul, or Ah Canul, were the so-called Mexican mercenaries introduced into Mayapán by the Cocom rulers, but it is only here that we find some indication as to when this occurred. Later, we are told, the Ah Canul were the guardians of the gates at Mayapán, but Maya literature has little or nothing to say about the Cocom. One might think from these prophecies that this was the end of the Itzá, yet we learn from other sources that some of them remained at Chichén Itzá until the Katun 8 Ahau which ended in 1461. Since they were expelled by a group from Mayapán, the date must have been prior to the fall of the latter capital; but we have excellent evidence that Mayapán was destroyed in this same Katun 8 Ahau.

The Katun 12 Ahau immediately following 1 Ahau was noted for its benevolent rulers, peace, and good morals. Historical references seem to be lacking for the succeeding Katun 10 Ahau, except that there was drought and famine. This represents the end of the cycle. For the following Katun 8 Ahau, as we have already seen, there is a brief mention of the fall of Mayapán. Fortunately Landa and the Maya Chronicles tell us more about this event.

It is hard to tell how accurate a record of events is represented by the historical allusions in these prophecies. It seems very probable that they reflect the beliefs of the sixteenth century Maya concerning their history during the 350 years prior to the Spanish conquest. That something was known of the preceding period seems certain from a brief but convincing report by an early native informant, but it is difficult to identify any reference to that period in the prophecies that have come down to us.

9.31.

RALPH L. ROYS

Historical Geography and Documentary Research

YB 51:271, 1952

The late winter and spring were passed in Yucatán, in an investigation of the boundaries of the former native states at the time of the Spanish conquest, for the purpose of compiling a historical geography covering that period. A number of villages and rural sites on or near

these former political frontiers were visited, and especial attention was given to two of these borders. One was the eastern limit of the so-called Province of Ah Canul, which extended from a little above the latitude of Campeche to Punta Kopte on the north coast. The other was the line separating the Province of Ah Kin Ch'el on the west from those of Chikincheel (sometimes called Chauaca) and Cupul on the east. Information regarding the latter was obtained at Temax, Buctotz, Dzilam González, and Dzilam Puerto.

Associated with these investigations was a search for more sites from which people were moved in very early colonial times and concentrated in towns, where they could more easily be supervised (YB 48). Calkini, for example, was little more than a village at the time of the conquest, but it soon became a large and important town where a convent was founded. From a native Maya chronicle we know the names of the former settlements from which it was recruited, but they no longer appear on the maps. This problem was largely solved after a visit of some days at Calkini and a tour of the surrounding country, thanks to the cooperation of the local professor, the mayor, and the librarian. Similar inquiries were pursued at Tizimín with some success, but, less than at Calkini.

Owing to the kindness of Mr. Don Drury, it was possible to establish headquarters at Colonia Yucatán in the northeast corner of the state and visit the surrounding area. One trip was made to El Cuyo, where a modern lighthouse surmounts an ancient stone mound of considerable size on the sand dunes by the sea. Not far to the south is Laguna Xuaca, from which the important conquest town of Chauaca took its name. Extensive ruins exist at Kantunilkin in Quintana Roo to the east, including one pyramid containing a descent beneath a stepped roof to a series of very narrow vaulted apartments in the heart of the substructure. Several days were spent at a large ruined site close to Colonia Yucatán, assisting Lawrence Roys in making a preliminary plan of the remains. Although no name is now known for this site, its location and a garbled name on three of the older maps give reason to believe that it was the large and important town of Sinsimato, visited by Montejo during his first expedition into the Yucatán peninsula in 1527–29.

During the past year *The Maya katun prophecies of the Books of Chilam Balam, Series I* has been completed for publication. Some time has been spent in reading the proofs of *Conquest sites and the subsequent destruction of Maya architecture in the interior of northern Yucatán*.

9.32.

RALPH L. ROYS

Historical Geography of Yucatán

YB 52:292–293, 1953

During the past year Roys has been engaged in compiling a historical geography of Yucatán as it was at the time of the Spanish conquest. The boundaries of the independent native states have been determined and mapped so far as possible. In most cases the towns which they comprised can be identified with considerable certainty, and it is often feasible to make a rough estimate of their populations.

The larger towns were composed of subdivisions, each of which had its own name. Sometimes the first Spaniards named a town for one of these subdivisions in their reports; but the local convent or church was later built in another, and thereafter the town was named for the latter.

The Maya documents and early Spanish reports furnish the pagan names of a good many of the ruling chiefs. These have been noted; when they could not be ascertained, it has often been possible to give the later names of caciques or town governors, most of whom were either the rulers at the time of the conquest or their sons or grandsons. Many of these names were recorded in 1565 and 1572.

In colonial times the pre-Spanish patronymic was preserved as a surname, preceded by the baptismal name. The original population was composed of something over 260 exogamous patrilineal name groups, some of which were much larger than others. Their social significance was obviously important, but we know little about them, except that the members of each usually felt a certain personal responsibility for one another, and at least three groups had their own patron deities, possibly deified ancestors. Roys surmises that the latter was true of most of them. Their distribution in the various territorial divisions is of interest. Apparently the political importance of a name group did not necessarily depend on its size for the patronymics of the ruling families were sometimes comparatively rare, even in the states where they ruled.

It is hoped that this study will furnish a comprehensive picture of Yucatán as the Spaniards found it, part of which, heretofore, has been available only in untranslated Maya manuscripts or unpublished Spanish reports of the sixteenth century.

9.33.

PEDRO CARRASCO

Ethnohistory of Yucatán

YB 52:293, 1953

In preparation for research on the ethnohistory of the Yucatán Maya in preconquest and colonial times, Carrasco made a short trip to Mexico City and Yucatán. Besides visiting the main archaeological sites in Yucatán, he worked at the Archivo General de la Nación in Mexico City, and in Yucatán at the Archivo General de Gobierno and Archivo de Notarías in Mérida, and in some parochial archives.

A number of documents in the Archivo General de la Nación refer to the *visita* of García de Palacio (late sixteenth century). Like the published report on Cozumel, they offer important material for the social organization of this period. Together with other already published materials, they provide a basis for an ethnology of the Maya at the end of the sixteenth century.

Various papers in the Archivo General de la Nación, Archivo de Gobierno, and Archivo de Notarías contain data on land tenure in Indian villages.

Local government in Indian villages and the late ending of the encomiendas in Yucatán, and the situation of the Indian workers, are also well documented in material in the Archivo General de Gobierno and Archivo General de la Nación.

Parish archives have documents on the *cofradías* during the colonial period, a very interesting one being found in Uman. There is also information on the colonial caste system, and of course abundant demographic records. A special possibility in using parish archives is that of studying kinship organization from birth and marriage records. The books seen on this trip start late in the seventeenth century, but a more thorough search might yield older material.

Copies were made of some documents in the Archivo General de la Nación.

10.0. PHYSICAL ANTHROPOLOGY

10.1.

GEORGE C. SHATTUCK

Report on the Yucatán Medical Expedition

YB 28:301–303, 1929

At the suggestion of Carnegie Institution of Washington the Yucatán Medical Expedition was organized by the Department of Tropical Medicine of the School of Public Health of Harvard University. It was financed jointly by the Institution and by the Department. The Expedition, making its headquarters at Chichén Itzá, worked under the auspices of the Carnegie Institution. The members of the Expedition were Dr. G. C. Shattuck, director, Dr. Joseph C. Bequaert, entomologist, and Dr. Jack H. Sandground, helminthologist, from the Department of Tropical Medicine; and Dr. Kenneth Goodner, bacteriologist from the Department of Bacteriology. Mr. Byron L. Bennett served as laboratory technician. Members of the Expedition, except Dr. Bequaert, whose departure was postponed, sailed from New York on February 1, 1929. Work was begun at Chichén Itzá in on the day of arrival, February 8, although it was some days later before the portable laboratory was completely set up and fully equipped. The object of the Expedition was to make preliminary medical survey of Yucatán. With this purpose in view, two centers of

population, Dzitás and Chan Kom, were selected for special study. Dzitás exemplified the small town of mixed population having railway communications with the outer world, and Chan Kom typified the large, isolated village of practically pure Maya stock. In both places free clinics were held which made it possible, not only to examine a large proportion of the entire population of these localities, but also to supply the laboratory with quantities of material.

The physical examinations made in the clinics showed the development of the individual, his state of nutrition and the presence or absence of characteristic physical signs of diseases. The laboratory studies included estimates of hemoglobin, typing of blood specimens, Kahn and cholesterol reactions which have a significance like that of the Wasserman test, examinations of blood smears for malaria, Schick testing to determine susceptibility to diphtheria, examination of feces for protozoön or helminthic parasites, such as the amoeba of dysentery and the hookworm, culturing the feces for pathogenic bacteria, and bacteriological

testing of water supplies. Local epidemiological data were obtained by abstracting the records of births and deaths in Dzitás, and by house-to-house visiting and census taking in Dzitás and in Chan Kom.

Meanwhile, numbers of patients were examined and treated almost every day in the laboratory at Chichén Itzá and visits were made to various Indian villages. Conditions in them were found to be similar to those in Chan Kom.

After Dr. Sandground and Dr. Goodner had completed their work and returned home, the laboratory was virtually closed. I then made a visit to Uxmal, where malaria has been prevalent in the past. Subsequently, I undertook two trips into the forests of the Territory of Quintana Roo to compare conditions there with those in Yucatán and to learn what I could about the prevalence and distribution of an interesting ulcerative disease known locally as "chiclero ulcer" or *pique de mosca*. I had previously seen a few examples of this disease in Yucatán but they had been contracted in Quintana Roo.

The first journey was from Tizimín to the Colonia Santa Maria, about 80 to 90 miles [128.8–144.8 km] distant by road and trail, and the second was to Xyatil and Xpichil which lie about 95 miles [152.9 km] south-east of Peto. My party on these trips included Mr. Bennett and Sr. Felipe Castillo of Dzitás who served as interpreter. Clinics held at the Colonia for five days gave opportunity to examine a considerable number of Mexicans. Through the good offices of Srs. Cué Hermanos our party was provided with mules for the journey in both directions and was housed and fed at the "Colonia" without charge. The trip from Peto was very kindly arranged for me by Sr. de la Torre of the Mexican Exploitation Company and by Mr. Joseph F. Rehani of Mérida. The object was to visit the Indians at Xyatil and Xpichil who live under conditions differing from those at Chan Kom and who are even more isolated.

Dr. Bequaert, who was to collect biting insects and plants, postponed his coming until after the rains had begun because of the scarcity of insects and of flowers in the dry season. He reached Mérida on May 29 and proceeded the next day to Chichén Itzá. Subsequently, he spent a week at Chan Kom and, later, he obtained important information from Dr. Gaumer at Izamal. I sailed for home on June 24 and Dr. Bequaert followed on July 8.

The work of the Expedition has provided much information about the prevalence and distribution of disease in Yucatán. This information relates not only to bacteriological and parasitic diseases but to maladies of nutrition as well. There is also a large quantity of statistical data upon infectious diseases in the districts of Mérida, Progreso, Ticul, Valladolid and Peto, which was laboriously copied from unpublished offi-

cial sources, and a quantity of meteorological data, based upon official observations over a period of five years at Mérida. Dr. Sandground's work in helminthology extended beyond man to the lower animals, from which a number of most valuable specimens were obtained.

Collections of bacteriological, helminthological, pathological, entomological and botanical material were brought back by the Expedition to be worked up in the home laboratories. Samples of water and of soil were also secured. Dr. Bequaert and Dr. Sandground each obtained a few zoological specimens.

It will require a good deal of time to study all this material and to prepare a report upon the work of the expedition as a whole.

Mr. J. O. Kilmartin of the Chichén Itzá Project kindly prepared maps of Dzitás and of Chan Kom to be used in the report.

The Expedition not only carried out its program, but extended its activities over a somewhat wider field than was originally contemplated. This success is attributable to various favorable factors and especially the enthusiastic work of my associates, the friendly spirit of both Yucatecans and Indians, and, lastly, but not least, to the helpful cooperation of Dr. Morley and his staff at the hacienda in Chichén Itzá.

10.2.

KATHERYN MACKAY

Report on the Chichén Itzá Clinic

YB 28:315–316, 1929

The Chichén Itzá Clinic was open from January 4 to July 10 during the 1929 field season. Within a few days after its opening the Maya began to flock into Chichén Itzá from the surrounding country, whole families at a time. The influenza epidemic had just reached Yucatán and the Indian population was very generally affected.

Owing to the limited space available for the clinic, a single room where only three bed-patients could be accommodated at one time, only the most serious cases could be given continuous attention and treatment. At the height of the epidemic, an outlying thatched hut was pressed into service as a temporary though inadequate hospital. In these places the worst cases were handled; the others were given medicines with instructions how to take them, and sent home to treat them-

selves. A number of villages sent runners to Chichén Itzá for medicines, which were distributed, free of charge, until the supply was exhausted.

The epidemic was not particularly malignant, out of nearly 300 cases treated, only 8.5 percent had bronchial pneumonia, and of these only one died. The pneumonia cases were cared for as bed patients at the Clinic.

The Clinic drew patients from a radius of about 50 miles [80.5 km], many Indians walking long distances for treatment, mothers with babies in their arms, small children, even old men and women.

A total of 624 cases were treated during the season as shown in the following table. Most of these were cared for in the central Clinic at Chichén, but in addition outside clinics were held in the neighboring villages of Pisté, Xochenpich, Dzitás, Yulá, Nictéhá, Chan Kom and Kaúa.

The foregoing table requires little comment. In view of the epidemic, proportions of influenza this season it is not surprising to find that nearly half of the cases treated (47 percent) were for this disease alone. Dysentery and colitis come next with a total of 20 percent. Diseases of malnutrition such as pellagra and scurvy rank third with a total of 12.6 percent, and ophthalmia is fourth, 5.5 percent of the cases suffering from eye infections.

Table 10.2.1. Chichén Itzá Clinic Report, January 4 to July 10, 1929.

<i>Diseases</i>	<i>Children N Cases</i>	<i>Adults N Cases</i>
Influenza	105	165
Influenza complicated with pneumonia	15	10
Dysentery and colitis	75	50
Ascarus	10	5
Whooping cough	10	
Malaria (active)		10
Scurvy	4	
Pellagra		75
Ophthalmia	25	10
Skin Infections	25	
Accidents		30
Total	269	355

The very few cases of malaria treated is probably due to two factors: 1. There is very little malaria around Chichén Itzá itself, most of the cases being brought in from the outside, and 2. The clinic was open only during the dry season. A report of the same number of cases drawn from the same region for the last half year-July to January, that is, during the rainy season would undoubtedly show a much higher percentage of malaria.

Finally, it should be noted that practically 100 percent of the population, both children and adults, show ascarus infection, although very few are clinical cases, less than 2.5 percent during the 1929 season.

10.3.

GEORGE C. SHATTUCK
Medical Survey of Yucatán

YB 30:119-122, 1931

During the period under review, no field investigations were in progress, the medical party having returned from Yucatán in the spring of 1930. Since that time attention has been devoted to preparation of the report upon the work of the two preceding seasons. This is now ready for the press. It therefore seems appropriate to summarize the information gained to date, to formulate the outstanding problems which have emerged, and to lay plans for the future.

The object of the 1929 expedition was to make a preliminary medical survey of Yucatán. With this purpose in view two centers of population, Dzitás and Chan Kom, were selected for special study. Dzitás exemplified the small town of mixed population having railway communications with the outer world, and Chan Kom typified the large, isolated village of practically Maya stock. In both places, free clinics were held which made it possible, not only to examine a large proportion of the entire population of these localities, but also to supply the laboratory with quantities of material.

The physical examinations made in the clinics showed the development of the individual, his state of nutrition and the presence or absence of characteristic physical signs of diseases. The laboratory studies included estimates of hemoglobin, typing of blood specimens, Kahn and cholesterol reactions which have a significance like that of the Wassermann test, examinations of blood smears for malaria, Schick testing to determine susceptibility to diphtheria, examination of feces for protozoon or helminthic parasites, such as the amoeba of dysentery and the hookworm, culturing the feces for pathogenic bacteria, and bacteriological testing of water supplies. Local epidemiological data were obtained by abstracting the record of births and deaths in Dzitás, and by house-to-house visiting and census taking in Dzitás and in Chan Kom. Meanwhile, numbers of patients were examined and treated almost every day in the laboratory at Chichén Itzá, and visits were made to various Indian villages. Conditions in them were found to be similar to those in Chan Kom. During the 1930 season the principal objectives of study were the basal metabolism of Maya Indians, their blood pressures and their blood pictures with special reference to anemia. This work was done at Chichén Itzá. In Valladolid, the relative prevalence of syphilis among Maya Indians and Yucatecans was

investigated. Data on blood pressure, anemia, malaria and other diseases were likewise obtained.

The work of the expedition has provided much information about the prevalence and distribution of disease in Yucatán. This information relates not only to bacteriological and parasitic diseases but to maladies of nutrition as well. There is also a large quantity of statistical data upon infectious diseases in the districts of Mérida, Progreso, Ticul, Valladolid, and Peto, which was laboriously copied from unpublished official sources, and a quantity of meteorological data, based upon official observations over a period of five years in Mérida and also in Valladolid.

Our observations make it clear that dysentery and similar infectious diseases of the intestinal tract are responsible for about one-third of all the deaths in the State of Yucatán. Two groups of disease compete for second place: the malaras and acute respiratory troubles. The Maya Indians appear to suffer very little from syphilis; the significance of this phenomenon is not yet understood.

There are many medical problems in Yucatán which are worthy of further study.

1. The relative prevalence of the three kinds of malaria and their distribution in the peninsula is practically unknown.
2. The relative prevalence of amoebic dysentery, its distribution, and its significance as a cause of sickness or of death is a matter of conjecture. Further study of the bacterial dysenteries of Yucatán would yield very interesting results.
3. More information is needed about the prevalence of syphilis and of other venereal diseases and, particularly, as to the amount of damage actually caused by syphilis in Yucatecan communities. Related questions of the greatest scientific interest and of worldwide importance relate to the immunology of syphilis as it appears in various races in Yucatán, and among the Maya in particular.
4. The status of trachoma, a disease which might produce an important health problem in the future, should be known; and a satisfactory means diagnosis, as well as the cause and means of prevention of folliculosis the conjunctiva, should be determined.
5. It is of serious concern to those who engage in the gathering of chicle in the forests of Campeche or in those of Quintana Roo that means should be found by which they may protect themselves from "chiclero ulcer." Typical cases of this disease are believed to be caused by infection with *Leishmania*.

Further study of the prevalence and distribution of amoebic dysentery and of malaria in Yucatán will, probably, be undertaken in the near future; during the early months of 1931 additional information was obtained about folliculosis in Yucatán; and it is hoped

that investigations of syphilis and of other diseases among the Maya of Guatemala may be undertaken next year.

Although much more study is required to enable man to improve and to extend his control of infectious diseases in the tropics, and, to improve treatment for these diseases, so much has been learned already that a great deal can now be done wherever funds are available for the purpose.

But there is a vast new field of work which has scarcely been touched thus far and which will inevitably be recognized more and more generally as of paramount importance. I refer, firstly to the physiological mechanism of adaptation to life in the tropics, not only as it exists among indigenous races, but also as it affects individuals belonging to races which have developed in a temperate climate and who have gone to live in the tropics temporarily or permanently; and, secondly, to the discovery and application of means of mitigating the ill effects of tropical environment.

It seem that this great group of questions might be attacked from two sides; namely, by physiologists on the one hand and by climatologists on the other.

The work of the physiologist is greatly handicapped in the tropics by the presence of disturbing factors which may be impossible to control and which may, otherwise, be difficult or impossible to evaluate. Normal standards must be based upon the study of normal individuals, but malaria, hookworm disease, faulty diet, and unhygienic habits, such as the excessive consumption of alcohol, or a combination of these factors very frequently complicate the picture.

Yucatán has two special advantages for such studies: firstly, hookworm disease is practically non-existent there; and, secondly, malaria is far less common and is, generally, less severe than in other parts of the tropics. Unhygienic habits and doubt as to the adequacy of diet must be reckoned with in Yucatán, however, as in most other tropical countries.

The true nature and cause of "sun-stroke," "heat exhaustion" and "airiasis" requires further study, not only in various kinds of tropical environment but also in the hot summer climates of the temperate zone. Why, for example, is the sun regarded with so much dread in India and in Africa whereas in the tropics of the Western Hemisphere and in the Philippine Islands the sun seems seldom to have serious effects? Is this mere superstition or would close study of solar radiation and of other climatic factors in these various localities show differences which might prove equate causes for the prevailing beliefs?

The industrial hygienists have already made observations upon the effects of heat, humidity and dust content of the atmosphere and upon human beings who have been subjected for short periods to these

various influences under carefully controllable conditions, but what of the heat or humidity or both to which residents of the tropics are subjected for months, years, or throughout life?

Solar radiation has been analyzed quantitatively at Davos in Switzerland and elsewhere and new instruments have been devised for the purpose. But should not solar radiation be studied in different parts of the tropics by similar means? Has it been shown beyond doubt that invisible solar rays other than the ultra-violet are harmless? Have cosmic rays any significance for health? What of atmospheric ionization and atmospheric electricity, not only in the tropics but also in the temperate zone?

It is proverbially easy to ask questions and difficult to answer them, but are not most of these questions pertinent to health? Is it not essential that much more should be known about climate and acclimatization in order that the tropics may be fully developed in the future as sources of food and of other materials, which will be more and more urgently needed by future generations of man?

The problems here suggested are vast. Programs for attacking them will require not only the consideration of physicians, of physiologists, and of meteorologists, but specialists in certain branches of biology, of chemistry, and of physics will be able to make essential contributions also.

The expense of initiating such work will depend upon the breadth of the programs undertaken. Strong financial backing over a period of many years will be needed before the results are likely to provide the information necessary for the basis of a new hygiene of the tropics. Man must learn to minimize the ill effects of tropical climates which are now universally recognized to operate against the efficiency of races from the temperate zones when they undertake to live or to reproduce their kind in tropical environment.

10.4.

MORRIS STEGGERDA

Physical Anthropology in Yucatán

YB 30:124-125, 1931

One branch of physical anthropology studies living man and attempts to apply a yardstick to as many of his characteristics as possible. For the external fea-

tures of the human body, this yardstick is called an anthropometer for the brain, mental tests are used as a measuring tool; and for the physiology of the human being various chemical reactions serve as a basis for measurement. Human heredity may well be considered as a branch of physical anthropology. In heredity, emphasis is laid on likenesses or similar characteristics between offspring and their parents. These likenesses must be measured and tested in a similar manner to that employed by the physical anthropologist. Naturally race crossing offers a profitable field for the study of human heredity, since the more widely separated the parent stocks, the more obvious are characters recognized in the offspring. In Yucatán the Spaniards and the Maya Indians have interbred since the Conquest. If this process were still going on, it would be possible to get "F1" hybrids which from the standpoint of human heredity are essential.

By "F1" hybrids we mean hybrids of the first generation. After a general survey of four months in the State of Yucatán it is the opinion of the author that such crosses no longer occur, and the hope that such data can be secured in abundance will have to be abandoned. The survey, however, presented other problems of equal value. These problems are discussed later.

The purpose of the past season's work, aside from obtaining the survey, called for a study of the relatively pure Maya Indians, from three angles, namely, physical, psychological and physiological. The work progressed unusually well, due to the facilities offered to us and the contacts made for us by the staff of the Division of Historical Research of Carnegie Institution of Washington, at Chichén Itzá. The author was accompanied his wife, who acted as a recorder, and by a native Maya man who acted as interpreter.

At present the field records are being analyzed at Cold Spring Harbor. In this report only the numerical field results will be mentioned, along with some more general observations.

About 75 physical measurements were made upon each of 50 adult males, 50 adult females, and 175 children. These measurements include stature, length of arms and legs, body segments, measurements of head and face, palm, finger and sole prints, examination of teeth, description of hair and eyes, and others.

These measurements are being analyzed statistically and will in time be published. Those on the adults may well supplement the more extensive work, done in 1927 by Dr. G. D. Williams of Harvard, which will soon be published. The measurements of the children, it is hoped, will form only a beginning of a larger program of the study of growth of Maya Indian children. Such work is now being done for white children. From examination of the 200 palm prints which were gathered, there appears a distinct racial difference in the

pattern among the Yucatecan Maya, when compared with the white and black races already studied.

Psychological tests were selected with a great deal of care, so as to eliminate such natural barriers as difference in language, and also speed, our white children are taught from infancy that speed is a factor in life. The tests were given individually and no group tests were attempted. The tests include: 1. Knox cube imitation test (*Journal of the American Medical Association*, 1914, pp. 741-747); 2. Stringing of beads (Eugenics Research Association, 1931); 3. Hollow square (Harvard Monographs in Education Series I, no. 4, 1931); 4. Ferguson Form Board (*Journal of Experimental Psychology*, 1920); 5. Sequin form board (Goddard 1912); 6. String tests (Columbia Contribution to Education, 136); and, 7. Nonsense syllables (Eugenics Research Association, 1931).

The above tests were applied to 40 adult males, 25 adult women and to 35 children. In general it may be said that the males do better than the females. This is due quite likely, not to superior intelligence, but to the lack of forwardness on the part of Maya females who are exceedingly docile and reserved. The chief difficulty in giving psychological tests in the field is the fact that one cannot control the surroundings of the individual taking them. There are no doors to close and, if there were, it would not be expedient. It was apparent from the manner in which the natives took the Sequin Form Board test that they are instinctively honest, and not given to crafty trickery. It is the opinion of the author that advancement in mental testing of foreign races will be slow and difficult.

Physiological work was done in connection with the Nutrition Laboratory of the Carnegie Institution. Basal metabolism records were made on 31 Maya men, each man being run three periods per day for three successive days. In obtaining the basal metabolism of an individual, one must determine among other things the amount of oxygen he consumes in a given unit. A portable field instrument was designed to determine this. Other areas noted were pulse rate, respiration, age, height, weight, temperature, barometric pressure, etc. The results of this aspect of the work are a confirmation and an establishment of the fact that Maya men have a higher metabolic rate than the standard determined from white men in this country. They were found to be 7 percent higher than white men. This is probably a significant racial difference.

In performing the above outlined anthropological studies, care was taken to select individuals from relatively large families; thus the data can later be used in making family studies as well as merely averages for the physical anthropologist. Pedigrees for the families of Pisté and Chan Kom are now made and many interesting facts will be learned.

Naturally one questions the genetic purity of the race studied. It is the author's opinion that Maya Indians can be found in Yucatán who may be considered from 90 to 100 percent pure descendants of the original ancient Mayas. Mestizos can be found who would represent approximately 50 percent Indian and 50 percent Spanish blood. These, however, are not "F1" hybrids. It is true also that there are relatively pure whites to be found. There is, indeed, a large amount of anthropological work to be done on these three groups. Since the peninsula of Yucatán is geographically restricted, it forms an admirably compact and definite field; and since the facilities offered by the Division of Historical Research are so excellent, it seems most desirable that further investigations may be carried on there by the Department of Genetics. It is also hoped that similar studies may separately be made of other subdivisions of the Maya people, as for example, those found in the highlands of Guatemala.

10.5.

GEORGE C. SHATTUCK

Medical Research in Yucatán and Guatemala

YB 31:107-111, 1932

The Third Yucatán Medical Expedition: George M. Saunders, M.D., Clinician, in charge; Frank H. Connell, Ph.D., Protozoologist; Byron L. Bennett, Laboratory Technician, was in the field from June 23 to September 23, 1931. The primary purpose of the expedition was to collect information upon the various forms of malaria and amoebic dysentery.¹ The investigations of 1929 and 1930 had thrown much light upon the prevalence and distribution of disease in general in the State of Yucatán, but had provided insufficient data of this kind about the above two diseases, which are of special importance as causes of morbidity and of mortality in many tropical countries. Statistical data indicated that both malaria and amoebic dysentery are far more prevalent in Yucatán in the summer than in the winter and, consequently, it became clear that observations relating to them could best be conducted in the summer. Dr. Saunders' expedition not only undertook to do this but also to add to the series of blood-pressure measurements, a considerable number of which had been made by the other expeditions, and which indicated that excessively high blood-pressure is uncommon in Yucatán and, particularly so among the Maya,

their average blood-pressure being apparently distinctly less than that of the United States or Europe.

The nature of the investigation required the making of observations at a number of different places scattered over the State. A minimum of eight localities was selected, it being left to Dr. Saunders to cover others if time should permit. By energetic and rapid work his expedition succeeded in holding a series of clinics and in making the needed observations in 11 towns or villages; Mérida, Progreso, Chichén Itzá and vicinity, Valladolid, Temax and Buctzotz, Muna, Peto, Izamal, Dzilam Puerto and Telchac. On the average, about a week was spent in each place. This expedition was beholden to the Governor of Yucatán, Sr. Bartolomeo García Correa, and to numerous town officials, and to Sr. Fernando Barbachano P. for kind cooperation in furthering its objects.

The findings of Saunders and Connell indicate that infestation with amoeba of the type which cause dysentery is extremely common in Yucatán and it seems highly probable that this organism is in fact a serious menace there not only to health but also to life. The presence of the three types of malaria in Yucatán was demonstrated by finding the three varieties of malarial organisms, but comparatively few of the blood examinations made showed the presence of plasmodia. It appears, therefore, that although malaria has undoubtedly prevailed to a serious degree in parts of the State of Yucatán at various times, the disease was not very common in that State during the summer of 1931. Malaria in Yucatán is by no means the scourge that it is in most tropical countries. Undoubtedly, one reason for this is the comparative scarcity of surface water in which the mosquito vector might breed. The blood-pressure observations, in general, confirmed and strengthened those of the earlier expeditions.

The data obtained by Dr. Saunders' expedition form Part III of the full report of the three medical expeditions to Yucatán, now in press for publication by Carnegie Institution under the title of *The Peninsula of Yucatán*.

The First Guatemala Medical Expedition: George C. Shattuck, Clinician in charge; Wilhelm Curth, M.D., Dermatologist; Carlos Sánchez, A.B., Secretary and Interpreter; Byron L. Bennett, Laboratory Technician, was in the field from January 30 to March 22, 1932. Its objectives were: 1. To gain a general knowledge of the diseases prevalent in the highlands of Guatemala; 2. To compare the observed conditions with disease conditions in the low Yucatán peninsula with special reference to the Indian population, their mode of life, and other factors which might have a bearing on their health; 3. To obtain the fullest possible data upon the frequency and severity of syphilis among the Indians, as well as among the Ladinos (mixed bloods) of this

region; 4. To collect available statistical data upon mortality and morbidity in Guatemala as a whole; 5. To gather available climatological data.

Comparatively little has been published of a specific or even of a general nature about disease in Guatemala, so that there was needed a good deal of first-hand clinical information, as well as general information of the sort to be had by interviewing informed people on the ground. It was thought that differences in the prevalence of disease might be correlated with mode of life and climate and that certain inherent weaknesses or resistances of the Indians might be thrown into relief by comparing the health status of the Indians in the Guatemala highlands with that of the Maya of the lowlands of Yucatán.

It was not believed so important to study disease on the coastal plain and in the highlands because on the coastal plain the climate and environment is essentially tropical, and there was every reason to expect to find there the usual diseases of the American tropics. Moreover, the prevalence of malaria and dysentery there was well known through the hospital work of the United Fruit Co. and the Rockefeller Foundation had made special studies of the distribution of hookworm disease and of malaria in Guatemala.

A problem of far-reaching importance had been envisaged in Yucatán where it appeared to be a fact that the Maya have an extraordinary resistance to injury and perhaps also to infection by the virus of syphilis. This suggests that syphilis is an old disease among the Maya, and that, in consequence, they have acquired a higher degree of immunity against it than has been demonstrated in any other race. This hypothesis has an important bearing on the history of syphilis by implying that the disease existed in Central America long before the Conquest, that it originated there, and that it was first brought to Europe from the New World by the sailors of Columbus. Belief in an American origin of syphilis has long been held by many, but opponents still insist that it is much older in China than in Europe and that it came to Europe by way of the East. These considerations, and the doubts cast by expert serologists upon the above interpretation of our findings in Yucatán, caused the inclusion in the Guatemala Expedition of Dr. Curth, a specialist in skin diseases and syphilis.

After consultation with Dr. Kidder and others, plans were made to study the Indian and Ladino inhabitants of the villages about Lake Atitlán. Reconnaissance of the region led to choice of Panajachel as a base, and the laboratory was set up there in the schoolhouse. Introductions to officials had been most kindly furnished by General Ubico, President of the Republic, so that their cooperation was readily secured. It remained, however, to gain the confidence of the Indians

in order that they would come to our clinics for examination and treatment and would willingly permit us to take samples of blood to be subjected to serological examination for syphilis. Mr. Carlos Sánchez, who was sympathetic to the Indians and who knew personally some of those living about the lake, not only served as interpreter, but was of inestimable service in winning for us the good will of all classes of people of the region, with the result that we had an adequate supply of patients and no time was lost at Atitlán. At Chichicastenango, where a few clinics were held, Padre Rossbach helped us in the same way. The work went forward so rapidly that there was time to accept the invitation of Mr. Gordon Smith to continue our work on his coffee plantation. Although he had anticipated no difficulty, the Indians proved refractory and little was accomplished in the week spent there.

As result of the investigation, dysentery was found to be by no means as prevalent in the highlands of Guatemala as in Yucatán. Malaria of importance is found only in a few villages on the shores of Lake Atitlán. Hookworm disease is scarce, and when seen has always, or nearly always, been contracted during periods of work upon the plantations on the coast. In general diseases in the highlands are those of the temperate zone rather than of the tropics. Tuberculosis, rheumatic fever, cancer, and the degenerative diseases which affect the arteries, the heart and the kidneys are notably unusual, outside the large towns and cities. This is true not only in Guatemala but also in Yucatán.

As in Yucatán, so also in Guatemala, those of pure Indian stock, and to a less degree those having a large admixture of Indian blood, show an extraordinary resistance to damage of the virus of syphilis. Careful physical examination by Dr. Curth and 500 serological tests (300 on Indians and 200 on Ladinos) support this statement.

In the course of our work two other conditions were noted; namely, the prevalence of goiter and the high cost of quinine, which puts this drug beyond the reach of most of those who suffer from malaria. The President of the Republic, other high officials of the Government, and representatives of the United Fruit Co. all became interested in the suggestion that quinine for home consumption might be produced at minimum cost in Guatemala to the advantage of all concerned; and the Director General of Health accepted with alacrity an offer to collect and send him recent literature upon methods of preventing goiter.

NUTRITIONAL AND ANTHROPOMETRIC STUDIES

By far the most important of the manifold practical problems of human existence is that of filling the stom-

ach. Men must be fed before any other activity can be undertaken. The quality and quantity of their food determines their health and vigor; the ease or difficulty of its attainment regulates the amount of effort they may put into activities beyond and above the mere business of keeping alive. Food supply and physical environment interlock to produce the most cogent conditioning factors of any people's career. No anthropological or historical investigation can therefore strike very deep without taking them both seriously into account.

In research upon the Maya, questions of food arise at every turn. Interpretation of the findings of archaeology hinges, for example, very largely upon understanding of how it could have been possible for this race to have wrested a bare subsistence from a region at once so thin-soiled and so densely jungled, to say nothing of having garnered sufficient surpluses to have enabled them to devote obviously large amounts of their time to such superfluities as the building, without the aid of metal tools, the wheel, or beasts of burden, the huge religious structures with which many parts of their former range are literally crowded. All calculations of ancient population must be based upon estimates of the country's crop capacity; all judgment of the physical condition of the modern Maya must rest upon knowledge of the nature of their food.

An illustration of the last statement is provided by the inquiry into the basal metabolism of the Maya. Dr. Williams' original determinations, made at the instance of Dr. Benedict of the Institution's Nutrition Laboratory, showed the Maya to be paradoxical in possessing a very high metabolic rate combined with an abnormally low pulse. Dr. Shattuck's check confirmed Williams' and Dr. Steggerda's most carefully controlled recheck placed the matter beyond dispute. This extremely unusual condition may be, it is thought, innate, in which case it becomes a most useful criterion of race. It may be caused by action of the cold Yucatecan nights upon thinly-clad, blanketless hammock-sleepers. If so, it may have important bearings upon study of the functioning of the ductless glands. But, in either case, the problem can not be settled until we know exactly what the modern Maya eat to produce the bodily activities expressed by the basal metabolism measurements.

So both archaeology and physiology need information regarding food. And widely separated as are the problems which they seek to solve, they both, together with the many other inquiries which are also brought to grips with questions of nutrition, come down, in the last analysis, to insistent demand for a single piece of primary data: the man-per-day ration of the Maya Indian.

This seems a simple matter. But surprisingly enough, one discovers that the best we can offer is the

vague statement that the Maya live largely on corn in the form of tortillas, eked out by a certain amount of beans and other vegetables and a little meat. The exact amounts consumed, the quality of the various comestibles, the nature of their preparation; of all such things we are completely ignorant.

A start toward remedying this unfortunate situation was made during the past winter at Chichén Itzá by Dr. Steggerda, who, after learning the necessary technique in Dr. Benedict's laboratory, collected and preserved 65 food samples. He also made exact record of everything eaten by four Maya men for three successive days. The material has been sent to the Nutrition Laboratory for analysis. Many further observations will, of course, have to be made in different parts of the region, during all seasons, and upon people of various ages, economic positions and occupations.

While we are still upon the subject of food, it may be permissible, before taking up Dr. Steggerda's other work in Yucatán, to mention a second aspect of the matter which has not yet been given adequate attention. Before consuming his food, man must get it. The Maya staple is, and evidently for a long time has been, corn. Therefore of equal importance with the man-per-day ration is the corollary problem of the bushel-per-acre capacity of the land. This, again, is unknown, although several years ago Mr. O. F. Cook of the United States Department of Agriculture made, at Dr. Morley's suggestion, a beginning of such a study. It is imperative that it be continued. We must go into the whole agronomic situation, highland and lowland, in the greatest possible detail, learning from the historian all we can of farming practice at the time of the Conquest, from the ethnologist how the modern Indians sow and harvest, from the geologist and geographer the nature and extent of cultivable terrain, from the soil chemist its potentialities.

To return to Dr. Steggerda. This gentleman's collaboration in the survey is made possible by the Institution's Department of Genetics. His primary interest is in the genetic aspects of physical anthropology. He has carried on the anthropometric work begun by Dr. Williams and has added thereto a study of Maya growth, selecting, for continuing observation, with the expectation of following them year-by-year through adolescence to adult life, the children of Pisté and Chan Kom, Indian villages in the neighborhood of Chichén Itzá. For comparative purposes he is about to start a parallel study of Navajo Indian children in Arizona. He is also collecting data regarding certain large family groups. In 1932 Dr. Steggerda was in the field during March and April. Dr. Davenport, Director of the Department of Genetics, came to Yucatán with Dr. Steggerda to make acquaintance with the field and to gauge its possibilities for genetic research. It is one

of the greatest advantages of the Chichén Itzá headquarters that it permits members of the resident, staff to have contact with other scientists and to see their own problems from fresh points of view.

NOTES

1. The health survey of the Maya area is a joint undertaking of the Department of Tropical Medicine of the School of Public Health of Harvard University and Carnegie Institution of Washington. For reports upon the work of previous years, see [Chapters 10.1 and 10.3].

10.6.

MORRIS STEGGERDA

Anthropometric and Other Studies

YB 32:106-107, 1933

With Mrs. Steggerda acting as recorder, I began this season's work at Chichén Itzá on January 31. This was our third year of work in Yucatán on the problem of growth in different racial groups. In the Maya growing series, there are 92 boys and 78 girls from the villages of Pisté, Chan Kom and Xochenpich. These children have now been measured for three successive years and it is planned to measure them annually until all have finally matured. Similar series of white and Negro children have been measured, with which these will be compared.

It has been our purpose from the beginning to analyze genetically as many families as possible in the towns in which we worked. From the first year we have plotted pedigrees of the families, showing their relationship and the number of children per fraternity, also stillbirths and miscarriages. We have determined the relationship in detail of every family in Pisté several in Chan Kom and some in Xochenpich. At present we have 45 pedigrees, representing some 500 or more individuals; of the number fully two-thirds have been measured in detail, some of the children several times. Each season we measure additional members of the families, record any who have died, married, or moved away, and other like notes.

In order that the family study may be as detailed as possible and also possess sociological interest, we had made, with the cooperation of Dr. Morley, a map of Pisté showing all streets and houses. We then made a canvass of the town, and thus determined just who

lived in each house and the purpose of the house (dwelling, storage, kitchen, laundry, apiary, etc.). In addition, we have taken for permanent record typical photographs of streets, houses and yards. Furthermore, we made this season a complete census of the town. This includes the number of adult males and females and children both living and dead for each. fraternity, as well as the size of each man's milpa (corn field), during the last two years, number of horses, cows, pigs, chickens, beehives, dogs and other animals.

Realizing the importance of the agronomic problem for all Maya studies, I wished to gather as accurate data as possible regarding soil deterioration under cultivation. We know in general that the Indians abandon their milpa after two successive years, and that the corn yield is about 50 percent less the second year than it is the first. We accordingly selected a *mecate* (approximately 400 square yards [334.5 square m]) of typical land, bounded it with stones and took a sample of its soil for analysis. It is hoped that each year corn may be grown on this *mecate* and its soil annually analyzed in order to determine quantitatively the amount of deterioration and the percentage of loss in corn each year.

In addition to the above, there was made a study of the stature of the human figures carved upon the columns of the Temple of the Warriors, which indicated that while the sculptures are some shorter than living Maya, the range of distribution for stature is the same. This perhaps lends color to the theory that the figures are actual portraits of individuals. Another activity was the gathering of saliva samples from Pisté men for Dr. Weston A. Price of Cleveland, who is conducting researches upon the causes underlying dental caries. Mouth-casts were also made for Dr. Price.

Leaving Yucatán on March 4, we undertook a reconnaissance trip in the highlands of Guatemala and in the Mexican state of Chiapas, with a view of determining the possibilities of those regions for an extension of the anthropometric and genetic studies already under way in Yucatán.

We were able to measure several adults, making approximately 75 observations on each subject. A few of the essential dimensions are given below to indicate their general characteristics [Table 10.6.1].

From these figures it will be seen that the two groups are of about the same stature and that the Yucatán Maya have shorter and broader heads and are thus more brachycephalic than the highlanders. The Yucatecans also have broader faces.

We were impressed by the high percentage of goiter in the highlands and by the absence of baldness which is so common among Yucatán Maya women. The highland Maya are also more independent and seem more artistic than those of Yucatán. We have

Table 10.6.1. Anthropomorphic Measurements of Highland and Lowland Maya.

	75 Quichés and Mams Guatemala	77 Yucatán Maya
Stature	153.2	155.1
Head Length	183.7	180.4
Head Breadth	143.9	153.7
Cephalic Index	78.4	85.0
Bizygomatic Width	137	143
Bigonial Breadth	107	106

made some excellent contacts in Guatemala. We believe that the metabolism of these people should definitely be determined and also that further anthropometrical work should be done, so that a closer comparison can be made with the Maya of Yucatán.

10.7.

MORRIS STEGGERDA

Studies in Physical Anthropology and Human Geography

YB 33:98–100, 1934

As in recent years, the Department of Genetics has cooperated with Division of Historical Research by sending Dr. Morris Steggerda to Yucatán to carry on studies in physical anthropology and upon population.

One of Dr. Steggerda's major problems concerns the comparative growth of children of different racial groups. Maya children of the village of Pisté near Chichén Itzá, constitute one of these groups, Navajo, Dutch white, and Negro children constituting the others. One hundred and 70 Maya children have now been measured in detail for four successive seasons. Many of the young girls measured first in 1931 are already married and some have children, and likewise several of the boys have now taken their places among the working men of Pisté. Growth curves are being made of each of these 170 children, considering not only height, weight, span, sitting height, and others usually considered, but also the development of the teeth and other bodily proportions. We now have standards for the Dutch whites, Navajos and Negros, and in another year in Yucatán we hope to measure a number of Maya children who will form the standard with which we can compare our individual growth curves.

Dr. Steggerda has likewise studied the finger prints of a series of 127 Maya Indians of Yucatán. The prints have been treated in the usual manner, by considering pattern type, pattern size (quantitative value) and pattern form. In this series 33 percent were whorls, which is slightly less than is found in other collections of North American Indians, but considerably higher than among Dutch whites, who show an incidence of 20 percent for whorls. Arches among the Maya had a frequency of 7.6 percent; this is higher than is generally found. The hypothesis that a greater frequency of whorls occurs among brachycephalic than among dolichocephalic peoples was tested with the Maya and Dutch material, and the conclusion was reached that no correlation exists between fingerprint traits and cephalic index.

For a number of years, Mrs. Steggerda has been interested in racial differences in palmar dermatoglyphics. It has been known that three of the main lines on a Negro palm generally fall in positions 7, 5 and 5, and that in whites these lines terminated most generally in positions 11, 9 and 7. It is of interest that 27 percent of the Maya fall in an intermediate position, namely 9,7,5, with 22 percent in the 7,5,5 group and 17 percent in the 11,9,7 class.

For purposes of genetic study, Dr. and Mrs. Steggerda have been plotting the family relationships of the Indians with whom they have been working in Yucatán. For the village of Pisté, which has been the seat of much of their investigation, they have accurately recorded all family relations. Thus, every person is accounted for on some pedigree. Each year the pedigrees brought up to date in the matter of births, deaths and marriages.

Thirty-four Pisté mothers, whose reproductive spans have been completed, produced 264 children, or an average of 7.8 children for each woman. The chances are that the rate is even higher, since not all dead children have been recorded. Of the 264 children, 90 are known to have died, which is approximately 34 percent. This figure is undoubtedly lower than the actual mortality rate. Family data of this sort, when fully tabulated, will permit computation of not only the average number of children for a large number of mothers, but also the average age of the mother at the birth of first child, which appears at present to be much younger than among white mothers. It will also be possible to determine the number of legal husbands and wives per individual, which is also higher than for whites.

In order to gather data bearing upon the problem of population shifts in Yucatán there was begun an accurate yearly study of other people of Pisté. It was learned from an elderly woman that when she first came to Pisté 50 years ago there were only six or eight families in town. Now there are more than 50.

Table 10.7.1. Population of Pisté, Yucatán, 1933 and 1934.

	1933	1934	Increase	Arrivals from Other Towns	Left Town
Adult males	85	101	16	14	4
Adult females	70	85	15	15	2
Boys	78	89	11	8	3
Girl	74	96	22	10	1
Total	304	371	64	47	10

From this table can be seen the results of migration and change. Fourteen adult males arrived from other towns, and four left, making an increase of 10. The difference between this figure and the total increase in men (16) is accounted for by the recruiting of six town boys into the adult group. The names and relationships of all these men are known and recorded, as well as those of the women and children. It is of interest to note in this connection that in 1933 there were 72 men subject to police duty as compared with 82 in 1934. In 1933 there were 13 men listed as officers, aged, sick and inactive as compared with 19 in 1934. In 1934 there were 68 fraternities (husband, wife and at least one child) in Pisté. Dr. Steggerda has also collected statistics upon births, deaths and marriages in Pisté; he has made a house-by-house census; and has listed and classified buildings and outbuildings. He has likewise collected statistics upon livestock of all types, upon food consumed, and upon soil deterioration. All these classes of information will be of the greatest value for the eventual synthesis of the human geography of Yucatán.

10.8.

S. T. CLARKE

Investigation of Chiclero Ulcer

YB 33:108-109, 1934

As a cooperative project of the Department of Tropical Medicine of the Harvard Medical School, the Chicle Development Company of New York, and Carnegie Institution of Washington, Mr. S. T. Clarke spent part of the summer of 1933 in the Department of the Petén, Guatemala, in an attempt to determine the method of transmission of "chiclero ulcer," a form of epidermal leishmaniasis particularly prevalent among persons who gather, in the jungle, the substance known as chicle, the basic ingredient of chewing gum. Mr. Clarke

reached his base at El Paso, a station of the Chicle Development Company, by boat via the Usumacinta and San Pedro Rivers. Work was carried on at El Paso and at camps in the forest where the chicleros were engaged in bleeding chicle.

"Chiclero ulcer" is a disease apparently always contracted by men actually at work in the jungle. Lesions occur on exposed parts of the body, most commonly on the ear, which in severe cases is eaten completely away. About 10 percent of all chicleros in the infested region are sooner or later attacked. The method of transmission of the causative agent is unknown. As "chiclero ulcer" is seemingly never contracted by one individual from another directly, it has been thought that contagion must be brought about by an insect vector. The objective of Mr. Clarke's journey was a preliminary study of the manifestations of leishmaniasis in the Petén and collection of the local insects which commonly bite man and animals and of which some one may be responsible for the spread of the disease.

Several cases of chiclero ulcer were examined, and statistics were gathered as to its incidence according to season, occupation, age and sex. It was found to occur only during the rainy season; and among adult males working in the chicle forest. It is evidently the result of exposure to conditions occurring only in the active pursuit of chicle gathering, for, as far as could be learned, it never appears in towns or even among the women and children, limited numbers of whom sometimes accompany the men as far as the forest camps.

Various insects have been suspected as carriers: especially sand-flies and the yellow fly (probably the hippoboscids, *Olfersinoe coriocea*), which lives or feeds under the wing of a large forest bird, the faisán (*Crax globicera*). The chicleros almost uniformly believe that the latter is to blame. Mr. Clarke's endeavor to identify the vector had negative results. He was unable, in spite of very careful search, to find any sand-flies in the region; nor could he discover hippoboscids upon the few faisans which he succeeded in shooting.

Furthermore, no faisán or other bird or animal collected showed any sign of lesions similar to those produced by leishmaniasis in man. Mr. Clarke believes, however, that an animal of some sort must act as reservoir for the disease and that the carrier is probably a natural parasite of this host which will also bite man when he lives or works in the same environment that is occupied by the host.

In addition to his study of "chiclero ulcer," Mr. Clarke gathered valuable data upon traveling conditions, and the social and economic life of the few inhabitants of this sparsely and seasonably populated section of the Petén. His notes upon these subjects have been added to the files of geographic and ethnological information at Division headquarters.

10.9.

MORRIS STEGGERDA

Physical Anthropology and Human Geography

YB 34:129-132, 1935

The Department of Genetics has again cooperated with the Division of Historical Research by making it possible for Dr. Steggerda to continue field work in Yucatán.

In his visits to the peninsula, Dr. Steggerda has been concerned primarily with the growth of children, this investigation forming part of his larger program in the comparative anthropometry of childhood and adolescence.

He has now carried the work at the villages near Chichén Itzá where he is able to make the necessary annual measurements in a relatively short time and is consequently free to devote a part of each field season to other somatological problems and to studies of the human ecology of the region. By so doing, Dr. Steggerda has contributed signally to the Division's program by undertaking researches in somatology, agronomy, nutrition and various other aspects of present-day native life, all of which are of great importance for the interpretation of Maya history, but which neither are archaeologist nor archivist is competent to prosecute.

On the physical side, Dr. Steggerda confirms the opinion of other observers that the Maya are among the shortest of all North, and Central American Indians. During the past year it was found that the Maya from the eastern part of Yucatán (Chichimila) are statistically equal in stature to those in the Chichén Itzá area. Their heights are 156.62 ± 0.42 cm for men 142.85 ± 0.46 c. for women, as compared with the Chichén males of 155.11 ± 0.40 cm and females of 142.72 ± 0.42 cm. It is of interest also to find that the Mam and Quiché males measured in Guatemala averaged 154.66 ± 0.47 cm. Dr. Steggerda believes that the natives of Chichimila possess somewhat more Spanish blood than those of the Chichén region, and that those from Chichén are in turn perhaps more mixed than the Quichés of Guatemala. This may account for the differences in stature for the three groups. Possible mingling with other native stocks, environmental conditions and food-supply must, however, all be considered as factors bearing on this problem. During the past five seasons a considerable portion of the state of Yucatán has been examined, with the result that the Indians of the Chichén Itzá area are thought to represent as pure a Maya type as can be found in northern Yucatán.

In 1935 there was also opportunity to measure four Maya from San Cruz de Bravo. In bodily proportions these Indians conform very closely to the Chichén Itzá type. In stature they were equal to the general average from northern Yucatán. Their cephalic index ranged slightly lower. Their teeth were excellent.

In collaboration with Mrs. Steggerda, a paper has been completed on palmar dermatoglyphics, with special reference to the Maya. The palm prints of the Maya are characterized as follows: 1. A high frequency of the 9.7.5 type of formula; 2. An unusually vertical general configuration of the palm, as indicated by the proximal terminations of Line A; 3. The frequent reduction of Line C to a rudimentary and more often a totally absent condition; 4. The occurrence of a single comparatively low axial triradius; 5. An unusually low incidence of the hypothenar pattern; 6. The low incidence of the second and third-interdigital patterns; and 7. The exceedingly high frequency of the thenar-first interdigital patterns. It is most significant that the Chinese studied by Wilder (1922) conform in every detail except the last to these characteristics. It is only in the low percentage of the thenar-first interdigital pattern that the Chinese, and Mongolians in general, differ significantly from the Maya and other American Indians.

With Dr. T. J. Hill, Professor of Clinical Oral Pathology of Western Reserve University, analysis has been undertaken of the tooth condition of the Maya Indians. Over 1,100 mouth examinations have been made. Of males whose permanent teeth have erupted, 19.6 percent have caries to some degree, as compared with 21.7 percent for females. This means that of the Indians of the Chichén Itzá area nearly 80 percent do not have caries in their permanent teeth. Considering the extent of caries in such persons as have tooth defects, it can be said that the males have on the average 2.8 cavities and the females 5.3. The conditions found in the deciduous teeth are also of interest; as compared with those of the whites they are remarkably free from caries. The percentages are higher in the deciduous than in the permanent teeth. For comparative material Dr. Steggerda has observations on more than two thousand young Navajos, of whom only 15 percent of the males and 21.7 percent of the females had carious permanent teeth. The Dutch white material, which will also serve for comparison, is not yet fully analyzed, but there is every reason to believe that it will not vary greatly from the usual carious condition found among whites, which is at least four times greater than that found in the above two Indian populations.

The investigation on the food of the Yucatecan Maya is approaching completion. It has been shown that their diet is very rich in carbohydrates and low in proteins. From weights of the foods consumed daily

by Maya laborers, it was learned that between 75 and 85 percent of their diet consists of maize products.

The vital statistics of the village of Pisté, in the immediate vicinity of Chichén Itzá, have been gathered over a period of several years. The following is a summary to date. In 1935 there were 415 inhabitants, of which 207 were males and 208 females. In this town, during the last 17 years, the birthrate averaged 60.1 per 1,000 and the death rate 31.7 per 1,000. Of all the children born in 109 families, 17.2 percent died under two years of age. The sex ratio of the children born was 108.5 males to 100 females. The average number of children per completed family was 6.7, and the interval between the births was 28 months. The average age of the women at the time marriage is about 15.7 years. However, this figure is not as accurate as it should be, since many of the recorded ages are not official. The average age of mothers at the birth of their first child, based on exact birthdays, is 18 years.

From the animal census taken in Pisté during the last three years a number of interesting facts have been learned. For example, in 1933 the ratio of horses to people was one horse to 4.7 people; in 1934, one to 5.9; and in 1935, one to 7.5, indicating a decrease in horses for the three years, whereas the number of cows has considerably increased. For example, in 1933 there was one cow to 6.6 people, but in 1935 the number of cows increased to make the ratio one to 4.2. If horses are considered a luxury, then Pisté is less wealthy in 1935 than it was in 1933. This may be directly associated with Carnegie Institution's work at Chichén Itzá, since little excavation was done in 1934 and 1935, and for this reason the people have shifted toward the raising of cattle. Comparing these figures with statistics from the towns of Chan Kom and Xochenpich, it may be noted that in 1935 both of the towns had more horses per one person than did Pisté, and Chan Kom had many more cows than did either Pisté or Xochenpich. The figures are as follows: Chan Kom, one cow to 1.4 people; Xochenpich, one cow to 3.8 people; Pisté, one cow to 4.2 people. From the Pisté records the ratio of pigs to people was one to 1.1 in 1933, one to 1.2 in 1934, but in 1935 the number of pigs had decreased so as to make the ratio to one to 10.1 people. The low percentage of pigs was due to hog cholera, since the ratio of pigs to people in Chan Kom and Xochenpich in 1935 was approximately that which was noted for Pisté in 1933 and 1934. Figures have also been gathered as to the ratio of turkeys, chickens, cats, dogs, goats, and bee hives to people.

10.10.

MORRIS STEGGERDA

Anthropology and Human Geography

YB 35:140-142, 1936

The Department of Genetics has continued its greatly appreciated cooperation with the Division of Historical Research by making it possible for Dr. Steggerda to continue field work in Yucatán.

Dr. Steggerda's program for comparative studies on the growth of children of different races has included measurements of some 146 Maya children, 81 of whom have now been measured five or six consecutive years. Forty-six observations have been made on each of these children each year. During the past year Dr. Steggerda has attempted to secure a large number of additional children of each age, in order to establish standards to which growing children may be compared for individual differences. At present, individual growth curves for 15 of these observations have been plotted for each of the 81 Maya children measured five or six years. Next will follow a comparison with other races. In this connection it may be said that for all ages from six years to adulthood the Maya average about 10 cm shorter than Navajos. Thus, the characteristic of shortness already exists at the age of six, perhaps even earlier, and persists throughout the growing years. Data for ages below six are being accumulated.

The study of tooth decay among the Maya has now been completed. The Maya have excellent teeth. Evidence for this statement is based upon comparative studies made by Dr. Steggerda on Navajo Indians, Jamaica Negroes and Dutch whites. For the age group between six and 10 years there were 16 times more individuals among Dutch whites affected by tooth decay than among the Maya, and in the 11 to 15 year class there were eight times more whites than Maya. Considering the percentage of carious to sound teeth in the two groups, the whites were 21 times higher than the Maya in the six to 10 year class, six times higher in the 11 to 15 year class, and nine times higher in the 16 to 20 age group, in which group all milk dentition had been lost.

One problem, which concerns all anthropologists, is the age and cause of death in a population. There are records in Yucatán which give date and cause of death, and a stated age for each entry. The recorded ages, however, are nearly all in round numbers. An earnest effort was made this year to determine the degree of error in the stated age in the Yucatán death records. This was done by securing the birth record of as many death entries as possible. Thus in the 35 to 39

year age group the fluctuations from the correct age ranged from minus 14 to plus nine years in error. Only four out of 20 entries were given accurately. It is hoped that in another year enough figures for all ages will have accrued to indicate the statistical error in the Yucatán death records. If this can be determined we shall be able to state accurately the life span of the Maya.

Dr. Steggerda's agronomic survey has reached the point where it can be said that the average size of 442 farms (milpas) in the Chichén Itzá area equals 97 mecates or 9.6 acres [0.04 sq km]. This average was calculated over a four year period during which weather conditions caused fluctuations in milpa size, making the average more significant. In the fertile Puuc area 122 milpas near Pencuyut average only 4.5 acres [0.02 sq km], which is less than half the size of those near Chichén Itzá. The data also show that the first-year milpas are approximately 15 to 20 percent larger than second year milpas.

Estimates of corn yield in the Chichén Itzá area were obtained from 111 farms. The estimated average yield was 0.72 cargas per mecate. First year milpas yield 0.80 cargas and second year 0.63 cargas per mecate. Realizing that these figures were based on very rough guesses, Dr. Steggerda enlisted the cooperation of some of the most influential farmers in weighing and measuring all corn produced on a given field. When this was done the figures increased tremendously; for example, on four such farms the yield was found to be in one case 1.3 cargas per mecate, in two cases 1.5 cargas, and in the fourth 1.7 cargas per mecate or, in American terminology, an average of 25.3 bushels per acre [4046.9 square m], which compares favorably with the average yield throughout the United States. The results, however, are inaccurate, since the length of the measuring rope with which the ground laid out varies from 19 to 23 m. In another year it is hoped eliminate this error.

The results of experiments on soil deterioration are accumulating. At present, after four years, there seems to be as much fluctuation in amount of nitrogen, carbon, calcium, phosphorus, etc., in the control plot, which in uncultivated bush, as there is in the other plots, one of which is in active corn production and the other reverting back to bush. This fact lends evidence to the theory of weed competition recently advanced by Kempton of the United States Department of Agriculture.

With the cooperation of Mr. Ralph Roys, Dr. Steggerda selected from Roys's *Ethno-Botany* 30 plants which were most commonly used as medicine by the Maya in the eighteenth century. Roys states in his introduction that many of these usages have altered little since the sixteenth century, when Maya medicine was

still unaffected by Spanish influence. From the writings of three present-day Yucatecan doctors and verbally from four Indian herbalists from different pueblos, the present usages of plants in question have been learned. Twelve of the 30, or 40 percent, of which have been scientifically identified, have been employed consistently over several hundred years by the Maya for specific ailments. In the other 18 cases there was confusion in vernacular designations, the same common name being applied to different plants, thus Roys's citation may apply to species other than those under consideration. Five of 30 plants put to service in colonial times are not used by in herbalists, and two now consistently employed for specific complaints formerly used for other diseases. Although it has been stated that there is but little pharmaceutical science involved in the medicinal usages of plants by primitive people, it is nevertheless interesting that confidence in therapeutic value of 40 percent of the group should have persisted, nearly four centuries.

10.11.

MORRIS STEGGERDA

Anthropology and Human Genetics

YB 36:150–151, 1937

Dr. Steggerda's studies of the living Maya of Yucatán, which have been made possible by cooperation of the Institution's Department of Genetics, were continued.

Dr. Steggerda has previously reported a lower incidence of dental caries in the Yucatán Maya and the Navajo Indians than in Dutch whites in Michigan and in other white groups reported in the United States. This season Dr. T. J. Hill, of Western Reserve University, checked Dr. Steggerda's findings in Yucatán and in addition showed that the percentage of Maya Indians free from *Bacillus acidophilus* was considerably higher and the number of these bacteria in individual mouths was relatively lower than for whites in the United States. These results are extremely important in that they support the theory that tooth decay in humans is directly related to the presence of *B. acidophilus*. The diet of these Indians, previously shown to be largely carbohydrate, should not deter the growth of these organisms.

The 150 Maya children who constitute part of the problem on comparative growth in different races have

now been measured for seven consecutive years. Since many are now married and have children of their own, Dr. Steggerda feels that the field work is now complete and the data are ready for analysis.

The agricultural survey of the Maya will require one or two more seasons; however, at present it is possible to supply the following facts: The average, size of Yucatán milpas is 99.23 mecates or 9.8 acres [0.04 sq km]. The yield per micate is still indefinite, but it may be fair to consider it as one carga per micate, or 17 bushels per acre [4046.9 square m]. An average family of five individuals consumes 6.65 pounds per day or approximately 64 bushels per year. It was determined that it takes nine hours on the average to produce one bushel.

Family statistics are also available showing that the average number of children per woman whose reproductive life is complete is 8.14. The reproductive span for 39 women was found to be 16 years. The average age of Maya girls at marriage is 16.3 and their age at the birth of their first child is 17.8. The average interval between births is 27 months.

In last year's report were discussed the medical usages, by the colonial and modern Maya, of 25 Yucatecan plants. This year 100 additional medicinal plants were studied. Dr. Steggerda's tabulation now also lists other plants used by the modern Maya for food, lumber, and miscellaneous purposes.

Cooperative projects dealing with problems on the psychology of the Maya are in progress.

10.12.

T. D. STEWART

Anthropometry of the Highland Maya

YB 46:195–197, 1947

The late Dr. Aleš Hrdlicka had planned to visit Guatemala in December 1943 to take measurements and observations on the highland Maya, but he died in September of that year. His successor in the curatorship of the Division of Physical Anthropology, United States National Museum, Dr. T. D. Stewart, finally undertook this work during the first three months of 1947. His trip was made in cooperation with the Guatemalan government and under the program for co-operation with the American republics through the State Department and the Smithsonian Institution. In addition to

studying the living, Dr. Stewart examined the available prehistoric skeletal remains, especially those recovered at San Agustín Acasaguastlán (Smith and Kidder 1943), at Kaminaljuyú, and at Zaculeu.

The main objective of Dr. Stewart's trip was to obtain information about the highland Maya which would enable him to make comparisons with the lowland Maya of Yucatán. These two groups, although rather widely separated geographically and exhibiting differences in material culture, nevertheless belong to the same linguistic stock. According to J. Alden Mason (1940:70), "The Maya stock is unusually homogeneous both as regards geographical location, and linguistic differentiation. It is really too unified for even the major divisions to deserve the rating of 'families,' and many of the so-called 'languages' differ only dialectically." Since language is fairly resistant to change (more so than material culture), considerable interest attaches to the question whether this linguistic homogeneity reflects a similar status in physical type.

Anthropometric records on the Maya Indians of Yucatán, obtained through the interest of the Carnegie Institution by G. D. Williams and Morris Steggerda, have already been published (Steggerda 1932, 1941; Williams 1931). For the highland groups of Guatemala, on the other hand, only two anthropometric studies are on record, one by Oliver La Farge and Douglas Byers (1931) and the other by Ada d'Aloja (1939). Neither of these Guatemalan studies, which are themselves not very well known, includes comparisons with Yucatán.

Dr. Stewart undertook the collection of data that would supplement those already available and at the same time allow their fuller interpretation. Since in Guatemala the municipio, being endogamous, is the basic unit for ethnic study, as Dr. Sol Tax (1937) has shown, Dr. Stewart restricted his study to two municipios within one linguistic subgroup, the Cakchiquel. First at Sololá, Department of Sololá, and later at Patzún, Department of Chimaltenango, he obtained comparable series of males, 82 and 72 respectively. At Patzún, moreover, he obtained a series of 35 females. All together this is the largest series from one highland linguistic group thus far studied.

In addition to the routine anthropometric measurements, observations, and photographs, the records

obtained this season include blood groups (A, B; M, N), taste sensitivity to phenyl-thiocarbamide, palm- and fingerprints, and hair samples. Arrangements have been made for Dr. William C. Boyd, of Boston University School of Medicine, to analyze the blood groups and taste records, and for Dr. Harold Cummins, of Tulane University Medical School, to analyze the dermatoglyphics.

Preliminary inspection of the anthropometric records indicates that the Cakchiquel are lighter complexioned, slightly lighter in weight, longer headed, narrower-faced, and broader nosed than the lowland Maya of Yucatán. Also, there are some significant metrical differences between the samples from Sololá and Patzún, a fact which suggests that, as suspected, inbreeding is producing local varieties in the highlands.

In his examination of the skeletal remains Dr. Stewart gave special attention to evidences of cultural practices, such as artificial deformation of the head and dental mutilation. The former, almost universal in the collections examined, mostly consisted in flattening of the occipital in the vertical plane ("cradleboard deformity") combined with frontal flattening. Previously this type had been reported only from Tajumulco (Stewart 1943). In other cases, especially at Kaminaljuyú, only frontal flattening was present. Also, at Zaculeu some evidence of the so-called "lambdoid" deformity was found in skulls from the most recent tombs.

As for dental mutilations, five examples of filed teeth were observed in the Zaculeu collections. One of these is a new type, or at least not included in the Borbolla key (Rubin de la Borbolla 1940), whereas the others are types known from elsewhere in the Maya area.

It is regarded as desirable that the experience gained in this successful first season be utilized for the extension of these observations elsewhere. For example, it is important to learn to what extent in the highlands the barrier of language is an aid in the formation of physical types. In this connection the Quiché, neighbors of the Cakchiquel, or the Mam, neighbors in turn of the Quiché, should be more fully studied. If the records are made by one observer, moreover, they will be more uniform and less subject to multiple personal biases.

11.0. BELIZE

11.1.

J. ERIC S. THOMPSON

Excavations in British Honduras

YB 33:95–98, 1934

As a joint project of the Field Museum of Natural History and Carnegie Institution of Washington, Mr. J. Eric Thompson visited northern British Honduras in the winter of 1934. The purpose of the expedition was to continue promising earlier investigations made in this region by Mr. Thompson, one of the specific objectives being to follow certain clues indicating the possibility of recovering archaeological evidence bearing on the much debated question of the correlation between Maya and Christian chronology.

Recent study of this problem strongly suggests that one of two proposed correlations is correct. According to that of Spinden, the Maya date 10.3.0.0.0, which is the latest so far found at Old Empire sites (Uaxactún, Naachtún, La Muñeca) and which is therefore thought to register a year shortly before the close of the Old Empire, corresponds to 639 A.D. Under the alternative Goodman-Thompson correlation, 10.3.0.0.0 should be 260 years later, or 899 A.D.

Settlement of the correlation problem is eminently desirable, for as long as so serious a difference exists

between the two most generally approved systems, it is impossible to take full advantage of the remarkably complete chronological documentation of early Maya sites. Dates in the Old Empire Long Count are, it is true, accurate in relation to each other, and therefore correctly express lapses of time during the era in which they were in use. But until we are able to relate them, in terms of the Christian calendar, with the abbreviated dates of the New Empire, we can not properly interpret evidence bearing on the extremely important period of the abandonment of the southern cities and the rise of the great late centers of northern Yucatán. If the Spinden correlation be correct, one must allow, for the phenomenon of transition, over 250 years more than is required by that of Goodman and Thompson. And a full quarter of a millennium is a great amount time, when one is attempting to evaluate historical events or cultural changes

In addition to its large significance for Maya research, the correlation of Old Empire with Christian dates is necessary for proper understanding of what

took place in Middle America as a whole. The Maya calendar offers the only absolute chronological yardstick we are ever likely to have for measuring the growth and spread of cultures in that field. And unless we can be certain as to where that yardstick should be laid, it is of relatively little use.

Attempts to solve the correlation problem have, to date, been founded upon two sorts of evidence: historical (post-Conquest records, Maya and Spanish), and astronomical (internal evidence from the monuments and codices). The archaeological attack has not yet been seriously undertaken. This holds considerable promise of success, for if it be true that either the Spinden system or that of Goodman-Thompson must be correct, it seems certain that intensive analytical study of Maya remains with thoroughgoing comparative work upon adjacent and allied cultures will enable us to decide whether the 250 year period should or should not be interpolated. Judgments as to short time-intervals can naturally not be made on the basis of archaeological findings; but they should certainly permit us to deal confidently with a span as long as the one in question.

The following of an archaeological clue bearing on correlation was, as has been said, one of the objectives of Mr. Thompson's work in British Honduras. The Field Museum expedition of 1931, under his direction, had revealed at San José, west of Belize and about 12 miles [19.3 km] from the Guatemala border, ruins containing pottery of non-Maya ancestry (though probably of Maya manufacture) which appeared to be of late date, yet which seemed to be associated with typical Maya wares of the Old Empire. Could this association be confirmed, it would of course argue for the correctness of the shorter Goodman-Thompson correlation. The excavations were accordingly planned and carried out with a view to recovery of all possible stratigraphic data.

The ruins of San José consist of two ceremonial plazas of the usual Maya; that is, they are flanked by a series of mounds, some of which are surmounted by stone-vaulted rooms. The largest mounds attain heights of to 40 feet [12.2 m]. In addition to the main groups there are two smaller consisting of low house mounds facing small courts, and a series of scattered mounds and structures including a ballcourt. There is only one and that is plain.

The investigation resulted in establishment, on stratigraphic evidence, series of five sequent ceramic periods designated San José I to V. The earliest, San José I, was but sparsely represented. Its pottery seems to show affinities with the wide-spread, and evidently important, but not yet accurately located or described, early complex at present known as the "Q" culture. San José II wares bear likenesses to those of early

Holmul, Uaxactún I and, possibly, Teotihuacán II periods. The principal San José III ware can be correlated with certain pottery from the Mountain Cow region of British Honduras, which, from associated finds, is perhaps relatable to Holmul V. San José IV represents, apart from olla ware, a break from San José III, but may possibly be correlated with Uaxactún III, but is possibly later than Holmul V. San José V is clearly a lineal descendant of IV. Several IV wares continue almost unmodified to the end of San José V. This suggests a short time-interval.

If one can link San José III with Holmul V, and if Holmul V has been correctly assigned to the close of the Old Empire, then the fact that San José V was apparently a short period closing not long before the Conquest would indicate that possibly there is no room for the 260 extra years required by the Spinden correlation, but rather that the Goodman-Thompson dating may itself be actually too early, and that 10.3.0.0.0 may have fallen less than 500 years before the arrival of the Spanish.

So little is really yet known of Maya ceramics that one can not make categorical statements but it would seem highly improbable that all architectural and ceremonial activities in the Petén ceased 900 years before the Spaniards came. The answer to this question might be supplied by the ceramics of Tayasal. Should Yucatecan pottery be found there in quantities in association with that characteristic of the close of the Old Empire, one could postulate that the Old Empire persisted up to the time of the migration of the Itzá in the late fifteenth century.

Thus, while no conclusive determination was made of the length of the period of transition, the classification and sequential ranking of the local wares and the linking with them of various foreign types constitute a very important advance in the study of Maya ceramics.

At present it seems probable that San José was founded at the beginning of the Old Empire, and that the region was continuously occupied until shortly before the coming of the Spaniards. Period IV witnessed the greatest building activity. During Periods IV and V trade with other areas was at its height. In V deposits, pottery spindle-whorls occur for the first time; two of these are of Huasteca or northern Totonacan origin. At the same time marble vases were being imported, perhaps from the Ulúa valley in Honduras; as well as typical "paint-trickle" decorated ollas from Yucatán, ollas from Oaxaca and finely carved pottery. Strangely enough, no Plumbate Ware appeared. In general, Uaxactún ceramic influences seem to have been more potent than those of Holmul, although Holmul is much nearer and practically lies between Uaxactún and San José. In the same way, San José should have cut off the

flow of Holmul influence to Santa Rita, which lies beyond and which shows many Holmul traits.

Such paradoxes as the above, encountered at the beginning of an investigation, are temporarily confusing; but the very fact that a ceramic situation is complex shows that many types were evolved and that trade, or at least interinfluence, was strong. Such conditions result in deposition of remains which, however puzzling at first contact, most amply repay intensive study. Mr. Thompson's earlier work in the El Cayo district and the past year's excavations at San José indicate that British Honduras, while lacking the spectacular ruins of Guatemala and Yucatán, is a very promising field for further investigation.

11.2.

J. ERIC S. THOMPSON

Reconnaissance and Excavation in British Honduras

YB 37:152–153, 1938

Early in 1938 Mr. Thompson made a reconnaissance of the northern part of the Great Southern Pine Ridge of Central British Honduras in an endeavor to find traces of a pre-agricultural horizon. This elevated broken area, the flora of which is pine, grass scrub oak, and a type of palmetto, is quite unsuited to maize cultivation, yet it was known that a number of cairns, consisting of heaps of stones around slate shafts, were situated on many of the highest points. Excavation of these produced negative data as to when they were erected. No caches were found, but a few sherds including incensario fragments and a pressure-flaked flint point among the stones pointed to their use during the Maya period, presumably in the same way that mountain tops were used as shrines by the Chols and highland Maya into colonial times.

At the close of this reconnaissance a small outlying group at the ruins of Benque Viejo (Xunantunich) was excavated. Previous work at San José and Mountain Cow had revealed close similarities in the earlier ceramic phases, but rather marked divergence in the later phases, Mountain Cow late pottery resembling that of Uaxactún more closely than that of San José. Since the connections between late San José and late Uaxactún (Tepeu Phase) pottery were largely indirect, and dependent on Mountain Cow, it was thought that study of late periods at a site about halfway between

San José and Mountain Cow might clarify problems of contemporaneity. Benque Viejo was chosen as being very accessible and roughly equidistant from the three sites.

Excavation yielded three Sequent phases, correlatable with San José III, Transition III-IV, and close of San José IV, and a fourth, unstratified, corresponding to Uaxactún 1a (Mamom). Since sherds from Benque Viejo of forms occurring in Uaxactún Ib (Chicanel) and Uaxactún II (Tzakol), which in turn correspond to San José I and II, are in the Peabody Museum, Harvard University, a complete series for this site now exists.

In the phase correlatable with close of San José IV, the resemblances to certain Tepeu features are more marked, and correspondences with Mountain Cow are close in all three phases. The last Benque Viejo phase shares with close of San José IV and San José V the absence or extreme rarity of polychrome pottery and introduction of carved pottery.

Excavation at Benque Viejo has, therefore, helped to clarify relations and divergences between San José, Mountain Cow, and Uaxactún, and confirms the disappearance of polychrome pottery toward the close of occupation already reported for San José.

At the close of the season Mr. Thompson proceeded overland from Benque Viejo to the northwest of the colony to visit a site reported by chicleros. This, named La Milpa from a nearby chicleros' camp, lies about 7 miles [11.3 km] southwest of Warree Camp close to the junction of the Victoria Creek with the Bravo River.

The numerous mounds, pyramidal and razor-backed (probably collapsed ranges of vaulted buildings), are in detached groups and are probably of early Petén masonry style since no dressed stone was observed during the two days spent at the ruins. Twelve stelae had stood in front of various mounds on the east side of the main plaza. All were extremely weathered and most had fallen face upward. Apparently three were plain; the rest carved. Only one (Stela 7) was sufficiently preserved to yield a date. This proved to be 9.17.10.0.0, 12 Ahau 8 Pax recorded by an Initial Series on the north side, the Calendar Round being repeated on the front. Altars stood before some stelae. Two mounds, which seemingly formed a ballcourt of the sloped-wall type and with east-west axis, are situated on the east side of the plaza.

Mr. Thompson also visited Guatemala City to examine pottery from Uaxactún and Kaminaljuyú, and to discuss ceramic problems with the Chairman and Mr. R. E. Smith. He also proceeded to Copán, where he was able to recover two more dates. A stone incensario, part of which was found in the shaft of Temple 11, yielded (9.17.2.0.0) 5 Ahau 3 Cumhu reached from an earlier 9.16.13.0.0, and from a jamb of Temple 11 a Calendar Round, date 3 Cib 7 Pop, which is pretty surely 9.17.0.0.16, 3 Cib 9 Pop, was recovered.

12.0. BAKING POT

12.1.

OLIVER G. RICKETSON

*Report on the excavations at Baking Pot,
British Honduras*

YB 23:219–221, 1924

The excavations carried out during the season of 1924 at Baking Pot were under the direction of Mr. Oliver Ricketson Jr., who sailed from New Orleans on February 10, proceeding to Belize, British Honduras, where he accompanied Mr. Blom and Mr. Amsden to the ruins of Uaxactún, Guatemala, returning immediately to Belize to outfit and provision.

Baking Pot lies on the south bank of the Belize River, six miles by land easterly from El Cayo. The ruins consist of two distinct groups lying in a large clearing, belonging to Mr. Arthur Williamson of Belize, to whom the expedition is greatly indebted for many courtesies.

Dr. Thomas Gann, by a careful study of Cogolludo and Villagutierre Sotomayor, and aided by a first-hand knowledge of the topography and drainage of the country traversed by Avendaño, Fuensalida, and Orbita, has concluded that the Tipú mentioned in these accounts must be the ruins located at modern Baking Pot, since no others in that vicinity fulfill the require-

ments as to size, location, and stated distances. As Tipú was the location of the first Franciscan mission in what is now British Honduras, it was hoped that the discovery of its remains might positively identify the site as Tipú. The almost innumerable small mounds that dot the whole clearing, however, uniformly offered such a smoothly rounding appearance that a far more exhaustive study would be necessary to determine the actual presence or absence of such a mission.

Excavation started March 23, four different sites being examined. The first site was a small house-mound to the north of Group 1, consisting of a rectangular platform of faced stone. The finds were coarse sherds, broken granite mauls, and a few flints.

The second site excavated was the top of the most prominent pyramid (Pyramid B) in Group 1. This group lay with its long axis east and west, a quarter mile to the north of Group 2 and 250 m from the nearest bank of the river. It consisted of three built up plazas, Plaza 1 being the lowest and westernmost, Plaza

2 (separated from Plaza 1 by the centrally located Pyramid B), being the medial one in both position and elevation, and Plaza 3 being the easternmost and highest. Both axes of the top of B were trenched to a depth of over a meter. No worked stone and only a very few natural rocks were found. Sherds were conspicuously absent.

Excavations at the third and fourth sites were started simultaneously. One of these was the top of a small pyramid (E) placed centrally on a mound running north and south between Plazas 2 and 3. It was composed entirely of unworked limestone and limestone marl. A cache of nine eccentric flints and two small jade pieces was uncovered.

The last site to be described is a steeply sloping, circular mound (G), lying on the northern edge of the Plaza 3, 4.5 m high and 26 m in diameter. Excavation revealed a rectangular retaining wall of faced limestone with slight lateral projections, the wall curving up from each corner (where the average height was less than one meter) to the midpoint of each side (where the average height was 1.8 m). On the south side close to the southwest corner, but lying outside the retaining wall, three skeletons were found, all lying parallel to the wall, Burial 1 lay face up, was male, and lacked the right arm, the pelvis, and both legs; the burial objects were a piece of antler, a corn grinder, and grinding stone. Burial 2 was also face up, the right leg fully extended, but flexed at the hip so that the foot lay above the head; the right femur's greatest length was 43.6 cm. The left leg was missing, though the head of the femur was in the acetabulum; no burial objects were found. The head of Burial 3 lay directly beneath the pelvis of Burial 2. It showed marked fronto-occipital flattening, and was the only cranium unbroken. All three burials were simple inhumation.

The mound was then trenched from the south side to the center. Inside and above the retaining all another wall was encountered. This was also of faced stone, and sloped upward from the corners to the mid-

point. Lying parallel to this wall and just outside it, another skeleton was uncovered, face down, simple inhumation, and no burial objects.

Continuing the trench to the center, Burials 4 and 5 were encountered, no. 4 lying directly over no. 5, at a depth of 1.4 m. Both lay face down, head to the south, as did all of the other eight skeletons found at the top.

Just beyond Burials 4 and a sepulcher was found, lined with faced stone and covered with flat slabs of rock. In endeavoring to trench around the east side, seven skeletons were uncovered. Of these the following peculiarities may be noted: no. 7 had a deformed left humerus (25.3 cm as opposed to 31.6 in the right) and an enlarged head and great tuberosity on the left femur; no. 8 had five and one-half of the upper front teeth deeply filed; no. 11 was directly superimposed on no. 13, the latter, besides other objects, having a large and deformed antler, drilled and grooved, under the mandible; no. 12, directly superimposed above no. 14, had the upper front teeth filed as in the case of no. 8. No. 14 still retained the deciduous teeth; its cranium lay below the pelvis of no. 12; the sciatic notch of the latter enabled identification as a female.

Burial 15 occupied the central grave of stone. The upper five front teeth were inlaid with circular fillings of iron pyrite on their anterior surfaces. There were two three-legged pots, that at the head being incised with a plaited design, the one at the feet being plain; both were black. Other burial objects were five jade beads, two jade ear-plugs, and several pieces of carved bone and shell. The bones were badly decayed, yet the left shaft of the femur was sufficiently preserved to show clearly lesions closely resembling the involucre of syphilis, if not syphilis itself. Many of the 12 crania obtained when assembled will undoubtedly show marked fronto-occipital flattening.

Work was concluded May 31 and Mr. Ricketson proceeded to Chichén Itzá, returning to the United States in July.

13.0. PUSILHÁ

Pusilhá is the southernmost site in Belize where hieroglyphic texts have been identified, and is located a short distance from the Guatemalan border. Since it was discovered in 1926, 26 sculptured stone monuments (21 stelae, two fragments, and three altars) have been found. All of these monuments were located in the stelae plaza.

13.1.

SYLVANUS G. MORLEY

Report on the Pusilhá Expedition

YB 27:318–320, 1928

The ruins of Pusilhá are located in the extreme southern part of British Honduras, about a mile [1.6 km] east of the Guatemala frontier, on a point of land be-

tween the Pusilhá and Machaka Rivers, which unite here to form the Mojo River. Hills surround the site on all sides, enclosing a valley of very great fertility; even today the rain fall is so excessive, probably being between 140 inches [355.6 cm] and 150 inches [381 cm], that it is possible to raise three crops of corn a year.

There are the remains of an ancient bridge over the Pusilhá River, two stone piers, perhaps 20 feet [6.1 m] high 30 feet [9.1 m] long and some 30 feet [9.1 m] apart, one on either side of the river. The sides of these piers, facing upstream, have been given concave outlines so that logs coming down at high water and striking them would be diverted toward the middle, and thus more easily pass beneath the bridge without blocking (Joyce, Clark, and Thompson 1927:315).

The word *pusilhá* means in Maya, *pusil*, stagnant; *ha*, water, that is, stagnant water, a name possibly derived from some fancied characteristic of the river of the same name which flows by the group.

Pusilhá was discovered during the summer of 1927 by Mr. James R. Mason, in charge of the mahogany

operations of Mr. Lee Pierce of Punta Gorda. Mr. J. Eric S. Thompson, of the Field Museum of Natural History, Chicago, visited the site a few months later and deciphered four of the Initial Series there, those on Stela D (first Initial Series), K, M and O (Thompson 1928:95).

In December 1927 and again in March 1928, Dr. T. Gann visited Pusilhá on behalf of the British Museum, spending five weeks at the site during his second visit and removing four of the monuments, Stelae M, O, P and Q, to Punta Gorda for transportation to the British Museum. On his second visit Dr. Gann deciphered three additional dates, Stela H (first Initial Series), Stela Q and Stela Y (first Initial Series).

Dr. Morley was at Pusilhá from May 5 to May 7 and deciphered five other dates as follows: Stela D (second Initial Series), Stelae E and F, and Stelae H and Y (second Initial Series). A complete list of the dated monuments at Pusilhá, arranged in their chronological sequence, is given in the following table:

Table 13.1.1. Calendrical Decipherments, Pusilhá.

<i>Monument</i>	<i>Maya Date</i>	<i>Christian Era (A.D.)</i>	<i>Kind of Date</i>
Stela O	9.7.0.0.0	314	Initial Series
Stela Q	9.8.0.0.0	334	Initial Series
Stela F	9.9.13.0.0	367	Period Ending
Stela D	9.3.0.0.0	334	Initial Series*
Stela D	9.10.15.0.0	388	Initial Series
Stela Y	9.7.0.0.0	314	Initial Series
Stela Y	9.10.15.0.0	388	Initial Series
Stela H	9.11.0.0.0	393	Initial Series
Stela H	9.7.12.6.7	326	Initial Series
Stela K	9.12.0.0.0	413	Initial Series
Stela M	9.14.0.0.0	452	Initial Series
Stela E	9.15.0.0.0	472	Initial Series

* The katun coefficient in this Initial Series is recorded as three. Katun 8, however, is clearly recorded in Glyph A8, and Glyph A7b may represent its corresponding month position, 3 Chen. In any event the contemporaneous date of Stela D is not the first but the second Initial Series, 9.10.15.0.0

There are 20 monuments in the principal plaza at Pusilhá, all but two of them (Stelae U and Y) on the south side in front of Mound 1. Of these, the dates of nine have been deciphered. Three others, Stelae N, P, and U, formerly had Initial Series, a fact proved by presence of the accompanying Supplementary Series in each case, but they are now too effaced to permit decipherment. The Supplementary Series of Stela P indicates that its Initial Series may have been 9.13.0.0.0. The remaining eight monuments, Stelae A, B, C, G, L, R, S, and T, have their inscriptions entirely destroyed. Indeed in the cases of most of these monuments, the only parts which have escaped the ravages of time and weather are the butts, the upper parts having com-

pletely eroded away. There are 14 Initial Series and one Period Ending date.

There is not a single standing stela in the city, most of them having fallen backward instead of forward, thus preserving the inscriptions on their backs, rather than the human or divine figures, which had been carved on their fronts. Only one monument, Stela C, has a well-preserved figure; this shows a gorgeously dressed individual clasping a double-headed ceremonial bar diagonally across his breast.

The dates at Pusilhá indicate a fairly early Old Empire site, founded some time toward the close of the Early Period. Stela O, stylistically as well as chronologically, is the oldest monument, the early technique of its glyphs, show irregular outlines agreeing with the early date recorded upon it. Six of the nine dated monuments (Stelae O, Q, H, K, M and E) were erected on katun-endings; two (Stelae D and Y) on hotun-endings, and one (Stela F) on an oxlahuntun-ending. It is to be supposed that some of the other monuments, the inscriptions of which are effaced, filled the existing lacunae in the chronological sequence.

Stelae D, H and Y have a characteristic shared by but two other monuments in the whole Maya area: Stela 1 and 6 at Macanxoc-Cobá [Chapter 34.1], that is each has two Initial Series instead of one, the second Initial Series in each case, following the body of the text some distance after the first Initial Series. As the Initial Series were originally so named by A. P. Maudslay, the English explorer, because of the fact that they always stand at the beginning of inscriptions where they appear (Maudslay 1889–1902:1:40), the five cases given above are the only examples of their kind now known in the *Corpus Inscriptionum Mayarum*.

Stela K at Pusilhá shares with Stela 4 and Altar I at Copán and Stela 10 at Tikal an even greater distinction, these four monuments being the only ones known where the Initial Series stands elsewhere than at the beginning of an inscription. The Initial Series on Stela K at Pusilhá stands at the top of the third and fourth columns of glyphs from the left, instead of the first and second, or the first alone, the position elsewhere (Morley 1920:190–193, 356).

The latest date at Pusilhá, 9.15.0.0.0, on Stela E, indicates that the city was occupied, at least down to the beginning of the Great Period. But how much longer it continued to be occupied, before it was abandoned, is a matter of conjecture, failing the positive evidence of dated monuments. It is not improbable, however, that Pusilhá ceased flourishing as a center of population sufficiently important to erect monuments commemorating the katun-endings, well before the beginning of Baktun 10¹ and by 10.3.0.0.0 when the last monuments seem to have been erected in the Old Empire region.²

NOTES

1. The latest date near Pusilhá is 9.18.5.0.0 on Altar 1 and Cancuen, some 30 miles [48.3 km] westward in Guatemala, discovered by the First Central American Expedition in 1915 [Chapter 1.3].

2. Stela 10 at Xultún [Chapter 1.8] and Stela 12 at Uaxactún [Chapter 1.10] are the two latest Old Empire monuments known; both of them record this date, it probably had been completely abandoned.

14.0. SAN JOSÉ

J. Eric S. Thompson made an extensive study of San José, what he considered to be a small ceremonial center located 35 km northeast of the site of Holmul. The San José site has a plaster-lined aguada, or water hole, four small plaza groups of mounds, a ball court, vaulted architecture, and plain stelae.

14.1.

J. ERIC S. THOMPSON

Exploration in Campeche and Quintana Roo and Excavations at San José, British Honduras

YB 35:125–128, 1936

In an endeavor to learn something of the archaeology of the region directly east of that explored by the

Campeche expedition of 1932, 1933, and 1934 [Chapters 15.1 to 15.3], an expedition left Chichén Itzá at the end of February 1936, with Mr. Thompson in charge, Mr. J. C. Harrington, surveyor; Mr. Conrad Kratz made rubbings of inscriptions and graffiti. Principal objectives were the collection of epigraphic material and of such other data as might throw light on the position in Maya history of the peculiar architectural styles known as Río Bec and Ramonal, both of which find very close parallels in the architecture of the Chenes region, and to a lesser extent in that of the Puuc and that of the so-called Renaissance style at Chichén Itzá and elsewhere. On the other hand, there are also certain parallels between Río Bec sites and cities of north-eastern Petén, particularly La Honradez. On the strength of the above resemblances it has been suggested that Río Bec and Ramonal architectural styles are transitional in time between the so-called Old and New Empires. An alternative theory that the sites are transitional merely in geographical sense has also been advanced.

Three new sites, Las Escobas (18 degrees, 21'.6, 89 degrees 20'.6), No Te Metas, and San Lorenzo, possessing architecture in these two styles, were discovered. Unfortunately very little ceramic material was recovered. Sherds from under the floors of the buildings would undoubtedly have solved the problem few sherds, however, were found at terrace edges, and these should eventually yield evidence on the age and cultural relationships of the ruins. A considerable amount of information on architecture and masonry was obtained.

El Palmar, a large site situated at 18 degrees, 5'.0, 89 degrees 20'.6, detained the expedition for three weeks. This city had been built around two lakes, one of which had in its center, a small island bearing the ruins of a small structure and a plain stela. Mr. Harrington mapped an area 900 m north and south, by 660 m east and west.

Every superstructure had fallen, but fragmentary, walls showed that masonry was unsquared and unfaced. It had been laid in and covered, masses of mortar. This masonry contrasted sharply with the very carefully faced stone veneer found on buildings of the Río Bec and Ramonal styles. The collapsed state of the superstructures of El Palmar is probably to inferiority of construction, since the large areas of exposed mortar offer ready lodgement for vegetation. Forty-four stelae and several round altars were found at El Palmar, but owing to the extreme softness of limestone from which they had been hewn, and the very low relief, little carving was preserved. Twenty-three stelae were carved, five plain, 16 so weathered that it was not possible to say whether or not they had once been sculptured. A peculiar feature of the inscriptions was the apparent absence of Initial Series. In those cases in which glyphs were legible, there were certainly no Initial Series, while in all other cases glyph blocks were too few to have recorded dates by this method. Period ending dates recovered were: 9.14.0.0.0?; 9.14.10.0.0; 9.18.10.0.0; 9.19.10.0.0; 10.2.15.0.0?. The stelae can be grouped stylistically with those of Naranjo and Calakmul, but in composition one stela, at least, resembles those of Honradez, in that the base of the design is occupied by a large mask, perhaps a link with the carved square columns of Yucatán.

Artistically, a find of outstanding importance was a cache of eccentric flints and obsidian cores and flakes from beneath a stela. One of the flints, which was executed in the same technique as some found at Quiriguá (Joyce 1933:88) was superbly chipped to represent, in profile, four seated deities.

A ballcourt, situated close to the great plaza, is of the usual early type with sloping sides. Two of the pyramidal substructures were of very considerable elevation: 119 and 142 feet, respectively, above the level of the aguada.

During the visit to El Palmar a new and very simple method of recording epigraphic material was evolved: the photographing in direct light of Chinese ink rubbings in position over the glyph blocks. This does away with the inevitable distortion produced when the paper sheets bearing the rubbings are removed and laid flat. The El Palmar rubbings, together with photographs of the glyph blocks taken with side lighting, constitute an epigraphic record such as exists for few Maya cities.

A stratification of pottery was encountered at El Palmar, sherds of phase characterized by basal flanged bowls being found underlying a phase in which the lateral ridged bowl predominates. The earlier phase can be correlated in form with the Tzakol Phase at Uaxactún, Holmul III (and perhaps earlier Holmul), and San José II. The later phase at El Palmar can be correlated, so far as dominant form is concerned, with San José III, which in turn appears to have been contemporaneous with Holmul V and the Tepeu Phase at Uaxactún. With the earlier pottery at El Palmar were mixed a few sherds indicating a yet earlier ceramic development, with forms partially corresponding to the Chicanel Phase at Uaxactún and early pottery at San José. On the whole El Palmar pottery seemed closer to that of British Honduras than to that of the Petén.

In the course of the field work attempt was made to collect simple botanical data. Since botanical expeditions in the Petén and contiguous areas a likely to cover far less ground than the more frequent archaeological parties the archaeologist may have to depend largely on his own observations for information on such vegetational changes as may have a bearing on cultural subdivisions of the Maya area. Naturally, the archaeologist has, as a rule, neither the time nor the training for a thorough botanical survey, but many important trees are easily recognizable, and their distributions may have archaeological importance. With this in mind, notes were kept on such features of the flora as could be observed along the trail. It was possible to note gradual changes in the vegetation as one progressed westward. For example, no cohune palms were noted until within 15 to 20 miles [24.1–32.2 km] of the Río Hondo. Similarly the all-spice tree was entirely absent in the western section, but gradually became abundant as one traversed Quintana Roo. A great belt of *cordoncillo*, *escoba* and bay leaf palm extends from north to south, its western edge roughly, coinciding with the Quintana Roo-Campeche border. Within this belt most of the Río Bec and Ramonal sites appear to be situated.

At the conclusion of the work at El Palmar, Mr. Kratz returned with surplus equipment to Yucatán via Campeche, while Messrs. Thompson and Harring-

ton proceeded via Chicchanhá to Botes on the Río Hondo, and thence a Payo Obispo to Corozal in British Honduras.

From Corozal, Messrs. Thompson and Harrington proceeded to San José, where Mr. Thompson had carried on excavations in 1931 and 1934 [Chapter 11.1]. Previous stratigraphic work at San José had revealed a sequence of five ceramic phases, which strongly suggested that the site had continued to be occupied after the supposed abandonment of the Central Maya area (shortly after 10.3.0.0.0), and that in all probability it was not deserted until the period of Mexican contact in Yucatán. The purpose of the present season's work was to amplify the ceramic and architectural information already yielded by this site, and to seek answers to certain problems which had arisen in preparation of the report upon the earlier excavations.

In the three weeks spent at San José a considerable quantity of ceramic material was obtained. cursory examination of this suggests that three new ceramic phases may have been established: by a division of the original San José I phase into two phases corresponding to the Mamón and Chicanel phases at Uaxactún (Robert E. Smith, Preliminary Shape Analysis of Uaxactún Pottery); the third, a transitional phase between San José III and IV, was only sparingly encountered in 1934, but the finds of the present season suggest that it may have to be elevated to the rank of an independent ceramic phase.

Little material of the San José II (by a regrettable oversight this phase was correlated in [Chapter 1.22] with the Uaxactún I Phase; whereas the correlation is

with Uaxactún II (Tzakol Phase), both phases having the basal flanged bowl as the most typical form) phase was encountered. This was regrettable as it had been hoped that more light might be thrown on the Teotihuacánoïd form which occurs in this phase. The 1936 excavations, however, produced additional evidence of the far-flung trade relationships of the site during San José V. New examples, of Yucatecan Slate Ware ollas, marble vase fragments and another spindle whorl, decorated with *chapopote* designs in Huastec style, were found associated with this phase. The presence of such importations, as well as of carved slate (one example), an apparently early simple silhouette form of Orange Ware (one example), many finds of Carved Red Ware, and one of copper, together with total absence of Plumbate and Carved Orange Ware, suggest that San José was abandoned shortly before the Mexican period in Yucatán, but at a time considerably subsequent to 10.3.0.0.0, if San José IV and the transitional phase following it have been correctly placed at the close of Cycle 9.

Particular attention was paid to the masonry of San José. Two definite types were identified and placed in chronological order by means of associated pottery. Details, such as the use of small potsherds and obsidian fragments in mortar, were observed, and a series of photographs of small surfaces of walls was made. Finally, there was excavated a very long and narrow building of a type not hitherto described for the Maya area. This structure, over 36 m long, yet under 4 m wide, consists of two rooms, each provided with but one doorway.

15.0. CAMPECHE

15.1.

KARL RUPPERT

Explorations in Campeche

YB 32:89–92, 1933

As result of the exploration and study of Calakmul in 1932 and reports of other sites in the same general region, an expedition spent the months of March, April and May in the exploration of south-central Campeche. Mr. Karl Ruppert, archaeologist, was in charge; Mr. John H. Denison, Jr., served as epigrapher; Mr. John O'Neill, as surveyor. The field of work was reached from Chichén Itzá via Mérida, Campeche, Canasayab, La Gloria, and Central Buenfil, which was made the base of supplies.

Messrs. Denison and O'Neill made a preliminary trip to Calakmul to take observations for latitude and longitude (N18 degrees 8.7'; W89 degrees 50' 21"). On March 10 the entire expedition left Central Buenfil for the ruins of La Muñeca, which were reached at 2:30 the same afternoon. La Muñeca is a dry camp. Anyone visiting the site, except during the rainy season should, Mr. Ruppert reports, be prepared to haul water from two to six leagues.

La Muñeca was visited in 1932 by Messrs. Ruppert and J. S. Bolles but, due to lack of time and illness, only

a sketch map of the site and a preliminary examination of the stelae and buildings were made. The latitude and longitude of the site are N18 degrees 14.7' and W89 degrees 37'. The ruins lie on two low ridges, which have their long axis north and south. Thus the city is divided into two well-defined sections, of which the westernmost contained the highest mounds and all the stelae. Nineteen stelae were found, of which eight are carved, seven carrying Initial Series dates. The earliest and latest dates for the city are 9.13.0.0.0 and 10.3.0.0.0, respectively.

The next objective was Placeres, an abandoned chicle station 7 leagues to the east, which served as base for the expedition for seven days while trails were opened and the nearby areas to the south, west and north were explored. Leaving part of the supplies and equipment at Placeres, the expedition left on March 26 for a three-weeks trip to the north and west. Stops were made at the sites of Noche Buena, Río Bec and La Hormiguero.

Noche Buena is an extensive site, a hard six hours ride north of Placeres. The buildings have almost

entirely fallen. Only in a few cases are sections of wall or arch still in position. The study of the buildings showed the incorporation of lateral wings in the ground plan in several instances. No stelae were found.

March 30 to April 7 was spent at Río Bec. This city was discovered by R. E. Merwin of the Peabody Museum some 20 years ago. Merwin's Group F and G were the only ones examined by the present expedition, attention having been confined to the area west of these groups. The site was not recognized as Río Bec until after Mr. Ruppert's return from the field, when the latitudes and longitudes were checked. They are N18 degrees 20.5' and W89 degrees 22' 4", respectively. Merwin's groups to the east of F, the nearest of which is 1.5 miles [2.4 km], were not seen. The principal structure in the western area, Structure D, Group I, with its lateral towers, was recognized as being of the Río Bec type. The masonry is the finest found, being made up of small, carefully worked stone the size of bricks. The low platforms supporting buildings have the same measurements in plan as the buildings themselves. These platforms are either plain or ornamented with colonnettes. Excavations in front of doorways did not show steps giving down from the platforms. Stucco and stone decoration covering the façades or as inset panels of geometric design was used in the ornamentation of the buildings. A type of construction not seen at other sites visited is a low rectangular platform supporting a building which extends around three sides of the platform. In the center of the open side, or sometimes in the middle of the platform, is a small masonry altar-like mound.

Hormiguero, located at latitude N18 degrees 24.0' and longitude W89 degrees 38' 35" was next visited (April 9 to 14). It is much smaller than Río Bec, but is similar in style of architecture. The use of lateral towers was noted on two structures. The principal building has a length of 47 m, a width of 10 m and contains eight rooms. In one room the ceiling was intact. The central doorway of the south façade is still supported by wooden lintels. Stucco decoration on the same façade is in a good state of preservation. Great lateral towers, with stairways as decoration only, are used as at Río Bec.

Leaving Hormiguero on May 14 the party started southward, retracing its steps to Placeres. Here it was necessary to lay over for four days while the men opened trails, and muleteers made a trip to Central Buenfil for supplies. Staying one night at the aguada of Delicia, the abandoned chicle camp of Alta Mira was reached May 20. On the way in to Alta Mira (N17 degrees 56.7', W89 degrees 31' 53") there are many mounds to be seen along the trail. Returning the next day to examine these mounds and the area lying between them and the camp, a small but carefully laid

out city was found. There were 16 stelae, of which half showed some trace of sculpture. No dates, however, were secured. Only small sections of standing walls were noted. One room, perhaps the central room of a three-chambered structure, has a portion of the arch still intact. The building carried a roof comb.

April 25 the party moved to the abandoned chicle camp of Villa Hermosa (N17 degrees 55.8' and W89 degrees 40' 35"). While waiting for the men to open trails and locate water, two days were spent exploring the many low mounds to the northeast, some of which were 1.5 to two leagues from Villa Hermosa.

The next objective was to find Nohochná, reported by C. L. Lundell as a new site in 1931. The drying up of the aguada forced the party to evacuate Villa Hermosa before the scouts had located water near Nohochná. This necessitated a detour by the way of the aguada of Monterey. Once at Nohochná, Mr. Ruppert recognized the site as Naachtún, discovered in 1922 by Dr. Morley. The party remained here from May 1 to May 12, during which time a new and more inclusive map was made. The latitude and longitude are N17 degrees 47.7', and W89 degrees 44' 22", respectively. Of the 45 stelae at Naachtún, 18 were found by Morley in 1922, eight by Lundell in 1931, and 19 by the present expedition. Only 24 show carving. The earliest Initial Series reads 9.3.10.0.0, the latest surely readable date is 9.16.0.0.0. Some of the standing buildings are of particular interest in that they resemble Maler's Temples I, II, and IV at Tikal, having three rooms, one behind the other, decorative extensions on the rear exterior wall and a niche in either end wall.

Mirador, the westernmost site, visited (N17 degrees 40'; W89 degrees 50') is perhaps that seen by Percy Madeira during his aerial survey in 1931 (Madeira 1931:121). It contains the largest and highest mounds that were encountered. There are at least nine lofty pyramids, the largest and highest of which supports seven good sized mounds, of which the largest rises not less than 20 m above the top of the great pyramid. As there was no water, it was only possible to spend one day exploring. No standing buildings were found. A small piece of sculpture, perhaps from a stela, was noted reused in the facing of a low terrace.

The final ruin visited (May 21) was Tres Marias, northeast of the chicle station of Río Disempeño. Tres Marias is a dry camp so that only, a hasty examination of the ruins could be made. The site is small and has no standing buildings or stelae. There is one plain round altar.

Between the dry aguada of Tres Marias and the ruins great numbers of small mounds were noted. They usually appear on the crest of hills. The mounds, outlined by large unworked stones, are irregular in shape and vary in size from 3 to 4 m in greatest dimension. In

height they rise 1 to 2 m. They are, often arranged around courts and may well represent dwelling house sites.

May 28 the expedition returned to Chichén Itzá, having been in the field exactly three months.

The expedition accomplished a preliminary survey of the area in southeastern Campeche from Central Buenfil to the east, north and south. Mr. Ruppert believes that since many groups of small mounds were encountered, perhaps representing dwelling house sites, there may well be large religious or civic centers associated therewith which still remain undiscovered in this section of the vast tropical forest. The area should be entered at some time when chicle operations are under way, so that the chicle gatherers may be questioned and rumors or reports of sites may be pursued. The work of the chicleros takes them off the trails in all directions through the dense bush, so that they cover the country much more thoroughly than an archaeological expedition is able to do.

15.2.

KARL RUPPERT

Explorations in Campeche

YB 33:93–95, 1934

Following the discovery of Calakmul by Mr. Lundell in 1931 and its exploration by Carnegie Institution in 1932, the need for further investigation of that part of Campeche lying between Calakmul and Uaxactún became evident. Here was a great stretch of jungle which had not as yet been examined for archaeological remains.

Since its abandonment by the Maya, this area has remained unknown except to the occasional chiclero who entered it during the rainy season to bleed the sapote trees. The chicleros have from time to time brought back reports of ruins seen during their wanderings. It was obviously desirable to learn something of the topography of the region, to study the sites and to ascertain their chronologic period. What architectural trends were manifested? Did the ruins constitute an independent group or did they show affinities to the north or to the south?

An expedition under the leadership of Mr. Ruppert explored part of the area in 1933. Hampered by scar-

city of water and by an almost complete absence of usable trails, the party covered less territory than had been hoped. However, the expedition discovered several sites, brought back reports of others and gained much useful knowledge of the trails and water holes. Valuable contacts were also made with chicle contractors working along the northern border of the region.

In 1934 a second expedition penetrated the same general area. The work was again in charge of Mr. Ruppert, with Mr. John H. Denison, Jr., as epigrapher, Fred P. Parris as surveyor. Mrs. Denison accompanied the party as assistant and also collected herpetological material. Outfitting at Chichén Itzá in Yucatán, the group was in the field from January 31 to May 8, a total of 98 days. During this time over 1,150 miles [1850.8 km] were covered, 500 [805 km] on mule back. Four major and six minor sites were discovered which, according to the practice long used by Dr. Morley, were given Maya names. Two previously known sites, Pared de los Reyes and La Muralla, were visited.

The first ruin found was Oxpemul (N18 degrees, 18.3'; W89 degrees, 47.9'). Although no buildings remained standing, the structures indicated that the city was laid out in two well-defined plazas. One group in the west plaza is very similar in plan to Group E at Uaxactún, in that a long, low mound is surmounted by three buildings, and that it is opposed, on the western side of the plaza, by a single high mound. This peculiar and possibly astronomically significant [Chapter 1.14] arrangement is also found, Mr. Ruppert points out, at a number of other Old Empire cities. Oxpemul possesses 19 sculptured stelae, of which 12 carry Initial Series dates ranging from 9.15.0.0.0 to 10.0.0.0.0.

Uaacbal, visited February 16, is a small group of mounds laid out around an extensive rectangular court. The principal building was apparently on the west side, where there rises a high mound surmounted by a roof-comb bearing human figures in stucco. There were no stelae.

Becán, examined February 20 to March 4 (N18 degrees, 30.6'; W89 degrees, 28.4') is unique among Maya cities in that the ruins are surrounded by a moat excavated in the natural limestone to an average width of over 50 feet [15.2 m] and a depth varying with the terrain of from 6 to 12 feet [1.8–3.7 m]. It is crossed by seven causeways, some of masonry, some left in the ledge-rock. Water is brought to the moat from a now silted-up aguada on the north side of the city. Architecturally Becán is of the Río Bec type. It has four stelae, two sculptured and two plain. No dates were recovered.

Channa, near Becán, is a small site with one standing building whose north façade has two masonry columns.

The expedition next visited Río Bec. This important city, discovered by Comte Peréigny in 1905–06, was more carefully studied and mapped than was possible in 1933 [Chapter 15.1].

Balakbal, a small new site (N17 degrees, 52.7'; W89 degrees, 35.2'), discovered April 7, shows an arrangement of mounds and buildings like that of Group E at Uaxactún. There is also a ballcourt with long axis east and west. Of five stelae, four are sculptured. From an epigraphic point of view by far the most important discovery of the expedition was the finding of a contemporaneous Cycle 8 monuments at this site, which is the State of Campeche, Mexico, about 5 miles [8.1 km] north of the Guatemala frontier and 32 miles [51.5 km] north of Uaxactún. It bears the dedicatory date 8.18.10.0.0 of the Maya era and is the fifth earliest dated monument yet reported from the Maya area and the earliest known example of a ten-year period marker. The large significance of this discovery lies in the fact that it pushes the area of very early dated monuments some 30 miles [48.3 km] to the north, and corroborates previous conclusions that the Uaxactún region as the earliest center of stone sculpture in the Maya area.

Pared de los Reyes (N17 degrees, 58.8'; W89 degrees, 48.2') is a small group discovered by Mr. Lundell in 1930. It has no stelae and interest centers about the remains of a roof-comb.

La Muralla (N17 degrees, 44.1'; W89 degrees, 47.8'), lying over the border in Guatemala, was studied in 1927 by Mr. Monroe Amsden, who reached in from the Institution camp at Uaxactún. The site contains many mounds, one bearing a roof-comb over 50 feet [15.2 m] long and 15 feet [4.6 m] high, elaborately decorated with stucco sculpture. This type of ornamentation was great favored by Old Empire architects: in its excavations, Maya art apparently reached its highest expression. But due to its perishable nature very few examples have been preserved. For this reason unusual importance attached to the La Muralla figures and Mr. Ruppert accordingly devoted particular attention to making photographic records of such parts of them as remain.

San Francisco (N18 degrees 08'.3; W90 degrees 05'.0), examined April 16 to 18, has many mounds, but no standing stelae or buildings.

Uxul (N17 degrees, 51.7'; W89 degrees 59.3') was the last city reached by the 1934 expedition. It is a long, rambling assemblage of mounds, apparently not carefully laid out. One group is again similar in plan to Group E, Uaxactún. There is a ball-court with long axis north and south. Fourteen stelae, of which 13 are sculptured, yielded 10 Initial Series ranging from 9.9.9.9.18 to 9.12.0.0.0.

15.3.

KARL RUPPERT

Campeche Expedition

YB 37:154–156, 1938

In continuance of the exploration of southeastern Campeche and southwestern Quintana Roo, March, and April of the past season. This was made possible, in part, by generous financial aid provided by Mr. John H. Denison, Jr., who served as epigrapher on the expedition.

Mr. Denison and Mr. William E. Shepherd, the latter as cartographer, landed at Progreso, Yucatán, January 6, whence they proceeded to Mérida. Here they were joined by Mr. Ruppert on January 8. Mr. J. C. Brydon of Mérida kindly loaned the use of a storehouse for assembling and packing equipment and supplies. On February 1 the expedition left Mérida by train for Hecelchekan, Campeche. The following day the journey was continued to the chicle camp of Nohsayah (N18 degrees 44.4'; W89 degrees 14.6'). This portion of the trip, made by airplane in an hour, would by pack mule have taken 10 days. February 4 the party set out with pack mules for the laguna of Central Sabana, where camp was established from February 5 to February 8. From here trips were made to a number of small groups of ruins lying within a distance of from four to five hours' ride.

The first, Payan, to the east of the laguna, is a scattered group of mounds. The highest, which was probably the principal structure of the group, now shows only a few great stone blocks which served as facing. At some distance to the southwest are remains of a building which shows 14 chambers. The west façade is pierced by three doorways and was decorated with stucco masks.

Desprecio, two hours' ride southeast from camp, is distinctive only in a U-shaped structure somewhat reminiscent of similarly shaped mounds seen at Río Bec in 1933.

Buenos Aires, lying four hours' ride northeast of camp, was a group of low mounds and a partially standing six chambered building. The structure carries a roof-comb of the single-wall type. Xaxbil, near the aguada of Garafon, is a small building with two rooms, and has façade decoration of large geometric scrolls and engaged columns at the corners.

On February 11 the expedition moved to Lagunitza (N18 degrees 27.61'; W89 degrees 18.9') where camp was maintained until February 18. The site of Okolhuitz, to the east of the aguada, is fairly large and arranged in two definite groups, each on the crest of a low ridge. Architecturally it is of Río Bec type.

A day's trip was made to the site of Pasión del Cristo, where there are a great many large mounds and three fallen and one standing stela. No dates were obtained by Mr. Denison.

Three days were necessary to make the trip from Lagunita and examine the site of Corriental. In this group is one standing building with two towers. A passageway from a chamber behind one tower extends downward into the fill of the pyramid, through it to the other side, and then upward opening into a chamber behind the second tower.

From February 19 to February 25 the expedition camped at the aguada of Xpuhil (N18 degrees 30.6'; W89 degrees 24.5'). The ruins, lying 20 minutes' walk southwest of the aguada, consist of a few low mounds, except for one remarkable structure defining the west side of a large plaza. This building has 12 rooms and three towers, one placed at either end, and one in the back center. The latter rises 20 m above the podium on which the building rests. The towers have rounded corners and carry false stairways which were ornamented with great stucco masks.

On February 26 camp was moved to Aguada Carolina, and the following three days were spent in studying the ruins of Culucbalom, half an hour's ride to the east. The best-preserved structure defines the north side of a small court. The building contains six chambers and carries a roof-comb of the single-wall type. Of special interest is the south façade, ornamented with four engaged columns each decorated with two seated human figures in low-relief stucco.

While camped at Laguna Carolina Mr. Shepherd made observations for latitude and longitude, which are N18 degrees 34.1' and W89 degrees 27.7', respectively. The aguada at water level had a length of 2/5 mile [0.6 km] and a width of 1/6 mile [0.26 km]. On March 3, Mr. Denison made a trip to inspect some large mounds to the south. They proved to be Becán, the site surrounded by a moat, which was discovered by Carnegie Institution in 1934.

On March 7 the expedition left Aguada Carolina for Santa Rosario by way of So Aguada, Guyitara, Carmalita, and Holaltún. A large group of mounds at Carmalita indicates a once well-planned, carefully laid out city. To the northwest of Holaltún recent milpa clearings have exposed a number of structures. The lure of treasure has led chicleros to dig in some of the chambers' with consequent destruction of material.

The aguada of Santa Rosario was reached March 14 and there camp was maintained until the morning of March 22. The ruins known as Pechal lie half an hour's walk to the south of the aguada (N18 degrees 52.0'; W89 degrees 29.8'). The city was the largest encountered. Several of the buildings, each resting on a podium, show elaborate stucco-decorated façades. The

east court proved of outstanding interest, as it was probably an amphitheater. The court measures 68 m by 75 m and is surrounded on all sides by a continuous mound, broken only in four places, as if for entrances. An examination of the enclosing-wall showed it to be lined on the inner side by a series of 18 to 20 steps. The seating capacity, very conservatively estimated, is placed at 8,000. Four stelae discovered at Pechal were sculptured with human figures, but carried no dates.

The last site visited was that of Peor es Nada (N18 degrees 50.5'; W89 degrees 22.2') where the party stayed from March 22 to March 31. It is a rather extensive site with a number of buildings standing in part, which show ground plans of from six to 14 rooms. Towers, as at Río Bec, were seen on two structures, and there is a roof-comb of the single-wall type, 18 m long, 5.4 m high, and 1.9 m wide. Peor es Nada is the only site where a ballcourt was found. From here the expedition returned to Noh-Sayab and then by airplane, on April 6, to Mérida.

15.4.

E. WYLLYS ANDREWS

Exploration in Southwestern Campeche, Tabasco, and the Department of Petén

YB 39:267–269, 1940

In the course of decades of exploration and excavation, a large part of the Maya area has become intimately known to the archaeologist. Up to the present decade, however, work has been concentrated at the northern tip of the Yucatán peninsula (the "New Empire" area) and at the opposite end in northern Honduras and the lowlands of Guatemala (the "Old Empire" area). In the course of these investigations the intervening country was almost completely ignored, but recently the work of Messrs. Pollock and Ruppert has gone far to bridge the archaeological gap between these two regions. Dr. Pollock has conducted an architectural reconnaissance of the Puuc and Chenes areas in the north. Mr. Ruppert on his several Campeche expeditions has explored the western part of southern Quintana Roo and, the eastern part of southern Campeche. A large gap still remained, including that part

of Campeche south of Champotón and west of La Tuxpena, the part of Tabasco north of the Usumacinta River, and the northwestern corner of the department of Petén in Guatemala.

During the past winter, Mr. Andrews spent several months in a preliminary exploration of this territory. He was accompanied by Mr. Melvin A. Traylor, of Chicago, who, establishing himself at several base camps during the period, made an extensive collection of birds for the Field Museum of Natural History.

The party left Mérida in the middle of December, proceeding directly to Matamoros, Campeche, where by the courtesy of Mr. Cecil H. Branson, of the Laguna Corporation, Mr. Andrews was able to make a trip northward to a group of reported near the chicle camp of Carrizal, then in a large circle to Mocú, Cilvituk, Konhuas, and Esperanza, whence he was able to fly by chicle plane back to Matamoros. Except at Carrizal and Cilvituk, no standing remains were encountered. However, the entire area was covered with concentrated groups of mounds in complete ruin, many of them (such as those at Mocú) of considerable size and extent. An extremely dense population in ancient times was clearly indicated. At Carrizal, the only fragment of standing architecture contained a vault very reminiscent of Tzibanche in its extreme narrowness and "cupola" shape.

Interesting remains were noted on an island in the center of the Laguna Cilvituk, previously visited by Maler in 1895. Two sites were named Isla Cilvituk A and B, to distinguish them from the large remains on the mainland near the village of Cilvituk. In one of these groups was a low substructure with a square temple with flat beam and mortar roof.

From Matamoros, an excursion was made to the village of Pustunich, 100 km south of Campeche near the line of the Ferrocarril del Sureste. Here two sculptured monuments were found which almost perfectly duplicate the style of the sculptural material found in 1937 at Telantunich in Quintana Roo. The resemblance was so startling that these sculptures may safely be classed as organically related members of the complex defined Mr. Andrews' paper on that area. One these, a grotesquely phallic male statue, been re-erected in a shrine for local worship. Under the name of Santo Pus, he is now center of the village's Catholic ceremonial

Returning to Matamoros, the party then flew to Pacaitún on the Río Candelaria for a reconnaissance of this drainage system. Excursions were made to the mouth of the river, and then upstream to the heads of its two main tributaries, the Río San Pedro and the Arroyo Caribe. From Laguneta at head of the Caribe, a trip was made to the chicle center of Aguada Seca to the east. In this entire area no standing ruins were

countered, but the examination was sufficiently exhaustive to permit the conclusion that probably no large remains of this sort will be found here in the future. As in the Matamoros region, however, wherever the terrain was habitable, large and small mound aggregations were found in surprising density, again indicating an unusually dense population in ancient times. Pottery was to be found almost everywhere on the ground, and notes were kept of specific deposits and stratifications to aid in future ceramic study this region.

Finally, Mr. Andrews made a trip to the south, crossing from the Río Candelaria the Río San Pedro Martir, and on to Tenosique on the Usumacinta. In the course of a brief visit to Piedras Negras and Yaxchilán, a previously unphotographed fragment of Stela 38 at the former site was encountered. This fragment bears the terminal date of the monument, 9.12.6.5.9, 9 Ahau 18 Zotz. Connected to this by a secondary series is the further date 5.12.6.5.9, 4 Muluc 7 Zac. The assembly of the fragments of this monument in *The Inscriptions of Petén* apparently includes an eroded fragment which was not part of the stela.

Information was obtained at Balancan regarding a large site one day's journey up the Río San Pedro Martir, and a visit was made possible through the kindness of Don Pablo Ocampo, on whose lands it was located. Maler had heard of this ruin in 1907, and named it La Reforma III, although he did not visit it. As the settlement of Moral is considerably nearer the ruins than the finca of La Reforma, and as Reforma is a confusingly common name throughout this general region, the former name has been given to the ruins. Moral was a very large city, extending in compact plaza groups over several square kilometers. Although many of the mounds are extremely high, no standing remnants of architecture were found. This was partly due to the ravages of time and weather and partly to the fact that many of the larger pyramids had been completely stripped in recent times to fill gullies on the road detouring the two leagues of unnavigable water between La Provincia and Palomillo on the nearby San Pedro. In one of the plazas of the city were found a sculptured stela, a plain stela, and a plain round altar. The stela was carved on four sides, the front and back with human figures, the sides with hieroglyphic dates. Above the standing figure on the back of the monument was a well preserved Initial and Supplementary Series, dating it at 9.16.5.0.0, 8 Ahau 8 Zotz. The style of the monument is unmistakably that of the Petén, in contrast with that of the nearer cities of Yaxchilán and Piedras Negras on the Usumacinta and Palenque to the south. This indicates that the Río San Pedro was an artery of cultural traffic in middle Old Empire times.

Mr. Andrews returned by river to Carmen, whence he flew over the lower Chumpam and Candelaria drainages to Pacaitún. He returned to Mérida early in March.

15.5.

GEORGE W. BRAINERD

Campeche

YB 48:232–234, 1949

The purpose of the fieldwork undertaken in Campeche this year was the linking of the ceramic sequences of Yucatán and the Petén region of Guatemala by excavation at a series of intermediate points in the area lying between them. The work was in charge of Dr. George W. Brainerd, who took six months' leave of absence from the University of California at Los Angeles and from the Southwest Museum for this purpose. Mr. Karl Ruppert, who was thoroughly familiar with the southern part of the area to be worked, was the other member of the expedition.

Previous architectural exploration of this intermediate territory between the northern and central Maya ruin areas had been done by Ruppert (Ruppert and Denison 1943) and by Dr. H.E.D. Pollock [Chapter 2.3]. The standing ruins in the Chenes, which is the northern part of this area, are distinctive and are similar in many particulars of style to those of the southern part of the area, which has been called Río Bec after the site of that name. These two architectural styles (or, perhaps better, this joint style) are in turn easily distinguishable from that to the north in the adjoining Puuc area of Yucatán, and from that of the central or Petén Maya area which adjoins the Río Bec area to the south. The explored Chenes and Río Bec sites are separated by about 100 km of unexplored area which presumably also contains ruins of Chenes-Río Bec architectural style.

Three sites were tested ceramically this season: Santa Rosa Xtampak and Dzibilnocac in the Chenes region, Xpuhil in the Río Bec area. Collections were also made at other sites within 30 km of Xpuhil. Approximately three months were spent in excavation. The next three months were spent in Mérida in recording the collections, to be followed by a month at Los Angeles in analysis and preparation of a report. During the time in Mérida Mr. R. E. Smith gave two weeks to the identification of Petén influence and trade in the

collections. This procedure was of great benefit in establishing approximate chronological equivalence between the Campeche ceramics and the sequence at Uaxactún in the Petén, where stratigraphic phases have been fixed in time by Maya dates on accompanying monuments.

The determination of the correct time relations between the ruins of the Petén and Yucatán areas is of importance both in telling of Maya history and in the dating of the Maya culture in terms of the Christian calendar. The Chenes-Río Bec area, intermediate between the two, is the likeliest place to look for datable connections between them. Its study is also important in the determination of the nature and direction of cultural influence at all periods between Yucatán and Petén.

All three sites dug showed evidence of occupation ranging from pre-stela (Formative) times until somewhat before the period of Toltec influence at Chichén Itzá. In each site, however, one period predominated in the pottery, presumably that of the standing architecture of the site. This period in all cases was characterized by a predominance of the Medium Paste Slateware which also predominates in the Puuc ruins and other of the Classic Period in Yucatán. The occurrence of this pottery at Xtampak in quantity in the terrace underlying stelae, two of which bear Maya dates of approximately 9.16.0.0.0, gives a contemporaneous date for this ceramic horizon in the Maya calendar. This dating by sherd material was reinforced by the finding of cache pottery of Classic ware in the stelae platform. The terminal dates of the period are harder to work out, but some information should appear from the detailed analysis not yet begun. At present there is a suggestion that the occupation of the Puuc sites was somewhat later than, though overlapping in time with, that of the Chenes sites. The beginning date of this pottery is also not closely fixed as yet. The absence of all three sites of clearly defined deposits between the Classic and the underlying Formative suggests either a period of abandonment or a longer use of the pottery we call Classic. At various sites in Yucatán a series of ceramic phases between Formative and Classic have been found and designated by the general term Developmental. Yucatán Developmental pottery occurs very sparingly in the Chenes sites tested.

Dating in the Maya calendar of Chenes architecture at Xtampak is given confirmatory evidence by Smith's classification of the Petén trade wares. The majority of polychrome trade ware sherds from each site tested falls into the Uaxactún subphase Tepeu 2, which Smith dates at 9.13.0.0.0–9.19.0.0.0. Thus the dating of the Chenes and Río Bec architectural styles falls well within the Maya Initial Series Period. The coming detailed analysis of these collections should

limit more closely the dating of the Yucatán periods in reference to the period of these sites.

The degree of cultural similarity among the material of the Puuc, Chenes, Río Bec, and Petén areas is useful in evaluating Maya cultural development. Both Chenes and Río Bec pottery of the Classic Period show preponderant percentages of Medium Paste Slateware, the chief Yucatán ware of this period. This ware is distinctive from that of the Petén. The pottery of each of these three Slateware areas, however, is easily distinguishable from that of the others by differences in detail of vessel forms. The finer monochromes of the Río Bec area are very similar to certain wares of their corresponding horizons in the Petén, whereas the Chenes fine monochromes resemble those of the Puuc area. These degrees of relationship seem at least roughly to parallel the architectural relationships which have been observed.

An additional finding of interest is that of a new Formative phase which seems to precede the Late Formative apparent in nearly all Yucatán sites thus far sampled. The Yucatán Late Formative, as well as that found in the Campeche sites this year, bears certain marked similarities to types of pottery found in the Chicanel Phase at Uaxactún, according to the find-

ings of R. E. Smith. There are also sporadic resemblances to the earlier Mamom Uaxactún Phase. At Dzibilnocac and Xtampak were found deposits of a phase seemingly earlier than Late Formative and showing ware and form resemblances to the early deposit found at Maní under a Late Formative deposit [Chapter 1.31] (YB 41). At Dzibilnocac the deposit of this new phase includes some Late Formative pottery; at Xtampak the diagnostic Late Formative wares are absent. This period may be provisionally called Middle Formative; the Maní deposits, Early Formative. The Middle Formative phase shows less similarity to Chicanel than does the Late, but no similarity to Mamom. The Early Formative seems to show no resemblances to any pottery of other areas thus far known.

The dating of the Early and Middle Formative periods of the northern Maya area is not at present a profitable subject even for conjecture. The Middle Formative collections are small; the Early Formative, although larger, are limited almost exclusively to water jars. The distinctive character of these periods is striking, but further excavation is imperative before they can be properly placed. The study of the cultures sampled this season has scarcely been initiated.

16.0. CALAKMUL

Calakmul is one of the largest and most important of known lowland Maya sites. It is located in southeastern Campeche, north of El Mirador, and some 35 km from the Guatemalan border. Calakmul was first reported by Cyrus Lundell in 1931. The first CIW expedition to the site was in April, 1932, followed by three additional surveys, the last in 1938. In 1982 it was the focus of a project sponsored by the Universidad Autónoma de Campeche, which has produced a new settlement map, the discovery of more monuments, and a series of new excavations. The site core comprises approximately 2 sq km and contains approximately 1,000 structures and at least 117 stelae. Although construction of both of the main pyramidal buildings, Structure 1 and the 45 m high Structure 2, was begun in the Middle Preclassic period, Calakmul was not identifiable as the seat of an important royal dynasty until about 500 AD. It first became a regional power, capable of competing with Tikal under Tuun K'ab Hix (ca. 520–550 AD). The political influence of the site reached its political apogee under Yuknoom the Great. His son, Yuknoom Yich'aak K'ak' (686–695 AD) was vanquished in 695 AD while battling Tikal. The sensational

tomb chamber of this ruler was found in Structure 2 in 1997. The glyphic record of the site ends in 909 AD.

16.1.

ALFRED V. KIDDER

The Calakmul Expedition

YB 31:95–96, 1932

Work at Chichén Itzá was interrupted, in mid-season, by word of the discovery of a large, hitherto unreported Maya city in the archaeological unknown forest region of south central Campeche. Mr. C. A. Lundell, then in the employ of the Chiclé Development Company,

learning of the site from chicleros, explored and named it in December 1931, and later reported it to Dr. Morley, coming to Chichén Itzá in March, where he most generously turned over to the Institution his map and notes.

So important did the ruin seem, from Mr. Lundell's description, and so many inscribed monuments did it evidently contain, that it was decided to equip an expedition for its immediate investigation in order to take advantage of transportation facilities at the same time available through operations of chicle workers in the region, but which might, in another year, not be available. Dr. Morley headed the party and handled the epigraphy; Mr. Ruppert accompanied it to report upon architecture; Mr. Bolles to survey the city; Mr. Strömsvik to turn fallen monuments and to study such artifacts and pottery as might come to light.

Four weeks were devoted to the trip, two weeks being spent at Calakmul. The five days' journey in from the city of Campeche by boat, mule-drawn trolley, auto truck and mule-back was arduous in the extreme. It was made possible by the most helpful cooperation of Mr. Brydon of the Chicle Development Company and the invaluable assistance of Sr. Francisco Buenfils

of Mérida, a large chicle operator. The ruins proved to be those of a very extensive Old Empire city. It is remarkable for the unprecedentedly large number of its monuments. No less than 103 stelae were found, of which 75 percent are sculptured, and of which the dates of nearly 50 were deciphered by Dr. Morley, covering the period in Maya chronology from 9.9.10.0.0 to 9.19.0.0.0 (364 to 550 A.D., according to the Morley-Spinden correlation). The height of ancient activity at Calakmul would thus appear to have taken place during the middle to late part of the Old Empire period. The nature of the sculpture indicates that the city was a thriving provincial center, evidently colonized from Petén. Its situation in a region between the previously known sites of Petén and those of later times in northern Yucatán gives it great archaeological importance. Word of other large ruins in the vicinity, one of which was visited by Messrs. Ruppert and Bolles, and found to contain sculptured monuments extending into the Cycle 10, offers ground for belief that much significant information upon Maya history awaits recovery in this region. It is planned to continue exploration there in 1933.

17.0. EDZNÁ

In 1928 the Mexican archaeologist Federico Mariscal published some drawings and plans of Edzná. Sylvanus G. Morley and Enrique Juan Palacios later deciphered some of the dates on the stelae. The first extensive exploration of the site was undertaken by Alberto Ruz Lhuillier and Raúl Pavón Abreú in 1943. They identified the extent of the site core and the major features of the Temple of Five Stories and Ruz Lhuillier published an account in 1945. Pavón Abreú conducted further work in 1958 and 1962, and the Temple of the Five Stories was partially restored. In 1968 a survey of the site core and some peripheral areas was made by George F. Andrews. In 1970 additional excavation and restoration was undertaken by Pavón Abreú and Román Piña Chan for Instituto Nacional de Antropología e Historia de Mexico, and in 1983 the New World Archaeological Foundation archaeologists including Ray T. Matheny and Donald W. Forsyth reported on the hydraulic systems and ceramics at Edzná. From 1986 through 1989 major excavations and structural restorations were undertaken by Pavón Abreú and Luis Millet Camara of the Campeche Regional Center of Instituto Nacional de Antropología e Historia de Mexico,

and it was reported by Benavides Castillo in 1989 and 1990. Guatemalan refugees formed part of the work force, and funds were provided by agencies of the United Nations and Mexico devoted to helping refugees. In 1991 additional excavation on the north side of the Main Acropolis and consolidation of the Temple of the Five Stories were undertaken.

17.1.

SYLVANUS G. MORLEY
Report on Edzná

YB 26:263–266, 1927

On January 13, 1927, Mr. Nazario Quintana Bello, Inspector of Archaeological Monuments for the State of

Campeche, discovered an important Old Empire city, some 40 miles [64.4 km] southeast of Campeche, the state capital, and 8 miles [12.9 km] east of the modern village of Tixmucuy. A temple, five stories high, was the principal object stressed in the press reports of the discovery and the name of *Tixmucuy* was incorrectly attached to the city.

Early in March, Messrs. Reygadas, Palacios and Mariscal visited this site in behalf of the Direction of Archaeology of the Mexican Government, and made additional discoveries of even greater scientific importance. Several hieroglyphic monuments were found, and Mr. Palacios succeeded in deciphering on the front of Stela 2 an exceedingly difficult and very much weathered text, recording the Initial Series date, 9.15.0.0.0, 4 Ahau 13 Yax (ca. 472 A.D.), which fixes the chronological position of the city.

This new Initial Series makes the fourteenth to have been found in Yucatán,¹ and the third in the State of Campeche, the other two being the one from Holactún on the savanna of Xalumkin south of the railroad station of Dzitbalché [Chapters 1.6 and 1.12] and the other from the Island of Jaina on the northwest coast [Chapter 1.12].

On May 15 and 16, Dr. Morley and Messrs. Ruppert and Crandall visited this site in behalf of the Institution, discovering 15 additional monuments, bringing the total of sculptured stelae to 17, and a hieroglyphic step in front of the principal temple. At this time also, the true name of the site was ascertained from the inhabitants of the nearby village of Tixmucuy.

The local name for this group of ruins is *Etzná*, meaning in Maya *etz*, a grimace, or a face, in the sense of to make a face and *ná* house, perhaps "The House of Grimaces," would be a free translation. The Indians of the region have a tradition that if one is hungry, and leaves money on the stones at Edzná, returning later, a good meal will be found in its place.

Finding the name Edzná so clearly attached to the site, and not that of Tixmucuy, the name of the modern village nearest there to and under which the first press notices thereof had gone forth, Dr. Morley asked permission of the Direction of Archaeology at Mexico City to make this change in nomenclature before such a misleading designation should become fixed. This was graciously granted, and the local name Edzná was accepted for the group.

The ruins of Edzná indicate that it had been a place of considerable size, a large provincial Old Empire city, although not so large as Cobá [Chapter 34.1]. The large Acropolis is an enormous construction measuring more than 500 feet on a side and some 25 to 30 feet in height. From the broad platform thus provided, rise four temples on the four sides of a court, that on the eastern side (that is, facing west) being the Temple

of The Five Stories, noted in the first press dispatches. The four lower stories of this edifice are built against the side of the supporting pyramid, in tiers receding toward the summit, a broad central stairway leading from the court level to the fifth story above.

This had originally been composed of two chambers, one behind the other, but the outer front wall had entirely fallen, leaving only the inner chamber intact. Although the exterior walls had been made of faced stone, the individual blocks were very small and not overly well executed. The arch stones were not shaped as in New Empire times, the slope of the corbel being achieved by a liberal stucco finish, now fallen, leaving the rough butts of its constituent elements exposed. Against the back of the inner chamber a large plain slab of stone had been let into the wall. This had every appearance of being a stela, but was without carving. The wooden lintel over the doorway leading into this chamber was of four sapote beams, all in good condition. This fifth story is surmounted by a roof-comb, in fairly good condition.

Perhaps the most interesting feature connected with the Temple of The Five Stories is the presence of one or more hieroglyphic steps in the stairway leading to the fifth story. Such, however, is its present chaotic condition, the component blocks having fallen and rolled hither and thither, that it was impossible to verify to what extent the risers of the individual steps had been carved. Near the bottom, one step and possibly two, showed hieroglyphs carved upon the riser. Each glyph is presented in a single cartouche with rounded comers. Unfortunately some one had torn a number of blocks from their original positions and thus destroyed the original sequence, a matter of vital importance in deciphering Maya texts. Considerable excavation, particularly at the northern side of the stairway, will be necessary before the beginning of this inscription (that is, the left half of the step, facing it) is disclosed.

The Small Acropolis lying just south of the Large Acropolis, and practically joining it, is even of greater scientific interest, in that here were found all the 17 sculptured stelae thus far reported at Edzná.

The Small Acropolis is surmounted by five temples, the one on the western side irregularly facing west, that is away from the court behind it, upon which the other four face. The western temple, however, would appear to have been the most important, since arranged in tiers in front of it, there are at least three rows and possibly four on the general ground level at the western base of the Small Acropolis, another possibly halfway up the slope, and a last row of two stelae on the terrace above directly in front of the temple, in all 16 of the 17 stelae thus far found at this site. The remaining monument, Stela 17, stands in front of the temple on the eastern side of the plaza above.

Fortunately most of the monuments associated with the Temple of the Sixteen Stelae had fallen with their sculptured faces downward in ancient times, so that the relief in many cases is still beautifully preserved. Of the 16 monuments in front of this temple, only two (Stelae 2 and 11) were found standing, by Mr. Reygadas and his associates in March; and it was on the former that Mr. Palacios succeeded in deciphering the Initial Series date 9.15 0.0.0, 4 Ahau 13 Yax, the only one thus far found at Edzná.

Of the 14 remaining monuments, three (Stelae 5, 13, and 14) had fallen with their sculptured faces upward so that most of their relief had been destroyed. This left 11 monuments (Stelae 1, 3, 4, 6, 7, 8, 9, 10, 12, 15, and 16) which were turned over to show their sculptured faces by the Carnegie Institution Expedition in the forenoon of Sunday, May 15, probably the greatest number of Maya monuments ever exposed at one time to the light of day.

The Edzná monuments, with the single exception of Stela 12, are sculptured on one face only, the back and sides being dressed, but plain; many if not most of the stelae have rounded tops. The commonest subject portrayed is a large principal figure of a ruler or high ranking priestly official standing upon the back or the stomach of a very obviously inferior captive. This subject is portrayed on Stelae 1, 5, 7, and 11, and probably upon Stelae 2, 3, 4, 10, 13, and 14 as well although the effect of erosion in the latter group makes impossible certain identification of the respective "captives."

The two monuments, Stelae 15 and 16, that formerly stood directly in front of this temple, for which reason they are probably of latest date, show a different treatment. The former is divided into two horizontal panels, the upper presenting the principal figure with some sort of a ceremonial baton in his hands and a small seated human figure at his feet; and the lower, two smaller human figures facing each other, with a panel of glyphs between them. Stela 16 is divided into three horizontal panels, each presenting two small human figures facing each other. Above there seems to have been a single row of glyphs. Stela 1 at Jaina, also in the State of Campeche, possibly dating from 9.11.0.0.0, 12 Ahau 8 Ceh, shows a similar division of its front into three horizontal panels, the upper one occupied by four seated human figures facing the center two on each side, the middle by a larger principal figure with smaller ones at its right and left, and the bottom one by a single human figure.

Stylistically considered the two most important monuments at Edzná are Stelae 8 and 9; indeed so unusual is their treatment, the nature of the design and its arrangement that they stand in a class by themselves without close analogues throughout the range of Maya stelae.

The subject portrayed on each monument is a pair of standing human figures back to back, the medial vertical axis of the front of the stelae passing between them. The medial vertical axis of each figure coincides with a front edge of the plinth in such a way that half of each figure appears on the adjoining side. A slight stylistic improvement is noted in Stela 8 as compared with Stela 9. In the latter case, although half of the upper part of each figure appears on the adjoining side, both legs are unnaturally forced on to the front of the plinth, giving a very grotesque twist to each body. In Stela 8 this defect has been remedied by the very naturalistic device of permitting the figure simply to straddle the edge, one half of each body from the elaborate head-dress to the sandal, appearing on the front of the plinth, and the other half in each case on the adjoining side.

The arrangement and length of the inscriptions in Stelae 9 and 8, also show corresponding development. On Stela 9, there is a single band of five glyph blocks across the top of the front; while on Stela 8, the inscription begins with a single glyph-block at the top of the left side, thence passes across the front in four glyph-blocks and finishes at the top of the right side with another single glyph-block.

Concerning the dates of the Edzná stelae, owing to the fortunate decipherment of the Initial Series on Stela 2 by Mr. Palacios of the Direction of Archaeology, at least one date is surely fixed in the history of the city. In addition, Dr. Morley found two other Period Ending dates, on Stelae 5 and 9. The three known dates at Edzná are as follows:

Table 17.1.1. Calendrical Decipherments, Edzná.

Stela 9	9.11.17.0.0	9 Ahau 3 Mol	circa 410 A.D.
Stela 2	9.15.0.0.0	4 Ahau 13 Yax	circa 472 A.D.
Stela 5	9.18.0.0.0	11 Ahau 18 Mac	circa 531 A.D.

These three dates, and especially the second one, which is an Initial Series, fix the chronological position of Edzná as extending at least from the middle of the Middle Period of the Old Empire down to the height of the Great Period; and its geographical position—far north of the center of the Old Empire region (that is, the Department of Petén, Guatemala) as clearly indicates that it was a peripheral and correspondingly provincial city, but at the same time of no mean importance in the world of its day.

NOTES

1. Nine Initial Series were discovered in Yucatán in 1926, one at a small site called Ichpaatún on the shores of Chetumal Bay, Territory of Quintana Roo, by Dr. T. Gann,

and the other eight at Cobá, in eastern Yucatán by the Carnegie Institution of Washington [Chapter 34.1].

2. There is evidence at Piedras Negras, Naranjo and Quiriguá, where the sequence of the hotun markers is especially long and unbroken, that the latest monument

in each plaza, not only occupies the most important position in that particular assemblage of monuments, but is also the most beautiful. Examples of this are Altar 1 at Piedras Negras, Stela 32 at Naranjo, and Zoomorph P at Quiriguá.

18.0. CHIAPAS

18.1.

EDWIN M. SHOOK

Yucatán and Chiapas

YB 54:289–295, 1955

Except for the brief time occupied by field activities at Mayapán, Shook spent the major portion of the past season in Mérida. There, at the Department's ceramic laboratory, he studied the pottery of Mayapán, assisted Berlin with his report on Tabasco, and recorded a number of privately owned archaeological collections. Shook also devoted about five weeks to exploration of ruins in the environs of Mérida, on the coast of Campeche, and in the central highlands of Chiapas.

The private collections in Mérida range in size from several specimens to over a hundred, usually of pottery, recovered from sources widely dispersed throughout the Yucatán peninsula. Though often lacking important information on exact provenience and association, these collections provide complete examples for study of many ceramic types previously known only from sherds. In rare instances, the contents of a single tomb or grave have been retained by the collectors, and in such cases contemporaneity and cultural relations may be established from association of pottery types.

Within the modern city of Mérida and on its outskirts, the last vestiges of the preconquest settlements are fast disappearing. The ancient structures are being demolished to clear space for new factories, houses, streets, and the like, or because the archaeological mounds provide a more readily accessible supply of building stone than do the quarries of native limestone. An effort was made to map, photograph, and collect sherd samples from as many of the archaeological sites as time permitted. The following ruins were, briefly visited and recorded.

Tecoh is situated on the lands of Hacienda Tecoh, 6 km south of the central plaza of Mérida. Twenty or more ancient house mounds and low platforms, several rectangular mounds 2–3 m high, and one pyramidal structure approximately 8 m high are arranged around a cenote with a permanent water source and, a spacious natural cave. The cave, now dry, may once have had a shallow pool of water, but its principal use appears to have been for quarrying *sascab* (lime gravel) for building purposes. The ancient quarrying on the

cave's cast side created a low-ceilinged chamber fully 25 m in diameter. The entrance from the natural cave to the large artificially dug chamber had been closed by a thick stone wall except for a single narrow, low-roofed passage. A search by flashlight of the pitch-dark room resulted in the recovery of only a few potsherds around the floor, edges and near the entrance passage. Outside, on the cave floor and in the fill of a collapsed part of the masonry wall, were potsherds in abundance. An unselected surface collection included a few Preclassic, a preponderance of Early Classic, and several Late Classic and Early Postclassic sherds. Among the latter was a decorated spindle whorl similar to some from deposits of the Toltec Period at Chichén Itzá.

The cenote has a roughly circular orifice and a rocky floor-sloping down to a deep, pool of water about 20 m from the entrance. A well-worn path with a few artificially cut steps leads to the water's edge. Along one side of the path, crudely sculptured in the natural rock, is a grotesque writhing serpent.

The Tecoh mounds, now almost entirely robbed of facing stones, are identified by featureless heaps of small dry rock fill. A careful search among the rock piles disclosed that Late Classic Medium Paste Slateware sherds predominate over other pottery types, though Preclassic and Early Classic types are present. A few scattered cut and dressed wall stones also suggested that the major occupation of the site was during the Late Classic Puuc Period.

Quinta Miraflores is apparently a small site, as remnants of only three mounds remain. The ruins are located in the gardens 100 m east of the main house of the property called Quinta Miraflores, 4 km east of the central plaza of Mérida. The present small acreage of the quinta is surrounded by a residential section which formerly was a part of Quinta Miraflores. Two of the archaeological mounds have been reduced by quarrying to barely discernible outlines, but the third retains some architectural features. The local people report the last to have been approximately 10 m high before quarrying brought it to its present height of 1.5 m. Exposed are vertical and sloping terrace walls, lime-plastered stairways, and floors of four successive building stages. The structure in each stage apparently had been a rectangular platform, with steps on either the east or the west side, supporting a building of perishable material. There was no evidence of vaulted masonry buildings. Substructure walls were built of rough uncut stones, then surfaced with lime plaster. A collection of 900 potsherds was obtained from the fill and general debris of the mound. The majority of the sherds were derived from a midden of charcoal, ash, bone fragments, and so on, outside and at the base of the second-phase platform. This midden appears to have

been normal household rubbish thrown over the edge of the platform.

The entire sherd lot from this Quinta Miraflores mound belongs to the Preclassic Period and conforms particularly well with what has been termed the Late Formative stage. There are no identifiable unslipped wares even among the high percentage of jar sherds, nor are there jar handles. It is significant that jar handles are lacking in all Preclassic material Shook has examined from northern Yucatán. Among the 900 sherds, one from a flat-bottomed, low flaring-walled bowl shows the mark of a foot attachment. It could not be determined whether the secondary support had been a solid nubbin or a hollow foot. The evidence from Quinta Miraflores clearly demonstrates simple but formal architecture with four successive rebuildings of the same unit during a late phase of the Preclassic Period.

Colonia Miraflores is an archaeological site of at least six mounds from 1 to 4 m high, 0.5 km south of Quinta Miraflores on lands formerly belonging to the same property. The area, on the southeast edge of Mérida, 4 km from the central plaza, is now a real estate development called Colonia Miraflores. The ancient structures, just north of the highway to Kanasin, are being demolished for building material. In several there are lime concrete floors exposed at different levels, showing a sequence of building activities. In the mound debris are a few well-cut and dressed wall and molding stones and colonnettes of types commonly associated with Late Classic Puuc-style vaulted buildings. The pottery and stone artifacts from the surfaces and fill of the mounds indicate a long period of occupation, extending from the Preclassic, through the Classic, into the Early and the beginning of the Late Postclassic Period. The majority of the sherds and several restorable vessels are of Medium Paste Slateware, confirming the architectural evidence that the site flourished mainly during Late Classic Puuc times.

Tihoo is the major pre-conquest site over which is built the central part of Mérida. Further information was gathered during the past season from oral and written sources and personal observation regarding the distribution of archaeological mounds around the center of Mérida. Only the larger structures have been recorded in published sources or are remembered by living inhabitants. Of the many units, traces of four exist today. The collection of pottery from the Franciscan monastery mound, made by R. H. Thompson and Shook in 1951 [Chapter 4.17], was re-examined. Among the pre-conquest material, there were no sherds identifiable as Preclassic, and just a few Early Classic ones. The majority are Late Classic Medium Paste Slateware, several are attributable to the period of Toltec influence in Chichén Itzá, and a

fairly sizable lot are Black on Cream, a common ware in the earliest levels of the Mayapán Period. The absence of Mayapán Redware sherds in the Tihoo collection suggests that Black on Cream may have been produced in northern Yucatán before, and continued in vogue for some time after, the development of Mayapán Redware.

Xcanatun is a major archaeological site 16.5 km north of Mérida and 0.5 km west of the highway to Progreso. The location of the ancient settlement had been well chosen for water supply, as four small cenotes exist within the confines of the ruins, each opening to the shallow water table approximately 2 m below ground level. The continued ruthless destruction of this great site for road building fortunately was stopped this year through the energetic protests of Dr. Alberto Ruz L., Government Inspector of Ruins for Yucatán. The foundations of six major structures at Xcanatun are recognizable, as well as numerous lesser mounds and platforms. The local workmen reported that the largest unit, before quarrying began, stood 20 m high and measured 80 m square at the base. The structures are formally arranged around several rectangular plazas, the principal one being elongated with its long axis north-south. Throughout the site and on the periphery are many low terraces or platforms retained by walls of large uncut stones laid without mortar. These terraces presumably supported houses of perishable material. There was no cut building stone or sculpture around these terraces or in the debris of the partly destroyed larger central structures. The latter had terrace and free-standing walls exposed, but no evidence of Maya vaulting. Room walls, though heavy, apparently supported beam and mortar or thatch roofs. Walls were constructed of rough, undressed stones and were smoothly surfaced with lime plaster. Floors of rooms, terraces, and plazas had been finished with a hard white to salmon-color lime concrete. Each major structure showed many-successive rebuildings, suggesting a relatively long period of development.

Pottery collected from the fill and debris of the larger mounds, including a restorable jar containing an infant's skeleton, proved to be entirely Preclassic. A few of the sherds conform to types recovered at Quinta Miraflores, but most of the material suggests a ceramic phase older than Quinta Miraflores. A single low mound, partly cut away, had in its debris weathered fragments of an Early Classic lustrous monochrome jar, and on the surface away from mounds were a few weathered sherds of Late Classic Medium Paste Slateware and Fine Orange. The ceramic and architectural evidence demonstrates that Xcanatun flourished as a major center during the Preclassic Period.

Soblonké, a small site 9.2 km north-northwest of Mérida, on the south-edge of the highway to Sisal,

lies at the southeast edge of the village of Caucel, which is built on and around another archaeological site [Chapter 1.40]. The ruins consist of six low mounds from 0.5 to 1.5 m high and a larger structure 3.25 m high. The last has been sectioned by quarrymen, exposing vertical and sloping substructural walls, built of rough, uncut stones and surfaced with lime plaster. The construction is of the same type as that at Quinta Miraflores and at Xcanatun, and again, only Preclassic pottery comes from the mound fill and debris. The workmen quarrying the mound had encountered, just before Shook's visit a burial of a male adult beneath the lowest floor and just above bedrock. They described the position of the skeleton as extended with head to the east. The several pottery vessels accompanying the body had been smashed by the workmen's picks, but many, of the fragments were recovered. These were flat-bottomed bowls of large diameter with heavy, straight flaring walls and with all-over glossily polished, crazed monochrome slip. The colors range on the same bowl from red to brown to black where fire-clouded. These vessels and sherds conformed to the principal types found in the major structures at Xcanatun. A few sherds of Medium Paste Slateware were encountered on the ground surface at Soblonké.

Tuc is a small site 5 km north of Caucel and approximately 10 km northwest of Mérida. Except for stone-robbing for fencing the henequen fields surrounding the site, the ruins of Tuc have not suffered such extensive damage as the sites previously described. A single pyramid, 12 m high, dominates the site and occupies the west side of a small plaza with lower temple mounds or platforms on each of the other three sides. Low mounds and terraces surround this ceremonial nucleus for several hundred meters. The pyramidal unit retains traces of a stairway on the east side, terraces of rough stone masonry, and the base courses of the temple's back wall. The position of the wall and of uncut stone masonry on the pyramid summit suggests a single-room temple facing east. Elsewhere at Tuc only one cut and dressed building stone was observed; it lay in the debris of the platform closing the north end of the central plaza. No pottery could be found on the surface. The placement of the principal occupation of Tuc in the Classic Period, on the basis of site arrangement and the few architectural details, is little more than a reasoned guess.

Ucu, a site consisting of a single mound 8 m high in 1951 [Chapter 1.41], has only traces of the mound left. All except the southern fringe has been torn down to bedrock. The destruction since 1951 disclosed that the structure contained an important architectural and ceramic sequence beginning with a Preclassic unit with rough uncut stone masonry walls, probably a

rectangular platform. How many rebuildings of the primary unit took place could not be determined, but eventually the whole was buried by an Early Classic pyramidal substructure with a stairway on the south side. This unit also probably underwent successive increments before the final Late Classic Puuc-style structure was erected over the older building. Remnants of the vaulted Puuc-style temple atop the pyramid were observed in 1951. Walls were faced with cut and dressed veneer stones set in excellent lime mortar and surfaced with a thin, hard lime plaster.

The small sherd sample collected in 1951 from the Ucu structure was considerably enlarged during the past season. Though hopelessly mixed from surface to bedrock by the quarrying operations, the material could be segregated typologically by comparison with controlled collections from Yucatán. Preclassic types comparable to wares found in Xcanatun and Soblonké were relatively frequent. Early and Late Classic types were almost equally well represented, the best diagnostics being Lustrous Monochrome jars and Medium Paste Slaware.

The above information, coupled with that gathered in previous field seasons, may be summarized as follows. The small area encompassed by the city of Mérida and its immediate environs contains architectural and ceramic evidence of considerable population, possibly continuous, from Preclassic (Middle Formative?), through Classic, into Postclassic times. The earlier phases of Preclassic, and the final period before the coming of the Spaniards, most of which was the time of political dominance of Mayapán, are lacking in the Mérida area. That no remains of these phases have come to light is probably due to the paucity of search by archaeologists. The brief catch-as-catch-can survey of the past season has broadened our knowledge of the Preclassic Period in northern Yucatán and demonstrated that large and small sites with permanent stone architecture of ceremonial, civic, and probably domestic nature flourished long before the so-called florescence or Classic expression of Maya culture.

A brief exploration by motor launch was undertaken along the west coast of the Yucatán peninsula from Campeche to Sisal. Archaeologically this coastal strip north of the Island of Jaina is known only to professional pot hunters and a few fishermen living in widely separated villages. The following sites were visited.

Jaina, 36 km north of Campeche, had previously been visited by the writer [Chapter 40.4]. This time a more thorough study was made of the limited habitation area on the island. Tightly concentrated around the temple mounds, and interrupting what normally would be an open plaza between major public build-

ings, were low rectangular house platforms. These were faced with vertical walls of cut and dressed block masonry, the same as that used in the pyramid terrace walls. Adjacent to these house platforms, pot hunters' pits disclose up to 2 m depth of household, refuse, heavily sown with human burials. Often a skeleton, either of a child or of an adult male or female, is buried tightly flexed in a large pottery urn. The stratigraphy clearly shows that many of the urn burials were inserted into pits dug through old, horizontally bedded refuse; others were sealed by post-burial deposits. Grave furniture may include small ornaments of jade, artifacts of shell and bone, pottery vessels, and figurines, figurine whistles, flutes, and drums of pottery. The articles, if space permitted, were placed with the body inside the urn; otherwise, offerings were laid around the outside of the containing vessel. The rubbish accumulation, evidently from households, contains ash and charcoal lenses, quantities of broken pottery predominantly of coarse unslipped utilitarian wares, fragments of manos, metates, obsidian flake blades, and chipped chert blades, and animal, bird, and fish bones. The inhabitants of Jaina evidently preferred refuse deposits around the house for interment of their dead, or else no other suitable ground was available. Certainly the tiny island was thickly populated during Late Classic times. No earlier material has so far come to light, and only an occasional surface fragment indicates habitation after the Late Classic Period.

Isla de Piedra, approximately 8 km north of Jaina, is a small island about 200 m in diameter barely detached from the mainland. The land area rises gradually from a mangrove swamp next to the mainland to a 5 m cliff on the ocean side. The small archaeological site, of about a dozen house platforms and low mounds concentrated around courts, is on the west half of the island. Numerous pits have been dug by treasure hunters. Pottery and artifacts, the former severely weathered, occur in abundance in the upper 30 cm of the site and sporadically to 50 cm depth. The eroded condition of the sherds permits only a provisional suggestion that Isla de Piedra may have been a short-lived coastal village at the beginning of the Late Classic Period.

Huaymil, 8 km north of Isla de Piedra and 16 km from Jaina, is a small island clump of mangrove opposite the mouth of the Río Huaymil. The ruins lie on the north bank of the river, 2 km inland from the sea, on the first land sufficiently elevated to permit habitation. Mangrove swamp extends from the archaeological site to the sea. A thorough exploration of Huaymil was not possible in the time available. The ruins are enveloped in part by dense, low jungle growth, in part by tall savanna grass. Shook was able to observe only what he believes to be the western edge of the site.

Here a series of tightly enclosed courts are surrounded by colonnaded buildings, some vaulted, and temple structures on high, steep-sided pyramids. One pyramidal mound 12 m high apparently faced north to a court on the edge of which stands *in situ* the bottom third of a carved stela. The upper two-thirds of the monument is missing but may lie buried in the surrounding debris. The stela, of fossiliferous limestone, is plain on the back and the two narrow edges, but the front bears a framed panel containing a standing human figure with feet pointing outward. One partly exposed colonnaded building has a triple entrance formed by two columns, each a single stone reaching to lintel height. The doorjambs and lintels also are single, full-width stones, and the walls are faced with moderately well cut and dressed stone. The structure has two long parallel vaulted galleries with four or more columns acting as medial supports.

The pottery collected from the back-dirt of pot hunters' excavations and from the general surface of the site is predominantly Early Postclassic. Well represented are typical wares and forms commonly found in Chichén Itzá during the period of Toltec influence. These are X Fine Orange and Chichén Medium Paste Slateware jars and bolster-rim basins. The sherd sample contained no Tohil Plumbate, but in a private collection in Mérida, reported to be from Huaymil, there are a number of whole Tohil Plumbate and X Fine Orange vessels.

Huaymil may have been an important Maya center with stelae and Puuc-style architecture at one time, and later, during the Early Postclassic, have come under the same Toltec influence that dominated Chichén Itzá.

North from Huaymil along the coast past Isla Arena, no archaeological site with mounds was known to the local fishermen questioned. They all mentioned Punta Canbalam, about 6 km north of Isla Arena as a place where pottery was abundant. This information proved to be correct.

Canbalam is a long, narrow beach of unconsolidated seashells that is separated from the mainland by an estuary and mangrove swamp. The maximum elevation is 1 m above sea level, and the beach is frequently submerged during storms. Strewn for at least 1 km north-south along the white beach and embedded among the shells to sea level are quantities of water worn potsherds and stone artifacts. The amount of pottery precludes any possibility that Canbalam was a seasonal camp site, and against such a supposition, too, is the lack of fresh water and the precariousness of existence on a low beach exposed to storms. An alternative theory to explain the heavy deposit at Canbalam is that the point once was much more extensive and higher, like Isla Arena, Isla de Piedra, and Jaina, and

had an adequate source of fresh water, and that a sizable ancient settlement occupied this point of land. Centuries of wave action may slowly have cut away the land area and left today just a narrow low strip on the inland side with a fringe of refuse deposits from the old habitation area. The recognizable sherds in the collection from the beach were Late Classic types, including Fine Orange.

The sandbar beginning south of Celestún and paralleling the mainland around northern Yucatán reportedly has shell mounds, but Shook saw none from Celestún to Sisal.

Late in the field season the opportunity was taken to join, in an advisory capacity, a survey expedition into the central and eastern highlands of Chiapas, Mexico. The objective of the expedition, sponsored by the New World Archaeological Foundation, was to locate Preclassic sites for future intensive excavation. Considerable information was gained in this archaeologically little-known region, particularly in the drainage of the Río Grijalva. The previously reported ruins on the east bank of the Grijalva at Chiapa de Corzo were found to be a major site, many of whose large structures were erected during the Preclassic Period. Upstream about 40 km from Chiapa de Corzo a concentration of archaeological remains was encountered along both sides of the Río Grijalva, centered around the modern town of Acalá. Most abundant were Preclassic and Late Classic sites, though it is likely that further investigation will disclose Early Classic and Postclassic remains.

The Acalá region is characterized by rolling to mountainous topography sectioned by the Río Grijalva. On each side of the river there are a number of small, level, exceedingly fertile terraces which have been built up of river-deposited silts from repeated flooding. The level of these terraces is about 12 m above the April 1955 water level. In geologically recent time the flood deposition stopped, and the Grijalva has since cut its present channel, leaving exposed sections of the silt terraces. A study of these river banks revealed cultural material of Preclassic date in the upper 4 m of soil, and Late Classic remains which were limited to the surface level except where deposited in pits intrusively dug through the horizontally stratified silts.

A sherd-bearing, Preclassic midden 30–75 cm thick was discovered deeply buried in the river bank opposite Acalá, just below Puerto Mexico. An exposed cross section of the midden, 18 m wide, showed its east-west limit, but knowledge of how far the deposit extends into the bank must await future excavation. Shook sank a pit 2 m square, using the river bank as one side of the cut, in order to sample the midden, which lay 2.3–2.9 m below the present valley floor. The upper 1.7 m represented successively deposited

layers of fine, sandy loam containing only a few eroded potsherds. This was followed by an occupation level, 1.7–2 m below the surface, composed of charcoal, ashes, sherds, and stone artifacts in a matrix of gray-brown sandy loam. Directly below was another distinct 25 cm thick layer of light yellow-brown loam which effectively sealed over the midden first observed in the river bank. The cultural material from the 25 cm stratum conformed generally with that from the lower deposit and may have been contemporary surface rubbish washed over the midden during the floods which sealed the main deposit. The latter, in an area 2 m square, produced an estimated 8,000 to 10,000 pottery fragments, besides typical midden material of ashes, charcoal, charred seeds, animal and bird bones, burned fragments of adobe bearing pole impressions, some shell, bone, and a quantity of stone artifacts.

This large body of unmixed Preclassic material, probably representing a single phase, provides a datum of reference for future investigations in central Chiapas. The common pottery types were an unslipped coarse brown ware jar without handles and with a straight flaring neck to a direct rim, and an all-over slipped and polished red, red-brown to brown ware

bowl with flat base and straight vertical or flaring wall to an out-curving or everted rim. A few small solid and hollow nubbin feet were found, and several larger hollow feet tapering to a flat bottom. Vessel decoration other than slipping and polishing was rare. Fragments of four hand-modeled figurines of Preclassic type came from the midden. There were no comales, and only two uncertainly identified sherds suggesting incensarios.

Elsewhere in the Acalá region samples of Preclassic pottery were recorded, some stylistically predating and others postdating the Puerto Mexico midden types. Present in these insecurely anchored collections were vessels and sherds of White-Rimmed Black Ware, a pottery found in greater abundance in the Olmec sites of Tres Zapotes and La Venta.

Two Late Classic Period sites, Cupia and Laguna Mora, in central Chiapas, are especially noteworthy because the ceramics of both indicate close trade relations with the Gulf coast plain of Tabasco and the central highlands of Guatemala. Also, sherds of San Juan Plumbate occur at Cupia and Laguna Mora, the farthest northwest this type of Plumbate has yet been reported.

19.0. BONAMPAK

Bonampak is a Classic period site in the state of Chiapas, Mexico, about 30 km south of Yaxchilan. It is a small site, and once a dependency of Yaxchilan. All of the structures seem to have been built in the period from about 580–800 AD. Bonampak contains several medium-sized temples around a plaza, along with a few carved stelae, but is famous for the murals in one of the buildings. The Temple of the Murals, or Structure 1, is a long narrow building with three rooms atop a low-stepped pyramid base. The interior walls preserve the finest examples of Classic Maya painting, otherwise known only from pottery and occasional small faded fragments. Over the years rainwater has seeped into the plaster of the roof in such a way as to cover the interior walls with a layer of slightly transparent calcium carbonate. These murals first came to modern attention in 1946, when Lacandon Maya who lived in the region showed photographer Giles Healey a small temple whose three rooms house paintings that cover all surfaces. Shortly after Healey's discovery the CIW sent an expedition to Bonampak. The walls were coated with kerosene which made the layer over the paintings temporarily transparent, then the murals were

extensively and completely photographed and duplicate paintings were made by two different artists. The paintings date from 790 A.D. and were made as frescos, with no seams in the plaster indicating that each room was painted in a single session during the short time that the plaster was moist. The three rooms show a series of actual events with great realism. The first shows robing of priests and nobles, a ceremony to mark a child as a noble heir, musicians playing wooden trumpets, drums, and other instruments, and nobles conferring in discussion. The second room shows a war scene, with prisoners taken, and then the prisoners, with ritually bleeding fingers, seated before a richly-attired Chaan Muan, the Lord of Bonampak. It is usually presumed that the prisoners are being prepared for human sacrifice, though this is not actually shown in the murals. The third room shows a ceremony with dancers in fine costumes wearing masks of gods, and the ruler and his family stick needles into their tongues in ritual bloodletting. The accompanying hieroglyphic text dates the scene and gives the names of the principal participants. From at least the 400s AD onward, lords at Bonampak skirmished with those from Yaxchilan, 26 km

away; but by the 700s the royal families at the two cities had achieved *détente*. By A.D. 800, when the paintings were completed, the region was suffering from deforestation, exhausted farmland, and overpopulation. Some cities were burned to the ground; others were simply abandoned. By A.D. 900 the forest had begun to reclaim the area. Concerned about the continued deterioration of the murals in the rainforest environment, Mary Miller, a professor of the History of Art at Yale University, established the Bonampak Documentation Project in 1995 to record every detail of the murals before they disappeared. One important goal of the project was to use infrared film to document the paintings, which reveals details invisible to the naked eye. Team members directed and assisted photographers at the site, recording every scrap of paint within the three narrow chambers in three formats: color film, photographic infrared, and video infrared.

19.1.

KARL RUPPERT

Bonampak Expedition

YB 46:177–179, 1947

Early in 1946 Mr. Giles G. Healey, employed by the United Fruit Company to make a photographic record of the Maya, past and present, was in the eastern part of the state of Chiapas, Mexico, filming some groups of Lacandon Indians, and was directed by them to the site of Bonampak. Here he noted some remarkably well preserved paintings on the walls and vaults of the only stranding three chambered building.

On his return from the bush Mr. Healey reported the find to the Chairman of the Division, who at once arranged for Sr. Antonio Tejeda, Division artist, to go to Bonampak. In July Mr. Healey and Sr. Tejeda spent five days at the site. The paintings, as shown by the sketches made at that time, were so remarkable and so important that it was considered imperative to send an expedition for their complete recording.

In the winter of 1947 such an expedition was undertaken, financed by the United Fruit Company and directed by Carnegie Institution of Washington. Personnel included: Karl Ruppert, in charge; Gustav Strömsvik, engineer; J. Eric S. Thompson, epigrapher; Antonio Tejeda, artist (all of Carnegie Institution); Giles G. Healey, photographer, United Fruit Company; and Agustín Villagra, artist, Instituto Nacional de Antropología e Historia, México.

Mr. Strömsvik reached Bonampak January 31, having gone ahead to arrange transportation and establish camp. Messrs. Healey and Thompson arrived February 15 and returned to Tenosique February 28. Mr. Thompson returning to the [United] States, and Mr. Healey again leaving for the ruins on March 6. The remainder of the party, proceeding by plane to Agua Azul on the Usumacinta River and thence by mules, reached the site March 17.

Bonampak lies about 25 leagues south and slightly east of the ruins of Yaxchilán at an elevation of 400 m. In this area Mr. Healey has found a number of previously unreported ruins. The site is relatively small, compact, and carefully laid out, with a main plaza measuring 90 m by 110 m and surrounded on three sides by low mounds. The fourth side is defined by a natural hill, 43 m high, artificially terraced, from which, from plaza level, a broad flight of six steps rises to a wide landing on which were found Stelae 2 and 3 and their associated altars. From this landing the stairway, now wider by 12 m, continues to a second landing on which are seen two standing buildings. Building 1, containing the wall paintings, is of three rooms; the other is a single chambered structure. A third platform or landing 14 m higher supports six standing buildings, each with a single chamber. On top of the hill reached by a well defined stairway are a number of artificial mounds formed by the collapse of structures. Though the eight standing buildings are in a surprisingly good state of preservation, large trees growing on the roofs will hasten their disintegration.

The buildings in most cases rise from a simple plinth. The lower wall zones are plain; the masonry is of blocks with some slabs. The upper zones are faced with small, rectangular slabs, rise with a batter, and often show traces of stucco decoration. Only one structure has roof ornamentation; it consists of a perforated roof comb formed by a series of seven transverse walls, 4 m in height. The vaults show much variation: simple soffit slopes, interrupted slopes, and stepped. The lintels of all standing buildings are of stone, four of them sculptured.

Only one of the five stelae found in the plaza is sculptured. This monument, now broken, had a height of 5 m, width of 2.6 m, and thickness of 20 cm. It carries an Initial Series date of 9.17.?.?.? and is further sculptured with a single human figure. Also in the plaza are a number of plain altars, circular and rectangular, one of the latter resting on short wedge-shaped legs. A crudely carved jaguar figure, 2.2 m long, lies in the northeast sector of the plaza unassociated with any structure. The two stelae and two altars on the first landing of the terraced hillside are beautifully sculptured. One of the buildings on the upper landing con-

tains a plain stela; inside four buildings are plain, slightly tapering, columnar altars.

Building 1, with three chambers, contains the wall paintings. The building has an over-all length of 16.5 m and width of 4.1 m. Its exterior construction is similar to that of other buildings at the site. In the upper zone there remain traces of stucco decoration and niches containing seated figures. A wide bench is built against the end and back walls of each room; from an offset at the spring line, the vault rises in a slope with a single interruption. Beam holes, in pairs, are seen at two levels.

The recording of the paintings in Room 1 constituted the major project of the expedition. The condition in which the paintings were found and the preparation necessary before they could be copied is described by Sr. Tejeda:

Growing out of the top of the building were great trees whose roots pierced the masonry. In some parts where they have rotted owing to the action of time or to the separation of the stones, the roots have permitted a constant infiltration of water, which has deposited on the stucco walls a calcareous sediment that in some places is so thick that it is impossible to perceive what kind of decoration existed. This destructive action is evidenced sometimes by petrified bubbles, and sometimes by a calcareous layer, just as though the walls had been painted white. In some places the infiltration is so constant that it has washed away the paintings, making recovery impossible. The humidity has also favored the growth of fungus, green and black. A factor that has contributed greatly to the destruction, especially where the walls are vertical as are the divisions between rooms, is the droppings of a great many bats which have found a comfortable lodging in the upper part of the vault. Finally, it is believed that the most dangerous element of destruction is the capillary roots that have entered between the wall proper and the plaster surface that carries the paintings. The damage may be seen in places where the roots have wedged out and displaced the painted stucco, now lying on the floor, almost pulverized.

Sr. Villagra, who also made copies of the wall paintings, and Sr. Tejeda began the long and tedious task of cleaning the walls before starting to draw. To obtain greater transparency of the calcareous coating, once we had removed the thickest part, we applied water, but succeeded only in vaguely enlivening the colors. It occurred to Sr. Tejeda to try kerosene, and the result was a great success, as it was possible to observe in the paintings details which previously were not known to exist. The kerosene is applied with a brush, and the action endures

approximately eight or nine hours, after which it disappears by absorption and volatilization. It does not hurt the colors, and serves temporarily to impede the formation of fungus.

Never before had such a wealth of Maya wall paintings been available, nor had anything been found comparable in subject matter, detail, and execution. On the walls and vault of this one room 34 human figures are portrayed. In the center of the back wall are three figures wearing elaborate costumes and ornate headdresses. To their left is a group of musicians, some blowing long trumpets, some carrying gourd rattles, others carrying turtle shells which are struck or rasped with a forked stick. One man stands behind a vertical drum with a skin stretched over the upper end. The figures to the right bring offerings or are in positions of adoration. The first band on the vault is of hieroglyphs and groups of human figures; above this, on the vault and capstones, are large bold masks.

In the time spent at the site the artists were able to copy the paintings in only one chamber. Although those in the middle room were not recorded, some of the scenes, such as that in which blood is seen dripping from the ends of men's fingers, or those showing processions and probably battles, are of such interest and excellent draftsmanship that their value is equal to if not greater than that of the paintings copied this past season.

19.2.

GUSTAV STRÖMSVIK
Bonampak Expedition

YB 47:211–213, 1948

A report on the 1947 expedition to the ruins of Bonampak, under the direction of Mr. Karl Ruppert, of Carnegie Institution, financed by the United Fruit Company, and participated in by the National Institute of Anthropology and History of Mexico, appears in *Year Book* 46. The primary objective of that expedition was to copy the extraordinary mural paintings discovered there by Mr. Giles G. Healey in 1946. Owing to various delays and transportation difficulties, the murals in only one of the three decorated rooms were completely copied, but these proved to be so magnificent and so important that the United Fruit Company continued

its support in 1948, thus making it possible to finish copying the paintings and to obtain additional data on the site. The 1948 expedition was organized by Sr. Antonio Tejeda F., artist, and Mr. Gustav Strömsvik, archaeologist, both of the Carnegie Institution. Sr. Agustín Villagra, of the National Institute of Anthropology and History, again participated, and, to insure completion of the work, the services of Sr. Hipólito Sánchez, of the Archaeological Museum in Campeche, were obtained.

The earlier expedition had encountered great difficulties in procuring mule transportation to the ruins; this year, with chicle exploitation of the region stopped, mules were virtually unobtainable. In view of the possibility that equipment and supplies might have to be transported on the backs of men, impediments were cut down to an absolute minimum, in both weight and volume.

Equipment and supplies were assembled in Mérida and shipped by rail to Tenosique. On March 1, 1948, Tejeda joined Strömsvik in Mérida, and the next day they proceeded by train to Campeche, where they were met by Villagra and Sánchez. Ways and means for reaching the ruins were discussed. Four men were hired to carry the packs from Santa Clara chicle station to the ruins, should that prove necessary. Santa Clara was chosen as point of entry because it is the landing field nearest the ruins and the trail is fairly good.

On March 5 the expedition took the train from Campeche to Tenosique, there being no regular air service over that route. At Tenosique, through connections and friendships made last season, 12 mules and two muleteers fortunately were obtained and sent overland, via Piedras Negras, to Santa Clara. On March 12 a bi-motored plane was chartered at Tenosique to fly the staff and equipment to Santa Clara; in the evening of the same day the mules and boys arrived at the chicle station. After a day's rest, the expedition got under way into the jungle, the men taking turns walking and riding. The trail was much overgrown and very difficult to follow, and several times it was lost. In spite of these delays, the ruins were reached in two and a half days without serious incidents.

On the trail to the ruins, numerous mounds were noticed, but no cut stones or sculpture. Such remains occur some 300 m south of the chicle camp at Santa Clara, by the Lacanhá River, and at an abandoned chicle camp called Moguel, about halfway between Lacanhá and Bonampak.

At the ruins, the area in front of Building 1, which had been cleared the previous year, was completely covered by lush vegetation, but the thatch house built last season would still give shelter. The artists immediately set to work at preparations for copying the re-

maining paintings. Getting the camp settled, the supplies protected against occasional heavy showers, and camp routine established, came first. Afterward, time was spent in helping the artists and in preparing the walls for copying. Scaffolding had to be built of materials at hand; the kerosene lamps used for illumination created so much heat and carbon monoxide in the rooms that a fan had to be constructed to force in fresh air to enable the artists to work. Owing to transportation difficulties, a very limited supply of canned goods and meats had been brought along, but the neighboring Lacandon Indians supplied some sweet potatoes, plantains, and green corn. One of our workmen turned out to be a good hunter, and with our shotgun supplied the necessary meats.

When time permitted, notes were made of further details to complete the Bonampak map. Numerous excavations were made in courts and by stairways to find ceramic specimens, but in vain. During the interval since last season, the major part of the complicated roof ornamentation of Building 4 had fallen, but all details are preserved in Ruppert's careful architectural notes of the site.

The work of copying the paintings in the remaining two rooms of Building 1 progressed according to a carefully calculated program and was completed during the six weeks allotted for the task. According to agreement made beforehand, the expedition was met by a plane at the Santa Clara field April 24. The expedition had completed its task.

19.3.

ANTONIO TEJEDA F.

Bonampak Expedition

YB 47:213–214, 1948

Until the discovery of the Bonampak murals, nothing had led us to suspect the great technical ability and the extraordinary mastery of drawing and of composition possessed by the Maya painters of the Classic period.

The method used in producing the murals was apparently as follows. On the still moist plaster the artist drew the entire composition in sepia color, which in some instances is blood red, perhaps owing to the action of time. There is no doubt that the design outline and major color backgrounds were painted di-

rectly on the fresh wall surface, because fallen pieces of the paintings show the pigment deeply embedded in the plaster. The relatively large compositions, covering an entire wall surface, were presumably accomplished in this fresco technique by laying the final coat of plaster on one section of wall at a time, and possibly by the use of assistants to apply color after the composition had been rapidly outlined. In some parts of the compositions corrections may clearly be observed, left unchanged by the artist rather than risk damaging the wall. In order to intensify color for shading, to obtain different tones, or to strengthen and bring out details, the artist used pigments mixed with some unknown adhesive, which did not materially affect the permanence of the colors. The superimposition of colors in certain areas is revealed by the fallen pieces referred to above. The entire technique, fresco-tempera, is curiously like that of the Italian Renaissance. Only mineral paints seem to have been employed. Their selection and preparation were astonishingly skillful, as they have retained their tone and brilliance through the centuries, in spite of the most adverse climatic conditions.

The paintings of Rooms 2 and 3 have now been faithfully copied; those of Room 1 were copied in 1947. Those of each chamber are independent in regard to composition and descriptive action of the scenes, a unit of arrangement and subject matter, but all three paintings form a most harmonious total composition. Each must be studied by itself, however, in order to appreciate the resourcefulness with which its elements have been fitted to the available spaces, and the skill with which individual figures and groups have been balanced.

The paintings of Room 2 represent the highest plane of artistic conception. On one wall there is depicted a stirring scene of battle. Another part of the room shows the torture of prisoners. A very high place in the history of art must be granted to these renderings which, for balance, harmony, dynamic action, and the expression of ferocity, triumph, suffering have seldom been surpassed. One figure, that of a sacrificed captive, exhibits a knowledge of foreshortening that is truly marvelous.

In Room 3, as in Room 1, are depicted scenes of ceremony, including winged figures with rich and elaborate headdresses. As spectators there are several priests wearing long white robes similar to those of persons in Room 1. There are also several women seated on a dais, at whose base is another woman holding a child in her arms. These women and the priests form groups of great interest and charm.

Many of the glyphs found in Rooms 2 and 3 have suffered severely, and their decipherment will be difficult. It seems that the artists of Bonampak were more concerned with the depiction of events, with action, and with the magnificent costumes of individuals than with recording of chronological data.

The paintings in Room 1, copied last year, remain in excellent condition, and the cleaning of the walls permits them to be seen more clearly. Those of Rooms 2 and 3 are less well preserved because of the heavy calcareous coating deposited on their surfaces, the filtering of water through the walls, and the stains produced by fungi and bat droppings.

During the stay at Bonampak, drawings were made of the sculptured lintels of the doorways opening into the three painted rooms. These are in low relief, each depicting a warrior with a prisoner. They had once been painted in the same polychrome style as the murals. Only a few patches of the colors are left, but these may make possible color restorations of the carvings.

The National Institute of Anthropology and History faces a very difficult problem in the preservation of the wonderful paintings at Bonampak. Some sections of the stucco background, which has an approximate thickness of one centimeter, have loosened from the walls because of the humidity. The open spaces thus formed collect moisture and are used as nesting places by insects. This is causing parts of the murals to fall, and such areas require prompt attention. Attempt was made by the 1948 expedition to clean the building as much as possible. All vegetation was removed in order to halt the destruction caused by roots, many of which have penetrated the walls and produced cracks and passages which allow water to enter during the downpours of the rainy season.

20.0. YAXCHILÁN

Yaxchilán, known for the large quantity of excellent sculpture, was a large Classic period center, and the dominant power of the Usumacinta area. It dominated such smaller sites as Bonampak, and was long allied with Piedras Negras, and at least for a time, with Tikal. It was a rival of Palenque, with which Yaxchilán warred. Yat-Balam, founder of a long dynasty, took the throne on 2 August, 320 when Yaxchilán was a minor site. The city-state grew to a regional capital and the dynasty lasted into the early ninth century. Yaxchilán had its greatest power during the long reign of King Shield Jaguar II, who died in his 90s in 742. The first published mention of the site seems to have been a brief mention by Juan Galindo in 1833. Edwin Rockstroh visited the site in 1881 and published short account. Alfred Maudslay and Désiré Charnay arrived here within days of each other in 1882, and they published more detailed accounts of the ruins with drawings and photographs. Teobert Maler visited the site repeatedly from 1897 to 1900, and published a detailed two volume description of Yaxchilán and nearby sites in 1903. In 1931 Morley led a CIW expedition to Yaxchilán, mapped the site and discovered more

monuments. The Mexican Instituto Nacional de Antropología e Historia (INAH) conducted archeological research at Yaxchilán in the early 1970s, again in 1983, during the early 1990s.

20.1.

SYLVANUS G. MORLEY

*Report of the Yaxchilán Expedition*YB 30:132–139, 1931

On March 22, just after the close of the Chichén Itzá Conference, the Yaxchilán Expedition left for the State

of Chiapas. The staff consisted of Dr. Morley in charge; Mr. Ruppert, archaeologist; Mr. Bolles, surveyor and engineer; Dr. Dwight M. Rife, physician and chairman; Mrs. Morley, in charge of the commissary, and Mr. F. K. Rhoads, camp assistant.

After a day at Mérida for the purchase of supplies, the Expedition left for Campeche on March 24. Through the kindness of Don Salustino Abreú, of Campeche, his boat, the *Nueva Esperanza*, a 50-ton schooner with auxiliary engine was in readiness and late the same afternoon the Expedition left Campeche for Ciudad del Carmen at the mouth of the Usumacinta River.

The *Nueva Esperanza* stopped at Ciudad del Carmen for several hours to permit the making of the necessary financial arrangements for the long trip up-river and into the interior. Mr. Leslie Moore, manager of the Phoebe Hearst Estate in Campeche, kindly acted as banker, supplying a certificate of deposit against which checks were issued throughout the course of the expedition, thus obviating the necessity of carrying large amounts of heavy silver into the interior. This method proved highly successful and is to be recommended for other scientific expeditions operating in the remote and inaccessible regions of the upper Usumacinta Valley.

Early the following morning the *Nueva Esperanza* reached the hacienda of Chablé on the east bank of the Usumacinta River in the State of Tabasco and the same afternoon arrived at Monte Cristo on the west bank, the starting-point for the ruins of Palenque.

Through the kindness of Señor Lic. Don Tomas Garrido, Governor of Tabasco, a Ford truck was placed at the Expedition's disposal for making the trip to Palenque. This truck with a reserve supply of gasoline, there are no filling stations in the Tabasco hinterland, left Monte Cristo at 4:15 in the morning of March 27, and reached the modern village of Santo Domingo Palenque, not to be confounded with the ruins of Palenque, at 8:30 A.M.

From the village to the ruins, it is necessary to proceed on foot or horseback through the forest for another 10 km. The trail gradually climbs over ever-rising foothills until the Río Chacamax is crossed, beyond which there is a final steep ascent to the bench where the ancient city of Palenque was built.

After a hasty examination of this important Old Empire site, the Expedition staff was obliged to return to the village of Palenque, and thence by truck back to Monte Cristo in order to make connections with the *Nueva Esperanza* which was leaving the same night for the village of Tenosique, at the head of steam navigation on the Usumacinta River and the point at which mule trains with supplies for the mahogany camps high up the river leave for the interior.

The Expedition reached Tenosique on the afternoon of March 28. Don Francisco Villanueva, who had acted on former expeditions as the Institution's resident agent at Tenosique, had secured a house in the village where the equipment and supplies were stored and had already arranged for mules to transport the staff and outfit from Tenosique to Salvamento, a half-day's journey below Yaxchilán by river.

Sunday, March 29, was spent in consultation with the chief *arriero* (muleteer), Rosendo Esparza, who had taken the Thirteenth Central American Expedition to Piedras Negras in 1929, about the arrangement of the packs. It was decided that 21 cargo animals would be required and 12 saddle animals, six for the staff, two for the camp assistants, and four for the *arrieros*.

The first half of the Expedition, consisting of the staff, two camp assistants and two *arrieros* with nine pack animals, left Tenosique on the morning of Monday, March 30, the second half leaving the following morning.

The first half of the Expedition reached the ruins of Piedras Negras, now being excavated by the University of Pennsylvania, the next evening, March 31. Dr. J. Alden Mason in charge of the University of Pennsylvania Expedition had an excellent camp on the east bank of the Usumacinta River, just north of the ruins. Comfortable houses of split bamboo with thatched roofs had been built both for his staff and the laborers, as well as store-rooms, company store, photographic dark-room, corrals for the mules, and even a vegetable garden.

The Yaxchilán Expedition remained at Piedras Negras for two days. Dr. Mason, Messrs. Satterthwaite and Egan-Wyer of the University of Pennsylvania staff showed them the excavations, the new monuments found and the material recovered. It was decided to stop at Piedras Negras for several days on the return from Yaxchilán early in May, nearer the end of the when excavations there would be more advanced.

The first half of the Expedition left Piedras Negras for Salvamento on April 3, the second half having already passed through Piedras Negras, en route to Salvamento, the previous day. Both sections reached Salvamento within an hour of each other late the following afternoon, April 4.

Arrangements were made with Ulises Cruz, the newly appointed custodian of the ruins of Yaxchilán, to transport the staff and outfit in two dugout canoes the remaining half-day's journey by river from Salvamento upstream to Yaxchilán.

That evening camp was made on the river shore at Salvamento, hammocks being swung and cots being placed between poles driven into the sand, from which the absolutely indispensable mosquito-bars were hung. The next morning, Easter Sunday, April 5, the

Expedition embarked in two dugout canoes and reached Yaxchilán, the goal of all this arduous travel, about two o'clock, in the afternoon, just 14 days after leaving Chichén Itzá.

The ruins of Yaxchilán lie in an enormous omega-shaped bend on the west bank of the Usumacinta River in the State of Chiapas, Mexico. Almost opposite the middle of this site there are the remains of a masonry construction in the river, now reduced to a roughly conical mass. This is near the east bank but except at lowest water is always separated there from, while at high water it almost entirely disappears. The buildings and terraces of the city are so completely overgrown with a vast tropical forest that no vestige of them appears from the river, so that this conical mound of fallen masonry is an excellent marker for the location of the site.

The Expedition spent 29 days at the site. Camp was made on a bench along the river bank just below Structure 16. The underbrush was cleared and three tarpaulins were stretched to accommodate the hammocks and cots of the members of the party. Thatched shelters without sides were also built to protect the food supplies and general stores from sun and rain. Another thatched shelter, also without sides, was built for the mess.

The scientific activities at Yaxchilán may be divided into three main groups: 1. Epigraphic work consisting of drawings, photographs, and descriptions of the hieroglyphic inscriptions by the writer; 2. Architectural studies, ground-plans, descriptions, etc., by Mr. Ruppert; and, 3. General map of the site by Mr. Bolles and Dr. Rife.

During exploration incident to the architectural studies and the mapping, Messrs. Ruppert and Bolles discovered a considerable number of new sculptured monuments, stelae, altars, lintels, inscribed steps, etc., a new ballcourt, and two new groups of associated structures. The new monumental material may be summarized as follows: 12 sculptured stelae, 13 sculptured altars, eight sculptured lintels, five sculptured door steps.

From this new material there were deciphered 11 new Initial Series and two new Period Ending dates as follows [in Table 20.1.1].

Probably the most important chronological contribution was the discovery by Mr. Ruppert on May 2 of the earliest known contemporaneous monument in the Usumacinta Valley, namely Stela 27 dating from 9.4.0.0.0.

The stylistic criteria of Stela 27 are in satisfactory agreement with this early date. The relief is low and the execution inferior; the proportions of the human figure are poor and the position stiff and awkward; finally, the monument itself is very small, the sculptured

Table 20.1.1. Calendrical Decipherments, Yaxchilan.

<i>Initial Series</i>		
Stela 27 (Str. 9)	9.4.0.0.0	13 Ahau 18 Yax
Stela 14 (Str. 44)	9.4.8.8.15	13 Men 13 Kayab
Lintel 48 (Str. 14)	9.4.11.8.16	2 Cib 19 Pax
Altar 4 (Str. 39)	9.16.1.0.0	11 Ahau 8 Tzec (?)
Altar 5 (Str. 39)	9.?.	?
Altar 6 (Str. 39)	9.?.	?
Altar 7 (Str. 23)	9.14.15.0.0	11 Ahau 18 Zac
Altar 9 (Str. 33)	9.16.0.0.0	2 Ahau 13 Tzec (?)
Altar 12 (near Stela 1)	9.?.	?
Altar 13 (Str. 40)	9.0.0.0.0	8 Ahau 13 Ceh
Altar 14 (Str. 40)	9.16.1.0.0	11 Ahau 8 Tzec
<i>Period Endings</i>		
Lintel 52 (Str. 55)	9.16.15.0.0	7 Ahau 18 Pop
Lintel 54 (Str. 54)	9.16.5.0.0	8 Ahau 8 Zotz

ured panel being only 1.37 m high by 86 cm wide. The earliest previously known monument found in the Usumacinta Valley is Stela 30 at Piedras Negras dating from 9.5.0.0.0., that is, 1 katun (19.71 years) earlier.¹

Of scarcely less importance than Stela 27, and of almost equal antiquity is Lintel 48, discovered by Mr. Ruppert on April 15 in Structure 12. The Austrian explorer Teobert Maler, who visited Yaxchilán on several occasions in behalf of the Peabody Museum of Harvard University (Maler 1903), described this building as having had four doorways in its southeastern façade, spanned by lintels to which he gave the numbers 34, 35,² 36 and 37 (Maler 1903:133, 134). Mr. Ruppert made a new ground-plan of this building and discovered that the southeastern façade originally had been pierced by seven doorways. Further façade measurements indicated that Maler had failed to locate the second, third, and seventh doorways facing the building. Excavation in front of these doorways brought to light the three sculptured lintels which had originally spanned them, to which the numbers 47, 48 and 49 were given. Owing to the fact that these had fallen with their sculptured faces down, the relief is in a perfect state preservation.

The most important of the three lintels, indeed of all seven in this building, is the new Lintel 48 which presents a very unusual full figure Initial Series, recording the date 9.4.11.8.1, 2 Cib 19 Pax, which apparently is either the dedicatory date of this building, or very close thereto.

The glyphs are in a magnificent state of preservation, much of the red pigment, with which the lintel originally had been painted, still adhering to the relief. All of the period glyphs except the one for the tun-sign are represented by full-figure forms, the earliest example of a full-figure Initial Series yet found. The baktun sign is represented by a vulture (?); the katun

sign by a parrot (?); the uinal-sign by a frog and the kin-sign by a monkey. The Supplementary Series and month-part corresponding to this Initial Series are recorded on Lintel 47 over the next doorway to the left facing the building. It was the correct decipherment of the latter which alone made possible the reading of this date.

By the same method, façade, doorway and inter-doorway measurements, Mr. Ruppert located the position of another new doorway Structure 13 and excavation in the façade débris in front of this brought to light a fourth sculptural lintel, no. 50, apparently without a date.

A third monument was found at Yaxchilán during the current season presenting a Katun 4 date, namely Stela 14, recording the Initial Series 9.4.8.8.15, 13 Men 13 Kayab. The latter half of the inscription on Stela 14 has not been found, but the stylistic evidence clearly indicates that this monument was erected at a much later period than Katun 4, probably at least two centuries later than the Initial Series date.

A similar case is presented by the inscription on the tablet in the Temple of the Inscriptions at Palenque, where although the inscription begins with the Initial Series 9.4.0.0.0, 13 Ahau 18 Yax, the contemporaneous date of this tablet is 9.13.0.0.0, 8 Ahau 8 Uo, nearly two centuries later.

Judging from the style of Stela 14 it would seem to have been executed during the Great Period of the Old Empire (after 9.15.0.0.0), that is more than two centuries later than its Initial Series.

It would seem from the evidence afforded by the following five earliest known Initial Series in the Usumacinta Valley of which the last two, however, are not contemporaneous, that this western part of the Old Empire probably reached the point of making records on stone about 9.4.0.0.0:

1. Yaxchilán, Stela 27, 9.4.0.0.0
2. Yaxchilán, Lintel 48, 9.4.11.8.16
3. Piedras Negras, Stela 30, 9.5.0.0.0
4. Palenque, Temple, Ins., 9.4.0.0.0 (not contemporaneous)
5. Yaxchilán, Stela 14, 9.4.8.8.15 (not contemporaneous)

Yaxchilán, Piedras Negras, and Palenque are the three largest cities of the Usumacinta Valley, and it hardly appears to be the result of accident that the earliest contemporaneous dates of the first two are 9.4.0.0.0 and 9.5.0.0.0 respectively and that the long text in the Temple of the Inscriptions at Palenque, which presents a series of 10 consecutive katuns ending 9.13.0.0.0, begins with the same date as the earliest contemporaneous date at Yaxchilán, that is, 9.4.0.0.0.

Possibly the early Initial Series 9.4.8.8.15, on the much later Stela 14 at Yaxchilán, may be a later

memorialization of an earlier date, important in the early history of the city. The new evidence secured during the current field season not only corroborates the previously known evidence from Piedras Negras and Palenque touching on the point, but also tends to indicate that the cities of the Usumacinta Valley reached the point of committing their records to stone about 9.4.0.0.0.

The most important date at Yaxchilán, Dr. Morley was able to show as a result of his first visit to this site in 1914, was 9.16.1.0.0, recorded twice on Stela 11, each time as an Initial Series and as a Period Ending on Stela 12 and Lintel 1. This season the same date was found as an Initial Series on two different altars, nos. 4 and 14, making six occurrences of this date in all.

Mr. Bolles discovered a new building, Structure 55, at the new Southeast Group, the north façade of which was pierced by three doorways. Excavating in the débris just in front of these doorways, three magnificently sculptured lintels were found, nos. 51, 52 and 53. The one over the middle and probably the most important doorway records the date 9.16.15.0.0, 7 Ahau 18 Pop, doubtless the dedicatory date of this building.

Several days before leaving, Mr. Bolles discovered another building just east of Structure 55, namely Structure 54, which also seems to have had three doorways in its north façade. The entire front of this building had collapsed and the position of the two end doorways was not apparent on surface of the mound. The middle doorway, however, was located, and excavation in the débris in front of this brought to light the eighth sculptured lintel found by the Yaxchilán Expedition, Lintel 54. The date recorded on Lintel 54 is 9.16.5.0.0, 8 Ahau 8 Zotz, which probably indicates the dedicatory date of this building.

Unfortunately time was lacking to locate the two remaining lintels which had originally spanned the two end doorways of this building, but these are almost certainly sculptured like those over the end doorways in the nearby Structure 55, and a few days' excavation would doubtless bring them both to light.

It is becoming possible, because of these recent discoveries, to begin piecing together the chronological record at Yaxchilán. For example, the four hotuns of Katun 17 were commemorated by the dedication of the following period markers:

- 9.16. 5.0.0 by the dedication of Structure 54 (Lintel 54)
- 9.16.10.0.0 by the dedication of Stela 1
- 9.16.15.0.0 by the dedication of Structure 55 (Lintel 52)
- 9.17. 0.0.0 by the dedication of Structure 10 (Lintel 31)

Doubtless further excavation will disclose other structures and monuments which will fill in still existing lacunae in the sequence of the period markers at this site.

Possibly the three most important architectural discoveries made by Mr. Ruppert were: 1. The five sculptured circular stones in the floor of the old ballcourt (Structure 14), probably used as markers for placing the ball in play, defining the limits of play; 2. The five sculptured steps *in situ* before the three doorways of Structure 44; 3. The nine small stucco figures seated on a low bench in the southeastern chamber of Structure 40.

Excavating in the floor of the new ballcourt, Mr. Ruppert found three sculptured, circular stones along the middle longitudinal axis of the court, one at each end and the other at the center of the court. Two other similar sculptured, circular stones were found one on each of the two platforms along the sides of the court, also in line with the central stone. As noted above, these may have been used as base stones for putting the ball in play, and the two end ones possibly as defining the limits of play. At Chichén Itzá lines of cut stone let in the floors of the courts at both the open ends seem to have served the same purpose.

Acting on this hint, Dr. Mason excavated in the two ballcourts at Piedras Negras and found five plain (that is, not sculptured, dressed, circular stones in the same positions in the southern one (Structure X-XI).

It seems probable that the three sculptured, circular stones found in line between two mounds at Lubaantún (Structure A-B) by Merwin of the Peabody Museum Expedition of 1915,³ and the one found between two at Cancuen (Structure B-1-B-II) by the First Central American Expedition also in 1915 [Chapter 1.4], were in each case found in ballcourts.

In 1900 Maler found in front of Structure 44 a large sculptured slab, neither stela nor lintel, inscribed with glyphs both on its top and front face, which he calls a Sacrificial Altar.

In excavating the three doorways of this same building, Mr. Ruppert found in the southeastern doorway two similar slabs *in situ*, so located as to indicate that they had been steps leading to the doorway. He found two similar slabs in the northwestern doorway, also serving as steps, but in the middle doorway only, the lower slab or step is *in situ*.

It became apparent that Maler's so-called Sacrificial Altar found by him in 1900 was in reality the missing, upper step of the middle doorway, which must have been removed in ancient times from this position to the front edge of the terrace on which Structure 44 stands, since the other five inscribed steps were all found deeply buried under masses of fallen façade débris.

The single Initial Series recorded on these six steps, 9.12.8.14.1, 12 Imix 4 Pop, is found on the upper step in the middle doorway, that is on the slab which had been removed in ancient times to the edge of the terrace in front of Structure 44. There are at least nine Calendar Round dates, however, with accompanying Secondary Series numbers recorded on the other five steps. It is hoped further study will establish the connection of all of these with the Initial Series.

In the southeastern chamber of Structure 40, Mr. Ruppert found the remains of nine small, anthropomorphic figures, made of stucco, seated in a row on a low bench not more than a foot [31 cm] high running across the back wall. The upper parts of all had been destroyed, but in clearing the floor of débris he came upon the remains of nine pairs of feet and legs *in situ* on the floor, built against the face of this low bench. When complete, even allowing for elaborate feather head-dresses, these seated figures could not have been more than 1.5 feet [46 cm] high.

The number of these seated stucco, anthropomorphic figures forcibly recalls the Nine Gods, the Bolontikú, frequently mentioned in the Books of Chilam Balam, the names of which though unknown, are almost certainly represented by the nine different forms of Glyph G of the Supplementary Series (Thompson 1929). According to Mr. Ralph Roys they are associated with the underworld.

During his cruising through the forest in connection with the survey of the site, as already mentioned, Mr. Bolles found two new and hither unreported groups: 1. The Southeastern Group and 2. The Northwestern Group. The former would seem to have been of considerable importance.

Four of the eight new sculptured lintels, nos. 51, 52, 53 and 54, found during the current season, and four of the 12 new stelae, nos. 24, 25 and 26, and the unsculptured and also unnumbered new stelae southwest of the long chain of low mounds along the river bank, just east of the main group, were found here, and further exploration would certainly bring to light other sculptured monuments, especially sculptured lintels.

No sculptures, or even partially standing buildings, were found a Northwest Group, which was nicknamed "Poverty Hill" because of its apparent lack of interesting features, as compared with the Southeast Group.

The topography at Yaxchilán powerfully coerced architectural assemblage and development. Along the curving river bank, but well above the highest water-level, a practically continuous line of buildings was erected, most of which seem to have faced away from the river, that is, looking toward a series of courts and plazas made on the first bench-level above the river. On the far side of these courts, built on terraces at the

bases of sharply rising hills, there is a second line of buildings curving around the bases, roughly paralleling the river.

The slopes of these hills have been literally made over into an elaborate system of terraces, which rises from the courts on the first bench-level to the hilltops. The summits themselves have, been leveled and each supports a number of buildings: The Northwest Group, the West Acropolis, the Central Acropolis and the South Acropolis. The last is reached by a series of receding stairways, all in the same axis, several hundred feet in height.

When Yaxchilán was occupied, the forest cleared, the succeeding ranges of white stucco buildings rising one behind the other, the terraced hills surmounted by other groups of buildings, the whole crowned by the distant and lofty South Acropolis, the effect must have been magnificent, making this site, because of its superb natural setting, perhaps the most spectacular in the Maya area.

The Expedition left Yaxchilán on May 5, returning by river as far as Piedras Negras, where a second stop of three days was made at the University of Pennsylvania camp. During the Expedition's five-weeks absence up river, remarkable progress had been made. The new road from Piedras Negras to the Pass of San José, 50 km, was finished; the monuments selected for removal to Guatemala and the Museum of the University of Pennsylvania at Philadelphia were being boxed and the excavations had yielded material of first importance. Indeed, Lintel 3 found in Structure 27 may, without exaggeration, be said to be the finest example of an American sculpture yet brought to light. This lintel will be exhibited at the Museum of the University of Pennsylvania this coming year.

The Expedition left Piedras Negras on May 8 and arrived at Tenosique before night, thanks to the new road, the dry season and the cooperation of Don Francisco Villanueva of Tenosique, who had a motor launch waiting at the Pass of San José. On May 10 Ciudad del Carmen was reached.

The next afternoon the motor canoe *Angelita* (Little Angel) was leaving for Campeche. Never was there greater misnomer. In addition to chickens and dogs, which roamed the single open deck at will, two Ford cars lashed crosswise of the boat occupied most of the available deck space; the staff pillowed on the running board of one of these Fords. Campeche was reached the following afternoon (May 11), everybody very much the worse for wear.

The Expedition left Campeche for Mérida the following day, reaching there the same night (May 12). A day's stop was made in Mérida in order that the photographic negatives might immediately be developed, owing to the danger of rapid deterioration from the excessive heat at the close of the dry season.

The next morning the staff left for Chichén Itzá, arriving there at noon after an absence of two days less than eight weeks.

NOTES

1. The date of this monument was deciphered by the Fifth Central American Expedition on May 28, 1921, [Chapter 1.9].

2. This lintel was removed to the British Museum by A. P. Maudslay in the eighties of the last century (Maudslay 1889-1902:2:43).

3. These three stones are now in the Peabody Museum, Harvard University, Cambridge, MA.

21.0. EL SALVADOR

21.1.

JOHN M. DIMICK

Salvador

YB 40:298–300, 1941

During the past field season, Mr. Dimick, assisted by Mr. Stanley H. Boggs, continued the intensive study of the great archaeological site of Campana San Andrés. The ruins are situated 32 km northwest of San Salvador in the fertile, bowl-shaped, and mountain-fringed valley of the Río Sucio. Although thorough exploration has not been undertaken, mounds are known to be scattered more or less thickly over the valley floor, an area approximately 48 square miles [124.3 sq km]. The most imposing group, perhaps the religious and administrative center of the entire aboriginal settlement, lies near the middle of the valley on the west bank of the Sucio. Here excavations have been carried out with the generous permission of Don Fratsco Dueñas, the proprietor, who did everything possible to facilitate the work.

The principal group consists of a great plaza roughly 200 m north to south and 140 m east to west, surrounded on three sides by mounds of various dimensions and on the south by an elevated court (over 6 m above the plaza) which in turn, is partially en-

closed by ruined structures. The largest of the latter, Structure 1, almost closes the south side of the elevated court, and Structures 2, 3, and 4 are in alignment along its eastern edge. Small excavations were made for pottery and architectural details throughout the group, but the greater part of the expedition's time was spent in careful exploration of Structures 1, 2, 3, and 4, and one mound, (Structure 8) located on the valley floor just south of the southeast corner of the elevated court.

The excavations have disclosed evidence of aboriginal human occupation over a long, but as yet undetermined, period of time. The earliest remains in the form of pottery and artifacts, were found in the upper 50 cm of a layer of soil forming an early valley floor. This occupational level was covered by a 25 cm layer of sterile volcanic ash. Subsequently, the development of the principal group took place. The earlier stages of the growth of the elevated court are indicated at present only by plastered floors encountered above the ash layer and by a stairway in Structure 1. The floors were

exposed by a deep test pit in the center of the court; the stairway by a trench into the lower part of Structure 1. Well above the early court floors another floor was found, upon which were built the imposing pyramidal Structures 1, 2, 3 and 4. That the pyramids were crowned by temples may be postulated, although positive evidence is still lacking. One of the outstanding architectural features of Campana San Andrés is the fact that, with a few exceptions to be mentioned later, the pyramids and court foundations are entirely of mold-made adobe blocks averaging in size 62 by 24 by 17 cm. Laid carefully in courses, these formed a very solid construction of uniform strength. All exposed surfaces were finished with a smooth coating of excellent lime plaster, which, despite its hardness and good quality, was frequently renewed on court floors and pyramids.

Structure 1 is a nearly equilateral pyramid, which rose in narrow vertical-walled terraces, probably 11 in number, to a height of 15 m. There was a broad projecting stairway on the north side. The pyramid corners and the edges of the terraces and steps are slightly rounded, and the pyramid as a unit is a splendid example of aboriginal architecture. Structures 2, 3, and 4, arranged in an orderly manner along the east side of the court, are very similar to Structure 1 but smaller.

Another building phase followed the erection of Structures 1, 2, 3, and 4. This mainly consisted of raising the whole elevated court level by 4 m to its present height, thus burying the lower terraces and steps of the existing structures. The labor involved in this task may be appreciated more clearly when one considers that at least 600,000 adobe blocks were made by hand and transported by man power to the building site to fill the elevated court, conservatively estimated at 15,000 cubic meters in volume.

Subsequent substructural renovations took place, some merely frontal additions, others burying more of Structures 1, 2, 3, and 4. New forms of decoration were brought into use, balustrades on stairways, terrace moldings modeled in stucco, and possibly sculptured stone heads tenoned in conspicuous place. A number of serpent heads with tenons, and other miscellaneous stone sculptures were found.

A late occupation of the site is suggested by the finding of a stone yoke and fragments of Plumbate pottery in the sloping surface debris of Structure 1.

Structure 8 differs from all others investigated in the main group. It appears to be a rubble-filled platform of two terraces facing west. The terrace walls are faced with well cut, dressed, and fitted blocks of volcanic tufa resembling that used in Copán. The platform underwent at least two building periods. The latest additions in the elevated court, a small rectangular altar attached to the front of Structure 1, and a step added between Structures 1 and 2, are constructed of these cut tufa blocks. Evidence is not sufficient at present to determine whether Structure 3 antedates the use of adobe construction and the late additions represent stone-robbing from Structure 8, or whether the use of cut stone is a late architectural feature post-dating the adobe period.

The excavations have yielded rich sherd material from each architectural accretion, thus integrating more closely the domestic and civic arts of these people. Mr. Boggs remained in Salvador during the off season to devote his time to the study of the ceramic collection.

In pursuance of Mr. Dimick's program of archaeological studies in Salvador, half the force of laborers were employed in work of conservation. Terraces, walls, and floors were coated with cement to prevent erosion by the torrential summer rains. In some instances reconstruction was required to prevent badly cracked walls from falling. Shelters and drains were built where necessary.

Architecturally, Campana San Andrés seems to share more general characteristics with Copán than with other well known sites. Both are located on level valley floors, their main groups centrally placed near a permanent stream. The orientation and assemblage of the principal ruins are similar, each having a great plaza surrounded, on three sides by structures and on the south by a raised, acropolis-like unit supporting massive, pyramidal temple structures. Certain terrace forms, balustraded stairways, well cut block masonry in Structure 8, tenoned, stone heads, and sculptured stone incensarios are a few details these sites have in common. It would seem that Campana San Andrés flourished during the Great, or Acropolis, Period in Copán. Also some connection with Kaminaljuyú may be implied by the finding of mold-made adobes in a tomb at that site. Mr. Boggs' pottery studies and future excavations in Campana San Andrés undoubtedly will show a more widespread connection and a closer association with the sites mentioned.

22.0. GUATEMALA

22.1.

OLIVER G. RICKETSON

*The Present Status of Archaeological
Investigation in Guatemala*

YB 30:112–114, 1931

The termination in 1931 of the sixth season at Uaxactún concludes the second most intensive examination so far carried out of any Maya site, and if it is decided to continue work there for another two seasons, data will in all probability be furnished with which to correlate the time-relations between the five main groups composing this ruin. As a result of the work already accomplished, we can say with absolute assurance that in this, the oldest dated Maya ruin so far discovered, and in presumably the oldest portion of that ruin, no evidence has been obtained to indicate that an other race than the typical brachycephalic Maya ever occupied this region; nor has any evidence been found to indicate esthetic developments, ceramic or otherwise, outside the Maya horizon in its broadest aspects. A marked progressive development within, from early to late, does occur, and there is strong evidence in the lowest, that is, earliest, strata to indicate a long occupancy for that period.

A stage of the Institution's investigation in the so-called "Old Empire" has now been reached in which

the importance of continuing the work at Uaxactún decreases and the importance of linking-up the low-land Maya culture, as typified at Uaxactún, with its parent stem correspondingly increases. I believe that further excavation at Uaxactún will yield only more detailed information in regard to those general features which we know, and that the advancement of scientific knowledge would be better served by a comparison of the data already obtained with that obtainable in some highland Maya site; the evidence of the earliest Uaxactún strata points strongly to the highlands of Guatemala, an area abounding in ruins, few of which have been examined at all, and none intensively. This region is one where, by reason of climatic and economic conditions, important archaeological data may be obtained for the expenditure of less money and less human effort than has been necessary at Uaxactún. The recommendation of any one highland site for intensive examination should not be made without at least one season's reconnaissance. The reconnaissance should include the sinking of pits and their

expansion into trenches wherever indicated; it would certainly result in an important ceramic collection, by means of which the types and stratigraphy of pottery at various sites would be revealed as well as the pottery relations between sites, including, of course, Uaxactún. That there is urgent need for such an investigation, the ruins of Quiriguá alone attest, in this case we have a well-known and accessible ruin, the site of two seasons' excavations, but one in which no test-pit has been sunk to determine the conditions below ground-level. If this is the case in Quiriguá, the state of our knowledge in other sites may well be imagined.

Such information as I have gleaned during a residence in Guatemala for the major portion of the last two years has been culled from casual vendors of pottery to the tourist trade and a few small personal collections; in both of these cases the objects are generally vague when not actually open to serious doubt. A few brief comments may be permitted here.

One of the most productive centers seems to be Santa Cruz [del] Quiché. Presumably the pottery comes from the ruins of Uatatlán and nearby burial mounds. Most of it is primitive in type, distinctly Maya, and on the whole monotonously uniform. Simple plates, tripod vases, and small ollas are not unlike those from Uaxactún, but certain forms decorated with human or grotesque heads in both low and high relief seem to be characteristically highland in origin. Polychrome does not occur, or at least never reaches the market. Crude human figurines of stone, with plain, more or less rectangular incised lines occur in great frequency in all sites from 1 to 6 inches [2.5–15.2 cm] high.

For variation in form and color, and for quantity, the ruins of Chuitinamit on Lake Atitlán are the most productive I have seen. Dr. Kidder and Dr. Roberts visited this site and the latter felt that here much influence must have come from the south, and that it lies too far west to come into the strict Maya sphere.

A small collection from the west coast beyond Retalhuleu, said to have been found in river sand 20 feet below the surface, contained the most primitive pieces I have seen. They differed notably from Maya, as might be expected.

Arevalo and Miraflores, in reality one very large site just outside Guatemala City, are the source of many figurine heads and occasional whole pots, the former bearing a close resemblance to the figurine heads from the lowest at Uaxactún. Conditions here seem ideal for obtaining important stratigraphic data.

Mr. Carlos Luna of the Sociedad de Geografía informs me that very near El Rancho on the Puerto Barrios branch of the railroad, San Agustín Acasaguastlán, is extremely rich in vaulted burial mounds containing many whole pots with each burial. Both he and Sociedad de Geografía are experiencing much diffi-

culty in protecting site from the ravages of commercial pot-hunters. Since it is located in the upper reaches of the Motagua Valley less than 125 miles [201 km] from Quiriguá, it shows strong Maya connections. The only pottery from this site which I have seen is magnificent Maya polychrome and a most interesting green ware not dissimilar from the Plumbate found scatteringly in the Maya area and more frequently in Salvador. As the evidence seems to be that the Maya were a highland people whose culture was destined to extend into the Yucatán peninsula rather than south or west, the location of San Agustín Acasaguastlán in the eastward draining Motagua indicates a site which will undoubtedly repay examination.

Between the Motagua drainage on the south and that of the westward flowing Río de la Pasión on the north extend the Alta and Baja Verapaz districts; these comprise an easterly extending spur of the main Sierra Madre. Where these highlands fall into the lowlands of the Petén, interesting data should be obtainable. It is an area, apparently, purely Maya. The country heretofore has been extremely inaccessible; it still remains one in which travel is by mule and on foot only, but its capital, Cobán, may be reached by airplane in two hours as against a previous five days or more. This territory forms the true base of the peninsula of Yucatán. Mr. Dieseldorff, a resident coffee-planter, has published descriptions of fine pieces, all Maya.

Taking into consideration the present state of knowledge in the Maya area, I believe that the following program is best fitted to meet the changing requirements:

1. Cessation of work at Uaxactún is recommended, because the six seasons at this site have given us all the detailed information that can be profitably assimilated at this time; further effort to obtain the correlation of the time-element between the various Uaxactún groups can not have the significance that the correlation of Uaxactún itself with other sites have.
2. The cessation of the work at Uaxactún should be followed by a period devoted primarily to the study and publication of the material already obtained, and secondarily to the determination of which highland site would most richly repay intensive examination. The reconnaissance necessary to reach this determination will naturally result in an invaluable ceramic collection from many sites. One season's exploratory work in the Petén using the Institution's camp at Uaxactún as a base would also yield much valuable archaeological information.
3. Inauguration of an intensive archaeological project in the highlands of Guatemala, be this the exhaustive examination of a single site for several years or the less extensive examination of several sites devoting one year to each.

22.2.

ALFRED V. KIDDER
Guatemala Highlands

YB 31:100–101, 1932

Mr. and Mrs. Ricketson spent the winter in Guatemala, studying the collections from Uaxactún and writing a final report upon E-Group, which will be published in 1933. Opportunity was taken to examine various sites in the highlands and a reconnaissance trip was made to Cobán in the province of Alta Verapaz, with a view to possible future excavations in that region. The Cobán district is known to be rich archaeologically and it is the Ricketsons' belief that its position on the northern slope of the highlands, overlooking, so to speak, the Petén, makes it probable that Cobán material might throw light upon the cultural relationships formerly existing between these two centers of Maya culture.

On July 17 Mr. Ricketson represented the Carnegie Institution at a special meeting of the Society of Geography and History of Guatemala, called for the purpose of presenting to the Institution a testimonial in appreciation of its scientific researches in Guatemala. Sr. Carlos A. Villacorta, the distinguished archaeologist and president of the Society, delivered the address of transmittal.

During the winter of 1932 advantage was taken of the temporary residence in Guatemala of Dr. S. K. Lothrop to enlist his aid in carrying out a preliminary examination of the archaeological remains on Lake Atitlán in the central highlands. Dr. Lothrop most generously donated both his services and a large share of the expenses of the work.

Attempt was first made to conduct excavations at Chuitinamit, the traditional seat of the Tzutujil rulers, a site of much importance because it is one of the few ruins in Guatemala where archaeology joins hands with written history. Opposition by the Indians of Santiago Atitlán forced cessation of work after a few trenches had been dug. The large collection of potsherds made by Dr. Lothrop will, however, provide material for a preliminary study of Chuitinamit.

Attention was next given to a survey of the south shore of Lake Atitlán. The entire lake front at the base of the volcano Toliman proved to be a single continuous archaeological site. Dr. Lothrop chose for investigation a locality known as Chukumuk on the summit of a ridge about 2.5 miles [4 km] from the town of Santiago Atitlán. He sank 22 test trenches which revealed debris of occupation to a depth of 8 feet [2.5 m], together with flexed burials accompanied by mortu-

ary pottery; and a group of eight decapitated individuals in the same grave, together with 22 pots and other artifacts.

The ceramic material comprises nine recognizable wares, whose stratigraphic and typological study indicates, in Lothrop's opinion, that the lowest Chukumuk finds have connection with early archaeological horizons of the valley of Mexico and of the Petén; as well as to the "Q" culture of eastern Salvador and the Chibcha culture of southern Central America. Intermediate Chukumuk pottery he considers to show relationship to later Petén and Copán wares, to Chorotegan incised and effigy types, and to Maya wares of Salvador and the Uloa [Ulúa] Valley. The latest Chukumuk is of much more local significance. It links with that of Chuitinamit, Utatlán and other protohistoric and historic ruins. It is obvious that the Guatemala highlands hold the key to many of the most important archaeological problems, not only of the Maya field, but of all Middle America.

In addition to the excavations at Chukumuk, examination was made of numerous house sites along the lake shores below Toliman of a type not previously encountered. Each house measured some 40 by 60 feet [12.2 m by 18.3 m] and had walls of dry stonework 4 to 6 feet [1.2–1.8 m] thick. The interiors were divided into four to six rooms, some walls still standing 4 to 6 feet [1.2–1.8 m] high.

Dr. Lothrop's forthcoming publication upon the work of the past winter will treat of the excavations and will contain notes upon other sites visited, both on Lake Atitlán and in the interior basins.

22.3.

ALFRED V. KIDDER AND
OLIVER G. RICKETSON
Minor Excavations in Guatemala

YB 34:120–123, 1935

A check-up of our present knowledge of Maya prehistory, undertaken during consideration of the ten-year plan mentioned in the introduction to this report, re-emphasizes the obvious fact that many parts of the area are archaeologically almost unknown. It has also become clear that while reasonably satisfactory

progress has been made in study of the Maya culture in its full flower during the Old and New Empires, very little light has yet been thrown on the outstandingly important problems of Maya origins and of the cultural and chronological relations between the developed Maya and other advanced groups in Middle America. Work, for example, is urgently needed in the southwestern part of the Yucatán peninsula and along the coastal plain of southern Veracruz, regions which should yield information upon early movements into northern Yucatán, as well as upon the source and nature of the later wave or waves of Nahuatl influence. The country lying between the Puuc and the Petén is studded with sites which should answer many at present extremely vexed questions regarding the cultural and time connections of the Old and New Empires. British Honduras, too, while its ruins are not spectacular, has been proved by Thompson to contain much material traded from other parts of the area. Investigation there should therefore provide valuable evidence for integrating our knowledge of Maya archaeology, particularly as regards ceramic developments. And the significance of the Guatemala highlands can hardly be overestimated, for in the mountain valleys should be found the remains of the early groups whose culture, according to the hypothesis held by in authorities, either through movement of people or by diffusion, fathered that of the Maya. The highlands, furthermore, seem always to have been the corridor for Middle American migration and trade. Highland sites, as is indicated by Lothrop's recent studies, show influences from both north and south, as well as from the Old Empire region.

A vast deal of almost virgin territory thus remains to be investigated. To work it at all thoroughly would require a very long time and much greater resources in funds and personnel than are available. Yet we should as quickly as possible obtain some idea of its archaeology in order that, within the 10 year period we have assigned ourselves for arriving at the stage of synthesis, we may envisage the major trends of Maya development. Even when no arbitrary time-limit is imposed, the soundest method of attacking any large archaeological field is to make an extensive preliminary sampling, for the purpose of locating strategic sites for intensive research. For this reason it is evident that major excavations at large sites should, for the time-being, be discontinued and our efforts be devoted to what may be called reconnaissance digging. The value of this sort of work has already been demonstrated by Messrs. Roberts' and Pollock's ceramic-architectural survey of northern Yucatán [Chapters 2.1, 2.2, 4.1, 4.2, and 4.3]. During the past season a similar campaign was inaugurated in Guatemala by reconnaissance investigations at Finca Miraflores in the highlands and at

San Agustín Acasaguastlán and Salama in the Motagua drainage.

FINCA MIRAFLORES

The great Miraflores-Arevalo mound group near Guatemala City has bulked large in the somewhat speculative writings upon the "Archaic" period and upon the genesis of Maya culture. Its clay figurines and pottery have been compared to those from the Valley of Mexico, from Salvador, from the Ulúa Valley, and from the early deposits at Uaxactún. But aside from excavations by Dr. Gamio in 1925, which were stated to have revealed stratified deposits, no "dirt-archaeology" had been done, nor does there exist any adequate description of the local ceramics.

The site, which lies in the outskirts of Guatemala City, consists of a large aggregation of earthen tumuli, most of which were apparently substructures for now vanished buildings of perishable materials. The work of 1935 was confined to test-pitting and trenching in search of refuse accumulations in which it was hoped that materials might be found, so stratified as to provide information regarding the nature and the sequence of the several ceramic periods which, according to Gamio, are represented at Miraflores. Best results accrued from the banks of a gully recently opened by seismic action. At that point rubbish extended to a depth of 3 m. Careful testing failed to reveal stratification, the material all seeming to emanate from a single culture horizon. However, a very large collection, of potsherds was made, as well as an apparently representative series of figurines. This material is of the sort which, rightly or wrongly, has been assigned to an early period. It will be studied during the coming winter. When published, it should give us a valuable datum for further typological research upon highland developments.

SAN AGUSTIN ACASAGUASTLÁN AND SALAMA

Maya culture is at present generally supposed to have been derived from the highlands and to have blossomed in the Petén. If this be so, one must postulate its relatively slow descent into the lowlands, for it is certain that those densely jungled regions could not quickly have been conquered for agriculture. It is therefore to be expected that chronologically and culturally intermediate remains should exist in the territory between the highland and lowland centers; and the country most likely to harbor them should be the upper and middle drainages of the great rivers that head in the mountains and skirt the Petén. An archaeological survey of the Motagua and Río Negro valleys was accordingly begun during the winter of 1935.

The site first investigated lies near the town of San Agustín Acasaguastlán, in the arid Middle Motagua. It is a long and straggling series of rock mounds skirting the Río Lato, a small northern tributary of the Motagua, which enters the latter just below El Rancho. The constructions proved to be of two sorts: substructure and burial mounds. No traces of early occupation were found, but interesting data were gathered regarding the vaulted tombs contained in the burial mounds. These were small subterranean masonry chambers, roofed with a corbelling of stone slabs, and covered with heaps of rock varying from one to 4 or 5 m high. Two chambers were opened and a number of others, previously cleared by the Guatemala government, were studied. There accrued a small collection of mortuary pottery. The most profitable part of the work, however, was the excavation of two rubbish deposits which yielded a great harvest of potsherds representing the wares in common use at the site. A report on the San Agustín burial chambers has been published (Kidder 1935).

It may here parenthetically be stated that the study of Maya ceramics has to date been sadly handicapped by the fact that practically all conclusions have had to be based on a very few fine vessels from tombs, many of which are most probably trade pieces and practically none of which are representative of the ordinary, everyday run of vessels serving the mass of the population. It is about as though a botanist were forced to draw inferences as to the flora of Long Island from the contents of the greenhouses on its country estates. However, such material as was gathered at San Agustín and Salama, and as is being collected at Chichén Itzá and in the Puuc, at Uaxactún and Copán, as well as that coming to light in the excavations of the University of Pennsylvania Museum at Piedras Negras, is rapidly supplying a large body of more reliable data for research upon Maya pottery.

The mounds at Salama, some 25 miles [40.2 km] northwest of San Agustín, are in the drainage of the Río Negro, which in turn flows into the Usumacinta. They are large earth tumuli, apparently not containing chambers like those of San Agustín. In the short time available it was not possible to make extensive excavations in the mounds, but trenching in their vicinity produced the usual large collection of potsherds.

The work at Miraflores, San Agustín and Salama proved, if nothing else, that even the most modest excavations result in a grist of ceramic material so extensive that months are required to work it up and prepare it for publication. When methods of handling such accumulations have been improved and standardized, when types have been established, and a start has been made toward building up a well-illustrated descriptive literature.

22.4.

ALFRED V. KIDDER

Guatemala

YB 38:243, 1939

Dr. Kidder spent the winter in Guatemala. Having finished, in 1938, the study of the nonpottery artifacts from Uaxactún and of the specimens from the Kaminaljuyú tombs, he was free to visit certain parts of Guatemala and Salvador which will sooner or later have to be investigated by the Division. A number of reconnaissance trips were accordingly made. At San Marcos in western Guatemala the collection recently made at Tajumulco by Miss Dutton of the School of American Research was studied; private collections in Quezaltenango were seen. Dr. Kidder also visited the ruins of Zaculeu, near Huehuetenango, and large mound sites at Aguacatán and Sacapulas. He spent a few days with Dr. Mary Butler of the University of Pennsylvania Museum, at her excavations in the very important Alta Verapaz district; and, after a trip to Copán, devoted 10 days to a journey through the Republic of Salvador. That country literally teems with antiquities: sites are everywhere, and both in the capital and in the provinces are large, and in some cases well documented collections, the careful study of which would go far toward formulating for later attack by excavation certain very significant problems regarding the eastern extension of Maya culture and the relations between the Maya and the peoples of Salvador, Nicaragua, and Honduras.

22.5.

A. LEDYARD SMITH AND

EDWIN M. SHOOK

Investigations in Guatemala

YB 39:269–270, 1940

Since the close of the Institution's excavations at the ruins of Uaxactún, in the department of Petén, the site has been made a center for the collection of chicle and a landing field has been established for its shipment to the coast by air. Taking advantage of its new acces-

sibility, Mr. Smith and Mr. Shook flew to Uaxactún in January and devoted a week to minor excavations and observations needed to supplement the data gathered during the original study of the ruins. The digging was for the most part in search of potsherds which would serve to place in their proper chronological position various deposits, buildings, and parts of buildings whose periods had not previously been determined with certainty, but which, during the writing of the final report upon Uaxactún, had been found to be of special significance. In this way the elaborate Structure E-VII sub and Temple B-XIII were assigned to the Chicanel and Tzakol phases respectively. Observations were also made on the ballcourt, and upon several stelae.

After Mr. Shook left to join Dr. Pollock in Yucatán, Mr. Smith proceeded to San Agustín Acasaguastlán, in the valley of the Motagua River, to conduct excavations and to explore the hitherto little-known remains in that region.

In 1935, a brief visit to San Agustín by Drs. Kidder and Ricketson had indicated that there were many tombs at the site and that the local culture differed in various ways from that of other Maya centers. Assisted by Dr. Gustavo Espinoza, Mr. Smith spent two months at San Agustín. His original plan called for two weeks of excavation, and six of exploration. The mounds investigated proved, however, so interesting and so rich in archaeologically valuable specimens that the greater part of the season was devoted to them. During this time a ten-room structure, which had perhaps been vaulted, was cleared; a ballcourt and a small temple were studied; and numerous pits and trenches were dug for the recovery of potsherds. The most important finds were made in a mound which held two tombs. These were of the slab-vaulted type known to exist at San Agustín but not previously examined by competent archaeologists. The vaults were rectangular chambers in each of which led an entrance passage sealed with large stone slabs. They appeared to have been kept in use for mortuary purposes for a considerable time, as each of the two held remains of many individuals, the bones of the earlier interments having been disarranged and pushed aside for later burials. From the vaults were taken a large number, of pottery vessels of various types, some of them of a beautiful Red, Black, and Yellow on Cream Polychrome Ware which has not hitherto been reported.

Preliminary study of the vessels from the tombs and the sherds from the general digging indicates that at least two ceramic periods are represented at San Agustín: one approximately contemporaneous with, but easily distinguishable from, the early Old Empire Tzakol phase of Uaxactún; the other somewhat later than the terminal Tepeu phase of the latter site.

Plumbate Ware, so far not found at Uaxactún, and believed, to date from the very end of the Old Empire, was in use during the time represented by at least the latest of the tomb burials.

Among the sherds are specimens which seem surely to be of nonlocal manufacture. Some of these are of wares characteristic of the Petén, others of Copán, and still others of the Guatemalan highlands. Owing, however, to the considerable time during which the tombs were in use, and to the extraordinary amount of building and rebuilding that took place at San Agustín, there seems to be a certain amount of mixing of materials of different periods. For this reason the sherd collections now at hand are not of maximum usefulness for determining the exact chronological relations of the two postulated San Agustín periods with the ceramic phases of other culture areas in the Maya field. It is nevertheless probable that further excavation specially directed toward that end would result in location of undisturbed and therefore pure deposits.

At the close of his excavations, Mr. Smith explored and mapped the Motagua valley and the lower courses of its tributaries for a distance of about 50 km from Zacapa to Progreso, finding many ancient sites in which were noted no less than 16,000 mounds of characteristic San Agustín type. Most of these are undisturbed. He also found ruins at a greater altitude near El Rancho which seem to represent a different culture. Their structures bear analogies to those of Rabinal.

22.6.

ALFRED V. KIDDER, R. E. SMITH,
AND A. LEDYARD SMITH
Guatemala

YB 40:297–298, 1941

The Guatemala City office, administered by Mr. R. E. Smith, continued to serve as headquarters for the Division's activities in Central America and for those of field workers from other institutions. To the latter it is often possible to be of assistance in supplying information regarding the country and as to customs and immigration regulations, in obtaining permits and contacts with government officials, and in providing

storage and laboratory facilities. The office is also often called upon to give help to travelers who wish to visit regions off the regular tourist routes.

Mr. R. E. Smith returned to Guatemala in January, where he and Mr. A. L. Smith have continued work on their print report on the excavations at Uaxactún. Mr. Tejeda, staff artist, spent two weeks at Copán, making paintings of the finer pottery vessels recovered by Mr. Strömsvik during recent years. He made other paintings of vessels in private collections in Salvador. At the office he drew and painted pottery excavated by Mr. A. L. Smith at San Agustín Acasaguastlán in 1940, and by Dr. Mary Butler, working under a grant from the American Philosophical Society, in Alta Verapaz. It is impossible to exaggerate the beauty and the meticulous accuracy of Mr. Tejeda's reproductions of material of this sort.

By courtesy of Governor W. Cameron Forbes, Chairman of the Institution's Board of Trustees, Dr. Kidder was able to accompany him on a trip to the Bay Islands, off the north coast of Honduras. Information was obtained as to prehistoric sites on the islands which it is hoped may eventually be investigated by the Division. Governor Forbes and Dr. Kidder later flew to Copán, to inspect the work of Mr. Strömsvik. Dr. Kidder, after visits to Mr. Dimick's excavations at Campana San Andrés in Salvador, and to those of Mr. Richardson in Nicaragua, spent two weeks on a study of the great archaeological site of Kaminaljuyú in the outskirts of Guatemala City.

Kaminaljuyú had been mapped by Mr. T. R. Johnson and Mr. E. M. Shook in former years, and excavations, had been made in certain parts of the site, but a thorough surface examination of its 200 or more mounds had not previously been undertaken. It revealed much of interest regarding the grouping of the mounds. In particular, there were noted at least, eight long, narrow constructions, whose parallel sides suggested that they might be ballcourts, but which lacked the open or expanded ends characteristic of all such courts which had hitherto been noted. To ascertain their nature, Mr. A. L. Smith ran a series of test trenches in one of them, finding a pair of tenoned stone parrot heads on opposite sides at the middle and evidence that there were sloping benches on either side of a playing alley. The latter indications, together with the fact that tenoned serpent or parrot heads have been found in similar positions in ballcourts at Copán, San Agustín Acasaguastlán, and San Pedro Pinula, renders it certain that most, if not all, of the Kaminaljuyú structures served that purpose. One or more of them will be more fully examined in the near future.

22.7.

J. ERIC S. THOMPSON
Guatemala: Pacific Coast

YB 41:267–269, 1942

The considerable number of fine sculptures in the neighborhood of Santa Lucía Cotzumalhuapa, Escuintla, on the Pacific slope of the Guatemalan highlands, are of prime importance in determining the history of Mexican-Maya relations. The style, subject matter, and hieroglyphs; of the monuments have long been recognized as of a distinctly Mexican cast, but the chronological position of Mexican enclave has been a matter of much speculation. The ruins have usually been attributed to the Pipil, a Nahuatl-speaking group, a part of which was settled in eastern Escuintla at the time of the conquest, but the question of when these sites flourished could not be solved without excavation.

At the end of January 1942, Mr. Ralph L. Roys, Mr. Thompson, and his photographer, Mr. William Webb, made a tour of the central and western parts of the Pacific coastal slope to decide on a place to excavate and to inspect sites and collections with a view to obtaining information on the general archaeological picture in this area. The most interesting outcome of this reconnaissance was the discovery of two stelae at a large site on the Fincas San Isidro Piedra Parada and Santa Margarita, near Acintal, in the southeast of the department of Quezaltenango. Both stelae were carved in the easily recognizable style of Izapa (Tuxtla Chico), a site in southeastern Chiapas. One of them, however, had an Initial Series introductory glyph followed by the number 7, expressed by means of a bar and two dots. There was a plain surface immediately below, indicating that the number had not been associated with a glyph, but the rest of the surface has flaked off. This stela, therefore, falls into the small and very perplexing group of monuments which have numbers but no glyphs, and which, in the opinion of some archaeologists, are of extreme antiquity. It is difficult to hazard whether the complex scrollwork of this Izapa type denotes the over-elaboration of a primitive style or the sophistication of a late rococo development. Near by was a boulder carved with a kneeling figure, perhaps a ball-game player, in the style commonly known as Olmec. The site is large, and because of the diversity of styles (there is also extremely crude sculpture there) and because Plumbate sherds indicate that its occupancy may have been extended, excavation there might be well repaid.

Following this preliminary reconnaissance, Mr. Thompson and Mr. Webb proceeded to El Baúl, a sugar

plantation near Santa Lucia Cotzumalhuapa, where through the courtesy of Mr. Carlos Herrera, one of the owners, and Mr. Julio García Salas, the manager, they were invited to stay as guests of the plantation as long as the excavations lasted. El Baul is of archaeological importance because among the sculptures found there is the Piedras Herrera, another of the group of stelae with numbers unattached to glyphs. This has been read as an Initial Series recording the very early date 7.19.7.8.12. It was desired to determine whether ceramic evidence bore out this early attribution, and it was also hoped to date the Cotzumalhuapan sculptural style, of which good examples also occur there, in terms of ceramics.

Considerable quantities of sherds were obtained, but, unfortunately, no clear-cut stratification. Two periods are, however, represented, and there are slight traces of a third. The latest, which includes Plumbate vessels of simple forms, but not those which found their way in trade to remote parts of Middle America, appears to be coeval with the Amatlé horizon at Kaminaljuyú. The earlier is close to the Esperanza horizon of Kaminaljuyú. There were also a very few sherds which stylistically belong to the still earlier Miraflores horizon. One pyramid was partially excavated, bringing to light a very fine low relief sculpture in Cotzumalhuapan style which represented the upper half of a deity or personage emerging from the body of rather realistic crab. This pyramid also yielded two heads of snakes in the round, a stone with the date 4 Quiauitl, the glyph being represented by a full face view of the head of Tlaloc, and a stairway of large, well dressed stone blocks. The pottery has not yet been studied in detail, but at least it can be said that among the very few sherds in the soil in front of and level with the butt of the Piedras Herrera are included some which are very probably of, the later horizon.

Pottery from Tiquisate, Suchitepéquez, is almost exactly the same as that of the later period at El Baúl, and other sites on the Pacific coastal slope have several ceramic types in common with El Baúl. At the site of El Castillo, about 1.5 km from El Baúl, the presence of round monolithic columns was noticed. Some of these were in the soil at the foot of a mound, others had been set up around the hacienda building. Visits were paid to the neighboring fincas of Pantaleon, Los Tarros, Aguna, and Xata, where archaeological material was inspected. The many examples of sculpture at Pantaleon are well known, but it is not generally realized that some of these pieces came from El Baúl and neighboring fincas.

Mr. Thompson spent the month of April in Guatemala City making notes on the sherd material from El Baúl in order to avoid the necessity of shipping the collection. One interesting point has developed,

namely, that the sherds of Plumbate Ware, many of them poorly fired, it would seem, are of forms such as shallow bowls and simple cylindrical vases. None are of the more elaborate effigy vessels or composite silhouette jars which are so widely distributed. Since Mr. Kidder found a similar situation in the Amatlé horizon at Kaminaljuyú, and in view of the associated pottery at both sites, it seems not improbable that these simple forms of Plumbate are anterior to the development of export to distant markets.

During a brief reconnaissance in the highlands, in company with Mr. Roys, two important groups of ruins near Sacapulas were visited. One, Río Blanco, on the peninsula formed by the confluence of the Blanco and Negro rivers, was found to have an oval pyramid and a ballcourt in a good state of preservation. The second, Chutixtiox, situated on a steep hill to the north of the Santa Cruz Quiché road and about 4.5 km from Sacapulas, has some remarkably well preserved buildings, including a *monoztli* (a small pyramid-like platform) with the plaster still in position on most of the almost perfect surface, and a room about 24 in. long, the back wall of which was standing to a height of about 2.7 m.

22.8.

A. LEDYARD SMITH

Guatemala Highlands Project

YB 44:166–168, 1945

During the winter of 1944–45, Mr. A. L. Smith, assisted by Sr. César Tejeda, spent four months in archaeological reconnaissance in the departments of Huehuetenango and El Quiché. The purpose of the work was to obtain as much information as possible, without intensive excavation, as to both hilltop and valley sites with a view to selecting representative examples of each type for future excavation. All sites were mapped, architectural details were recorded by drawings and photographs, and samples of pottery were recovered from inside or below constructions as well as from the surface. Special effort was made to locate refuse dumps.

The trip was made in the Institution's station wagon, and local labor was employed. The hiring of workmen was greatly facilitated by the cooperation of the Minister of Public Education, the governors of de-

partments, and the mayors of the towns and villages visited. Seventeen sites were examined, some large and some small, all within fairly easy access of a main highway.

Huehuetenango, capital of the Department of Huehuetenango, was the first base used. In this region seven sites were investigated: Zaculeu, Cambote, Chicol, Piol, Xetenan, Cucal, and Pucal. Of these, Zaculeu, a fortified site surrounded by barrancas on three sides, proved to be by far the largest and most interesting. It lies about 4 km northeast of Huehuetenango. Considerable excavation has been carried on here in the past, the Guatemalan government in 1927 having excavated and partially restored the principal mound, a large pyramid surmounted by a temple. About 10 days were spent at Zaculeu in recording materials for restored drawings of several buildings and a ballcourt. A large collection of potsherds was also made. Cambote, directly south of Zaculeu and in plain view there from, rests on a tongue of land; but is not so well protected as Zaculeu. Very little masonry was showing here, and there was no ballcourt. Chicol, Piol, and Xetenan are all small hilltop sites practically surrounded by barrancas. All three have ballcourts. Cucal is a small valley site without a ballcourt. At Pucal, a small hilltop site near Cucal, only one mound remains, but there is evidence that there were several others which had been leveled for agricultural purposes, the stones being used in the building of modern fences.

The next base of operations was the village of Aguacatán, about 26 km east of Huehuetenango in the Department of Huehuetenango, where a month was spent investigating Huitchun, Chalchitan, Xultún, and Chichoche. Huitchun, sometimes called Chichun, rests on a low hill just west of the village. It is a small group surrounding a court and has a ballcourt. Chalchitan, one of the largest sites visited, and the one to which most of the month's work was devoted, lies in the valley just east of the village. Unfortunately a great many of the mounds had been dug into by treasure hunters, causing much damage to inner constructions. There is still much left, however. One of the two ballcourts was excavated and found to cover an earlier ballcourt, within which there was evidence of still earlier construction. Two nicely carved stone heads, one of a serpent and the other of a jaguar, were recovered from high up in the center of the playing walls of the earlier ballcourt. A tomb with a corbelled vault was discovered in one of the largest mounds. This had been looted years ago. Probably the most interesting find was a building showing six distinct architectural phases, the most instructive of which were a platform with four round columns, one off each corner, and a later construction of four walls with stepped tops. There

is much pottery of all periods at Chalchitan. Xolchun, east of Chalchitan, is a good-sized hilltop site. Its main features are a well preserved ballcourt, terracing, block masonry, and a type of late pottery with white geometric design on a red slip. Chichoche is a small group of mounds in sight of Xolchun across the barranca to the southeast.

Sacapulas, a village in the Department of El Quiché about 37 km east of Aguacatán, was the last place used as a base. From here the ruins of Chutixtiox, Chutinamit, Pacot, Xolchun, Río Blanco, and Xecataloj were studied. The best preserved of these is Chutixtiox, a hilltop site extremely well protected against attack, its only entrance being blocked by a wall. The main group is on a high terrace with stairways on all sides. An interesting feature is a stucco jaguar in a crouching position at the base of one of the several platforms. It was possible to take measurements of almost all the buildings. Chutixtiox is similar to Xolchun in that it has the same kind of ballcourt, a great deal of terracing, and the same White on Red pottery. Chutinamit, just outside Sacapulas, is another well protected hilltop site, almost completely surrounded by barrancas. Its only entrance, on a narrow neck of land to the north, was protected by three parallel walls stretching from barranca to barranca. Pacot, also almost inaccessible, is small, but the buildings are well preserved. Xolchun, not to be confused with the Xolchun in the Department of Huehuetenango, lies on the tongue of land formed by the junction of the Río Blanco and the Río Negro. A stela, used as the capstone of a tomb, was found in a small temple. Its upper part bore a well carved geometric design. A most unusual structure was an oval, almost circular, platform with seven terraces. Río Blanco, a small valley site, shows several periods of construction, and the types of pottery found there indicate along occupancy. Among the wares noted were Plumbate and Utatlán. Xecataloj is a small valley group on the north bank of the Río Negro about 1.5 km east of Sacapulas.

It would appear that the well protected hilltop sites are later than the more vulnerable valley sites. Before definite conclusions are reached, however, the collections of potsherds, now in the Institution's office in Guatemala City, must be studied. Probably of significance is the fact that the White on Red Ware occurs only at hilltop sites. Another point is the fact that those in the valleys all have several architectural periods, whereas in most cases the hilltop sites do not. The latter are characterized by much terracing, ballcourts with well marked end zones, and split stairways with balustrades. The mounds are usually grouped about a plaza with one or more small platforms in the center. Ball courts in the valley sites lack end zones. At present the two groups that appear most desirable to excavate

are Chalchitan and Chutixtiox: Chalchitan because of its long occupation, its architectural and ceramic sequence, its accessibility, and the availability of good labor at Aguacatán; Chutixtiox because of the excellent preservation of buildings of various types and because it could conveniently be worked from a base at Sacapulas. Final choice, however, should be postponed until, further reconnaissance of the highland region has been carried out.

22.9.

A. LEDYARD SMITH

Guatemala Highland Project

YB 45:199–201, 1946

During the 1945–46 field season Mr. A. L. Smith, assisted by Sr. César Tejeda and Mr. Douglas Binney, continued the archaeological reconnaissance of the Departments of Huehuetenango and Quiché. Permission to operate was granted by the Minister of Public Education, Dr. Manuel Galich, whose effective cooperation, together with that of the Governor of Quiché and the mayors of the various villages visited, greatly facilitated the recruiting of labor. Fourteen sites were investigated and roughly mapped, and individual structures measured and photographed. In several instances circumstances seemed to warrant fairly extensive digging, which at one site revealed a building sequence and at each of two others resulted in discovery of rich tombs.

The first week was spent at Sacapulas working at the nearby fortified hilltop site of Chutixtiox, investigated and mapped last year. The ruins were thoroughly bushed and cleared for an aerial photograph, and Structure II was excavated in hopes of finding a tomb. None was found, but the structure, a small platform supporting the remains of a superstructure, proved to have been added to at least three times. Chutixtiox dates from the period of the Spanish conquest or very shortly before. Its buildings are in an excellent state of preservation and it lies close to the main highway between Sacapulas and Huehuetenango. A fence has been put up to protect it from cattle, and, to make it more readily accessible, the Governor of Quiché plans to build a road tip to it from the highway. It is without doubt one of the most strategically and picturesquely situated ruins in Guatemala.

During the second week, Quiché, the capital of the Department, was used as a base of operations. In this region three groups were investigated: Comitancillo, Sac Lac, and Laguna Seca. Comitancillo, a well fortified site, about 34 km north of Quiché, proved to be the most interesting. The ballcourt, the most important of its 13 structures, is in a very good state of preservation, has closed end zones, and still retains traces of red, blue, and yellow paint. Another structure of interest is a small truncated pyramid with stairways on three sides. This building apparently was originally completely painted red. Among the sherds recovered was a good percentage of White on Red Xolchun pottery, a ware found in many of the fortified conquest-period sites. Sac Lac is a small plaza group situated on a plain about 3 km southeast of Comitancillo. It is now used as a cemetery. Laguna Seca, another small plaza group, about 2 km west of the village of Joyabaj.

Nébaj the third largest town in the Department of Quiché, was chosen as the next base. The original plan was to spend about three weeks here, and then move on, but, the area proved to be of such interest that the rest of the field season, with the exception of a week at the Brol finca, was spent here. In the immediate vicinity, the ruins of Nébaj, Vitenam, and Tixchun were studied. The two latter are small, unimportant ball-court groups. The ruins of Nébaj, in the valley just southwest of the town, are quite extensive. The mounds are very large and surround several plazas and courts. In the main plaza there is an alignment of large rough stones whose arrangement may have had astronomical significance. Although one of the largest sites in the Department, Nébaj does not have a ballcourt. During its investigation a depression was discovered at the base of one of the principal mounds. The possibility that this might have been caused by the caving-in of a tomb made excavation seem worth while. After two weeks of digging, we finally encountered the tomb at a depth of over 9 m. It consisted of a square stone chamber roofed with a corbelled vault, entrance having been gained by means of a stone passageway 5 m long sealed with a single stone slab. The vault had collapsed, causing the depression above. Besides the human remains, over 40 pottery vessels and some 250 pieces of jade were recovered. The pottery is of the general period represented by that of the late Tzakol and early Tepeu phases at Uaxactún. Before the work was finished at Nébaj, all the stone monuments were whitewashed in readiness for aerial photographs, kindly taken by Colonel Arthur Binney, U. S. Naval Attaché in Guatemala, of the Nébaj mounds, Chutixtiox, and other ruins.

Still using Nébaj as a base, we visited and mapped several sites near the neighboring villages of Chajul and Cotzal: Huil, Oncap, Mutchil, El Tigre, Acitiz,

Pulai, and Vicaveval. Huil lies on the side of a hill about 10 km north of Chajul. It is a ball-court group consisting of a rectangular plaza with the ballcourt at one end and structures on the other three sides. A small platform, now used as a shrine by the Indians, stands in the center of the plaza. There are several stucco monuments here in the form of human figures. The ballcourt has no end zones and, like most of the Huil structures, is very well preserved. The ruins of Oncap are about 6 km southwest of Chajul. In plan it closely follows Huil, and it is in an equally good state of preservation. Mutchil and El Tigre are two small ball-court groups on Finca Santa Abelina, the property of the Hodgson family, some 10 km northeast of Cotzal. Both sites have open-end ballcourts. El Tigre was so named because a stucco jaguar was found in the ruins. Acihz and Pulai are two small ball-court groups lying in valleys, the former about 4 km south and the latter 7 km southwest of Cotzal. The courts have no end zones, and very little masonry appeared at either. The ruins of Vicaveval, a half-hour's walk northwest of Cotzal, are well protected in a depression near the top of a high hill. Its ballcourt, which has closed end zones, is situated in the center of the depression, three sides of which rise in terraces to a height of over 20 m and form a regular stadium from which to watch the game. On the opposite side of the hill from Vicaveval and a little higher there is a cave in which were the remains of at least 40 skeletons. Twenty-two skulls were still there, but many had been taken away over a period of some years. No pottery was found with the skeletons, which undoubtedly date from before the conquest. A good deal of burnt wood was scattered among the bones.

The season's work was wound up at the Brol family's Finca San Francisco, some 17 km northeast of Cotzal. There are two ruins: San Francisco and Tzicuay. The former, in a cane field on the edge of the Río Chipal 0.5 km southeast of the Brol residence, was mapped by Robert Burkitt some 33 years ago. Today there is practically no masonry showing. It is a ball-court group, the court having end zones. Tzicuay, also a ball-court group, is on the tip of a low promontory projecting from the side of a high range of hills, about 1.5 km west of the Brol residence. The buildings retain considerable masonry. The ballcourt has well marked end zones; in its east range is a masonry tomb with corbelled vault and short entrance passage. Unfortunately, it had recently been entered and disturbed, but 74 pottery vessels were recovered, most of them unbroken. Although it has as yet been only cursorily examined, the pottery appears to represent a long sequence of phases, from an early one, possibly contemporaneous with the Chicanel ceramic phase of Uaxactún, to a phase containing the relatively late Plumbate Ware. This and the fact that many skeletal remains were found pushed to

the sides of the tomb to make room for later burials indicate that it was in use for many generations.

It was originally planned to investigate the Rabinal area in the Department of Baja Verapaz, but the unexpectedly long time required for the excavation of Néabaj has forced postponement of that part of the reconnaissance until next year.

22.10.

EDWIN M. SHOOK

Guatemala Highlands

YB 46:179–184, 1947

Mr. Shook resigned from his position with the United States Government and returned to the Division in August 1946. Early in October he began preparation for field work in the southwestern highlands and on the Pacific coast of Guatemala. An intimate knowledge of most of this area and the contiguous region of Chiapas, Mexico, had been gained during three years' service on the government's Cinchona Procurement Program. As complete a record as possible, under the circumstances, had been made of the archaeological remains throughout the zone. The information thus gathered showed that the narrow strip of hot coastal plain from sea level to approximately 300 m elevation had witnessed the ebb and flow of pre-Columbian Indian culture from the earliest horizons known in Guatemala to the time of the Spanish conquest. Sites ranging from small clusters to great groups of mounds, each over a kilometer in extent, line the banks of the many streams crossing the fertile plain. The site of Itzapa, just across the Mexican border in Chiapas, is typical of the large ruins. With a few exceptions, the remains above the 300 m elevation on the Pacific slope of the cordillera are small and widely scattered. Tajumulco, is typical of these sites. Not until the broad inland valleys and plateaus north of the volcanic mountain range are reached does one encounter ruins, of considerable size. An examination of private archaeological collections and surface sherd samples from southwestern Guatemala showed Plumbate pottery to be most abundant down the Río Cusulchima and Naranjo valleys, fanning out over the Pacific slope and coastal plain from these drainage systems.

The first activity of the field season was a reconnaissance of the northern half of the San Marcos

Department and the Río Cuilco valley of southern Huehuetenango, not only to search for the source of Plumbate pottery, but to fill the remaining void in the archaeological picture of southwestern Guatemala. A suitable base of operations was established at the United States Government cinchona plantation, Finca El Porvenir, situated on the south slope of the Tajumulco volcano. The trip from El Porvenir, to San Marcos and Tejutla, was made by automobile on October 23. Thereafter, a ten-day circuit of 200 km was made on foot and horseback to Sipacapa, San Miguel Ixtahuacan, Antigua Tutiapa, Cuilco, Canibal, Tectitan, Tacana, Ixchiguan, back to Tejutla, and then by car to El Porvenir. Over 30 minor sites were recorded. Each of the modern towns mentioned, with the exception of Ixchiguan, had one or more archaeological ruins within the town or on the outskirts. The most important zone appears to be the Cuilco valley, where remains occur at short intervals on both sides of the river; others are situated in tributary valleys and on spurs of the Sierra Madre directly above the Río Cuilco. One well preserved hilltop site, Pueblo Viejo, 8 km southwest of Sipacapa, has exposed masonry of cut semi-block and slab stones laid in mud mortar. At Chilipe, 7 km south of Cuilco, a well defined open-end ballcourt was found, the only ballcourt seen on the trip. The previously known ruins of El Reparo, 10 km below the town of Cuilco, were visited and a large stone monument and urn burial discovered. The monument, carved in the round and depicting a full standing human figure, stood on the lowest step of the principal pyramid. The burial of a young adult was found below the top floor of the same pyramid in a large red ware urn with another pottery vessel inverted over the lower as a cover. Although surface sherds were examined and samples collected, no Plumbate Ware, was seen at any site visited on the trip. This is of particular significance in the continuing search for the manufacturing center of this most widely traded Mesoamerican pottery.

The second part of the field season consisted of a series of excavations on the Pacific coastal plain paralleling the Guatemala-Mexico frontier. El Sitio, the first site investigated, is an enormous group of mounds formally arranged around plazas with monuments of plain columnar basalt. The ruins lie along the east bank of the Río Gramal, a small tributary of the Río Suchiate, 18 km north of Ayutla, on the highway to Catarina and Malacatan. Five test pits were sunk: four through platforms and mounds from surface to sterile subsoil, the fifth on level ground at the north edge of the site away from ancient construction. This last test produced a mixed lot of material from two distinct occupations of El Sitio. The earlier belonged to the Middle Culture horizon contemporaneous with the

Miraflores phase in Kaminaljuyú, whereas the later occupation occurred during the Postclassic period, as Plumbate pottery was well represented. The burial of an important personage was found below the floor of a terrace or platform. A huge pottery urn covered by another inverted vessel contained the body, jade beads, and ornaments. Other burial furniture was on the outside, including a finely carved stone scepter. The major occupation and greatest architectural activity took place at El Sitio during the Late Middle Culture period.

A small site, La Libertad, on the east edge of the highway, 14 km north of Ayutla, was next investigated and proved to be contemporaneous with the late occupation at El Sitio. Plumbate sherds occurred in each level of the stratigraphic cut. Similar evidence was recovered at Santa Romelia, where a group of scattered mounds on both banks of the Río Seco, 10 km north of Ayutla, indicated a small village rather than a large ceremonial center like El Sitio. Again, Plumbate was evenly distributed from top to bottom of the test cut and amounted to 30 percent of all sherds. Here the results show that Plumbate pottery served a utilitarian as well as a ceremonial purpose.

At Ayutla single small groups of mounds may be found anywhere on the plain between the Suchiate and Melendres rivers. During the leveling for a railroad siding, about 75 cm of the ground surface was cut down and archaeological material equivalent to Santa Romelia and La Libertad was exposed. Just east of Ayutla on the west side of the Río Melendres another major site, El Jobo, comparable in size to El Sitio and Itzapa, was discovered. Pyramidal mounds up to 15 m in height and a multitude of lesser structures, arranged in an orderly manner around plazas, extend approximately 1 km along the riverbank. A finely carved stela of the Itzapa style, and two urn burials accompanied by some 40 pottery vessels were found in El Jobo. The burials and furniture belong to the Middle Culture horizon and are contemporaneous with the early occupation of El Sitio. Unfortunately the stela had been disturbed and broken in recent times and lay at the foot of a mound. An unsuccessful attempt was made to locate its base and associate the stela with the ceramic material. The structure with which the monument was associated had been built during the early period, but surface sherds of Plumbate also indicated that El Jobo had a more recent occupation. A small site, Buena Vista, just south of El Jobo and possibly an outlying group of that large center, produced from the central fill of a mound a large Plumbate burial urn containing the skeletal remains of a child, and a beautiful jar of the same ware.

There are many archaeological ruins on the fertile strip of land from Ayutla to Ocos between the Río

Suchiate and the Naranjo. The major sites are Santa Clara, Los Limones, and La Zarca, 6, 10, and 13 km respectively below Ayutla. Another Plumbate burial urn containing an infant skeleton was found in a mound at Santa Clara, and a ballcourt of the open-end type was discovered.

On the Hacienda Los Limones there are two sites: one on the east bank of the Suchiate, the other on the west side of the Naranjo. The latter has a type of construction hitherto unknown on the Pacific coastal plain. The substructures consist of a hearting of sandy brown earth encased by masonry terrace walls of small, selected river-worn stones laid in lime mortar and finished with a heavy layer of excellent lime plaster. The lime was derived from sea shells; in many instances the unsuccessfully burned shells or their fragments appear in the mortar. Unfortunately the short stay at Limones produced no pottery to aid in the placement of this site in the cultural sequence.

La Zarca is a major site located on the east bank of the Suchiate. No excavations were undertaken, but a ceramic sample was obtained from the local farmers, who are constantly unearthing archaeological specimens during crop planting. The material showed that La Zarca had the same occupational range as El Sitio and what appears to be a post-Plumbate period. Characteristic of this phase are Red on Cream Ware tripod bowls with tall, bird head-effigy feet. Some of these bowls have striations on the interior similar to grater bowls or *malcajetes* from late horizons in the Valley of Mexico.

The small, briefly investigated site of La Victoria, 17 km south of Ayutla and 3 km inland from the ocean, produced a relatively high percentage of solid, hand-modeled figurines of the so-called Archaic type, now assigned to the Middle Cultures. Again the presence of Plumbate in the surface levels indicated a more recent occupation.

The third part of the field season, from late January to early March, was spent on Finca El Paraiso, a coffee farm on the Pacific slope at 1,000 m elevation. El Paraiso is located in the Chuva zone of the Department of Quezaltenango, 10 km by road north of Colomba. The owners, Srs. Vitalino and Benjamin Robles, during the course of coffee cultivation, have made important archaeological discoveries over a period of many years. The majority of the objects they found came from an insignificant-looking low mound on a level bench of land jutting out from the main mountain range. Undoubtedly, the mound was the principal structure of a small village occupied during Late Classic and Postclassic times. In the upper part of the mound the Robles found two gold disks associated with effigy Plumbate pottery; in 1943, assisted by Sr. César Tejada, they encountered a cache of many ves-

sels without metal at a greater depth. The specimens were made available to the Division for study, and a generous invitation was extended by the Robles to make further investigations in El Paraiso. Accordingly, Dr. Kidder and Mr. Shook planned to devote from three to six days there, thoroughly recording all data. It actually required six weeks, so rewarding were the excavations.

A north-south trench was dug through the mound's center, disclosing its construction. It was an earth and stone-filled platform with vertical exterior walls heavily backed with water worn boulders. The platform probably once supported a structure of perishable material. Within the platform was found a red-painted, stone-lined, richly stocked tomb sunk through subsoil prior to the platform's construction. It contained the skeleton of an adult seated cross-legged on the floor, backed against the north wall, facing south. Another human skeleton lay diagonally across the floor of the tomb. Around the dead, covering the available floor space, had been placed a wealth of furnishings; the tomb was then filled, and other offerings were piled in a heap above the closed tomb. This was the pottery cache discovered by the Robles in 1943. The tomb and cache contents included jade and shell beads and ornaments, obsidian lancets, an iron-pyrite mosaic mirror, nine pottery bells, three drums, one flageolet, one whistle, three figurines, nine spindle whorls, and over 67 vessels. Plumbate was the most abundant ware found in this tomb.

Near the platform's center, 3.5 m below the surface, another interment had been made before construction of the mound. Two large pottery urns, each containing an adult body, were found side by side, each covered by an inverted vessel. The furnishings, both inside and outside the urns, included jade beads and ornaments, small black polished pebbles, an iron-pyrite incrustated mirror, pottery spindle whorls, and vessels. Several of the latter are of Plumbate Ware. Many caches of one or more pots were found throughout the fill of the mound, some having been put there during construction, others near the surface having possibly been buried after completion of the mound. We believe that the two thin gold disks and effigy Plumbate vessels discovered by the Robles belong to the later of these caches.

West of the platform the land slopes sharply to a ravine called La Gruta, from the head of which issues a spring of cool, crystal-clear water. Carvings on natural rock outcrops and the abundance of potsherds led the Robles to investigate. They uncovered a line of flagstones and a rich deposit of sherds, and had the fortitude to resist further digging until our arrival. The flagstones proved to be those of a broad paved terrace facing the spring. A stone stairway descended to the terrace from the direction of the village site above. At a right

angle to the natural slope of the ravine's north side, an underground passage, large enough to permit a short man to walk erect, led 7 m into the hillside from the paved terrace. At that distance a stairway ascended to the interior of a circular structure somewhat resembling a Southwestern Pueblo kiva. It consisted of a central fire pit encircled by two flagstone benches, one above and set back from the lower, like seats of an amphitheater. The maximum inner diameter of the top bench was 5.65 m. The level of this bench averaged 1 m below the soil surface prior to the 1902 eruption of Santa Maria volcano, which added about 1 m of pumiceous ash to the Paraiso region. The fire pit of the circular structure was filled with broken metates and unworked boulders, all severely burned. The passage served as a drain as well as an entrance, as far as the terrace below, where a well made, stone lined, slab-covered drain channeled the flow of water along one side of the terrace to the ravine. No conclusive evidence was obtained on the use of the circular structure or on the method of roofing. It is believed to have been roofed and possibly to have served as a ceremonial or communal sweat bath. The ceramic material from La Gruta proved the contemporaneity of the circular structure and the village site at El Paraiso.

The fourth part of the field season, from mid-April through May, was spent in exploration and excavation on the lower coastal plain south of Tiquisate in the Department of Escuintla. Recently the United Fruit Company began clearing this area for new banana plantations, digging deep drainage canals and building roads, in the course of which work a wealth of archaeological material was exposed. Through the kindness of the Company officials and particularly the Tiquisate manager, Mr. A. L. Bump, the opportunity was offered the Division to investigate the area. Excavations were made on Ticanlu, Tacana, Zunil, and Toliman farms, and surface sherds collected at Las Trozas, Huisisil, Ixtepeque, and Pacaya. Many of the ruins bordered on a dry stream bed between the present Nahualate and Naranjo rivers. If the stream dried up or radically shifted its course during the occupation of these sites, it must have had a profound effect on the inhabitants. The excavations in four of the ancient settlements along the dry stream bed proved that they flourished vigorously during the Early and Late Classic periods. Then activities abruptly ended and the area, at least that part investigated, was abandoned. No effigy or Tojil period Plumbate or post-Plumbate material was recovered in the excavations or was seen in any of the private collections in Tiquisate. Prior to the Early Classic surge in Tiquisate, apparently a thinly scattered population inhabited the zone, as a small amount of Middle Culture material was found. Diagnostics of this period are solid, hand-modeled figu-

rines and certain forms of Usulután Ware pottery. During the field season, visits were made to Copán and Zaculeu to keep abreast with the work of others. Dr. Kidder and Mr. Shook briefly inspected the ruins of San Cristóbal, Department of Totonicapán, and Piedra Parada, Santa Isabel, Canchón, and Virginia, Department of Guatemala. They also began the recording of the immense Robles Collection of pottery and artifacts in Quezaltenango. Mr. Shook continued compiling information on modern sweat baths and on the manufacture or archaeological counterfeits in Guatemala.

22.11.

A. LEDYARD SMITH

Guatemala Highlands

YB 46:184-187, 1947

The work carried on during the 1946-47 field season consisted of the following activities: reconnaissance in the Departments of Baja Verapaz and Quiché; excavations at Nébj, Department of Quiché; visiting various sites in the Departments of Huehuetenango, Baja Verapaz, and Quiché in order to gather material for reconstruction drawings.

During the first five weeks of the season's work, Mr. A. L. Smith, assisted by Sr. César Tejeda, carried on archaeological reconnaissance in Baja Verapaz. Six sites were visited: Cahyup, Chuitinamit, Pichec, Toloxcoc, Pachalum, and El Portón. Plans of these sites were made, individual buildings measured and photographed, architectural details recorded, and, where possible, surface collections of pottery recovered. The two most interesting ruins were Cahyup and Chuitinamit in the Rabinal area. Both of these are fortified sites of the conquest period situated on the crests of high hills on the north side of the valley of Rabinal, the former at its east end, the latter northwest about 8 km down the valley. At the time of the conquest the Spaniards attempted to conquer the valley of Rabinal, but were driven out, and it was not until after the Indian rulers at Cahyup and Chuitinamit were converted to Christianity by Las Casas and Father Angulo that the Spaniards finally occupied the valley.

The ruins of Cahyup lie about 2 km, north of the village, of Rabinal. There are five groups. The main group crowns the top of a hill some 250 m above the valley. The 22 structures that form this group are lo-

cated in and around three plazas and consist of temples placed on high platforms, long single-room buildings with multiple doorways, and altar platforms. The single-room buildings form two or three sides of a plaza and face upon it; temple structures are placed in the plaza and are associated with one or more altar platforms. One of the most interesting structures at Cahyup is a large pyramid supporting two temples, each resting on its own platform. Two other groups are on hills to the north and northeast of the main group; the remaining two groups lie in the depression between the hills. Irregularly placed on the slopes leading down into the depression mentioned above are short terraces which undoubtedly once supported houses of perishable materials. A most unusual construction was found on a high hill about 1.5 km north of the main group. This proved to be a solid, round masonry structure 2.4 m high with five terraces rising to a flat top. It may have been used as a watch tower or signal post.

The ruins of Chuitinamit consist of eight groups extending along the top of a ridge about 300 m above the valley. The general direction of the ridge is northeast and southwest. The groups are well separated so as to form definite units. With the exception of two ballcourts, a type of construction not found at Cahyup, the two sites have similar structures arranged in much the same way. The ballcourts are of typical conquest site design, with end zones enclosed by high walls and stairways leading out at either end. One of the courts had never been completed. Southwest of the most northeasterly group, two high defense terraces protected the rest of the site from attack. The upper slopes of the ridge, close to the various groups, were dotted with house platforms. These, of which there were over 400, were small platforms of stone with a terrace in front of each. Both Cahyup and Chuitinamit have many well preserved standing structures that show a great deal of Mexican influence. A good example of this, which occurs at both sites, is twin temples standing on a communal pyramidal substructure.

Pichec, another hilltop site, lies directly across the valley from Chuitinamit. It is a small group comprising a temple and altar and several low platforms. Toloxcoc stretches along a high ridge about 7 km southeast of Rabinal. There is very little standing masonry left, just low platforms with post holes, small shrines, and considerable terracing. Pachalum is another hilltop site just east of San Jeronimo. Stretching along the crest of a hill about 300 m above the Salama valley, it is a fairly extensive ruin of the type of Chuitinamit. The main plaza has a temple in its center and several altar platforms, and is bordered by long, low, one-room buildings. There is no ballcourt, but there are outlying platforms and terracing. Locally the ruins are known

as "Pueblo Viejo," but as this term is often used for sites lying near villages, it seemed best to distinguish the site by calling it Pachalum after the hill upon which it rests. El Portón, a valley site, is on a national plantation about 1 km out of San Jeronimo on the road to Salama. There is no masonry showing here, only a group of mounds on three sides of a large plaza.

After leaving Baja Verapaz, Smith and Tejeda, accompanied by Miss Proskouriakoff, moved to Néabaj, Department of Quiché, where comfortable quarters in the local pension served as a base for the remainder of the field season. Most of the time at Néabaj was spent in excavating the frontal platform of a large mound in the main group of the ruins of Néabaj. This mound has the same shape as a mound facing it, in which, during the 1946 field season, Smith excavated a corbel-vaulted tomb of the Early Classic period. Leaving Tejeda to find the entrance of the passageway into a similar tomb, Miss Proskouriakoff and Smith visited other sites to gather material for reconstruction drawings.

The first ruin visited was Chalchitan, a valley site in the Department of Huehuetenango. Here the ball-court group, rather than the whole site, was chosen for investigation. In the Sacapulas area of the Department of Quiché the fortified hilltop site of Chutixtiox and the valley site of Xolchun were selected. Throughout the season, when opportunity offered, other sites were visited for the same purpose: in the Ixil area of the Department of Quiché, the ball-court sites of Oncap, Huil, Tzicluay, Vicaveval; in the Rabinal area, Cahyup and Chuitinamit. In Sacapulas two tombs were found, one at Chutixtiox, the other at a new site called Xolpacol, about 6.5 km from Sacapulas on the road to Aguacatán. Unfortunately, both tombs had been robbed, but their shape could be determined; it proved to be very different from that of tombs found at earlier sites, Chutixtiox and Xolpacol being of the late, conquest type. The tombs, which were in structures, had two chambers each, an inner circular one which was the tomb proper, and a rectangular antechamber considerably larger in area. The two parts of each tomb were joined by a doorway blocked by a stone slab.

Returning to Néabaj, after their first absence, Miss Proskouriakoff and Smith learned that Tejeda had uncovered an altar below which was a burial of 11 skulls. He also had uncovered a paved ramp leading downward beneath the frontal platform of the mound. At this point Tejeda left Néabaj to resume his studies at the University of Mexico. He was replaced by Mr. Douglas Binney. Further excavations disclosed that the ramp descended to the entrance of a long passage way leading into a corbel-vaulted tomb similar to the one found in the opposite mound in 1946. Unfortunately, the vault had collapsed, and it was necessary to dig down from the top of the frontal platform in order to

get into the tomb. This required digging a pit 8 m wide and 12 m deep. The tomb, the earliest found, had been placed in sterile ground well below the foundation of the earliest structure.

During the excavation required to get into this tomb, a series of eight tombs and 21 caches was found associated with six superimposed stairways belonging to a sequence of platforms, several of which were painted red. Fortunately the tombs and caches were so stratified that their relative positions in time could be established. They cover a span of some 700 years of occupation, from the Early Classic period through the Postclassic period of Plumbate pottery. The tombs vary in construction. In Early Classic times large chambers were constructed and roofed with corbelled vaults, whereas smaller and narrower tombs were closed with large stone slabs extending from wall to wall. In Late Classic times the large vaulted tombs were abandoned and only long, narrow chambers roofed with large slabs were used. Still later in Postclassic (Plumbate) times, tombs were roofed with wooden beams supporting stone slabs. In all periods multiple burials were the custom.

Furniture from the tombs and objects found in caches vary according to the style of the period with which they were associated. Such material consists of pottery, alabaster and marble vessels, pottery whistle figurines, beautiful jades in the form of beads and carved pendants and plaques, shell ornaments, crystal pendants, pyrite mirrors, flint laurel-leaf blades, copper and gold ornaments, incense burners, and the remains of a codex, part of one page of which depicts a priest or ruler in costume. It is interesting to note that at Nébaj outside influence seems to be from the Maya of the Río Usumacinta area rather than from the Mexicans.

Unfortunately very little architecture was found. The outer structures had been ruined by agriculture, and the inner structures had been cut through or partially removed to put in late tombs. Throughout the work architectural features that came to light and the positions of tombs and caches were recorded on plans and sections by Miss Proskouriakoff. In May she and Binney had to leave, the former to return to the United States. At this time Mr. Gustav Strömsvik joined Smith and assisted him in the completion of the excavations.

During the operations at Nébaj two new sites were visited, Caquixay and Tuchoc. Caquixay is about a two-hour horseback ride east of Cotzal. It is a well preserved site of the Huil type, namely, a ballcourt, and adjoining plaza with an altar platform in the center of the latter. The ballcourt is of the open-end variety and had the stucco remains of what appeared to be a human head with feathered headdress in the center of either playing wall. Tuchoc, about halfway between Caquixay and Cotzal, is a site of the same type. Other

new sites were located through the kindness of Colonel Arthur Binney, United States Naval Attaché in Guatemala, who took Smith on several flights over the San Andres Sajcabaja area. This area, which lies about 27 km northeast of Quiché, consists of a large open plain about 1200 m above sea level. As a result of the survey six sites, which from the air appear to be in a good state of preservation, were located on the plain.

Owing to the length of time taken in the excavations at Nébaj, several investigations had to be postponed until some future date. Among these are a ground reconnaissance of the Sajcabaja area, the mapping of the fortified site at Xolpacol, and an attempt to find at either Chutixtiox or Xolpacol an undisturbed late tomb of the type which was noted this season but of which both examples had been robbed. The discovery of such a tomb at one of these conquest-period sites would be of the greatest importance, as it should contain objects in use shortly before or at the time of the conquest.

22.12.

A. LEDYARD SMITH
Guatemala Highlands

YB 48:224–229, 1949

The 1948–49 field season was the final of four seasons devoted to archaeological reconnaissance in the Guatemala highlands. As in previous years, the main purpose of the expedition was to obtain as much information as possible in a minimum period of time and with little excavation. In most cases sites were roughly mapped, detailed measurements were taken of individual buildings, a photographic record was made, and pottery was collected. In some instances perspective sketches were made of whole sites or of individual groups. The season included expeditions to sites in five areas: Sacapulas, Nébaj, San Andrés Sajcabaja, all in the Department of [El] Quiché; various sites in the Department of Alta Verapaz; Mixco Viejo in the Department of Chimaltenango.

Mr. A. L. Smith, assisted by Sr. Gustavo Espinoza, began the season at Sacapulas and visited three sites: Chutixtiox, Xolpacol, and Chuchun. At Chutixtiox, a late hilltop site, a tomb was found associated with an early structure. Unfortunately it had been robbed in

ancient times, but the excavation yielded a few objects from the tomb and from the entrance.

Xolpacol, also a hilltop site, proved, although small, to be extremely interesting. Among its 10 structures were a well preserved late-type ballcourt, a small round platform supporting a round superstructure with four doorways, and a low platform upon which rested twin temple mounds. The main temple mound stood in the center of a small plaza. It had been dug into and a tomb exposed (YB 46). A very good sample of pottery was recovered from the surrounding fields and down the steep slopes which had been used as a refuse dump.

Chuchun is a small valley site. Of the eight structures noted, the most important were an open-end ballcourt and two fairly large temple mounds. A small surface collection of pottery was recovered.

Leaving the Sacapulas area, Smith, accompanied by Sr. César Tejeda, assistant archaeologist, and by Mrs. Smith, moved to Néabaj. For the remainder of the field season Mrs. Smith took charge of the food and the gathering of surface pottery collections. While in the Néabaj area time was found to visit Finca San Francisco, belonging to the Brol family; from here the ruins of Chikal were visited.

The major effort at Néabaj was the further investigation of the large mound excavated during an earlier field season [Chapter 22.11]. A tomb was found that proved to be of the same ceramic period as the earliest tomb previously discovered, Late Classic or early Late Classic. The grave was relatively rich in furniture, and additional material was found in the dirt that had caved in from the sides of our original excavation. Before leaving the site, we completely filled the hole.

Two small groups of mounds just north of the main ruins of Néabaj were mapped. Both groups have open-end ballcourts leading into small plazas with an altar mound in the center, the ballcourt being the principal structure in each group.

The site of Chikal, which is of the Huil type, open-end ballcourt and adjoining plaza with an altar in the center of the latter, is in a very poor state of preservation. The ruins are used as a corral, and stones from the structures have been removed to build walls. No map of the ruins was made, as Burkitt had published one. No pottery was found at the site.

From the Néabaj area the expedition moved to San Andrés Sajcabaja. This area had previously been reconnoitered from the air [Chapter 22.11]. Eleven sites were visited: La Lagunita, Xepom, Xolja Alto, Xolja Bajo, Pantzac, Patzac, Llano Grande, Los Cimientos, La Iglesia, Chusap, and Xabaj. These were located on a tracing of a map of the municipality.

La Lagunita, a large site, consists of two groups separated by a deep ravine. Group A has 14 struc-

tures, an enclosed court, and several plazas. In the main plaza beneath is a plain stela, beneath which someone had dug. Six of the mounds are large, but no traces of superstructures were found. Group B, with 13 structures, has two possible ballcourts, one with open ends, the other closed but with no apparent end zones. The rest of the structures are platforms surrounding courts or small plazas. Both groups are surrounded by deep ravines and lend themselves to defense. Pottery from the site seems to place it in the Late Classic period.

Xepom, Xolja Alto, and Xolja Bajo are small sites. Xepom and Xolja Alto are on the tops of hills overlooking the Río Agua Caliente; Xolja Bajo is in the river valley. Very few architectural details of interest were found and only a small amount of pottery was collected. From the sherds recovered, Xolja Alto and Xolja Bajo appear to have been occupied in Late Classic times.

The largest site visited in this area was Pantzac. The ruins are not unknown, having been mapped by Sapper and briefly described by Maudslay. Sapper's map is extremely accurate and needs few changes. There are 38 mounds still in existence, but Sapper shows others which have been razed; many of the architectural details that he indicates have long since disappeared. The masonry is of well cut and faced blocks which the inhabitants now living in the ruins use to build their houses and fences. The site divides itself into about five groups containing temple mounds and long structures surrounding plazas and courts, altar mounds, platforms, and a sunken court. There are two ballcourts, one with open end zones and an adjoining plaza not unlike the Huil type, another with end zones probably closed with low walls. Pottery, found in quantities in the surrounding fields, places the occupation of the site in Plumbate times. Although probably not built as a defense site, Pantzac lies on a plain surrounded by deep ravines which would afford easy defense.

Patzac, like Pantzac, is surrounded by deep ravines. It is a large site having 34 structures. These are mostly in the two main groups, the rest being in scattered groups of two and three mounds. Each of the main groups has a ballcourt with closed end zones. Other structures take the form of temple pyramids, platforms, and altars. Several of the structures support low walls of superstructures. The pottery collected shows that the site was occupied at the time of the conquest.

Llano Grande lies in a plain, and the site definitely was not built with any idea of defense. The ruins consist of a large rectangular platform, reached by a stairway on its south side, and supporting four mounds and a sunken court. The last, which is at the west end of the platform, is probably a ballcourt. To

judge by the pottery recovered, the site was probably occupied during the Late Classic period.

The best-fortified site visited in the area was Los Cimientos, completely surrounded by steep ravines, the only entrance being over a causeway. Nine structures at the highest point comprise the ceremonial center. Eight of these follow the edges of terraces and form the sides of a small plaza; the ninth structure, a temple mound, is in the plaza. Two of the nine structures are temple mounds, seven are low platforms, most showing signs that they once supported superstructures. The main feature at the site is the terracing on its east, south, and west sides. The terrace walls are built against natural levels running in all directions and varying in height. Reaching to the side of the ravine, the terraces are quite extensive and may once have been used as sites for houses of perishable material. Surface pottery is scarce, but a small collection places Los Cimientos in the conquest period.

La Iglesia, the main structure of which has been turned into a crude modern church, has two groups. Group A lies on a large oval hill which rises about 50 m above the surrounding plain. It consists of a rectangular court surrounded by a low wall with an entrance in the south side. All but one of four platforms in the court carried stone superstructures. The superstructure of the largest was of great interest, as the walls stood to considerable height in some places, and the method of construction could be examined in detail. A good sample of pottery of the Plumbate period was obtained from this group. Group B is on the level of the plain. It is made up of a plaza with a large rectangular platform on each of three sides. No masonry was showing, and there was no evidence of superstructures.

Chuscup was visited because of a reported subterranean passage that had never been explored. It turned out to be a bottle-shaped hole in the center of a small field on a hill near the Río Agua Caliente. In shape it resembles a chultun, having a narrow neck for an entrance, with stones around the top, which was covered with a stone lid. Nothing was found in it and its purpose could not be determined. No structures of any kind were found in the vicinity.

The last site visited in the San Andrés Sajcabaja area was Xabaj. It is a small group of three platforms strung out along the top of a hill high above the plain. The platforms, which are almost square, still support the remains of superstructures. Two of the structures had each a small modern shrine on top, and a third had 6. Several of the shrines contained small carved monuments. No pottery was recovered. According to the local inhabitants, Xabaj is an important place of worship today.

The fourth expedition was to Alta Verapaz, the personnel being Mr. and Mrs. Smith, Mr. R. E. Smith,

and Dr. Stephen Borhegyi. Ceramic studies were in the charge of R. E. Smith and are reported by him below. Perspectives sketches of ruins were made by Borhegyi. The following sites were visited: Esperancita, Tampoma, Omaxa, Canchunac, Las Tinajas, Pueblo Viejo, Chicuxab, Valparaiso, and Chinchilla.

The expedition's first base was Finca Mocca, belonging to Mrs. Robert Hempstead. The finca lies northwest of La Tinta, a village on the Río Polochic. The first ruin visited by Esperancita, a small site consisting of eight mounds and several terraces on top of a sloping ridge. The ridge rises in natural terraces, the upper three having been artificially leveled and faced with rough stone slabs. Large stairways lead from one terrace to another. The lower terrace supports the main group. Here six long low platforms surround a small plaza with a rectangular platform in the center. The second terrace supports a long low platform. There were no structures in the third. The platforms are not oriented to one another, as they follow the contour of the ridge. A sketch was made of this site.

Tampoma has five small groups spread out on the flat valley floor. A small river, the Tampoma, flows through the ruins to join the Polochic. The largest group has what appears to be a ballcourt with an adjoining plaza with long low platforms on three sides. Off to one side is a low mound with a plain stela and altar in front of it. The other groups had three or four mounds each, surrounding small plazas.

At Omaxa, close to Tampoma, are several small mounds and one large one. Unfortunately the site was so overgrown that no work could be done. Canchunac, west of Finca Mocca, consists of a series of terraces and one mound.

After leaving Finca Mocca the expedition moved to Finca Las Tinajas on the south side of the Río Polochic, where two ruins, Las Tinajas and Pueblo Viejo, were visited.

The ruins of Las Tinajas, also called Tzesac and located on Sapper's map as Chacujal, are close to the Río Tinaja, which flows into the Polochic. It is possible that this may be the Chacujal mentioned by Cortés in his fifth letter to the Emperor Charles V. It is a large site, at present badly overgrown. Twenty-six structures were found, a number of which supported the remains of stone superstructures. Two temple platforms stood in the center of a large plaza. The buildings were constructed of a hearting of clay and water-rolled stones faced with thin stone slabs laid in clay. It is worthy of note that no clay or thin stone slabs seem to occur in the vicinity of the ruins. A sketch was made of the site.

Pueblo Viejo is an extensive ruin not more than a kilometer west of the ruins of Las Tinajas. The mounds are piles of water-rolled stones with only a few instances of thin slabs around the base. It is very pos-

sible that these mounds formed a part of Las Tinajas that was never completed. No map was made of Pueblo Viejo because of its overgrown condition.

The expedition next proceeded to Finca Seamay and thence to Finca Arenal, both of which belong to Mr. George Koester, and which lie north of the Río Polochic not far from the village of Senahú. At Arenal two sites, Seacal and Chijolom, were visited.

Seacal lies on top of a steep hill covered with outcroppings of rock of the type used in the masonry at the site. The main feature of this small ceremonial group is a rectangular sunken court with sides of large, beautifully cut and faced stone blocks. The court is surrounded by rectangular platforms on the ground level above it. A sketch was made of the site.

Chijolom, a small group in which the ballcourt is the main feature, lies in the saddle between two hills. The ballcourt is the open-end type and has its sides built against two hills. On one side terraces and stairways rise further up the hill. Beyond a rectangular platform at either end of the ballcourt, terraces extend down into the ravines. The masonry, the most beautifully cut and fitted seen in any part of Guatemala, was laid without the use of mortar. A sketch was made of the group, showing details of stonework.

After leaving Arenal the expedition moved to Cobán, once more as guests of Mrs. Hempstead. Three sites were visited: Chichén, Santa Elena, and Chicuxab.

The ruins of Chichén are about 30 m above the north side of the Río Chichén. Almost all the 17 structures are oriented to one another and are grouped around three plazas. There are rectangular platforms, altar platforms, a temple mound, and two open-end ballcourts. The last are very similar to the ballcourt at Chijolom. No evidence of superstructures was found. A sketch was made showing the entire site.

Santa Elena, south of Cobán, is a small valley site of four platform mounds, three of which are oriented around a small plaza. The fourth mound lies to the north of the plaza group. Chicuxab, a three mound site, lies in a hollow in the hills. The three platforms are almost shapeless from having been plowed over.

After leaving Cobán the expedition returned to Guatemala City via Salama. Between Cobán and Salama two sites, Valparaiso and Chinchilla, were examined.

Valparaiso, a small site lying north of the Río Cobán, had been visited by Shook and Smith some years ago, when a collection of surface pottery was made and the site was roughly mapped. We now attempted to obtain more pottery, but the owner was away and the resident Indian family would not permit any work.

The two groups which make up the ruins of Chinchilla are on the slopes of two adjacent hills on the north side of the Río Frio. The site was previously seen

by Dr. Kidder and at that time was in a much better state of preservation. The main group consists of five structures: four platform mounds are oriented around the four sides of a small plaza, in the center of which is a large temple platform. The other groups consists of three small mounds.

The final trip of the season was by Mr. and Mrs. Smith and Borhegyi to Finca Las Pilas, belonging to Sr. Francisco Martínez del Rosal, in order to examine the ruins of Mixco Viejo, a conquest site mentioned in the early accounts. The ruins have been mapped by Sapper. Mixco Viejo consists of 12 groups spread along the flat top of a ridge completely surrounded by steep ravines. It is a well fortified place which can be entered only by a steep narrow trail, easily defended. The larger groups consist of structures surrounding, in each case, a plaza, often with a temple mound or platform in the center. The structures are not oriented to one another because they follow the edges of the ravines. In many cases the upper edges of the ravines are faced with stone. On the south side there are natural terraces where the abundance of refuse indicates that thus may have been an area where houses of perishable material once stood.

The 68 or more structures at the site consisted of temple platforms, long platforms with three or more stairways on one side, altar mounds, long low rectangular platforms, twin temple platforms on a single platform, and two ballcourts. The last were of the conquest type with closed end zones and a stairway at the center of each end. Although many of the structures must have had superstructures, no evidence of them was found. A sketch was made of Group B, one of the largest groups that contained the greatest variety of structures. A large surface collection of pottery was recovered, but nothing was found in the several pits that were dug in platforms. Surface pottery contains some Early Classic, a good deal of Late Classic, and an overwhelming amount of conquest period wares. No Plumbate period pottery was found.

22.13.

ROBERT E. SMITH

Guatemala Highlands

YB 48:229–231, 1949

The pottery findings of the Alta Verapaz archaeological survey were quantitatively small but typologically

significant. The hilltop sites, Seacal, Esperancita, Chijolom, Chinchilla, and Samac, were especially lacking in potsherds with the exception of Seacal, which contributed about a hundred. These sites, including the ballcourt site of Chijolom, probably served as shrines, and therefore ceremonial pottery normally associated with tombs and caches was mostly used. In their function the Alta Verapaz hilltop sites differ markedly from those of other sections of the country, which appear to have been fortified retreats and where quantities of utilitarian as well as more elaborate pottery are found.

A tomb with skeleton, six pottery vessels, and bone ornaments was uncovered at Seacal. Two of the vessels equate with Tepeu 3 types. A cache in Mound I at Esperancita contained two pottery vessels suggesting a Tepeu 1, 2-Chipoc-Chamá 3, 4 Alta Verapaz II horizon. In addition, some 60 sherds were recovered from three sizable trenches. None were found on the surface. At Chijolom a trench was dug across the center of the ballcourt and a pit was sunk into the center of the northeast platform mound, but the only place from which potsherds were recovered was a low terrace off the southwest end of the ballcourt, where there was a vegetable garden. Here some 30 sherds were gathered from the surface. These indicate a Tepeu 3 to Tohil, or even later, horizon. The pottery picked up from the surface of the larger group at Chinchilla included two faceted, red ware, Z-angled sherds from Miraflores-Chicanel type. The other eight fragments recovered were too small and weathered for identification. A tomb, excavated on Finca Samac many years ago, included a skeleton and five pottery vessels. One of the latter is a Tohil Plumbate specimen which dates this grave as Postclassic-Tohil phase according to Dr. Wauchope, or as Alta Verapaz III according to Dr. Butler. On top of the hill upon which the tomb was discovered we were fortunate in finding a ready-made cut, exposing a section filled with potsherds ranging from Chipoc (Tepeu 1, 2-Chamá 3, 4-Alta Verapaz II) to Yaqui, the latest preconquest ceramic phase.

The valley sites, Las Tinajas and Tampoma in the Polochic valley, Chichén, Chicucab, Santa Elena, and Valparaíso in the Cobán area, as a rule were well supplied with potsherds. The exception was Las Tinajas, a large site where we dug a deep pit into the center of a long low platform mound and found a handful of unidentifiable sherds. Pits were dug throughout the main plaza, from which a total of one potsherd and an effigy-head foot resulted. At Tampoma two pits were

dug, one into a rock pile mound, the other under an unmarked stela. Most of the identifiable sherds from the former belong to the Chipoc phase, as do those from the latter pit, which also contained jade (two tubular beads and three very thin flat perforated ornaments) and a pyrite mosaic mirror fragment. Most of the sherds from this site were picked up from the surface, an ancient river bed. Because of the water worn or generally weathered condition of these fragments, much of the material is unidentifiable, but a quantity of Chipoc types were recognized. It is likely that further study will bring to light later horizons.

In the Cobán area the largest site observed was Chichén. Here we dug pits into three mounds, trenched across the center of the main ballcourt, and collected surface pottery. Mound III contained the earliest (Chicanel) as well as the latest recognized (Tohil) pottery. Undoubtedly the site was occupied up to the conquest, and further study presumably will prove this. Chichén is a present-day pottery-manufacturing center. Chicuxab is a small site, but the surface is literally bristling with potsherds. We did no digging here, but picked up a carefully selected collection, containing largely Chipoc types besides a few Tzakol-type and Tohil pieces. Another small site, Santa Elena, close to Chicuxab, had an abundance of pottery on the surface and inside small platform mounds, two of which we trenched. The only Chicanel-type sherds were found on the surface. The mounds and surface yielded Tzakol and Chipoc types in considerable quantity and probably later types. At Valparaíso a surface gathering contained a few Tzakol and Chipoc types and an abundance of unidentified fragments which probably form part of later cultures.

From this survey we find that in the Alta Verapaz we can recognize various phases which closely parallel those suggested by Dr. Butler (1940). Dr. Butler's work, however, deals for the most part with the Chixoy drainage area and includes sites in the western part of the Alta Verapaz or farther west in the Department of [El] Quiché, an area not touched in this survey. In order to keep the ceramics of the two areas separate, we are proposing new ceramic phase names for central and eastern Alta Verapaz: Chipoc (Tepeu 1,2; Pokom; Chamá 3,4; Alta Verapaz II; Late Classic), Seacal (Tepeu 3), Samac (Tohil; Chimal 2; Alta Verapaz III; Postclassic). The Preclassic and Early Classic, as well as the later phase corresponding to Yaqui, will be named when further knowledge as to the distribution of the wares of these periods in the Alta Verapaz is available.

23.0. KAMINALJUYÚ

Kaminaljuyú has been known for a long time and was visited by Alfred P. Maudslay at the end of the nineteenth century. He later published a plan of the site and a photograph of the mounds. Extensive excavations were undertaken at the site by the Carnegie Institution of Washington in 1936 and the work continued for several years. Reports were subsequently published on the excavation of Mounds A and B (Kidder, Jennings, and Shook 1946), D-III-13 (Berlin 1952), and E-III-3 (Shook and Kidder 1952). Their efforts constitute the earliest major archaeological research on Kaminaljuyú, and all were last minute efforts to salvage structures in immediate danger of destruction. The results of these excavations should be considered as one of the great achievements of American archaeology because archaeological work at Kaminaljuyú established for the first time a long consecutive chronological sequence for an area within the Guatemala highlands and also one of the most complete local sequences in Mesoamerica. It modified concepts about the nature of the culture of the Preclassic, or Formative, period. At least half of the 200 mounds were discovered to be Preclassic in date, including some of the largest struc-

tures of the site. The scale of the architecture and the wealth of tombs located within the mounds demonstrated conclusively that archaeologists had underestimated the size and degree of internal social differentiation of Preclassic societies. Prior to Kaminaljuyú, the Preclassic was conceived of as a period of socially homogeneous, sedentary folk agricultural societies. Mounds A and B were of Classic date and the association of Maya and Teotihuacán pottery in the same tomb completely altered the picture of the chronological interrelationships of the various Classic civilizations of Mesoamerica. Prior to the Carnegie excavations most researchers assumed that Classic Maya civilization started earlier and stimulated the growth of other Mesoamerican Classic civilizations. The excavations revealed the contemporaneity of the various regional cultures and in fact meant that much of the development of Teotihuacán was Preclassic in a chronological sense. This in turn has stimulated considerable controversy. A major discovery in Mounds A and B was the extraordinary impact of Teotihuacán on Kaminaljuyú in Classic times. The tombs contained copies of or imported Teotihuacán pottery and the pyramids that contained them

were copies of Teotihuacán architecture, including the typical specialized *tablero-talud* moldings. This discovery immediately initiated a series of controversies.

In the late 1960s, the Pennsylvania State University sponsored work at the site, directed by William T. Sanders and Joseph H. Michels. A series of monographs on the site was published by Pennsylvania State University in the 1970s. In 1994 Kaminaljuyú was made an archaeological park, and Guatemala Instituto de Antropología e Historia began a project on one of the few structures still standing.

23.1.

ALFRED V. KIDDER AND
OLIVER G. RICKETSON
Kaminaljuyú
YB 35:130–131, 1936

To the great aggregation of mounds on Finca Arevalo, Finca Miraflores and other farms in the outskirts of Guatemala City, the above name has been given by the Sociedad de Geografía e Historia of Guatemala. At the suggestion of Lic. Antonio Villacorta, Minister of Public Education, excavations were undertaken at one of these mounds. The structure proved to consist of four small pyramids built one over the other, the innermost and the second of adobe, the third and fourth of tufa blocks laid in mud mortar.

The eastern half of the complex was excavated, the operation yielding large rectangular pits lying immediately to the east of the mound. They contained the skeletons of persons of importance, accompanied by lavish offerings of implements, pottery, and jadeite ornaments. Some of the pottery appears to bear close resemblance to that of Uaxactún, some to that of Teotihuacán in Mexico. Final description of the pyramids and conclusions regarding the cultural relationships of the associated tomb material must await excavations planned for 1937, when, it is hoped, the remainder of the mound may be cleared and a fourth tomb, believed to lie below the second pyramid, may be investigated. An illustrated preliminary report has been issued as a press-release of the Institution.

Mrs. Ricketson carried on studies of the early pottery collected in 1935 at the Finca Miraflores.

23.2.

ALFRED V. KIDDER AND
JESSE D. JENNINGS
Guatemala Highlands
YB 36:143–144, 1937

Kaminaljuyú, a great aggregation of mounds in the southwestern outskirts of Guatemala City, has long been known to archaeologists and has long been believed important because Gamio’s excavations of 1925 had revealed the presence there of a presumably early culture; because of Lothrop’s identification of sculptures indicating influence from the Maya Old Empire; and, because, being situated athwart probable highland routes of migration and commerce, it might be expected to yield trade objects valuable for determining cultural and chronological relations between various Middle American civilizations. The Institution began work here in 1935 with excavations to check Gamio’s findings. Much ceramic material from the early period was recovered [Chapter 22.3]. In 1936 a mound on Finca La Esperanza was partially excavated [Chapter 23.1]; it was completed during the part season and the frontal terrace of a second mound was investigated.

Mound I proved to consist of eight structures, built one over the other. The two innermost were rectangular, vertical-walled platforms, the first of masonry, the second of adobe; the next six were truncated pyramids, the first four of adobe, the last two of water-rounded tufas laid in adobe. The total height of the complex was about 6 m.

The top of each pyramid had been reached by a stairway, and the summit platform of each had supported a superstructure, presumably a small temple. The current temple had been razed at each successive enlargement of the mound; that surmounting the outermost pyramid either had never been erected or had completely disappeared through erosion. Only the stairway of the last adobe pyramid had escaped destruction; buried in its exact center, halfway up, was a boulder of crude jadeite weighing some 200 pounds.

Associated with Mound I were six tombs, two of which, covered by the frontal platforms of the last two structures, were excavated in 1936; the other 4, lying below the mound, were cleared during the past season.

Of Mound II only the frontal platforms were excavated. Like those of Mound I, they covered tombs, two of which could be assigned to the two major building stages of the platform; the third was intrusive.

All nine tombs were rectangular pits, sunk from 1 m to nearly 5 m into subsoil. Some certainly, all probably, had been log-roofed. Each contained a principal

skeleton lavishly adorned with jade, mosaic mirrors, and shell ornaments, and accompanied by the skulls or complete skeletons of several other individuals, presumably slaves; much mortuary pottery was present, as well as remains of elaborate offerings of textiles and other perishable objects.

Interments and accretions to the mounds were apparently correlated, and definite connection between certain tombs and certain structures could be determined. Relative uniformity of funerary practice and close similarity between pottery from all graves indicates a short time-span for the entire series. The pottery evidences trade relations with northern Petén during the Tzakol period (middle to late Old Empire) and with Teotihuacán, Mexico.

At Kaminaljuyú three ceramic phases have so far been identified: Miraflores, early, possibly akin to the Mexican Archaic; Esperanza, the phase of the mounds and tombs, contemporaneous with the Maya Old Empire; Pamplona, crude, late, as yet unrelatable to any other group. Surface sherds from elsewhere on the site suggest presence of additional phases, and raise hope that it may eventually be possible to trace a long, continuous local evolution whose stages can be fitted into the larger scheme of Middle American cultural development.

23.3.

ROBERT E. SMITH

*Minor Archaeological Studies
at Guatemala*

YB 37:159, 1938

Small clay figurines, for the most part in the form of human effigies, are among the most characteristic and, archaeologically, the most significant remains of the so-called Archaic culture of Middle America. They were also produced in large quantities by the Maya, the Toltec, the Aztec, and other people of later times.

Mr. Smith, in his work upon the pottery of Uaxactún, has been giving special attention to the figurines from that site. The earliest figurines of Uaxactún have proved to be similar to specimens from apparently very old cultures in the Guatemala highlands; and these, in turn, seem allied to the Archaic figurines of Mexico. Mr. Smith has accordingly been led to the

making of a comparative study of all such material, that from Mexico as illustrated in the many publications of Vaillant; that from the Guatemala highlands comprising the collection made by Dr. Ricketson and the Chairman in 1935 at Finca Miraflores, and by the Chairman in 1936 and 1937 at La Esperanza, both localities which form part of the great archaeological site of Kaminaljuyú.

The Kaminaljuyú figurines were found by Mr. Smith to include several distinct types. But the specimens from La Esperanza having come from disturbed deposits, and those from Miraflores from a very small excavation provided no information as to whether the observed types were contemporaneous variants or whether they represented a stylistic sequence.

In order to gather further data Mr. Smith excavated a new and larger section at the Finca Miraflores, isolating a square column of earth, recording its layers, and collecting all material in stratigraphic order. Great numbers of potsherds were recovered which add significantly to our knowledge of the early ceramics of the region. The figurines, of which over 50 came to light, are at present being studied by Mr. Smith.

Mr. Smith also made a trip, during the spring, to Tiquisate on the Pacific coast plain of Guatemala, where the extensive operations of the United Fruit Company have led to discovery of many archaeological remains. These have been noted, and arrangements have been made with the Company officers at Tiquisate for notification of the Institution's office in Guatemala City of further finds.

23.4.

EDWIN M. SHOOK AND

A. LEDYARD SMITH

Guatemala: Kaminaljuyú

YB 41:263–267, 1942

In 1936 and 1937 excavations were carried on at two mounds of the great archaeological site of Kaminaljuyú in the outskirts of Guatemala City [Chapters 1.21, 22.3, 23.1]. One of the mounds (A) was completely dissected. It proved to contain eight superimposed structures and to overlie six pit tombs rich in pottery and jades. The body of the second mound (B) was not investigated, but three tombs were found below its frontal

platform and a modern cut on one side indicated the probable presence of several structures built, as in Mound A, one above another. In the course of preparing the results of the above work for publication, it became obvious that more data were needed on several important points concerning architectural and mortuary practices. It was therefore decided to excavate Mound B, a task undertaken by Mr. Shook and carried out from November 1941 through May 1942.

The mound before excavation was a conical hill-ock some 35 m in diameter by 7.5 m high. A vertical slice had been cut, in recent times, from its western slope; and, some years before, a deep, wide trench had been run in from the southeast by treasure hunters. Mr. Shook's opening trenches were pushed inward from the north and south, these sides being chosen because the later structures in the mound were known to face west, and it had been learned, during the work on Mound A, that tombs and caches, stairways, and other important architectural features were to be found on the front and could more safely be reached by lateral than by frontal approaches. The south trench at once encountered the basal step of a pyramidal substructure of puddled clay faced with a layer of lumps of pumice and coated with *piedrin*, an almost concrete-hard mixture of lime and small pebbles. The trench was pushed through this, revealing a second building of identical construction, which in turn was penetrated as far as a third building of pure adobe. There was thus disclosed a sequence corresponding to that found in Mound A, whose two outermost elements had pumice and clay heartings with *piedrin* finish, the third being of adobe.

At this point it was felt that enough was known of the mound's make-up to permit the frontal features to be investigated. The basal step of the outermost building (Structure 5 in the final enumeration) was accordingly followed around the southwest corner and across the western face to its abutment against the remains of the frontal stairway. The basal step was also located on the north and followed around the northwest corner to the stairway. The same method was employed in outlining Structure 4, and in laying bare the south side of the adobe pyramid, Structure 3. At the same time a third penetrating trench was run in from the east, encountering and passing through two more adobe structures, nos. 2 and 1.

As to Structures 1 and 2, little was learned, for they were seen only in median section in the sides of the narrow penetration trench. They appeared to have been low pyramids, parts of which had been cut away in the course of building the later units of the complex. Structure 3, however, was relatively well preserved. It was an adobe pyramid with basal measurements of about 30 by 30 m, a broad adobe stairway with heavy

balustrades mounting its western face. The upper part of the stairway had been destroyed by the pot hunters' trench, but a small area of the summit platform remained.

Structures 4 and 5, though inferior in construction to the corresponding units of Mound A, yielded the hoped for information as to the pumice and *piedrin* type of building. It was learned that it had a topped by low basal step, a lower-sloping zone topped by a slab-supported cornice, and a more nearly vertical second zone divided by moldings into rectangular panels. At the front a stairway mounted to a jutting platform, on which there apparently was located a small shrine. A second flight of which only traces of the lowermost steps remained, led upward, doubtless to a temple on the summit platform.

Two tombs were found: a small one south of the foot of Structure 5's stairway, and a very large one in front of the foot of the stairway of Structure 3. The small tomb contained the skeleton of an aged male, the bones of a child (probably a sacrifice), some jades, and a number of pottery vessels. The large grave was evidently that of an important personage, as it was more lavishly stocked with mortuary equipment than any of the other tombs so far opened at Kaminaljuyú. The principal occupant, seated cross-legged in the center of the tomb floor, had been literally covered with ornaments of jade and shell; a necklace of 280 jade beads was about the neck. In front of the body was a pile of very fine pottery, many of the pieces coated with stucco and beautifully painted. The skeletons of three young persons, evidently sacrificed at the time of their master's burial, lay toward the walls of the tomb. Near one of them was the finest single object recovered, a pyrite-incrusted plaque whose slate backing bore an intricate carving, the central elements being two small figures standing on either side of an altar, from which rises what appears to be a conventional tree.

Although the finds in this tomb were most spectacular, the most important results of the Mound B excavation were the data recovered as to architecture and as to the succession of pottery types. Great numbers of sherds were found in the fill. These were largely of the Esperanza phase, contemporaneous with the erection of the structures, but among them were many fragments of Miraflores pottery. The latter, representing the oldest ceramic horizon so far identified at Kaminaljuyú, had, of course, been scraped up with earth used for the fill of the various structures. After the mound had been abandoned as a place of worship and had fallen more or less into ruin, there accumulated on and about it a heavy stratum of occupational debris containing pottery of two post-Esperanza phases which have been called Pamplona and Amatlé. Although stratigraphic conditions were not clear, there

is little doubt that Amatlé is the older of the two. One component of the Amatlé phase is Plumbate Ware, mostly in simple cylindrical forms. Similar Plumbate was found in 1940 by A. L. Smith at San Agustín Acasaguastlán on the Motagua River, and more came to light in J.E.S. Thompson's excavations of the past season at El Baúl on the Pacific coast plain. When these and other ceramic materials from highlands and lowlands have been studied and compared, it seems probable that the chronological and commercial relations of several important ancient Guatemalan cultures will become clear.

During the mapping of Kaminaljuyú in former years there had been noted at least nine constructions which, because of their elongated rectangular form, were surmised to be ballcourts. In order to test this supposition, A. L. Smith, in 1941, ran a trench across the middle of one of the largest. The finding of two tenoned stone parrot heads, analogous to those of the Copán ballcourt, and of traces of sloping benches paralleling a playing alley settled the matter conclusively.

During the past season further excavation was carried on here, and two smaller courts were investigated. The original 1941 trench in the large court was reopened and sunk to a depth of about 5.5 m before sterile natural deposits were reached. Directly below the northern long wall, Mr. Smith exposed parts of two deeply buried earlier constructions. The upper one was of red-painted adobe, apparently with low vertical terraces. Its upper parts had been cut away in ancient times. An adobe floor, also painted red, extended outward from its base. Farther down was the southeast corner of a very well preserved building, probably a substructure. Its basal terrace had borne slab-supported moldings, torn away when the building was buried, but it, and what remained of a second terrace, were still covered with smooth, hard, red-finished *piedrin*. Well underneath this was a floor of packed adobe, under which, to subsoil, a distance of nearly 2 m, the deposit contained only Miraflores pottery, the earliest type so far found at Kaminaljuyú.

By the time subsoil had been reached, the rainy season was about to begin. Work was therefore suspended, but the trench was fenced and left open in case it should be possible to push the operation farther at some future time. Although removal of the tremendous overburden would be a long and costly undertaking, the investigation of the early buildings and of what may well lie below and behind them would undoubtedly yield invaluable archaeological information. We already know that there is a direct superposition of three types of structure and a stratification of Miraflores, Esperanza, and Pamplona-Amatlé pottery. Because of the depth of the deposit and the scaling of several of its horizons by floors, there is likelihood of

recovering unmixed samples, some of them perhaps exemplifying hitherto unknown transitional ceramic periods. Furthermore, the lowest floor may be connected with a structure dating from Miraflores times. The discovery of such a building would be of the greatest interest, for Miraflores structures, presumably ancestral to all later architectural developments in this region, are still entirely unknown.

While work in the deep central trench was going on, a pit was sunk in the southwest corner in a vain search for the tenoned stone head which, on the analogy of the Copán ballcourt, should have been found there. The digging, however, revealed, below the level of the court, a *piedrin* floor pierced by several large post holes, which indicated the former presence there of a building of perishable materials.

The second ballcourt investigated formed part of a small group just to the east. A trench was dug across its short axis, a little north of the center in order to cut into a mound resting on the western wall of the court. The upper part of the wall and the face of the mound proved to be terraced and to bear a *piedrin* coating.

The transverse trench, again carried to subsoil, yielded evidence of a long series of structural events, involving two rebuildings of the court; an abandonment during which a humus layer was laid down; and the excavation, perhaps through a still earlier fill of a pit in whose bottom was a drain, slab-floored and walled but without capstones. A tenoned human head of stone came to light in the western extension of the trench.

The third court lies a considerable group well to the east in a district called La Granja, where a real-estate development is now being undertaken. As part of the "improvement" a road was run through the court, cutting both end walls and passing down the long axis of the playing alley. This permitted observation, with relatively little digging, of the closing walls and the alley. The dimensions of the alley were determined to be 33 by 7 m. Remains of an earlier construction were laid bare. This, razed almost to ground level when the Court was built, had originally been a multi-chambered affair without supporting platform. In its *piedrin* floor were postholes and on it were butts of several free-standing walls of mold made adobes faced with pumice blocks and *piedrin*.

A number of finds were made at this court. Directly under the southeast corner of the playing alley were two plain red ware bowls set lip to lip, probably a dedicatory offering. Near the center was a large tenoned stone snake head, which had obviously slipped down from the north-central wall. Several other heads and pieces of broken sculpture had come light during the digging of the modern road. In the center of the court Mr. Smith encountered a filled pit which, seeming

to be ancient, was believed to have served a drain or sump. Well below the level of the playing alley, however, were the most completely rotted bones of a horse and below them, the crushed remains of two, pottery water jars. The horse bones of course, proved the pit to be post-conquest, but their condition argued for very long burial, and the jars, when restored were found to be of an unknown type, perhaps ancestral to present-day Chinautla pottery. They are, in any case, the oldest modern vessels so far collected.

To sum up: Mr. Smith's investigations made it clear that the nine or more long rectangular constructions at Kaminaljuyú are ballcourts, and have permitted identification as such of many similar ones at other sites throughout the valley of Guatemala. The ballcourt, indeed, is shown to have been perhaps more abundant in this region than in any other part of Middle America. As to the details of construction, data are as yet not fully satisfactory because, being of pure adobe, the courts have suffered severely from erosion and the growth of forest trees. It is known, however, that the playing alley was long and narrow, and that it had low, sloping side benches. It was closed at either end, thus lacking the expanded end zones characteristic of most other ballcourts. Set opposite each other at the middle of the parallel side walls were two tenoned stone heads, usually parrot or snake, often with a human face in the open mouth. Whether these were placed vertically, as at Copán, or horizontally is unknown, as all were found fallen forward on the side benches. There was no evidence of stone markers in the floor of the playing alley. The courts seem to be sited without regard to the cardinal points.

23.5.

EDWIN M. SHOOK

Guatemala Highlands

YB 47:214–218, 1948

Two of the most significant archaeological discoveries of the past year in Guatemala were made accidentally. The first was in Kaminaljuyú on the outskirts of Guatemala City, and the second, 29.5 km west of the city near Santa Maria Cauque, in the Department of Sacatepéquez.

The latter find was made en route to Tiquisate by Mr. Shook and his assistant, Mr. Henry Morgan, as

they were passing through a new road cut for the Roosevelt Highway, where it skirts the foothills along the west side of the Río Sacatepéquez valley. A low spur of the mountains had been cut to a depth of 4 m below the original surface with heavy road equipment. Prior to excavation, no artificial mounds, pottery fragments, or other remains had appeared on the surface to indicate that a town site once existed there or in the immediate vicinity. About 0.75 to 1 m below the surface, however, a number of ancient pits and graves were encountered. The pits, similar to ones frequently found in Kaminaljuyú and Salcajá, were oval in profile, varied from 2 to 3 m in depth, and were filled with ancient rubbish. Many graves were disturbed by the heavy machinery, as was evident from the number of freshly broken pottery vessels, human bones, and jade beads scattered along the roadbed. One grave, left partly exposed in section, was excavated by Shook and Morgan. A vertical shaft had been sunk to a depth of 2.5 m and an adult buried at full length on its floor. Surrounding the body were thin stone slabs set on edge. The left side of the skeleton, the slabs, and whatever mortuary furniture existed on that side had been swept away by the bulldozers. The remainder of the skeleton was *in situ* with eight pottery vessels aligned at the right of the body, several obsidian lancets, and a single jade bead. In addition to the grave contents, a large sample of pottery and artifacts proved to be Preclassic and to be intermediate between Las Charcas, the oldest phase at present identifiable in the highlands of Guatemala, and the Miraflores phase of Kaminaljuyú. It has been given the name Sacatepéquez from the locality in which it was found; its chronological position between Las Charcas and Miraflores was ascertained by the excavations at Kaminaljuyú described below.

The diagnostic pottery of the Sacatepéquez Phase is a White Ware with medium-textured white paste and a well smoothed, polished surface. Vessel exteriors were often decorated by simple incising, grooving, or modeling, and by plain bands or broad-line geometric designs in red paint. This White or Red on White Ware comprised 55 percent of the Sacatepéquez collection. It occurs abundantly in the Guatemala and Antigua valleys, and has been noted as far west as San Cristóbal in the Department of Totonicapán. Worn fragments came from the fill of Structure E-III-3 in Kaminaljuyú, but no vessel of White or Red on White Ware was found in the richly stocked Miraflores tomb in that structure. Such typical Miraflores features as hairline and coarse incised Brown-Black Ware, Fine Red Ware, "Archaic"-type figurines, effigy rim-heads, and secondary vessel supports were entirely lacking from the Sacatepéquez material. Fragments of metates, manos, and comales indicated that even at this early

date the people were sedentary and had developed a secure economy based on the cultivation of corn.

The destruction of the great archaeological site of Kaminaljuyú on the southwest edge of Guatemala City has accelerated since 1940 owing to the encroachment of the modern city in that direction and to the heavy demand for bricks, tiles, and adobes. The material for these is derived largely from the ancient mounds. Many groups and individual mounds have been removed completely since the Institution surveyed Kaminaljuyú in 1936 and 1939. Recently, the Department of Public Works of Guatemala acquired the largest single mound, Structure E-III-3, for the manufacture of bricks. Last November, after most of the eastern half of E-III-3 had been cut away, the workmen, in making another vertical cut downward from the top of the mound, encountered human bones; pottery and stone vessels, some containing mineral paints; several jade ornaments; and a carved "mushroom" stone. Fortunately, the superintendent of the brickworks, Sr. Moises de Leon, halted the work and reported the finds to the Director of Public Works. The Director in turn advised The Minister of Public Education and the National Institute of Anthropology and Ethnology. Mr. Shook was requested to investigate. The above-mentioned objects proved to have come from a tomb, the most richly stocked to be unearthed to date in Guatemala, and, of more importance, the first major tomb to be found dating from the Miraflores phase of the Preclassic period. Excavations were undertaken with labor generously supplied by the Department of Public Works, under the combined direction of Dr. Kidder and Mr. Shook, ably assisted by Sr. Gustavo Espinoza.

The tomb had been cut into the top of an existing pyramid, 13.4 m above ground level, in a series of three terraces stepping in on all four sides toward the burial chamber, a rectangular pit measuring 3.2 m north-south and 1.7 m east-west. Four large wooden posts had been set, one in each corner, to support two heavy north-south longitudinal timbers, on which were placed close together the east-west transverse beams that roofed the chamber. Prior to roofing, the burial of a most important personage took place, the body apparently laid on the floor. The position of the skeleton could not be determined because the eastern half of the floor had been cut away by the brick-factory workmen. However, the jade ornaments which must have accompanied the body were found near the center. Abundant pottery vessels and other offerings had been piled to the height of the roof around the tomb's walls. Further mortuary offerings were heaped on the roof and the terraces. The remainder of the pit was filled with mixed earth to the level of the pyramid top, and a thin adobe floor laid over the tomb area. Some slumpage occurred from settling, and perhaps from the breakage

of the vessels by the pressure of the fill, and several other floors were added to level up. Also, a small rectangular adobe platform, perhaps a shrine, was built directly above the tomb. It appears that these floors and the platform were temporary measures to permit the continuation of ceremonies dedicated to the deceased, while a completely new pyramid was being constructed to encase the one into which the tomb had been cut.

The tomb's location in the principal Miraflores structure at Kaminaljuyú, the enormous work involved in its construction, and its rich furnishings give ample evidence of the position of great honor and esteem held by the deceased. The mortuary offerings included some 300 pottery vessels; finely wrought vessels of marble, greenstone, and jade; stone mortars and pestles, several of the mortars carved in the form of toads; the carved "mushroom" stone previously mentioned; about 100 obsidian-flake lancets; one large eccentric flint; jade beads, earplugs, and pendants; shell ornaments; mica sheets; mineral paints; and objects made from armadillo shell. Perishable items were evidenced by textile, mat, and wood impressions. Among the pottery vessels were effigies, pieces decorated with painted stucco, and at least eight with covers, a feature common for certain forms in the later Esperanza phase but heretofore unknown in the Miraflores phase.

While the tomb excavation proceeded, careful watch was maintained on the digging done by the brickworkers on the other parts of the mound. We were able to determine that E-III-3 consisted of a succession of pyramidal adobe structures, facing south, built one over the other. Each adobe accretion had an elaborate frontal platform which underwent several renovations before being buried by the next pyramid. Low, rectangular platforms with postholes at each corner were found on one frontal platform; on the floor near by, severely burned rectangular depressions containing ashes and charcoal. The latter appeared to be hearths for ceremonial fires, the former to support small individual shrines of perishable material.

The entire building activity in Structure E-III-3 apparently took place during the Miraflores Phase. No evidence was seen in the fill of the latest pyramidal addition or on its surface that the mound had been used during the subsequent Classic and Postclassic periods.

Other activities of 1947-48 were as follows:

The southwestern section of Kaminaljuyú was mapped, completing the surveyed plan of the site. The principal group there consists of eight mounds arranged in an orderly manner on the four sides of a plaza. The court and area surrounding the mounds had been excavated in ancient times to a depth of 4 m from the original ground level. This left the eight units, each 4 m high, of undisturbed sterile volcanic deposits.

Five of the mounds remained unaltered thereafter, whereas the heights of three were increased in the normal manner by the addition of more material.

Several weeks were spent in Quezaltenango recording in detail the archaeological material recovered by Sr. Vitalino Robles from the ruins of El Paraiso [Chapter 22.10]. This completes the field data for the publication of the ruins of El Paraiso.

One month was devoted to the study and photographing of the various private collections in Tiquisate. Most of the specimens in these collections were found in the Tiquisate zone during the building of roads, the cutting of drainage canals, and the installation of pipe lines. The stratigraphic excavations made in 1947 [Chapter 22.10] permit the utilization of this large body of material. Its full value may be appreciated when one considers that several years of intensive work and the expenditure of a large sum of money would be required to recover a comparable amount of data. The United Fruit Company again generously provided facilities and assistance in this study.

Mr. Stanley H. Boggs, after two years as archaeologist of the Zaculeu Project, resigned in the summer of 1947. Mr. Richard Woodbury was appointed in his place. By request of Dr. Kidder, Mr. Shook spent three weeks in Zaculeu helping Mr. Woodbury to become acquainted with the work accomplished during the previous seasons. At the same time this gave Mr. Shook opportunity to improve his knowledge of Zaculeu ceramics. The pottery sequence showed that Zaculeu was founded during the Early Classic Period and was continuously occupied until the conquest by the Spaniards in A.D. 1525. Only a small amount of material has been recovered representing certain periods, especially the Late Classic. This may be due more to failure to locate structures than to lack of occupation of Zaculeu during those times.

A brief reconnaissance was made in El Salvador in the company of Mr. Boggs. The major archaeological zones of Campana San Andrés, Chalchuapa, and Cihuatán were visited, as well as many smaller sites. Cihuatán proved to be a large site strategically located on a slight elevation overlooking the broad, fertile valley of the Acelhuate River, a tributary of the Lempa. House platforms, temple pyramids, a late type ballcourt, and the wall enclosing the central plaza are well preserved. The house platforms are concentrated on the gentle slopes outside the walled area, suggesting the typical Latin American town of today, while the people live around a religious and civic administrative nucleus. Cihuatán appears to have been an important center in the Postclassic Period and may have been occupied at the time of the conquest.

A short trip to Tikal with Dr. and Mrs. E. Wyllys Andrews was made to estimate the time and equip-

ment necessary to obtain a record of the architectural remains readily available there without excavation. There exists in Tikal more exposed and well preserved architecture than in any other site known in the Department of Petén. It would require one field season to photograph and study adequately this material without undertaking more than minor excavations.

23.6.

EDWIN M. SHOOK

Guatemala Highlands

YB 48:219–224, 1949

The cutting away of Structure E-III-3, Kaminaljuyú, to obtain material for bricks continued throughout the past year. The great mound as previously reported [Chapter 23.5], is the largest individual structure of some 200 which make up the ruins on the southwest edge of Guatemala City. The salvaging of the invaluable archaeological material and data from the excavations was possible through the co-operation of Sr. Moises de León, superintendent of the government brick factory. He not only placed several laborers under our supervision, but permitted his workmen to be shifted here and there on the mound to facilitate the recording of the exposed remains.

Information was gathered on the architectural development of Structure E-III-3 from a small semicircular adobe unit about 12 m high (no. 1) through six successive major additions. The final stage (no. 7) was a massive, flat-topped, rectangular pyramid over 20 m in height and measuring 70 by 90 m at the base. Ceramic material obtained from the fill of each unit indicated that the long sequence of architectural activities took place during the Early and Middle Miraflores phases of the Preclassic Period. The lavishly stocked Tomb 1, reported in [Chapter 23.5], had been cut through the top of Structure 5. A similarly constructed and equipped tomb, no. 2, was found during the past field season. It had been dug through the top of Structure 6, the next pyramid, which completely encased Structure 5 and Tomb 1.

Tomb 2 occupied a position just west of and higher than Tomb 1, its east wall actually penetrating the upper west bench of the older tomb. Although less carefully constructed and less richly furnished, Tomb 2

provided more information because it had not been disturbed by the brick-factory workmen as had Tomb 1. Prior to the roofing of the tomb with timbers, the principal individual, a mature adult, had been laid horizontally, head to the south, on a low wooden table or platform resting on the tomb floor. The body was completely painted red and probably dressed or wrapped. Two children, about 8 years of age, had been sacrificed and placed in an extended position on the tomb floor just west of the principal body. Another skeleton, that of a young adult, lay extended, face downward, on one of the cast benches above the roof of the tomb. Over 100 pottery vessels, some containing ash and charcoal, had been placed on the surrounding benches after the timber roof was laid.

In contrast with Tomb 1, only a few pottery vessels were found on the tomb floor. Here, however, were most of the nonpottery objects: mica sheets, sting-ray tails, fossil fish teeth, stuccoed containers (possibly gourds), quartz crystals, water worn stone pebbles, basalt implements, bone spatulas and ornaments; mosaic mirrors of pyrite and of crystalline hematite, obsidian pellets and flake-blades tubular jade beads, mosaic sets, and a mask or headdress heavily incrustated with jade elements. The last was found face down off the southeast corner of the wood, platform that had supported the principal body. The decay of the platform, or a fragment of falling roof timber, may have rolled the object to the tomb floor. The backing of wood and leather, we believe, was still firm when this occurred, and the heavy jade elements remained in position until falling material settled around and covered the whole. This earth fortunately maintained the original form of the object fairly well after the backing rotted, and the recording and removal of the jade elements more or less in their original positions were possible. The headdress or mask has been reconstructed by the artists of the Archaeological Museum of Guatemala.

After Tomb 2 was roofed, additional offerings were placed on the benches and the large space was filled with earth from the roof level to the floor of Structure 6. An adobe floor then covered the entire tomb area, permitting the use of the pyramid-top again. At the same time, we think, the last great increment to E-III-3 was started. Prior to the completion of Structure 7, which added some 4 m to the total height of the mound, Tomb 2 was re-entered and partially rifled. The looters disturbed only the principal skeleton, from the pelvic region to the head; we found none of those bones in place. We did find scattered human bones and teeth in earth mixed with red paint, well above the tomb floor, apparently from the main skeleton and cast aside by the looters. The jade ear ornaments, necklace, and pendants which normally would adorn a person of such obviously high rank were entirely missing. The jade-

incrusted headdress beads lay off to the sides of the wood platform and were overlooked by the looters perhaps because they were covered by debris.

The evidence strongly suggests that only one generation (25 years or less) elapsed between tombs. The occupant Tomb 2 may have been the immediate successor of the individual buried in Tomb 1. Some striking changes had taken place in Kaminaljuyú in those few years. A higher percentage of Usulután Ware vessels was found in Tomb 2, many of them similar in shape to fine, incised red ware bowls, with everted rims and three sharply pointed nubbin feet. The latter vessels, although among the most common in Tomb 2, did not occur in Tomb 1. They apparently developed during the interim for specialized ceremonial uses, and often are found containing ashes and charcoal. As a result of the burning, the bowls' interiors frequently are blackened. Tomb 2 contained no "mud" pots or frog effigy vessels of fine red ware, as did Tomb 1, no stone vessels, mortars, or "mushroom" stones. The less care shown in the construction of Tomb 2, the fewer offerings, and the evidence of looting may indicate that the principal individual buried there had not been so successful a ruler or priest as his predecessor, or that economic conditions at the time of his death were more severe than at the beginning of his rule.

Structure E-III-3 is only one of a number of ancient structures being dismantled in Kaminaljuyú. Periodic visits to the various excavations helped to gather much information that otherwise would have been lost. Fortunately, one of principal mound groups has been set aside through the civic interest of the owner Sr. Arturo Samayoa, to be, preserved as a national monument. The National Institute of Anthropology and History has appointed a caretaker, whom we have trained, to maintain the monument and to collect archaeological material as it is excavated elsewhere in Kaminaljuyú.

Modern road construction and trenching for pipe lines led to more discoveries in the past year that amplified knowledge of the oldest known ceramic phase in the Guatemala highlands, the Las Charcas, and of the subsequent Sacatepéquez phase. Both of these pre-date the long Miraflores phase. An ancient pit, containing a rich deposit of apparently pure Las Charcas material, was found in Colonia Progreso, southeast of Mound B, Kaminaljuyú. The material, sealed by a heavy layer of obsidian flakes, included a wide range of ceramic types illustrating many specialized features. Among the latter were spouted and shoe-shaped vessels, effigy monkey heads broken from vessel walls, small solid crudely hand-modeled monkey figurines, two cylindrical and two stemmed flat seals or stamps. Also found were many burned adobe fragments bearing impressions of leaves, corncobs, and other vegetable, objects, carbonized seeds of several fruits, and

ashy remains of woven fibrous material. The Colonia Progreso find represents the first large lot of Las Charcas material recovered by a controlled excavation.

Further search along the newly constructed Roosevelt Highway west of Guatemala [Chapter 23.5] disclosed more deposits of the Sacatepéquez phase, usually in deep rectangular or circular bottle-shaped pits. The pits occur sporadically along the road from San Bartolomé Milpas Altas to Chimaltenango. Archaeological sites with mounds were located in the vicinity of the pits, but direct associations were difficult to ascertain, because the surface material collected from these sites shows that occupancy continued into later periods. The ruins, in order along the highway, are Xaraxong, Chacaya, Santa Maria Cauque, Manzanales, Los Pinos, San Roberto, Río Sumpango, Tejar, Tejarcito, Santa Fe, El Rancho, and Santa Sofia. The last six sites are in the Chimaltenango Valley; the others, in the Río Sacatepéquez Valley.

Advantage was taken of an opportunity offered by Mr. Hugh Craggs, of Guatemala City, to accompany him on an automobile trip through southeast Guatemala, Salvador, and Honduras. A brief reconnaissance was made of eastern Salvador, the coastal plain of Honduras north of the Gulf of Fonseca, and the highland valleys of Zamorano, Tegucigalpa, and Comayagua. The archaeological museums of Comayagua and Tegucigalpa and the ruins of Tenampua and other sites were visited.

Firsthand observation of the topography and climatic conditions of eastern Salvador and of southern and central Honduras directs attention to the importance of the natural intercoastal corridor running from the Pacific coast via the Río Goascoran Valley to the upper Comayagua, thence to the Ulúa Valley and north coast of Honduras. Through this natural funnel must have flowed not only aboriginal commerce, but forces affecting the cultural development of much of southern Mesoamerica. Eastern Salvador and the upper Comayagua Valley have a concentration of ancient remains showing occupancy over the known range of pre-Columbian history. It is most desirable that a study be made of the Río Goascoran drainage from the Pacific lowlands to the upper Comayagua Valley.

Shook also visited the archaeological zone of Chalchuapa, where the Salvador Government for several years has carried on intensive excavation and repair of the principal structures, under the able direction of Mr. Stanley H. Boggs.

In southeast Guatemala a record was made of the small, hitherto unreported site of San Juan Las Minas, 1 km west of Asunción Mita. The extensive, well known ruins of Asunción Mita, south of the modern town, have been noted for their excellent state of preservation, the quality of the thin-slab masonry, and the cor-

belled, arch used by the builders to roof their structures. This is the most southern site on record, where the Maya-type vault was utilized. Despite the importance of these ancient buildings, they were being destroyed to obtain stone for road construction. Shook submitted a report to the Institute of Anthropology and History which curtailed the quarrying of the site except for the main structure, already beyond saving. Strömsvik later visited Asunción Mita and obtained as full a record as possible of what remained.

In 1945 the Guatemala Government began an agricultural colonization project in the southeastern corner of the Department of Petén. Poptún, a small village near the headwaters of the Río Machaquila, was selected for the permanent site of the colony and renamed Poptún. The operation entailed intensive land clearing for agricultural experimentation, surveys, building of the physical plant, and opening of a highway to Cardenas on the Río Sarstoon. The road, to be completed in 1949, is being constructed from Poptún south through San Luis and north from Cardenas. Since 1945, reports have been received repeatedly from individuals and through the local press of archaeological discoveries made in Poptún, Cardenas, and along the highway. This past year the governor of the colony, Col. Ernesto Alvarez, invited the Institute of Anthropology and History and Carnegie Institution to visit Poptún and report on the finds. Lic. Adolfo Molina, then Director of Institute, R. E. Smith, and E. M. Shook went to Poptún in November and spent four days recording the cultural material, and mapping and photographing archaeological sites.

Five ancient sites, Los Cimientos, Hortaliza, Sabana, Poptún, and Peténsuc, were studied briefly during the visit. They lie roughly in an east-west line, north of the modern settlement, between the drainage of the San Pedro and Machaquila Rivers. The remains of Poptún are the best preserved architecturally. They undoubtedly represent what was the region's civic and religious center. There are three known groups, South, Central, and North, connected by a broad artificial causeway with a low masonry parapet on each side.

The North Group consists of five rectangular platforms of fairly well cut stone masonry on top of a leveled and terraced, limestone hill. The southern base of the hill also was terraced, but no masonry stairway connected, the lower with the upper terraces. Apparently, a pathway zigzagged up the steep hillside to the structures on top. The causeway from the South and Central Groups joined the great basal terrace of the North Group. Here a single plain stela of limestone was erected.

No evidence was found in Poptún or in the small outlying sites that the Maya here used the typical vault or even masonry buildings. All the masonry noted in

the area was for substructures, terraces, and low walls bordering courts, terraces, and causeways. The substructures were low rectangular platforms to support houses and temples constructed of perishable materials.

Poctún evidently was never a major center. It may have served the civic and religious needs of a comparatively small population scattered widely throughout the area. Although there is evidence from the cultural material of occupation from Preclassic (Chicanel) to Late Postclassic time, the period of greatest activity was during the Late Classic (Tepeu).

Engineers of several American oil companies have for the past two years been making an intensive topographical survey of the Department of Petén. They have discovered many hitherto unreported archaeological sites and caves containing ancient cultural material, and deposited their data, maps, and specimens with the Division. Dr. Barnum Brown, of the Sohio Oil Company, made important discoveries along the Río de la Pasión from the junction of the Santa Amelia to the confluence of the Río Salinas or Chixoy. He recovered quantities of petrified bones of Upper Pleistocene fauna on bars and barrier reefs along the Pasión. They had been washed out from deposits somewhere on an eastern tributary of the stream, possibly the Río Santa Amelia. One bone fragment, as yet unidentified but thought to be that of a sloth, has three sharp V-shaped cuts on the unbroken external surface. These cuts, according to Dr. Brown were made in living tissue. If the cuts were made by man, as Dr. Brown thinks, this is the first evidence found in Guatemala of man associated with now extinct fauna.

Dr. Brown also discovered an artificially built island in the Río de la Pasión, above the ruins of Seibal, and a previously unreported sculptured stela at the latter site. He collected large samples of pottery from various points along the river, including Seibal and Altar de Sacrificios. The ceramic material shows a range of occupancy in southern Petén from the Chicanel phase of the Preclassic through the Early and Late Classic periods.

Two efforts were made during the spring of 1949 to locate the conquest town of Nito, an important commercial center of the Indians. The town was conquered by Gil González in 1524 and renamed San Gil de Buena Vista. Apparently the site proved unsuitable to the Spaniards and they soon abandoned it for a new location on the Río Dulce near the sea. The Spanish name, often reduced to San Gil, as well as the Indian name Nito, continued to be applied synonymously to the new town site where, in April or May 1525, Cortés arrived after his extraordinary march overland from Mexico to Honduras. Cortés found his countrymen starving at San Gil and shortly after his arrival he moved them to Honduras. Since the abandonment in

1525, both sites, San Gil near the sea and Nito the original Indian trading town, have been unoccupied and their exact locations lost. It is of historical significance to place these sites and especially to obtain from Nito data on cultural material anchored firmly in Christian chronology.

A launch and other facilities were generously provided by the United Fruit Company through the courtesy of Mr. William Taillon and Mr. Edward Farnsworth. The latter accompanied Shook on the second expedition. Two areas were intensively investigated. The first was the south side of the Golfete, the body of water connecting Lake Izabal with the Río Dulce, which existing information suggested as the most likely area in which to find Nito. Several days were spent along this shore, penetrating the dense tropical jungle wherever possible and pushing a dugout canoe up the tributary streams. Finally an elderly native of unusual intelligence was encountered. He knew the area well, including a navigable stream, an abandoned property, and a site with mounds, all still known as San Gil. He had discovered and removed a fragmentary bronze bell from the site about 18 years ago. The bell was later seen and recorded by Shook and efforts were made to have it sent to the Guatemala Museum.

We followed the Río San Gil upstream for approximately 3 km from the Golfete. Only the first kilometer was navigable in a dugout canoe, the next 2 km having been blocked by fallen trees and by sand bars, but the entire distance would be navigable by canoe if the stream channel were cleared. At the 3 km point two shallow, swift-running branches join to form the Río San Gil. Here the land is level, fertile, and at present heavily overgrown with dense tropical rain forest. This latter condition so obscured the area that, though we searched over a wide zone, we were unable to locate the mounds where the bell had been found. The general locality, Shook nevertheless believes, must have been the site of Nito. Strong evidence for it is the survival of the name San Gil for the place, the river, and a high mountain rising immediately behind, as well as availability of a fine water supply and access by canoe to the Golfete.

The second area investigated extends about 4 km along the south bank of the Río Dulce, from its mouth opposite Livingston to the foot of the mountain range paralleling the coast. Here undoubtedly was the later settlement of San Gil de Buena Vista, where Cortés found the Spaniards. Most of the 4 km may be eliminated as unfit for settlement because of swamps and lack of fresh water. Two places were found to offer adequate facilities to sustain a small colony. One, on elevated and well drained ground 2 km southwest and upstream from Livingston, still is known as Buena Vista. An excellent spring of fresh water issues from

the base of the hills only about 50 m back from the Río Dulce. No ruins were visible, but reports from the local people tell of ancient artifacts being found when the land is cleared for corn planting. The other possible location is on a high bluff at the outlet of the Río Dulce, known today as Herreria Point. A fresh water supply from two small streams is available and there is a certain amount of cultivable land. A small preconquest Indian site (Herreria) was found overlooking the Caribbean Sea 500 m south of the Río Dulce. Broken china, crockery, and glass bottles gave evidence of occupation during Spanish colonial and modern times, but nothing definitely assignable to the early colonial period was found.

While awaiting transportation in Puerto Barrios, Shook mapped and recorded previously unreported site called San Manuel. The ruins are situated on the south bank of Río Cacao and are cut by the auto road to Santo Tomas. The principal structures are so grouped around a plaza as to form an oval, in contrast with the normal rectangular arrangement. Some 40 or more mounds, the majority low house platforms, compose the site. All are substructures built of earth. The largest structure, about 5 m in height, has its surface partially faced with water-rounded boulders. No hall court, stone sculpture, or surface pottery was found to suggest the occupation period of the site.

23.7.

EDWIN M. SHOOK

Guatemala

YB 49:197–198, 1950

A major portion of the past year has been spent in preparing for publication reports on excavations done in Guatemala since the war. Some time, however, was spent on field work as the opportunity arose. Close attention was given to the accelerated destruction of Kaminaljuyú as the modern city of Guatemala encroaches more and more on the old site. The cutting away of Structure E-III-3, as reported in [Chapters 23.5 and 23.6], exposed many more architectural features. The information was salvaged whenever possible, including that dealing with a fine broad stairway belonging to one of the earlier structures in the great mound. Near by, several other mounds were removed completely by the Guatemala Government, the mate-

rial from them being utilized for the making of bricks. Before their complete destruction, a large sample of pottery and artifacts, as well as charcoal samples for dating purposes, was obtained. Two of the mounds, E-II-3 and E-III-1, proved to have been built during Providencia times, the oldest Miraflores subphase. Another huge structure, D-III-10, also dating from this early period, is being destroyed. Information was obtained on the adobe architecture, and from its fill came the only example of wood, that of a large main post, ever recovered from Kaminaljuyú.

Structure D-III-13, the cutting away of which has been going on for several years, proved to be of considerable interest. The brickyard workmen discovered a minor grave, near the mound's base on the west side, which Shook excavated. Several stuccoed and painted vessels, minor burial furniture, and a large sample of charcoal from fires burned contemporaneously with the interment were recovered. The pottery pertained to the Early Classic period, probably somewhat earlier than the known part of the Esperanza phase. The discovery of this grave, a plain stela erected above it, and a part of a red-painted adobe structure with its stairway beneath still another stairway of stone plastered with adobe resulted in our requesting Drs. Heinrich Berlin and Joel Canby, of the Institute of Anthropology and History of Guatemala, to undertake minor excavations. They began at the top of the mound, working out a number of summit platforms of successive architectural units much like those found by A. V. Kidder in Mounds A and B. Their excavations brought to light more caches of incensarios and many pottery vessels, amplifying knowledge of the early Esperanza phase in Kaminaljuyú and proving the existence of considerable architectural activity at the site between the Miraflores phase and the construction of Mounds A and B. Three large charcoal samples from different architectural stages in Structure D-III-13 will permit, it is hoped, the accurate dating of this important new material.

In the vicinity of Kaminaljuyú, Shook discovered and excavated two more pits containing Las Charcas material, representing the most ancient cultural horizon now known in highland Guatemala. Drs. Foshag and de Borhegyi located, and kindly informed Shook of, another series of ancient pits about 1 km south of the main site, many of them filled with Las Charcas phase rubbish. One pit excavated contained the richest lot of Las Charcas material, and the only burial, yet recovered. On the pit's floor lay extended, face up, the skeleton of a young adult without ornaments or formal grave furniture. Over the body had been dumped an incredibly rich midden. This consisted of dark brown soil; ashes; carbonized wood, corncobs, and fruit seeds; animal bones; disarticulated human bones; fragments of stone metates, manos, polishers, and

simple sculptures, bone tools, pottery vessels, figurines, whistles, incensarios, and a large hollow cylindrical seal. No pottery vessel was unbroken, and sherds of the same pot were scattered over the 3 m diameter of the pit from the floor to 1 m above. Many of the restorable vessels showed considerable wear, a further indication that new pots had not been broken ceremonially and thrown into the pit. The quality of pottery and artifacts and the decorative techniques employed show strikingly that even though this was a very ancient cultural horizon, it was in no sense primitive.

Further exploration along the Roosevelt highway west of Guatemala City in the Department of Sacatepéquez disclosed more sites and deposits of Sacatepéquez phase material, which we believe to be younger than the Las Charcas and older than the Miraflores phase. Several new sites were discovered in the Chimaltenango and Antigua valleys. Privately owned archaeological collections in Antigua were photographed and fully recorded. These collections often contain excellent complete specimens which could not be found by controlled excavation without considerable expenditure of time and funds.

The personnel of the United Fruit Company constantly informs the Division of discoveries made on the Pacific coastal plain at Tiquisate, Department of Escuintla. Kidder and Shook, in August 1949, spent four days in Tiquisate recording and making minor excavations at a large, hitherto unreported archaeological site named by them Sin Cabezas. Four beautifully sculptured human figures seated on pedestals were aligned in front of acropolis-like structure at the southern end of the main plaza. All the statues lacked heads, and, although the heads were diligently searched for in the immediate vicinity, none was recovered. It seemed evident that they had been broken off and removed from the site, possibly in ancient times by invaders. The ceramic material excavated indicated that the ruins had been occupied principally in the Late Classic period.

Shook attended the twenty-ninth International Congress of Americanists, held in New York in September 1949. Opportunity taken during this trip to study collections from Mesoamerica at Tulane University, the University of Pennsylvania, and the American Museum of Natural History. On his return trip to Guatemala a few days were devoted to studying the site of Tlatilco, on the outskirts of Mexico City, and the rich collection of material recovered from that site. An attempt to relate this highly developed culture to the sequence established in the southern highlands of Guatemala was not too successful. At the moment it appears to fit best in late Miraflores times, about the Arenal subphase. It should be pointed out, however, that Shook was unable to identify a single specimen in

the Tlatilco collection which may have been traded from Guatemala nor has he been able to find a Tlatilco trade piece in Guatemala.

Strömsvik and Shook went to Yucatán for 10 days in November to assist Mr. Morris Jones in establishing a camp in Telchaquillo and beginning a detailed survey map of the ruins of Mayapán.

23.8.

EDWIN M. SHOOK

Guatemala

YB 50:240–244, 1951

Knowledge of man's cultural development in Mesoamerica before the Classic period was augmented this year by a discovery made in Kaminaljuyú on the outskirts of Guatemala City, when a workman began removing sod from a grass-covered mound, C-III-6, located on privately owned property, Quinta Samayoa. This property, formerly known as Quinta Arevalo, lies entirely within the archaeological site of Kaminaljuyú, and the major concentration of ancient mounds is within its boundaries. The workman, while chopping out squares of sod from the top of Mound C-III-6, struck a stone with his hoe. Being familiar with the local terrain, where no natural rock exists, he was curious and began clearing the stone. It proved to be the plain shaft of a pedestal sculpture which had been set vertically into the top floor of the mound. The excavation of this stone brought to light another, some 50–60 cm below the surface, which proved to be an excellently preserved carved stela of columnar basalt. The property owner, Sr. Arturo Samayoa, had the stela removed to his house for safekeeping and notified the Institute of Anthropology and History of the discovery. Shook, on request of the Institute, investigated the report and recommended minor excavations where the monument had been found. The purpose was to observe, if possible, its association with pottery and other cultural remains.

Several weeks were spent excavating Mound C-III-6. The sculptured stela formed part of an incredibly rich cache placed in a large, roughly rectangular intrusive pit. The pit had been cut through the structure's top floor to a depth of 1.4 m and floored with an enormous stone slab. Around the slab had been placed three plain basalt columns, the stela, and two pedestal sculptures. The last extended above the mound's floor

level and had been broken off and removed, probably in ancient times leaving only their plain pedestals buried in the mound fill. Also found in the cache were over 70 pottery vessels, a bird (?) skull containing a necklace of 290 emerald-green jade beads and pendants, a jade pendant carved in what Shook believes to be the so-called Olmec or La Venta style, and 23 small jade beads and mosaic elements. Ceremonial fires had been burned around the base of the pit, leaving quantities of ash and of charcoal, a sample of which was obtained for carbon 14 analysis. Among the ashes were scattered fragments of the pottery vessels, which had been broken ceremonially. Subsequently the pit was filled and the area resurfaced with an adobe floor, and presumably the structure continued to serve its original purpose.

Excavations were made below the intrusive pit through undisturbed mound fill to a sterile level. A few potsherds were recovered, and all that could be identified belong to the Las Charcas phase, the most ancient known in the Guatemala highlands. The cache, however, being later than the construction of the mound, contained Early Sacatepéquez phase pottery believed to represent a transitional stage between Las Charcas and Sacatepéquez.

The excavations in Mound C-III-6 prove that architecture of a permanent nature, serving public and ceremonial functions, began in Kaminaljuyú at a much earlier date than was hitherto believed. Monumental stone sculpture, jade cutting, carving, and polishing show a well developed technology. The jade pendant carved in the form of a human figure was evidently an import. If the specimen is in fact a product of Olmec-La Venta art, it represents the earliest example yet found associated with archaeological material recovered under controlled excavation.

Two nearby mounds show a type of construction similar to that of C-III-6. A ceramic sample from the fill of one, C-III-10, consists mostly of Las Charcas wares with a few examples of Early Sacatepéquez type.

During the year, wood or charcoal samples were obtained for carbon 14 analysis from several locations at the ruins of Kaminaljuyú and Tikal in Guatemala, and at Tulum on the east coast of Quintana Roo, Mexico. A total of 30 specimens have been collected from archaeological sites throughout the Maya area, ranging in time from the oldest levels now recognized to within a century of the Spanish conquest. These samples are in the Department's office in Cambridge, Massachusetts, awaiting analysis.

24.0. SITES NEAR LAKE PETÉN (TAYASAL, POLOL, CHAKANTÚN, TOPOXTÉ)

At the time of the Spanish conquest Tayasal was the most prominent site in the Petén lowlands of northern Guatemala. Most scholars locate Tayasal on the shores of Late Petén Itzá, most likely obscured archaeologically by the modern capital of Flores. Historical evidence suggests that Tayasal was founded on the edge of Lake Petén Itzá by transplants from Chichén Itzá in northern Yucatán. These Itzá Maya, under the control of the Canek lineage, maintained a vestigial overland trade network through the central and southern lowlands. In 1524–25 an expedition to Honduras, led by Hernán Cortés, passed through the Maya lowlands and the settlement at Tayasal was discovered. In 1618 Fr. Fuensalida and Fr. Orbita visited the site, and in 1697, Tayasal, the last capital of the independent Maya was captured and destroyed by the forces of Martín de Ursua. The approach of a new katun cycle that augured momentous changes may have hastened the destruction of Tayasal.

24.1.

CARL E. GUTHE

Report on Tayasal

YB 20:364–368, 1921

Dr. Guthe sailed from New Orleans on February 11, 1921. During the latter part of the month a week was spent in excavating a small mound within the borders of British Honduras, at a clearing called New Boston, 4 miles [6.4 km] east of Baker, a village on the banks of the Belize River. After returning to Belize to meet Mr. Gates, Dr. Guthe left on March 7, met the rest of the expedition in El Cayo, British Honduras, and proceeded at once, with Mr. Ricketson, to Flores, Petén, arriving there on March 18. The first two weeks were spent in making a transit survey of the principal plazas of Tayasal. Actual excavation began April 5 and continued until May 21. Dr. Guthe left Flores on May 23, arriving in the United States on June 9.

The excavations at New Boston were made possible through the kind offices of Dr. T. Gann, of Belize, and the officials of the Belize Estate and Produce Company, to whom the land upon which the mounds are situated belongs. The purposes of this excavation were two-fold: to obtain some data upon the construction of

mounds in this area and to secure a collection almost entirely of potsherds from this district.

A mound which consisted almost entirely of large and small stones, with very little earth, was trenched from one side to the center. Two walls of dressed stone, one running at right angles to the other, were uncovered. Neither extended to the surface. The foundation course in both cases was composed of large flat stones which projected beyond the face of the wall proper. A small but representative collection of sherds was secured. The mound also yielded a few fragmentary human bones, a serpentine bead, and some partly finished flint objects. Since flint outcrops are numerous in this district, it is safe to assume that flint-working played an important part in the economic life of the builders of these mounds.

Upon reaching Flores, Dr. Guthe met with instant and hearty cooperation on the part of the government officials under Dr. José Prado Romaná, the governor of Petén, and of Dr. Robert Boburg, a resident Englishman. Unusual labor conditions and the strange class of work required caused some trouble at the beginning, which was, however, soon regulated.

The early Spanish writers state that the Itzá left their home, Chichén Itzá in northern Yucatán, about the year 1450 and went south, founding a city they called Tayasal, upon a large island in the lake of Petén Itzá. The purpose of the present expedition was to verify as far as possible the historical and geographical information contained in the early reports of this site (Means 1917), to secure an accurate idea of the plan and extent of the ruins, and to do what preliminary excavations seemed advisable.

Recent archaeological investigators in this country have ascertained that this city is now upon a large peninsula which juts into the lake from the east. The present capital of Petén, the little village of Flores, is situated upon a small island within a quarter of a mile [0.4 km] of the shores of this peninsula. Through conversations with inhabitants of Flores who knew the surrounding country, and by means of personal observations of the topography and present lake of Petén Itzá, it was possible to explain and clarify, in a most gratifying manner, many of the statements of the early Spanish writers which were obscure or seemed to be actually contradictory. Current place-names were secured for some of the spots mentioned in the early accounts, and the itineraries of the seventeenth century explorers were worked out with a fair degree of accuracy. Copies of three of the early maps of the district were interpreted satisfactorily by a study of the region at first hand.

During Dr. Morley's visit to Flores, careful measurements were made to determine the probable amount of subsidence in the water-level of the lake

since the end of the seventeenth century, which made of the then island a promontory. A rock outcrop near the plaza of Flores, with a design incised upon it, is 45 feet [13.7 m] above the present water-level. A very distinct line of demarcation on the peninsula itself, between the low jungle growth of the lake shore and the grasslands which cover the ruins proper, is approximately 40 feet [12.2 m] above the present water level. From this evidence and other corroborative data, it seems probable that 225 years ago the water level was between 40 to 45 feet [12.2–13.7 m] higher than at present. There is some contradictory evidence, such as finding potsherds below this former water level, but the general mass of evidence, including that in the early maps, is overwhelmingly in favor of the figures given.

The civic and religious center of Tayasal, as marked by the larger mounds, occupies the western and highest part of the former island, covering an area about 2 km long, by 0.8 km wide. The topography is fairly rugged with numerous outcrops of limestone, causing many and sudden irregularities in the surface. The mounds were placed with due regard to these irregularities, and in some case use was probably made of the natural knolls in their construction. The eastern part of this civic and religious center is lower than the western part, and covered with a dense growth of high underbrush. At the eastern end stands a huge pyramid which commands the entire surrounding country. Another large pyramid marks the western end, which practically coincides with the end of the peninsula itself. The western part is now covered with high grass, which permits the mounds to stand out clearly. In addition to the center of the city, there are, of course, the more outlying districts. Smaller mounds are said to occur as far as 10 km east of the western end of the peninsula.

The highest part of the peninsula, about 0.75 km east of the end of the promontory, is occupied by a well-defined group of mounds surrounding four principal and four subsidiary plazas. A careful transit survey of this group occupied the first two weeks of the work (Fig. 24.1.1). The four principal plazas are arranged in line from east to west, each being at a higher level than the one to the east of it (cross-section at top of Fig. 24.1.1). The western and highest plaza is the summit of a large pyramid, like an acropolis, which is probably partly natural and partly artificial. The four secondary plazas are arranged around the larger ones in a manner implying consideration of the topography. This group probably marks the very center of the former city's activities. It occupies the very highest part of the peninsula; it is the most closely coordinated group of the city; and within it were found the two hieroglyphic monuments. At the very beginning of the survey, the stub of a stela with traces of hieroglyphs upon it was found approximately in the center of the

second highest of the four larger plazas.

Excavations were begun in the plaza in which this stela was found, by uncovering a small, low mound in the plaza itself, just south of the monument and apparently associated with it. When uncovered it proved to be a small square building upon a low platform, with only the foundations of the walls remaining. A space resembling a doorway was left in the middle of each side of these foundations. The masonry was partly of dressed and partly of rough stone. The walls themselves were probably similar to those made in the country today, of vertical saplings lashed to horizontal ones and then completely covered with mud or mortar. Two fragments of a lintel were found, one on the mound itself, the other about halfway between the mound and the stela, which Dr. Morley assembled and deciphered as 12.5.9.0.0, 11 Ahau 18 Mac (1467 A.D.). During the excavations here six burials, all fully flexed and entirely without furniture, were exposed.

The eastern end of the long mound on the southern side of this same plaza was also cleared; this mound proved to be a terraced substructure, the terraces varied in width, with the walls between differing in heights to an even greater extent. The masonry was not the fine stonework of northern Yucatán, but simply irregular stones, laid in very uneven courses and smoothed over with liberal applications of mortar and mud. Only the lowest wall was composed of dressed stone. These floors, on the other hand, were very fine indeed, presenting a surface nearly as smooth as a cement floor, with a foundation of broken stone several inches thick. On one terrace, at the outer edge, the floor had been raised about 2 cm, just enough to prevent the water from a torrential rain running over the side of the terrace and to guide it to a probable outlet. The floors ran underneath the walls, showing clearly that the walls were built after the floors were laid. No trace of a building could be found on the top, unless a few scattered flat stones were the remains of a foundation for a house of wattle and daub. In one section of this uppermost floor there was a distinct depression, where the floor appeared to have sagged because of some heavy weight, such as a wall, resting upon it.

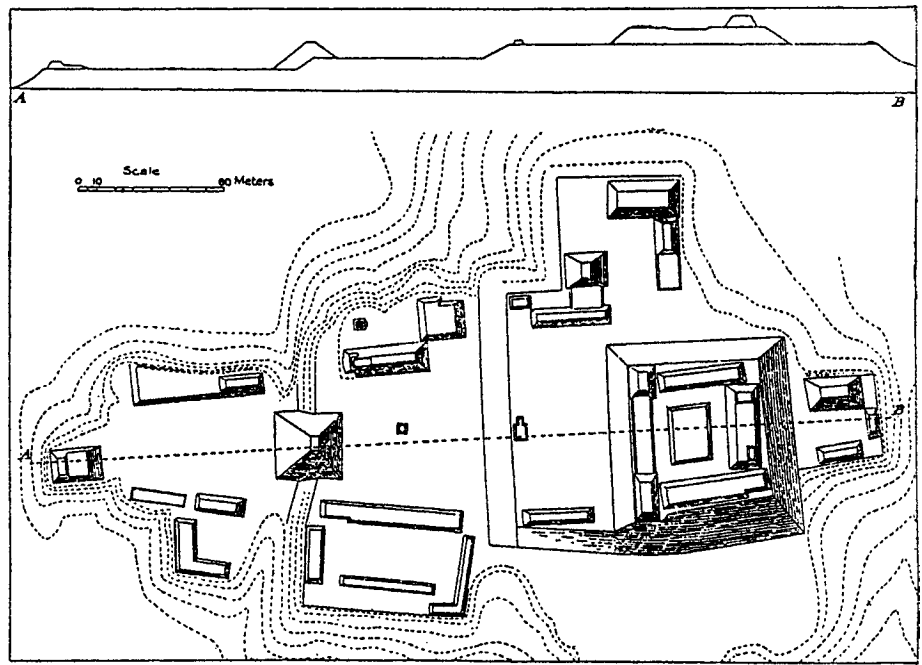


Figure 24.1.1. Tayasal, map and cross-section of principal group of mounds and plazas at ancient Itzá capital. The section shown was probably the civic and religious center of the city.

A trench was run into the pyramid on the eastern side of the same plaza. The floor of the plaza itself, finished like the other floors, was uncovered, and also the very much ruined face of the pyramid. In this trench, as well as in all others, the stratification was studied carefully in order to ascertain the manner of disintegration of the mounds.

The fourth and last mound on which excavations were undertaken was the small one just south of the main group around this second highest plaza. This mound proved to be a small square building, 3.8 m on a side, set upon a low platform, 30 cm in height, which made a terrace a meter wide on all four sides of the building. On the western side of the building a steep stairway of eight steps led to the top, which was about 2 m above the platform. The walls of the building were of unfinished stones, but those of the platform consisted of well-dressed limestone. The interior of the building had been completely filled. Excavations in the center of the mound disclosed, at a depth of 3.5 m below the top of the building, a tomb of large, rough, flat limestone slabs leaning against one another to form a rude vault. In this tomb was the skeleton of some important personage, laid on its back at full length, with the head towards the north. With the burial were found five unbroken pottery vessels, an obsidian knife, and a necklace composed of 18 spherical beads of serpentine and jade, and five beads of clay and bone. Although the vessels were somewhat encrusted with lime, it was possible to obtain the designs, in

colors, of four of the 5. One, cylindrical in shape, was fluted.

The dearth of smaller objects was very noticeable. In the course of the entire excavations, not a single bone implement was found and less than a dozen stone tools appeared, but potsherds were very common indeed. A large collection was made, showing examples of all of the many variations in shapes and wares. In accordance with the permit granted by the government of Guatemala, the objects found in the tomb were deposited with the local authorities at Flores.

While excavating for a large cistern near the plaza of Flores, the government exposed several floors, many potsherds, and at least one grave. From this work two complete vessels were saved.

The interest shown by the inhabitants of Flores towards the end of the work was extremely gratifying, in view of the fact that at the beginning there was an atmosphere of tacit disapproval. On Sundays especially, a great many groups climbed the steep path from the lakeshore to inspect the work. The governor and his staff, all of whom had evinced a keen interest from the very beginning of the work, visited the excavations many times. On the eve of departure, Dr. Guthe was informed that the government would install a glass case in the public library in order to exhibit the collection, would place a guard at the excavations to protect the walls and mounds from vandalism, and also place a roof over the tomb to protect it from the weather.

24.2.

CARL E. GUTHE

Report [on Tayasal]

YB 21:318–319, 1922

Through the cordial support of General Isidro Valdez, who was governor of the Department of Petén when Dr. Guthe arrived, it was possible to begin work at Tayasal with 12 laborers on February 20. Don Bernard Burmester, the government interventor, by his interest and cooperation, also did much to facilitate the progress of the excavations. The entire season was devoted to a study of the construction of the long mound, the eastern end of which had been cleared during the previous season [Chapter 24.1]. During the course of the work six trenches were run, four on the northern or plaza side of the mound, and two on the southern side. The eastern and western ends of the

structure were definitely located. Toward the eastern end a trench was dug entirely through the mound, exposing a complete cross-section and disclosing, under the late construction, the remains of an earlier, building of the Old Empire. This earlier building was placed directly upon the rock of the peninsula, which at this point slopes rather abruptly from south to north.

The excavations this season disclosed that this structure consisted of a platform raised about 1.5 m above the plaza level, with two stairways built into the wall. Upon this platform there probably was an early building which was later razed to within one course of the platform, over which was placed a second platform, with a bench at the southern side.

The city of which this early structure formed a part was probably abandoned early in the seventh century A.D., that is, the period of abandonment of the Old Empire Petén sites. For at least seven and possibly eight centuries this city was uninhabited. During this time a thick deposit of earth, and stone accumulated south of the bench. Why no traces of a similar deposit north of the bench are found in this part of the mound is a mystery.

The settlers of the New Empire raised a high terraced substructure on this site, the retaining walls of which were built upon the ruins of the old building.

The unusually thin layer of debris upon the upper floor of this mound and the almost, total absence of large stones lead to the conclusion that the building itself was of wood and, palm-leaf thatch. At the western end, however, a fragment of a dressed stone wall was found at the northern edge of this upper floor.

Just to the south of the mound a skeleton was found. The individual had been buried in a flexed posture, on his back, with the shoulder-girdle considerably above the pelvis. This burial should be associated with the later period, for it rested upon the early floor, less than a meter below the upper or late floor. No furniture was found with it. No trace of a skull, teeth, or of the atlas and axis could be found. It is assumed that the individual was decapitated before burial, a procedure which Villagutierre states existed at Tayasal.

24.3.

J. O. KILMARTIN

Report on the Topographic Survey of Lake Petén

YB 22:272–273, 1923

The object of the topographic survey of the Lake Petén region was to ascertain whether or not the peninsulas of San Benito, Candalaria, and Tayasal were islands, as described by the different Spanish conquerors and padres at the time of their *entradas*, between 1525–1697, and which was the Petén Grande, or Island Capital of the Petén Itz'ás, and what rise of water would be necessary to convert these present peninsulas into islands.

On the peninsula of San Benito a trail leads from the village of San Benito at the point, across the mountains to San Juan de Dios, La Libertad, and other villages. Only one place was found along it (at the trail-forks and enclosed by the 490 foot [149.4 m] contour that might have been an island, and this certainly was not so at the time of Father Avendaño's visit to Tayasal in 1697. For about a mile [1.6 km] back from the lake shore the topography is fairly regular, that is, it is not broken up by small drains. This section was an old lake bed at one time. In front of the cemetery in San Benito is a small saddle, elevation 425 [129.5 m], and just to the north, extending along the peninsula, is a small knoll enclosed by the 430 foot [131.1 m] contour, but this is not to be considered.

While traversing the trail to Picú west of San Benito, a good view could be obtained of Candalaria peninsula, and what might be the lowest place appeared to be about a mile [1.6 km] back from the extreme end of the peninsula. A trail was cut into it and elevation established. Ruins were found scattered throughout this area; practically all just above the 460 foot [140.2 m] contour. The trail from San Geronimo Bay to Picú was next traversed and nothing was found tending to prove that Candalaria peninsula was ever an island.

The third, and most important peninsula under consideration is that of Tayasal, which many have thought to be the island capital of the Petén Itz'ás. After traversing the trail to Pitchallin, a line of levels was carried south to Naranjal, along an old trail which passes through a low gap on the 560 foot [170.7 m] contour, then dropping into a *bajo* (low ground), elevation 520 [158.5 m], and then into the drainage of Lake Eckixil, which is west. At Naranjal the line continued in a southwesterly direction across the foothills and on to El Yex. From El Yex the line continues to San Benito, thus completing a circuit around the entire area

involved. From Playa Trapiche a trail follows east along the peninsula of Tayasal. At the road-forks, elevation 620 [189 m], one trail continues to Sonoti and thence to Playa Puxtial, while the other continues south and east across the divide between Lake Petén and Lake Peténxel to the intersection of the trail from El Yex to San Benito.

From a point along the trail from Sonoti to Playa Puxtial a trail was cut east to the saddle on the Pitchallin-Naranjal line. No lower place than that, previously discovered, that is, 565 [172.2 m], was found, and the elevation checked favorably with the one before, which is one of the proofs that Tayasal was not an island. In the village of Flores and just below the plaza on its north side, certain glyphs are inscribed on a rock ledge, exactly 50 feet [15.2 m] above the lake-level and it is likely that these were somewhere close to water-level a few hundred years ago.

Lake Petén contains 10 islands, of which only two, Flores and Lepet, are inhabited; the remainder are of no great importance, as they show no evidences of ruins or of having been inhabited at any time. Indeed, all except Santa Barbara, Flores, Hospital Island, and the last island to the east of Flores are of recent origin, and even Lepet may also be included in this list.

To the east of Flores and Lake Petén are two large and two small lakes, the small lakes being at no time connected with the larger ones. Lake Peténxel is 13 feet [4 m] above Lake Petén, Lake Eckixil is 18 feet [5.5 m] above Lake Peténxel and 31 feet [9.5 m] above Lake Petén, and a 20 foot [6.1 m] rise of water in Lake Eckixil would connect all of these lakes.

In Lake Eckixil are two small islands; on the island to the west are ruins of perhaps one house, just above the 460 foot [140.2 m] contour. These ruins are of the same type found elsewhere throughout this region. Residents report that the water rises but little during the rainy season.

The Savana de Sonoti has many ruins similar to those on the western end of Tayasal, and two tombs found there appear to be of the same type as the one excavated by Dr. Guthe at Tayasal in 1922. Just west of the intersection of the trail to Sonoti and San Benito is a saddle 15 feet [4.6 m] lower than the one between Pitchallin and Naranjal; this also would tend to prove that Tayasal was never an island.

In drawing conclusions, we must, first of all, consider the hieroglyphs in Flores, elevation 50 feet [15.2 m] above lake-level. It is certain that these were not inscribed under water, and therefore in order to convert Tayasal into an island we must look for a saddle with an elevation that compares with this.

On Candalaria peninsula 65 feet [19.8 m] of water would be necessary to convert small knolls shown into islands, but this would obliterate the ruins. From this

we can readily see what effect 150 and 165 feet [45.7–50.3 m] of water, would have on these places.

It is hoped that the foregoing, facts, with the aid of the topographic map obtained, clearly prove that the present peninsulas of San Benito, Candalaria, and Tayasal were not islands as described by Father Aven-
daño in his sketch of Lake Petén in 1697. It is most likely that the present Tayasal was the capital city of the Itzás, but certainly it was not an island, and the padres were either wrong in their descriptions of it, or in their interpretation the Maya language.

24.4.

CYRUS L. LUNDELL

Sites near Lake Petén

YB 32:96–97, 1933

While engaged in botanical studies in the savanna region near Lake Petén, Mr. Lundell, who in 1931 discovered the city of Calakmul, found several new archaeological sites, the largest of which lies in heavy forest on the border of the savanna 5 miles [8.1 km] west of La Libertad, near the small settlement of Polol.

The Polol ruins consist of a central group of mounds covering approximately half a mile square [1.3 sq km]. This area was thoroughly explored and mapped. There are no standing buildings. The main plaza is bounded on the south by a great terraced pyramid bearing fallen temple structures. Its dimensions are: base, 318 by 390 feet [96.9 m by 118.9 m]; summit platform, 100 by 105 feet [30.5 by 32 m]; height (mea-

sured up the very steep slope), 170 feet [51.8 m]. In the plaza are 15 stelae, of which at least six are sculptured. All save one have fallen and broken. The largest (no. 10) is 7 feet 5 inches [2.3 m] wide, 2 feet 9 inches [0.8 m] thick, and almost 12 feet [3.7 m] long. It bears glyphs on the two sides, a large human figure on the face. Another (no. 3) has glyphs on sides and back, a figure on the face. From Mr. Lundell's photographs and drawings, Dr. Morley has deciphered Initial Series dates which indicate that Polol was occupied during the Great Period of the Old Empire, at least from 9.15.0.0.0 (Stela 0) to 9.18.0.0.90 (Stela 1).

The second site was found in open country 5 miles [8.1 km] south of La Libertad, south and east of the aviation field in the San Francisco, Santa Teresa, and Chica savannas. Exploration revealed numerous low mounds, terraces, stone paved courts, stone foundations and floors of round and rectangular structures extending over an area about 2 miles [3.2 km] long by a mile [1.6 km] wide. There are apparently no stelae. Mr. Lundell named the ruins Chakantún (*chakan*, savanna; *tun*, stone).

At the ruins of Tayasal on the shores of Lake Petén (YB 20 and 21) there was discovered, on the plastered surface of a terrace partially cleared by native lime-burners, a very interesting series of non-realistic pictographs: whorls, crosses, and meandering lines.

During a delay on the outward trip, explorations were made among the ruins on the islands at the west end of Lake Yaxhá. On the island of Topoxté, previously investigated by Maler, eight stelae and three altars were encountered. Of these, Stela 1 and 2 are sculptured. The most interesting structure on the island is a well-preserved terraced pyramid on the summit of which there stands a columned temple. Two adjacent islands were visited and, on a third, two additional sculptured and inscribed stelae were found. These, designated Stela 9 and 10, have not hitherto been reported. The ruins of Topoxté were mapped and the stelae on both islands were photographed.

25.0. LA MURALLA

La Muralla is one of several major sites in the Mirador basin in the northeastern Petén region of northern Guatemala seemingly abandoned by the beginning of the Early Classic period (250–550 AD). Although building construction ceased and goods were no longer being imported, Late Classic period codex-style pottery was still being manufactured here and at other sites in the region.

25.1.

MONROE AMSDEN

Report on the Muralla Expedition

YB 26:266–289, 1927

The ruins of La Muralla lie about 50 miles [80.5 km] northwest of Uaxactún and 10 or 15 miles [16–24 km]

south of the Campeche border, in a section of the Petén forest that is almost completely unexplored. They were discovered by a Negro chiclero during the rainy season of 1925, and were reported by him to Captain Vans Agnew of the P. W. Shufeldt Company, who, accompanied by Enrique Shufeldt, visited the ruin in the autumn of the following year. They remained only long enough to fell a section of the bush on the north side of the decorated wall, from which the site takes its name, and to make various sketches. With the exception of a few chicleiros from a nearby camp, these were the only persons, so far as is known, who had seen the place previously or had even known of its existence.

Water in this region is quite scarce, and the presence of numerous bajos makes exploration an arduous task, even under the most favorable circumstances. The fact that during the three and a half days' trip from Uaxactún to La Muralla, the Institution's Expedition met not a single person on the road, nor passed a single inhabited place, is significant of the uninhabited condition of this part of the Petén region. Indeed

there are no permanent settlements, the temporary camps of the *chicleros* being the only communities of any kind, and during part of the year even these are abandoned. In view of such conditions, unless systematic exploration is undertaken, discovery of other ruins may be delayed for years.

This group of ruins, of which the wall is the only feature of extraordinary interest, covers an area of perhaps half a square mile [1.3 sq km]. On the south they extend to the edge of a natural terrace beyond which stretches an extensive *bajo*. This seems to run west for several miles, while east of the city it turns within a short distance and continues north. The sloping ground forms a large, rather low promontory, the city standing upon its highest point.

Mr. Amsden, accompanied by Captain Vans Agnew, reached La Muralla on February 28, and the first work, after establishing camp on a terrace near the southern base of the wall, below which there is a very good aguada, was to fell part of the bush in the plaza, upon one side of which the wall stands, and to build a scaffold of poles from which to take photographs.

The site consists of a series of long, low mounds, enclosing small plazas with here and there a solitary pyramid, of which the highest rises more than 20 feet above the ground level. All architectural details excepting the wall have disappeared. No stelae or carved stones were found. Like all untouched Old Empire cities, La Muralla lies buried in dense bush which has rendered it utterly devoid of any distinguishing features, except in contour.

Whether the wall served originally as a roof-comb or was built for some other purpose can not be determined without excavation. Its size (58 feet [17.7 m] long, 6 feet [1.8 m] high, and 5.5 feet [1.7 m] thick at the base) would apparently indicate that it was a roof-comb, were it not for the fact that the mound upon which it stands is no higher than the wall itself, which would make the floors of the rooms, if it were a roof-comb, at or near the level of the floor of the plaza. Since the mounds below the wall is very little wider than the thickness of the wall and of even width throughout its length, it is difficult to see how it can contain rooms. However, the superficial evidence is inconclusive either way.

In construction, the wall is apparently of compact rubble, faced with masonry and plastered with a coating of stucco. It is pierced vertically by openings 5 or 6 inches [12.7–15.2 cm] in width, which divide it into nine independent blocks of equal size. These are bound

together by three horizontal layers of stone about 6 inches [15.2 cm] in thickness, cornices, which project slightly from the face of the wall, dividing each face into 27 separate panels and the ends into three panels, each course or horizontal series of panels being narrower than the one below it. Vestiges of a fourth course can be seen at the top, but it has been badly wrecked by the growth of vegetation.

Of these four horizontal zones of decoration, the next to bottom probably bore figures in low relief on alternate panels, the intermediate one having instead single figures in full relief, larger than life size, seated cross-legged upon the projecting cornice and tenoned to the wall for support. The two figures on opposite sides of the second block from the east have more elaborate headdresses of feathers which fall over the shoulders and seemingly terminate in conventionalized serpents, or similar figures, in the panels below them. Against the fourth panel from the left on the north side, in the next to bottom row, sits a more modestly garbed figure in a lifelike attitude. In the third is a group in low relief composed of a man, arms bound with a rope, kneeling in a posture of servility while a second figure holding the rope is kicking him.

Another scene of violence is depicted in the third panel from the bottom in the first block. Here, a human figure lies stretched on his back with his legs dangling over the edge of a low bench. Seated at his head, a second human figure appears ready to slit his throat or tear open his breast in sacrifice. The scene in the panel directly below is more felicitous. Here a gaunt simian figure advances on tiptoe with his long arms outstretched toward another, facing it. The second figure has an abnormally distended abdomen, and possibly represents a pregnant female. Parts of other figures adhere precariously to the surface of the wall; but, excepting a highly conventionalized serpent at the northeast corner, they are mostly fragmentary and lack the interest of those described.

Mutilated as they are (the face of every human figure is gone), and even though covered with a dark lichenous coat, a graceful precision of execution is plainly seen in all, giving an appearance of beauty and of unusual artistic merit. Before decay and the forces of nature began their work of destruction, and painted as it must have been in brilliant colors, this wall must have presented a scene of barbaric splendor, of which any city, Maya or modern, might well have been proud.

26.0. PIEDRAS NEGRAS

Piedras Negras seems to have been an independent city-state for most of the Classic Period, although sometimes in alliance with other states of the region and perhaps paying tribute to others at times. It had an alliance with Yaxchilán, located some 40 km up river. Ceramics show the site was occupied from the mid-seventh century BC to 850 A.D. Its most impressive period of sculpture and architecture dated from about 608–810 AD, although there is some evidence that Piedras Negras was already a city of some importance earlier. The artistry of the sculpture of the Late Classic period at Piedras Negras is considered particularly fine. Before the site was abandoned, some monuments were deliberately damaged, including images and glyphs of rulers defaced, but images and glyphs of deities left intact, suggesting a revolt or conquest by people literate in Maya writing. The site was first explored, mapped, and its monuments photographed by Teobert Maler at the end of the nineteenth century. An archeological project at Piedras Negras was conducted by the University of Pennsylvania from 1931 to 1939. Further archeological work here was conducted from 1997 to 1999 by the Instituto de Antropología e Historia de

Guatemala (IDAEH) and Brigham Young University. Tatiana Proskouriakoff was the first to decipher the names and dates of a Maya dynasty from her work with the monuments at this site. By her request, Proskouriakoff was buried here after her death. In 2002 the World Monuments Fund financed the conservation of Piedras Negras. It is today within Guatemala's Selva Lacandona National Park.

26.1.

SYLVANUS G. MORLEY

*Report on the Piedras Negras Expedition*YB 28:327–328, 1929

On May 5, Dr. Morley left Chichén Itzá for the Old Empire center of Piedras Negras in the extreme north-

western corner of the Department of Petén, Guatemala. The journey was made by sailboat with auxiliary motor from Campeche to Ciudad del Carmen, thence up the Usumacinta River to Tenosique, at the head of navigation, and thence by mule train, 40 miles [64.4 km] south to the ruins, which are located on the east bank of the river in Guatemala.

Before publishing on the inscriptions at this site, it appeared advisable to subject them to further examination to clarify moot points, as well as to search for additional monuments, which might perhaps fill some of the few, remaining lacunae in the chronologic sequence of the monuments there.

Dr. Morley was at Piedras Negras from May 5 to May 12 and found four new Initial Series and one New Period Ending. Through the application of the Teeple formula for Glyphs C and D, of the Supplementary Series, it was, possible to correct an earlier reading of the Initial Series on Stela 23. The contemporaneous date of Altar 1 was also probably determined. The new decipherments are given below:

Table 26.1.1. Calendrical Decipherments, Piedras Negras.

<i>Monument</i>	<i>Maya Date</i>	<i>Christian Era</i>	<i>Kind of Date</i>
Stela 15	9.17.15.0.0	527 AD	Initial Series
Stela 33	9.10.10.0.0	383 AD	Initial Series
Altar 3	9.19.0.0.0	551 AD	Initial Series
Altar 4	9.18.0.0.0	531 AD	Initial Series
Stela 18	9.17.5.0.0	517 AD	Period Ending
Stela 23	9.14.15.0.0	467 AD	Initial Series
Altar 1	10.0.0.0.0	571 AD	Period Ending

Although no new monuments were discovered, the missing middle and bottom fragments of Stela 15 were located. Maler had found the top of this monument on his fourth visit to Piedras Negras in 1899, but

was unable to locate the remaining pieces. Dr. Morley on his two previous visits to the site, in 1914 and 1921, had even failed to find Maler’s top, but this year not only the top was refound, but the middle and bottom pieces as well were located for the first time.

Stela 15 dates from the Great Period of the Old Empire, and is a magnificent example of ancient Maya sculpture, executed at the very moment of esthetic apogee. The relief is so high, 8 to 9 inches [20.3–22.9 cm], that the human figure carved on the front stands almost free of the background, the sections under the armpits being completely cut through and the upper arms appearing in the full round. The head is surmounted by a gorgeous panache of falling plumes; the hands are clasped in front of the figure, holding a bag or pouch upon which is beautifully carved the day 5 Ahau, the day of the Initial Series on the left side, viz, 9.17.15.0.0, 5 Ahau 3 Muan; the feet stand at an angle of about 90 degrees. The other costume accessories, collar, pendants, wristlets, anklets and sandals, are executed with great feeling and delicacy, and it may be fairly claimed that this monument is one of the finest examples of Maya plastic art, which has survived the vicissitudes of time.

The sequence of the hotun markers at Piedras Negras, the monuments erected at the ends of successive 1800-day periods, is the most complete in the Maya area. At no other city was the custom of celebrating the ends of the successive hotuns by the erection of sculptured monuments so rigidly followed; at no other city is the monumental series so regular and uninterrupted over such a long period of time. Indeed, the results of Dr. Morley’s investigations indicate that for a period of more than two centuries, that is, from 9.8.15.0.0 to 9.19.0.0.0 (349 to 531 AD) no single hotun-ending was permitted to pass without the erection of a corresponding sculptured monument.

27.0. QUIRIGUÁ

Frederick Catherwood visited the ruins at Quiriguá in 1840 and spent one day at the site sketching two of the stelae. John Lloyd Stephens reported Catherwood's trip to Quiriguá in his famous 1841 book. Alfred P. Maudslay visited Central America for the first time in 1881 and Quiriguá was the first ruin he visited. He stayed at the site for three days on his first visit, but he returned on three other occasions through 1894, when his wife accompanied him. During these trips he felled the large trees, cleared the bush, photographed the monuments, and made molds of the sculpture. He also made drawings of the figures and glyphs and on later trips compared them with the originals. In addition, he surveyed and partially excavated the site core. Further work was done at the site from 1910 through 1914 under the direction of Edgar Lee Hewitt for the School of American Archaeology of the Archaeological Institute of America. Shortly thereafter, the Carnegie Institution of Washington supported work off and on from 1915 through 1934. Sylvanus G. Morley, Oliver G. Ricketson, Earl H. Morris, and Gustav Strömsvik were important contributors during that time. The United Fruit Company, which by then owned

the land on which Quiriguá was located, in 1910 set aside 75 acres [0.3 sq km] surrounding the site core to be maintained as an archaeological park, leaving the jungle untouched in the middle of the banana plantation.

Quiriguá was one of the first Maya sites to be so thoroughly studied, though little of the architecture was restored. The structures that Morley had cleared and excavated once again became overgrown with jungle vegetation. In 1975 an intensive excavation and restoration program was begun under the direction of William R. Coe and Robert J. Sharer, jointly sponsored by the University Museum of the University of Pennsylvania, the National Geographic Society, and the Guatemalan government. It continued through 1979. During this work the acropolis was excavated, the monuments were cleaned and preserved, the outlying groups were studied, and Monument 26 was discovered.

27.1.

SYLVANUS G. MORLEY

Archaeology

YB 18:317–321, 1919

The principal work of the 1919 field season was the excavation in May of Temples 3 and of the Temple Plaza at Quiriguá, Guatemala. The excavation of this important group of buildings, no less than the civic and religious center of the site, as commenced 30 years ago by Mr. A. P. Maudslay, at which time Temple 6, on the north side of the plaza, was partially cleared.

Through an arrangement with Dr. E. L. Hewitt, Director of the School of American Research, Mr. Morley completed the excavation of this group during the present season. A plan of the temple plaza, which is 160 feet [48.8 m] long by 142 feet [43.3 m] wide, and the associated structures is shown in Figure 27.1.1, and a perspective drawing of Temples 1, 2, 3, and 4 (restored), looking southward, is given in Figure 27.1.2.

The excavation of Temples 3 and 4 brought to light no new hieroglyphic texts like those in the doorways

and on the cornice of Temple 1, but certain interesting architectural features were uncovered, perhaps not the least of which was the discovery that the old builders had begun to distrust their own handiwork, even in ancient times. Both temples, it was clear from the excavations, had begun to fail structurally before the city was abandoned, particularly at the corners, which had been prevented from sagging only by the erection of heavy buttresses built against the outer walls.

Temple 3 is the better preserved, due to the fact that the level of the terrace upon which it was originally built was subsequently raised at the back and sides to the level of the medial cornice, thus half burying the temple, all save the front, in a solid mass of stone and red clay, the only bonding material used in the Quiriguá masonry (Fig. 27.1.2). This resulted in its being better preserved than Temple 4, as already noted, and permits the establishment of one important architectural fact, namely, that the upper zone above the medial cornice, in this building at least, was vertical and not sloping as in the Palenque temples and the second story of the Monjas at Chichén Itzá. Temple 2 nearby has the same feature, and in the restoration in Figure 27.1.2 all the temples except no. 1 are shown with a vertical wall above the medial cornice.

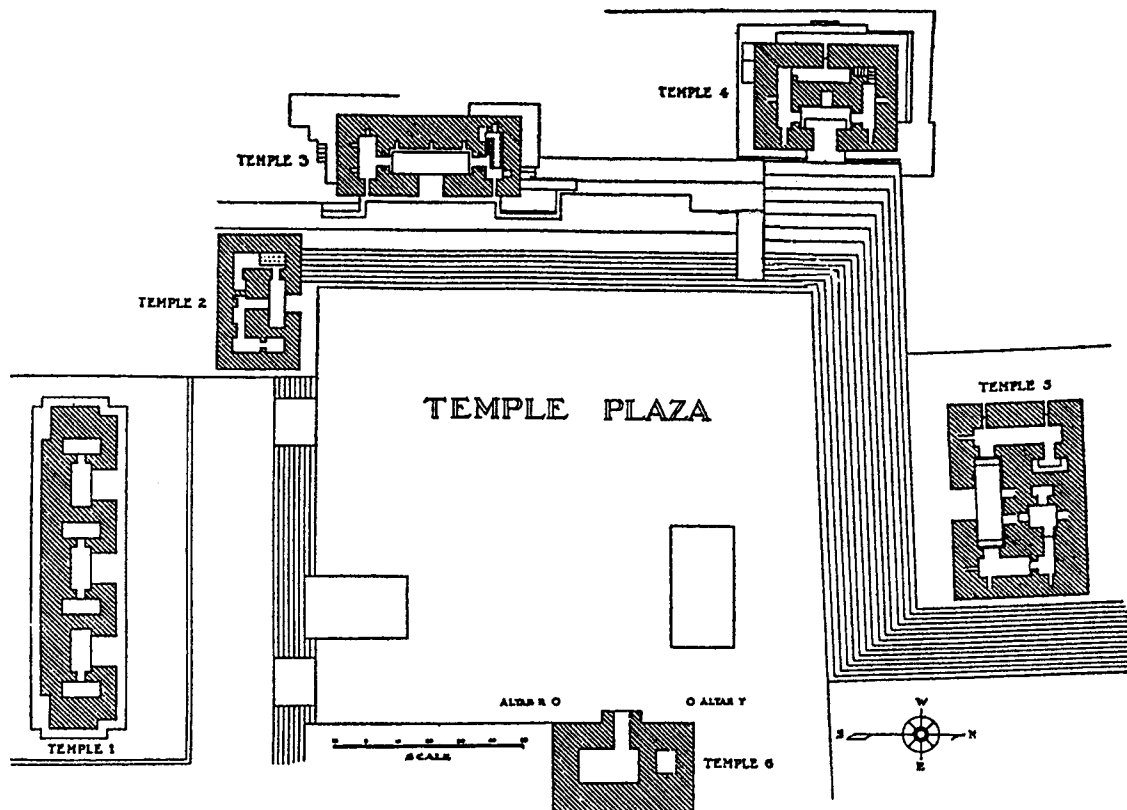


Figure 27.1.1. Quiriguá, plan of the Temple Plaza and associated structures.

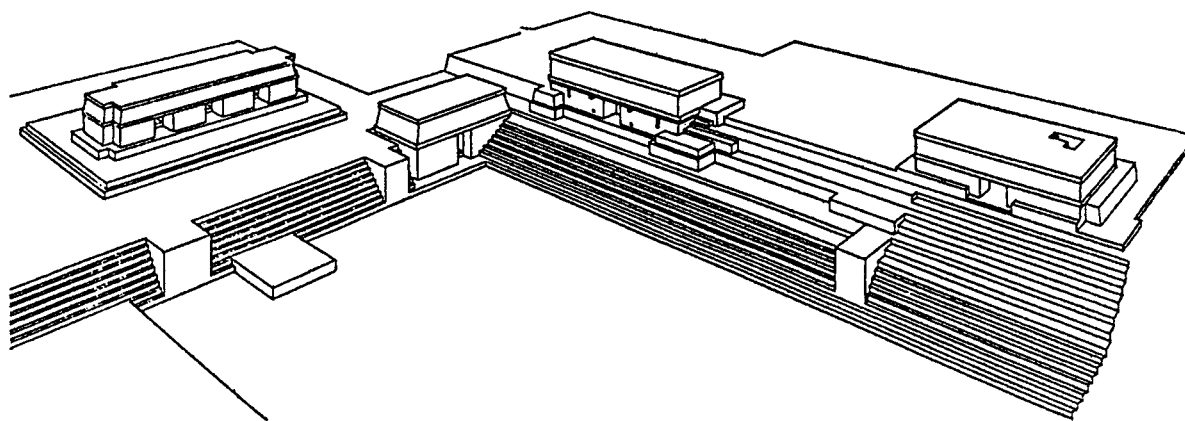


Figure 27.1.2. Quiriguá, Temples 1, 2, 3, and 4, looking southward (restored).

The façade had been ornamented with an elaborate decoration in stucco which was entirely destroyed when the roof collapsed, many small fragments of which were recovered during the excavation of the terrace in front of the temple.

The plaster on the floors and interior walls was of lime, fairly hard, and had been painted a dark wine-red. Some traces of green were also found in the doorway.

The most interesting feature of Temple 3 was the small dark interior chamber which was entered by a low passage 3 feet 6 inches [1.1 m] high, from the north chamber. It is only 3 feet 10 inches [1.2 m] high, 2 feet 8 inches [81 cm] wide, and 4 feet 9 inches [1.5 m] long. Strange to say, it was intact when found, every roof stone being in place, and it was half full of red earth lightly packed, as was also the passageway giving access to it. This was due to the leaking through of water from above, carrying with it particles of the red-clay bonding material, which gradually filled the chamber. Not a single specimen was recovered from this chamber, the use of which remains problematical.

A similar chamber was found in the excavation of Temple 2 in 1912, and at its farther end were 12 or 14 rounded river pebbles weighing a pound or more each and showing signs of having been smoked by fire. It has been suggested that these may have been heated and dropped into bowls containing water, thus making vapor, and that the chamber itself was used in connection with some sweating ceremony.

The most important architectural feature of Temple 4 was the interior stairway leading from the northern chamber to the roof. This was composed of two flights of steps and a landing. The first flight is 2 feet 2 inches [66 cm] wide, and has four steps averaging 9 inches [22.9 cm] in height. Beyond the landing the stairway make a 90 degree turn to the left, and then continues 2 feet 8 inches [81.3 cm] wide for five steps more to the top, the steps averaging one foot [31 cm] in height. The

roof was gone, but it probably had been like that over the interior stairway of Temple 20 at Copán, that is, composed of successively higher sections of the typical corbelled arch roof. The original height of Temple 4 is preserved to within 6 inches [15.2 cm] at the top of this stairway, from which it may be estimated to have been about 12 feet [3.7 m] high.

The specimens found, as is usually the case in temple excavations in the Maya field, were rather meager: a clay-pipe, two shell rings, two jade beads, parts of a very fine alabaster bowl covered with a brilliant red paint almost like an enamel, parts of a human skull found in the doorway of Temple 3, animal and bird bones, many obsidian flakes, a number of broken pottery vessels, and two fragments of a vase showing a band of hieroglyphs carved around the neck just below the rim.

The ground-plans of the several temples in Figure 27.1.1 show a general similarity in the arrangement of chambers between Temples 1 and 3 on the one hand and Temples 4 and 5 on the other; Temples 2 and 6 being different, not only from either of these two pairs, but also from each other. On the other hand, none of them contained large numbers of chambers, like some buildings elsewhere in the Maya area, for example, the Palace at Palenque or the Monjas at Uxmal; and it is probable that all were used either as temples proper, that is, places where religious rites and ceremonies were carried on, or for administrative purposes, such as councils, courts, and the like; and finally, probably none of them were dwellings of rulers or priests, such as the Palenque and Uxmal structures mentioned may have been.

The date of erection of the temple plaza is not certain, although Temple 2 is clearly the oldest of the six structures surrounding it. The apparent correlation of Zoomorphs O and P, 9.18.0.0.0 and 9.18.5.0.0, respectively, with the northern extensions of the terrace of

Temple 5, might indicate that one or the other marks the completion of this part of the group. The dedication of Temple 1, the only one of the six buildings having sculptured decoration, and therefore probably the latest, in 9.19.0.0.0, marks the end of sculptural as well as architectural activity at Quiriguá, this site (along with other Old Empire cities then occupied) probably having been abandoned not long thereafter.

27.2.

OLIVER G. RICKETSON

Excavations at Quiriguá

YB 32:95–96, 1933

The greater part of [1932–33] was spent by Dr. and Mrs. Ricketson in Guatemala City, completing their report upon Uxactún, in which Mr. Ricketson describes the excavations and Mrs. Ricketson treats the pottery and other artifacts. In the spring of 1933 Dr. Ricketson spent two weeks at the ruins of Quiriguá in the lower Motagua Valley to report upon the feasibility and probable expenses of making the ruins into an accessible and properly protected national park; to determine, if possible, subplaza conditions, especially with regard to stratification, either natural or manmade, by which the successive periods of occupancy could be distinguished; and to collect sherds from successive strata, if any, for comparison with the ceramic sequence obtained at Uxactún.

In order to determine whether the ruins of Quiriguá merited a more or less intensive archaeological examination, especially from a ceramic standpoint, eight pits were sunk within the ruins proper, five in the Main Plaza, one in the Ceremonial Plaza, and two in the Temple Plaza at the extreme south. Every pit in the plazas proper disclosed natural river cobbles as pavement underlying silt accumulated since the monuments were erected. The average depth of this silt is 0.96 m. Five of the six pits struck clay at an average depth of 2.7 m beneath the present surface and a sixth, Pit 2, pierced a clayey sand which gradually merged into a sandy clay at about 3 m. Pits 3 and 8 exposed butts of stelae, both of which were erected in rock ballast, about the only method possible for the erection of large and tall monoliths in such soft soil as composes the plaza. The deposits contained a disappointingly

small number of potsherds, most of which came from below or in the topmost pavement. They are being studied by Mrs. Ricketson.

27.3.

EARL H. MORRIS AND

GUSTAV STRÖMSVIK

Quiriguá

YB 33:86–89, 1934

The ruins of Quiriguá, in the valley of the Motagua River, Guatemala, date from the Great Period of the Old Empire. The site is remarkable for the size and extraordinarily beautiful sculpture of its stelae and altars. Quiriguá lies on the railroad from Puerto Barrios to Guatemala City and is much more easily accessible of all Old Empire centers. Hence it is essential to do everything possible to safeguard the monuments from deterioration and to render them readily examinable by visitors, in order that they may serve as an example of Maya art at its apogee. They stand in an area of magnificent tropical forest left intact as a proper setting for the ruins by the United Fruit Company, when it cleared the surrounding region for banana culture. The Company has also kept clear of vegetation the plaza about which the monuments are grouped. Several of them, however, had come to the ground in former years and some had been broken, evidently by the fall of great trees. In mending and re-erecting those which were down and in examining the foundations of those still standing, Mr. E. H. Morris and Mr. Gustav Strömsvik spent four months at Quiriguá in the winter of 1934. Their undertaking, encouraged and sanctioned by the government of Guatemala, had as collateral scientific purposes the investigation of the methods by which these very large monoliths had been set up and a search for the ceremonial caches often found buried below a Maya stela.

Mr. Morris and Mr. Strömsvik straightened the leaning Stelae A and K; re-erected the complete Stelae E and I; and re-erected and mended the broken Stelae H and J. They also found caches in connection with several stelae and zoomorphs. The outstanding event of the season was the discovery of two sculptured altars, one in front of Zoomorph P, the other in comparable position to Zoomorph O. Many very difficult engineer-

ing problems were encountered in handling the tremendously heavy monoliths, and the utmost caution had to be exercised to guard against marring the high relief sculpture with which they are covered. All phases of the work were much facilitated by cordial cooperation on the part of the personnel of the Guatemala Division of the United Fruit Company.

The straightening of Stelae A and K involved the use of fairly simple mechanical procedures. Earth and masonry were cleared away from the upper sides of their bases sufficiently to permit the movement necessary to bring them back to vertical position. Stela A was drawn upright with a chain block anchored to deadmen. Stela K was pushed straight with screw jacks, because its shaft was so full of cracks that a pull against the top probably would have reduced it to fragments.

The uprooted Stelae E and I were erected as follows: a pit was dug beneath the butt of each to appropriate depth, and in the bottom of it a concrete foundation was poured. A huge A-frame of native timbers was put up to span the pit. From a point well toward the tip of the stone shaft, a steel cable was attached to the top of the A and fastened to another steel line, which, rove through double blocks, connected with the drum of a ratchet-action hand winch. Stay lines were provided at the sides of the stela to prevent lateral swing during upward movement and a rear stay to forestall possible forward collapse after the vertical had been attained. The re-erection of Stela I was comparatively simple, since the stone was short and weighed only 17 tons. In contrast, Stela E was the most formidable of the monuments, its length being 35 feet [10.7 m] and its weight some 50 tons. Once in upright position, each shaft was secured by pouring a sturdy collar of concrete into a pit which had been dug to receive the base.

Stelae H and J had leaned considerably before their shafts snapped off at or slightly above ground level. The first step in the process of re-erection was the straightening of the bases. The masonry fill was dug away around them; the butts were shoved upright with jacks and anchored with concrete collars. The several main portions had not only to be swung to a standing position, but in addition had to be raised vertically in order that they might be set down in proper alignment on their butts. The lifting was accomplished with the hand winch, its draw-line operating through double blocks suspended from a four-legged derrick of native timbers. Heavy iron dowel pins were set across the lines of fracture and the bores enclosing them filled with liquid cement.

Great care was taken not to injure the sculptured surfaces. Where the collars for draw-lines were to be applied, thick mattresses of dried banana leaves were

lashed to cover the stone. Over this padding, a thick layer of split timbers was bound on and, outside this at right angles to the longer axis of the timbers, the encircling cable was applied.

Necessary excavation around the butts brought to attention several points of interest. Every stela in the city, with the possible exception of A, C, and D, stands at the center of a rectangular platform some two feet higher than the surrounding court level. The margins of the platforms are composed of very large sandstone blocks neatly cut and fitted. At the point where a stela was to be set up, a pit was dug to a depth of several feet below court level, then filled solid with masonry laid in clay except for a faced well at the center. Masonry was spread over the bottom of the well and covered, sometimes with a single very large flat stone, or in other cases with three or more smaller ones to serve as a bearing plane for the shaft. After the latter had been raised on end, the space between the butt and the sides of the well was wedged with masonry. The buried butts ranged in length from 3.5 to 8 feet [1.1–2.4 m]. No empirical evidence was obtained to suggest the method by which the Maya set the stela upright.

Below ground on Stelae A and E, "quarry stumps" remained to reveal the method by which the huge blocks had originally been separated from the mother rock. The surface of a ledge was cut straight and smooth. Then the desired block was outlined by a ditch which was deepened until a mass the height of the determined width of the shaft stood free. Subsequently the mass was undermined from back and front and cut through at regular intervals until the beam of stone remained poised upon and connected with the ledge below by a series of slender stumps which could be snapped off by prying with levers.

The Quiriguá zoomorphs proved also to rest upon constructions that had raised them considerably above what had been court levels previous to the deposition of the river silt that now hides the bases. Zoomorphs B, G, and O each recline upon a series of three enormous stone beams, placed transversely to the block above them and bedded on the gravel court. Zoomorph P has beneath it one very large sandstone slab with a row of smaller pieces rimming its periphery.

A search for caches pertaining to the sculptured monuments was one of the definite objectives of the Quiriguá expedition. Deposits were found near or beneath the following monoliths: Stelae E, H, I (by O. G. Ricketson in 1933) and J; Zoomorphs B, G, O and P. Excavations around the bases of Stelae A and K did not reveal caches, but it is probable that had digging in these cases been as extensive as at the other sculptures above mentioned, offerings would have come to light in connection with them also. From the fact that in every case where the test was conclusive, some sort

of deposit was found, it is indicated that at Quiriguá it was the universal practice to enter an offering during the erection of each monument.

In five cases (Stelae E, I, J; Zoomorphs G and P) the imperishable components of the offerings were rectangular pottery boxes 12 to 14 inches [30.5–35.6 cm] long and from 12 to 17 inches [30.5–43.2 cm] high, each fitted with a pottery lid shaped like a mansard house roof. All were empty save the one from Zoomorph G, which contained one very large obsidian core. In a slender cylindrical pocket in the gravel court paving below Zoomorph B, there was a sheaf of seven flint blades and four pieces of unworked jade. The blades are of superb workmanship, shaped like willow leaves, and vary in length from 5.5 to 18.3 inches [14.0–46.5 cm]. Deep down beside Stela H was one of similar shape, 9 inches [22.9 cm] long. In the lowest level of the clay-gravel paving under the foundation of Zoomorph O was embedded a quartz crystal, an unworked bit of jade, a jade face 1.25 inches [3.2 cm] long of superlative craftsmanship and a flint dagger 8.75 inches [22.2 cm] long, its handle shaped like the curve of a capital D, and wrought to represent the body and head of the Plumed Serpent. The corner where the blade and handle emerge is chopped into a typical Maya profile.

The most unexpected development of the season was the discovery of sculptured altars in front of Zoomorphs O and P. These lay directly under the principal trail from the railway to the Temple Court, hidden by 18 inches [45.7 cm] of silt. The one in front of Zoomorph P was found in sinking a shaft from which a tunnel might be driven beneath the zoomorph in search of its cache. The discovery of the first altar dic-

tated the quest of another in comparable position to the nearby Zoomorph O. Trenches failed to reveal altars in connection with Zoomorphs B and G at the opposite end of the city.

The stones are great slabs of somewhat irregular outline, carved on top and sides with compositions that were skillfully planned to conform to the topography of the available block. The altar pertaining to Zoomorph P is 11 feet 8 inches [3.5 m] in greatest length, 10 feet 6 inches [3.2 m] in greatest width and 1 foot 9 inches [53.4 cm] thick. Equivalent dimensions of the one accompanying Zoomorph O are 12 feet 4 inches [10.8 m], 11 feet [3.4 m], 1 foot 8 inches [50.8 cm]. The dominating figure in each carving is a large human form in dancing posture, elaborately clad and wearing a huge and complicated headdress with face mask. The other two-thirds of the area is covered with a long and delicately wrought hieroglyphic inscription, the whole margined with serpent motifs. The carvings, in composition and execution, are in the best Old Empire style. They will take rank among the masterpieces of Maya art.

While the work on the stelae was going on, Dr. Ricketson visited Quiriguá to examine ancient water-gathering devices discovered by the United Fruit Company during the digging of drainage ditches. Each of these proved to consist of a single large jar-shaped pottery vessel with perforated bottom, sunk to the level of ground water and set in a mass of rocks. The jar was connected with the surface by means of sections of cylindrical pottery pipe. The grouting of rock permitted water to filter through the jar, at the same time excluding silt. Access to the collected water was had through the cylindrical pipe.

28.0. UAXACTÚN

Uaxactún is located in the Petén region of northern Guatemala, some 40 km north of Tikal. With the decipherment of the Maya hieroglyphic writing, it was discovered that the ancient name for this site was Siaan Kaan. The name "Uaxactún" was given to the site by Sylvanus G. Morley in May, 1916. He coined the name from Maya words to mean Eight Stone. The name has two meanings: Morley's stated reason for the name was to commemorate it as the first site where an inscription dating from the 8th baktun of the Mayan calendar was discovered (making it then the earliest known Maya date). The other meaning is a pun, since Uaxactún sounds like Washington, home of the Carnegie Institute which funded Morley's work.

The first archaeologist to visit Uaxactún was Morley, when he headed an expedition for the Carnegie Institution of Washington in 1916. It is not clear how he first heard of the site, but he was guided there by a man named José. Although Morley and his team were at the site for only six days, they examined, photographed, and made drawings of the glyphs on several carved stelae, took measurements for a site plan, and did sketch plans of the structures. In 1924

Frans Blom spent two months at Uaxactún, surveying the site and recording the architecture and sculpture. He was the first to suggest that Structures E-I, E-II, E-III, and E-VII might have functioned as a solar observatory. From 1926 through 1937, the Carnegie Institution of Washington team, including Oliver Ricketson and Edith Bayles Ricketson, A. Ledyard and Robert E. Smith, and Edwin M. Shook, conducted excavations at the site. Ceramic analyses were undertaken by Robert E. Smith, and Alfred V. Kidder studied the artifacts. For most of the CIW team's time at Uaxactún, communication with the outside world was via a four day mule convoy to El Cayo, Belize. Towards the end of the time an airstrip was opened up. Flights to Uaxactún continued and a small village grew here, as it became a center for gathering of chicle sap from the Petén jungle.

A. Ledyard Smith and Shook returned in 1940 to resolve some points. In the late 1970s a rough road was opened up, connecting Uaxactún to Tikal and to the departmental capital of Flores, Guatemala. Air flights were later discontinued, and in 1974 Shook recleared and restored Structure E-VII-Sub. In 1978 Anthony Aveni took astronomical

measurements at the Group E solar observatory, and in 1978 and 1979 Ian Graham recorded the carved monuments. In 1982 a program of stabilization and restoration was begun by the Instituto de Antropología e Historia de Guatemala, and in 1983 Guatemalan archaeologists began new investigations, and in 1985 vaulted structures and stucco masks were discovered in Group H.

Uaxactún is one of the most extensively investigated sites since the early years of Maya studies. The ceramic sequence that resulted from the early Carnegie work there laid the foundation for the whole of lowland Maya chronology. This chronology was then linked to that of most of the remainder of Mesoamerica. Uaxactún's ceramic sequence begins early in the Middle Preclassic period, at which time platforms were constructed. Structure E-VII-Sub and vaulted structures were built during the Late Preclassic. Uaxactún was an active center in the Early Classic Period; then it was conquered by Tikal and ruled by Smoking Frog. Near the end of the Late Classic Period, a stela dating to 889 AD was erected at Uaxactún. It is one of the latest dated monuments in the southern Maya lowlands. In 1982 Guatemala's Tikal National Park was expanded to include the ruins of Uaxactún within its protected area.

28.1.

FRANS BLOM

*Report on the Preliminary Work at
Uaxactún, Guatemala*

YB 23:217–219, 1924

The eighth expedition of the Carnegie Institution into the Department of Petén, northern Guatemala, left Belize, British Honduras, for El Cayo, the head of navigation on the Belize River on February 18. The object of the expedition was to make a survey of the ruins of Uaxactún, discovered by the expedition of 1916, and to prepare the site for exploration during the coming years.

El Cayo, the chicle and mahogany center on the Belize River, is the starting point for all expeditions wishing to penetrate the immense tropical forests of northern Guatemala. It was reached on February 21. Pack-mules were secured and final touches were put to the outfit. Plancha de Piedra, the Guatemala customs station, was reached on February 25, and the following day 22 saddle and pack animals and a gang

of laborers on foot, swung into the narrow forest trails. Four days brought the expedition to its destination.

Mr. O. G. Ricketson, who had previously been at Uaxactún, accompanied the expedition in order to acquaint the leader, Mr. Frans Blom, with the ruins and monuments. As soon as this was accomplished he returned to British Honduras.

Dense vegetation covered the site, and it was necessary to clear this in order to erect houses, roofed with palm leaves, for the members of the staff and the workmen. A large water-reservoir had to be dug in the water-hole, which generally dries up during the month of May. As soon as a camp was established and trails had been cut to the different groups of buildings, a plane-table survey of the ruins was commenced. Mr. Monroe Amsden started this work but, as he soon had to leave because of illness, it was completed by Mr. Blom.

Toward the close of April, work at Uaxactún was concluded and the greater part of the equipment was sent direct to Plancha de Piedra. Mr. Blom, with some Indians, proceeded to various other ruins in the Department, finally reaching El Cayo on May 18. The sites visited were Tikal, Mejia, (new), Ixlú, Flores, Tayasal, Chichantún, Yaxhá, Topoxté, Benque Viejo, caves near Benque Viejo, Nakúm, El Encanto, Holmul, Tzotzkitam, and Baking Pot, the last in British Honduras.

Though the primary purpose of the expedition was to prepare for more intensive work at Uaxactún, a large amount of archaeological information was collected.

All the monuments at Uaxactún carrying inscriptions were drawn. A comparison of these drawings with those previously made by Dr. Morley made it possible to definitely decipher several, formerly doubtful dates. Stela 5 at last gave up the secret of its date, the reading being a Baktun 8 Initial Series, 8.16.1.0.12. Dr. Morley had previously given the tentative reading 8.15.18.3.12. This final reading gives a third Baktun 8, Katun 16 date at Uaxactún.

On a fragment of Stela 14 the date 8 Ahau 18 (?) was found; this may well be 9.19.0.0.0, 8 Ahau 18 Mol, the same date as given by the Initial Series on Stela 7 here.

The plane-table survey disclosed several important features, among others the close relation between Groups A and B, through an inclined road connecting the main plazas of the two groups. This road emphasizes the importance of the main plaza of Group A. The mound at the southern side of this plaza appears to be the heart of the two groups. This mound faces north, and from its top one looks down upon the main plaza of Group A and a row of monuments including Stelae 7, 8, and 11. The oldest stela known stands on the northern side of this plaza, and to the north of it begins the road already mentioned, sloping down to

the main plaza of Group B, with its multitude of monuments, a most imposing sight in ancient times.

During rainy days the large temple standing at the northeastern corner of the Acropolis (Group A) was cleared. The floors were covered with several feet of fine dust, and this was removed. Two rooms in the western end of the temple were nearly filled with debris, and when cleared the more western of these was found to contain a stairway turning at right angles and leading to the roof of the building. Only one other such stairway had been previously known, that discovered by Dr. Morley at Quiriguá. This building is in such a good state of preservation that it will be used for staff quarters.

On the lowland close to the aguada a quarry was found, which shows distinctly where the ancients had cut a limestone block for a stela. The road connecting Group A with Group D, as well as other roads connecting the different parts of Group D, was also found.

By far the most important discovery was made in Group E, namely, what appears to be an observatory for studying the sun. The group consists of terraces on which are mounds, the terraces being arranged around a plaza. The eastern terrace has three mounds upon which are remains of temples (I-III) with stairways leading from the plaza. In front of this terrace are Stelae 18, 19, and the plain stela, F.a. Whether we really have an observatory here can not be determined until the group has been excavated and studied with precise instruments. The figures at hand speak in favor of an observatory.

On the western side of the plaza we found Mound VII, likewise crowned by the remains of a temple facing south. On the side of this mound toward the plaza stands Stela 20. This plaza was covered with dense vegetation, and as the work of clearing proceeded it became more and more apparent that there was a close relation between Mound VII and Stela 20, and the eastern terrace, with its three mounds and three stelae.

The Department of Terrestrial Magnetism has located the geographic position of Uaxactún as latitude north 17 degrees 23' 8", and longitude west 89 degrees 38' 4". The bearings within the group were taken with a Brunton Pocket Transit from a position directly behind (i.e., west of) Stela 20. The magnetic declination is 7 degrees and was corrected on the compass, so that all readings were taken direct. A line drawn between Stela 20 and Stela 19 turned out to be due west-east, cutting through the center of Temple II.

Sights were also taken from Stela 20 to Stela 18 and F.a., the bearings being N76 degrees E. and S 76 degrees E respectively, and finally sights were taken over the centers of the Mounds I and III, giving the bearing N 66 degrees E and S 66 degrees E, or 24 degrees north and south of the west-east line. Compari-

son of these angles with the following data furnished by the Department of Terrestrial Magnetism shows amplitudes for sunrise at Uaxactún in latitude 17 degrees 23' 8" north and longitude 89 degrees 38' 4" west of Greenwich extreme values during the year.

Table 28.1.1. Amplitudes for Sunrise, Uaxactún.

<i>True Horizon</i>	<i>Visible Horizon</i>	<i>Remarks</i>
24.6	24.4	North of east on June 22.
24.6	24.9	South of east on December 22.

We see that the lines of sight from Stela 20 to Stela 18 and F.a. are 24 degrees north and south of the true east, coinciding with the two extremes at which the sun rises during the year.

Turning to the dates on the three stelae in Group E, we see that Stelae 18 and 19 carry the same date, viz, 8.16.0.6.0, 3 Ahau 8 Kankin (97 AD) and Stela 20, the date 9.2.0.0.0, 2 Ahau 18 Muan (235 AD). If Group E really proves to be a sun observatory it must have been erected not later than the year 235 AD and have been planned long before the two earlier stelae set up. Excavation of this group may throw much light upon Maya astronomy; it may be possible to find other lines of observation, and to determine the unit of measurement used, etc.

A hitherto unknown group of huge mounds was located south of Group E, and called Group F. A large natural hill had been leveled and terraced. Mounds inclosing courts and remains of several buildings were found, but no monuments.

28.2.

SYLVANUS G. MORLEY

The Uaxactún Project

YB 25:273-274, 1926

The current year witnessed the extension of archaeological operations to Guatemala. On November 28, 1925, a contract was signed in Guatemala City by Señor Don Rafael Ordoñez Solís, the Minister of Public Education, representing the Government of Guatemala, and by James H. Roach, an American citizen resident in Guatemala under special power of attorney, in behalf of the Institution.

Under terms of this contract, the Carnegie Institution acquires the right to carry on exclusive archaeological investigations, including excavation, at the sites of Uaxactún and Tayasal in the northern central part of the Department of Petén, and general exploratory privileges at all other sites in the same department, the heart of the Old Maya Empire, for a period of five years beginning January 1, 1926, with an option for renewal for an additional period of five years.

This contract, together with the one in force with the Mexican Government, brings under the Institution's purview possibly the three most strategic sites for a comprehensive study of the Maya civilization that can be found. Uaxactún is the oldest city of the Old Empire now known, based upon the evidence of the dated monuments (68 to 630 AD). Chichén Itzá is the oldest city of the New Empire, and was apparently the second place of any importance to be founded in the peninsula of Yucatán (531 to 1448 AD).¹ Tayasal was the last independent Mayan stronghold, and resisted the Spanish arms for a century and a half after the Conquest of Yucatán (1448 to 1697 AD). It has the further intimate connection with one of the other two sites, in that it was founded by the Itzá after the destruction Chichén Itzá, thus bringing under the Institution's observation and study six continuous centuries of ancient Maya History.

The Uaxactún Project was organized in January and Dr. Morley's direction, and on January 9, O. G. Ricketson, Jr., assistant archaeologist, sailed for Belize, British Honduras, to take charge of the field work at Uaxactún. Monroe Amsden joined him in February as field assistant, and a fortnight later the expedition proceeded by way of the Belize River to Plancha de Piedra on the eastern frontier of the Department of Petén, and thence overland by mule to Uaxactún.

Work at this site has been rendered far more practical and economical through the opening up of the whole region by the P. W. Shufeldt Company, a corporation engaged in the chicle business, to which the 1926 expedition is greatly indebted. Not only did this organization handle the transportation of all food and supplies, at cost, but its agents at El Cayo and Laguna Yaloch were instructed to extend credit to the expedition and to forward mail by their couriers. The expedition is also much indebted to C. O. Taylor, of Belize, for his many kindnesses, and to Robert Masson for his courtesy in expediting the customs inspection of scientific equipment.

On March 8 all available men were set at work clearing Group E, the site chosen for preliminary excavation. This group was first reported by Dr. Morley in 1922 [Chapter 1.10 this volume]. In 1924 Mr. Blom stated that the group was of unusual interest, as it contained lines of sight marking the sunrise points at

the solstices and the equinoxes [Chapter 1.12 this volume]. On March 10, four trenches were started into Mound II, two from the north and two from, the south. This mound is 60 feet square, and is one of three, which rest upon an artificial substructure 210 feet long by 90 feet wide. Mound II was partially excavated, the north and south ends being uncovered, and the many large tree stumps on its top and sides cut out.

On April 20, the corn-field was burned, and immediately afterward all 12 laborers were put to work building a permanent bush house, kitchen and corral. Work was rushed, in order that it should be completed before the water in La Joventud aguada should be exhausted, as the drying up of this aguada would necessitate the immediate withdrawal of the expedition. The buildings were completed May 18, a caretaker was installed, and the expedition left Uaxactún on May 19 for the exterior.

NOTES

1. The second place-name mentioned in the *ukahlay katunob* or native chronicles in the Books of Chilam Balam, which it is possible to associate with a definite geographical locality today, is Chichén Itzá (Brinton 1882:101, 144, 158).

28.3.

OLIVER G. RICKETSON

Report on the Uaxactún Project

YB 26: 256–263, 1927

In conformity with the contract granted by the Government of Guatemala to the Carnegie Institution of Washington for the excavation of the ruins at Uaxactún [Chapter 28.2], the second season was inaugurated early in January 1927. The members of the expedition consisted of Oliver G. Ricketson, Jr., in charge, Monroe Amsden, assistant, Mrs. Ricketson, and A. Ledyard Smith.

The purpose of the 1927 field season was to determine, if possible, the functions of Group E, reported in 1924 by Frans Blom as being in all probability a solar observatory [Chapter 28.1]. Group E consists of a plaza, the long axis of which runs north and south, 308 feet 5 inches [94 m], and the short axis east and west, 150

feet 10.5 inches [4.6 m], bounded on the east by a platform mound, 234 feet 8 inches [71.5 m] long at the bottom and 15 feet [4.6 m] high, on which stand Temples E-I, E-II and E-III. It is bounded on the south by another platform mound on which stand Temples E-IV, E-V and E-VI, and on the west by a pyramidal structure, E-VII, which is 50 feet [15.2 m] high. On the north are four mounds, E-VIII, E-IX, E-X and E-XI, surrounding a small court known as the North Court of Group E. The plaza contains four stelae, 18, 19 and E-I on the eastern margin and 20 in front of Pyramid E-VII.

During 1927, excavations were concentrated on the astronomically significant elements of Group E, with the result that the ground plans of Temples E-I, E-II, and E-III were determined, as well as the stairway and base of the platform on which these temples stand. The north and east sides of the base of Pyramid E-VII and its stairway were also uncovered.

Pyramid E-VII was found to be without a structure on its top and with its stairway on the east.¹ Its construction was of the crudest sort, consisting of rough, broken stones covered with crumbling plaster. Under this disappointing exterior, however, an earlier pyramid was discovered, built in terraces of well-wrought stone covered with plaster, still in excellent condition. Less than a week before the withdrawal of the expedition, made necessary by the exhaustion of the water supply, a mask was uncovered on the eastern face of this inner pyramid, just north of the stairway of the outer one. This mask was about 8 feet square [0.7 sq m], and represented a human or a humanized-animal head. It was constructed of stucco laid over a masonry core. The nose was extremely broad and flat, with a transverse, tapered decoration hanging in a catenary curve from the internal acanthi of the two eyes. The pupils of the eyes were represented by two vertical raised bands. The mouth, extending nearly across the whole face, showed as a narrow, sunken slit, with two curling fangs hanging from beneath the canine teeth, which were also shown. In the center of the mouth were two incisors, overlaid

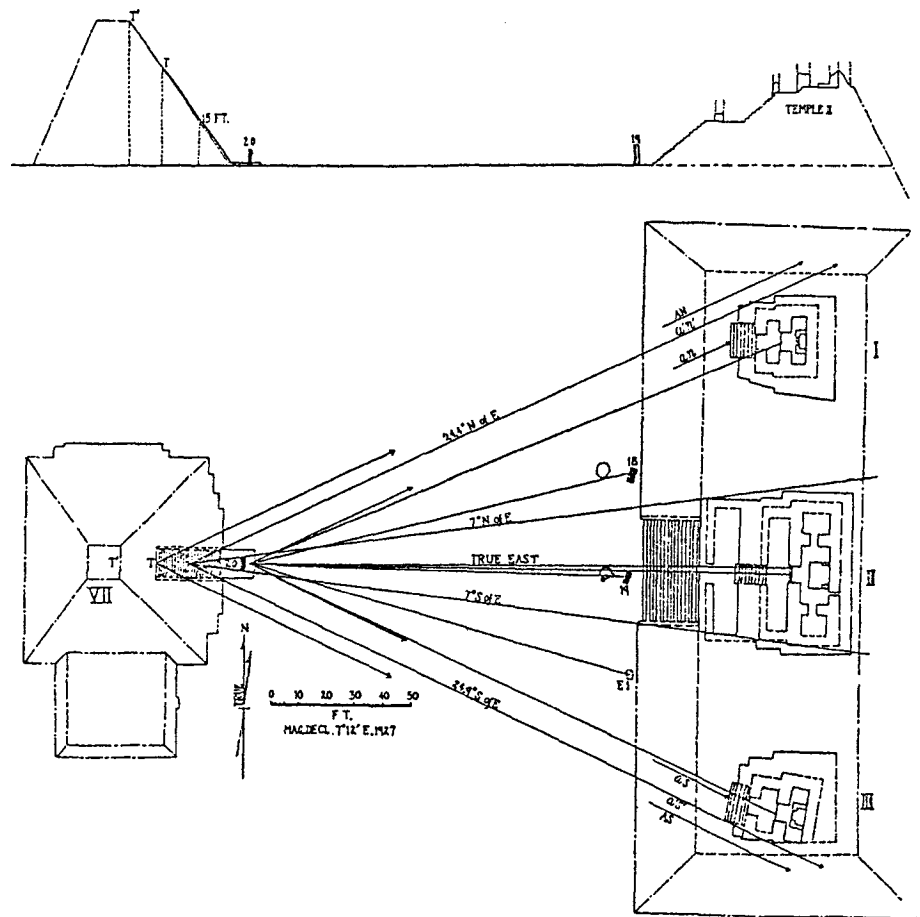


Figure 28.3.1. Uaxactún, Group E, Pyramid E-VII, Stelae 19 and 20, and Temple E-II, plan and section.

with a triangular device roughly heart-shaped, the rounded apex pointing down and the base contiguous with the upper lip. Only the right ear was exposed; it was represented by shallow incised lines and molding, and had a pointed tip and a flare that is suggestive of a bat's ear. The head was covered with the conventionalized representation of a feather head-dress. The execution of the whole is good, though markedly primitive. It is not done in bold relief. Further excavation of this mound will reveal other masks symmetrically placed, and will be necessary before a final report can be written.

When the debris in front of Pyramid E-VII was cleared, Stela 20 was found to stand on a raised dais, 1 foot 10 inches [55.9 cm] high. The stela is 6 feet 11 inches [2.1 m] in front of the bottom step of the stairway.

Temples E-I, E-II, and E-III, on the east side of the plaza, were found to be in such a dilapidated condition that the greatest difficulty was encountered in finding the remains, of walls. Each temple stands on a platform 10 feet high. The substructure terrace, upon which all three are located, is 15 feet [4.6 m] high, and

is ascended by a central stairway, 34 feet 6 inches [10.5 m] wide and consisting of 16 steps, on the west side.

Temple E-I, like Temple E-II, faces W 0 degrees 3' N.² It consists of a small, two-room building reached by a central stairway of eight steps. The inner room is higher by a step of 1 foot 2 inches [35.6 cm] than the anterior room, and is divided by an altar against the back wall in such a way that it appears to be three very small rooms. This altar consists of a rectangular block 2 feet [61 cm] high, with L-shaped walls enclosing the two sides and partly enclosing the front.³ One step is cut into the edge at the entrance. Excavation in the altar itself revealed a nest of potsherds. The pots of which they were fragments had evidently been broken before they were put into the altar, as it was impossible to assemble even one whole piece, though the sherds were very carefully collected. Here were found the sherds which, when pieced together, made the fragment with the beautiful and unusually colored painting of three Maya priests in full regalia. The colors used on this sherd were black, grey, white, yellow ochre, red, crimson, dark brown and a rose pink which the writer has not seen elsewhere in Maya pottery.

South of the altar in Temple E-I, in a circular hole in the floor, Cyst 2, 1 foot 6 inches [45.7 cm] deep and 1 foot 6 inches [45.7 cm] in diameter, were found two plain redware dishes with flaring rims, the upper one inverted over the bottom one. Each was 12.5 inches [31.8 cm] in diameter at the rim, and about 4.25 inches [10.8 cm] deep. They enclosed some fragments of bone, a complete set of human teeth, nine small jade beads, two small, irregular jade ear-plugs and a jade pendant representing an animal head. All of the jade pieces were of inferior material and workmanship. Similar burials were found in like positions in the other temples of this group and will be described with the temples concerned.

Of the walls of Temple E-I, for the most part only the inner surface remained standing, and only between the front and back rooms could the thickness of the wall be measured. It was found to be 4 feet [1.2 m] in thickness. The walls of the anterior chamber and the outer facing over the rubble core of the building were entirely fallen, this condition being due not only to the age of this section of the city, but also to the poor quality of the limestone in this part of the Yucatán peninsula and to the size of the trees which have taken root in the ruins. The platform beneath Temple E-I was peculiar in that its southern retaining wall ran S 83 degrees 18' E, or at an angle of 96 degrees 45' with the front line.

Temple E-II was a more complex structure. It was evidently the chief temple of the group, and stands directly behind the main central stairway from the plaza to the top of the mound. Although now in a very

ruined condition, originally it seems to have been a four-room building on a platform, reached by ten steps, each 6 feet 6 inches [1.9 m] wide and about a foot [31 cm] high; at a later date walls were added in front of the platform on the level of the top of the substructure terrace. These walls, when excavated, were only 2 to 3 feet [61–91 cm] in height; whether they formed a typical Maya room with vaulted arch it is not possible to say, but the relative thinness of the walls, 2 feet 6 inches [76 cm] to 3 feet [91 cm], and the lack of any cut vault stones in the debris would seem to argue against this hypothesis. In the southern end of this enclosed space traces of a low shelf or bench were found and a large quantity of sherds.

From the back of this lower room or gallery, the steps above mentioned lead into the anterior chamber of the temple itself, and two more steps lead into the posterior chamber. This latter was divided into a middle and two lateral rooms by transverse walls pierced with doorways. The outer side walls in both of the lateral rooms had completely fallen, making it difficult to determine the original inside length, north and south, of the building. It was about 41 feet [12.5 m]. The central room contained a rectangular, plastered bench or altar, 8 feet 3 inches [2.5 m] deep by 8 feet 7 inches [2.6 m] wide by 1 foot 4 inches [41 cm] high, which, upon excavation, proved most interesting. Inside it were two other earlier altars, one built over the other. The earliest and smallest one consisted of a rectangular plastered block, 35 inches [88.9 cm] deep by 45 inches [114.3 cm] wide, with a basin-like depression in the center and two lateral walls framing it. These walls extended less than 18 inches [45.7 cm] forward from the back wall of the temple. The second altar extended the lateral walls to 57 inches [144.8 cm] from the back wall and completely covered the altar beneath. The second altar was 1 foot 1 inch [33 cm] high, painted red, and also contained a basin-like depression in the top. The third or outer altar completely covered the constructions beneath, though the lateral walls on the north and south had not been extended to the front margin but left as they were when the middle altar was constructed. The outer altar had been plastered many times, and painted differently each time, the most frequently occurring colors being red and gray.

Above the surface of the second altar and below the surface of the third, that is, apparently in the depression on top of the second altar, were found 71 small pieces of jade, all broken pieces, small useless chips of varying sizes and shapes. These were scattered throughout the rubble of the altar, as well as a large quantity of bones of small animals, bats and small rodents. In the southwest corner of this area a small red dish was found, upside down, and near it a

small red pottery disk, a bird's head of red pottery, with eyes and wattle appliquéd in the same material, and a few disassociated human bones and teeth, apparently of a child. In the latest part of the altar; that is, below the surface of the outer altar but beyond the margin of the second one, innumerable skeletons of bats and rodents were found in a very fine black dirt.⁴ Two very small and finely worked lancets of obsidian, 2 inches [5.1 cm] and 2.75 inches [7.0 cm] long respectively, were found among the bones and Mr. Ricketson believes that these were the instruments used to kill the small animal offerings. In the southwest corner of this altar were two, flat red-ware dishes with flaring rims, about 6.75 inches [17.2 cm] in diameter and 2 inches [5.1 cm] deep, the upper one inverted over the bottom one, as already described in Cyst 2, Temple E-I. These dishes contained a fine dust, apparently fragments of bone.

South of the altar and in the center of the south room of the temple, two more cysts, 6 and 5 respectively, were discovered in the floor. Cyst 6 contained two plain red-ware dishes with flaring sides, the upper one inverted over the bottom one. Between the dishes were a human cranium and atlas, in good condition when found. It seemed to be that of an immature person, possibly male. The two lower incisors were lacking and the bone healed over; the fronto-occipital deformation was slight; the teeth were unworn; there was visible a shrunken, brown, friable tissue in the nares and orbits, over the supraorbital ridges, the forehead and the cheek bones, suggesting preserved periorbital tissue. The skull discolored to a pronounced yellow after a few days' exposure to the air. The cephalic index, taken with improvised instruments, was about 91. Cyst 5 contained only black dirt, a few unrelated sherds and a very crude pierced stone pendant, with two holes drilled in it to represent eyes; the pendant is 1.4 inches [3.6 cm] long and of a dark brown, unpolished stone.

The back wall of Temple E-II, immediately south of the altar, was pierced by a rectangular shaft at the floor level. This was approximately one foot square [9 square cm] and must have served as a drain or ventilator. The doorway leading from the central room into the south room appeared to have been sealed. Two large stones formed a kind of threshold which had been plastered over on the side of the central room but not on the side of the south room. Moreover, 2 inches [5.1 cm] of black loam was found on the floor of the south room, but in neither of the other two; from this it might be inferred that after the south wall fell and before this black loam was deposited by decaying vegetation, the walling up of the doorway to protect the central room and altar was undertaken rather than the restoration of the whole south wall. If this hypothesis is correct, it

would indicate that the Maya utilized these temples even after they had started to disintegrate.

Temple E-III, the southernmost of this group of three temples, differs from the others in that it faces W 7 degrees 42' N, making an angle of 7 degrees 39' with the other two. The platform under it, at least on the north side, is parallel to the south side of Temple E-II. The south side of E-III is entirely fallen. In general, the ground plan of Temple E-III duplicates that of Temple E-I, except that the front edge of the altar has no step cut into it. Three cysts were found in Temple E-III. One was in the altar against the back wall of the temple, Cyst 3, and contained a barrel-shaped jar of ordinary ware with a flat, rimmed cover, the whole being 4.4 inches [11.2 cm] high and 4.8 inches [12.2 cm] in diameter. The jar contained an archaic mudstone figurine, sitting on a little heap of dust, with its face to the north. The figurine is extremely crude and represents a person squatting with the arms at the sides of the body, the hands folded over the knees. The eyes, rectangular in outline, are marked off by grooves. When found, the figurine showed many traces of vermilion paint.

The next cyst, 4, was found in the floor south of the altar. It contained two flat dishes of red ware with flaring rims, about 3.75 inches [9.5 cm] deep and 11.25 inches [28.6 cm] in diameter at the rim, the upper one inverted over the bottom one. These contained a cranium complete with the atlas, the axis and the first cervical vertebra; the sutures of the skull were unclosed. On both right and left sides of both upper and lower jaws, the second and third molars had erupted, but the deciduous first molars had not yet been pushed out; all of the teeth were absolutely unworn. It was impossible to determine the sex of the individual. As with the skull from Cyst 6, the frontal region was covered with a friable brown coating; unfortunately the condition of this skull was such that it fell to pieces, even before it could be removed to camp.

The last cyst, 7, was found in the doorway between the outer and inner rooms of Temple E-III. It contained two dishes similar to those already described as containing skulls, but broken. Fragments of bone, unidentifiable but no teeth, were found inside. The lower pot differed from the others in that it had four sets of two perforations midway between the rim and bottom.

Excavation of the base of the substructure mound beneath Temples E-I, E-II, and E-III showed that it was terraced, the terraces being steep and shallow. The main stairway, probably balustraded, was set back 2 feet 2.5 inches [67 cm] from the front of the mound. Stelae 18 and 19 were cleared and it was noted that both are set in the ground obliquely; there was no evidence to show that this was not done intentionally. The altars in front of these two stelae were cleared,

and they were found to be supported on a tripod formed of three large, roughly rounded boulders. Excavations were extended in an effort to determine the exact position occupied by Stela E-I before its fall, and a hole piercing three layers of plaza pavement and ending at a fourth was found 31 feet 5 inches [9.5 m] south of Stela 19; the measured distance between Stelae 18 and 19 being 30 feet [9.1 m], this position for Stela E-I was assumed to be the correct one.

As soon as the progress of the excavations permitted, angular measurements were taken with a theodolite, reading only to tenths of degrees. The directions were determined with the theodolite set up 14.5 inches [36.8 cm] to the east of the center line of Stela 20, a position not impossible for an observer to assume, if the group really served as a solar observatory. Markers were then set up on the midlines of the entrances of the inner doorways in Temples E-I, E-II and E-III. These points were chosen for two reasons: 1. they could be determined exactly, an advantage not offered by many other points; and 2. they stood at the approximate centers of buildings, the exact outside dimensions of which, owing to the total destruction of all north and south exterior walls, must always remain conjectural.

In considering the elements of this group which may have composed a solar observatory, that is, Stelae 19 and 20 and Temples E-I, E-II, E-III, and E-VII, it is necessary to consider the geographic position of Uaxactún. This was determined in 1923 as being Lat. 17 degrees 23.8' N and Long. 89 degrees 38.4' W from Greenwich.⁵ The correction for the magnetic declination of the compass for 1927 is 7 degrees 12' E,⁶ and the amplitudes for sunrise are as follows:

Table 28.3.1. Amplitudes for Sunrise, Uaxactún.

True Horizon	Visible Horizon	Extreme Values During Year
24.6	24.4	North of east on June 22
24.6	24.9	South of east on December 22

The true astronomic directions are as follows. A correction of 7 degrees 12' east, for the magnetic declination of the compass in this region in 1927 as noted above, has been used throughout.

These figures show variations from the figures given by Frans Blom [Chapter 28.1], whose preliminary observations were made with a Brunton Pocket Compass and without excavation. The chief differences lie in the sights from Stela 20 to Stelae 19 and 18, given by Mr. Blom as true East and N 76 degrees E, respectively.⁷ His bearing to Stela E-I may be thrown out entirely, as its position without excavation could only be conjectured. Mr. Blom states that the angle between Stela 18 and Stela 19 (as taken from Stela 20) is 14 degrees; this is approximately correct, but he places Stela 18 1 degree 12' and Stela 19 1 degree 45' too far north. The angular difference between the two centers is actually 14 degrees 33'.

As a check, angles of 24.4 degrees to the north of, and 24.9 degrees to the south of the true east-west line were measured off in the field from Stela 20. These lines are labeled *a n* (amplitude north) and *a s* (amplitude south) on the accompanying diagram. Upon completion of the plan of Group E on paper, similar angles for the amplitude of the Sun were laid off from the point T, at the top of the stairway on Pyramid E-VII. These angles as extended are indicated by the lines *A N* and *A S* on the diagram. It is greatly to be regretted that Temples E-I and E-III are so very badly fallen, for an observer standing on the stairway of Pyramid E-VII could so change the location of his eye by ascending or descending the steps as to cause the amplitudes of the Sun to fall anywhere between *A N* and *a n*, and *A S* and *a s*. This fact not only gives a great deal of leeway for the location of the point sighted upon from Pyramid E-VII, but it allows the observer to mount from the plaza level to a point as high as 35 feet [10.7 m] in the air (plus his own height), a distinct advantage in making a sight in relation to a temple, the platform of which already rests on a substructure mound 15 feet [4.6 m] high. Obviously, no horizon sight can be made from Stela 20 with this mound looming in the way. Furthermore, since the north wall of Temple E-I and the south wall of Temple E-III must fall somewhere between the lines *A N* and *a n*, and *A S* and *a s*, respectively, it is self-evident that from some position on the midline of the stairway of Pyramid E-VII an observer would see the sun rise on the summer and the winter solstices in

Table 28.3.2. Variation in Astronomical Observations, Uaxactún.

From Stela 20 to	True Bearing	Degrees of Arc From True East	Amplitudes of Sun at Uaxactún
Center of doorway Temple E-II	S89 degrees 03'E	0 degrees 57'S	Equinoxes
North Jamb Doorway Temple E-II	True east	0	
Stela 19 (center)	S88 degrees 15'E	1 degree 45'S	
Stela E I (hole)	S74 degrees 18'E	15 degrees 42'S	24.9 degrees on December 22
Center of Doorway Temple E-III	N65 degrees 18'E	24 degrees 42'N	
Stela 18 (center)	N77 degrees 12'E	12 degrees 48'N	
Center of Doorway, Temple E-I	N68 degrees 00'E	22 degrees 57'N	24.4 degrees on June 22

relation to these temples. If he placed his eye 15 feet [4.6 m] above the plaza level (that is, level with the top of the eastern substructure), the amplitudes of the Sun would fall along the lines $a'n'$ and $a's'$. From this same point the directions north 83 degrees east and south 83 degrees east were laid off (that is, 7 degrees north and south of the true east-west line). These directions mark the dates of sunrise on April 6 and September 6, and March 3 and October 10 respectively, which are about 17 days before or after the dates of the equinoxes.⁸ It is interesting to note how closely they approximate the outlines of Temple E-II.

If we compare these dates with the dates on the three standing stelae in Group E, we see a close approximation as regards the April dates.⁹

Table 28.3.3. Calendrical Decipherments, Uaxactún.

Stela 19	8.16.0.0.0	3 Ahau	8 Kankin	April 5, 97 AD.
Stela 18	8.16.0.0.0	3 Ahau	8 Kankin	April 5, 97 AD
Stela 20	9. 3.0.0.0	2 Ahau	18 Muan	April 3, 235 AD ¹⁰

The 1927 expedition is deeply indebted to many individuals for their courtesy and assistance, chief among whom are Mr. and Mrs. P. W. Shufeldt, Mr. C. O. Taylor, and Mr. Robert Masson of Belize; Dr. and Mrs. Patterson of El Cayo; Sr. Lic. Don Antonio Villacorta, Sr. Ing. Don Fernando Cruz, Sr. Dr. Don Federico Mora, Sr. Lie. Don Virgilio Beteta, Sr. Don Carlos Luna, Mr. James Roach and Mr. David Davidson of Guatemala, and to Mr. G. P. Chittenden of the United Fruit Company, through whom many courtesies were extended by the Guatemala Division. Mr. Ricketson is personally indebted to the Department of Terrestrial Magnetism of the Carnegie Institution of Washington for supplying him the magnetic and astronomic data.

NOTES

1. Incorrectly reported in [Chapter 28.1] as crowned with the remains of a temple facing south.
2. All directions are true or astronomic.
3. Compare the shrines in the Palenque temples.
4. Dr. Grover Allen can identify the following: Yucatecan leaf-nosed bat, short-tailed bat; Yucatán cotton rat, the rice rat?
5. Incorrectly given in [Chapter 28.1] as Lat. 17 degrees 23' 8" N and Long. 89 degrees 38' 4" W.
6. Information supplied by the Department of Terrestrial Magnetism, Carnegie Institution of Washington.
7. Two errors in [Chapter 28.1] should be corrected here, besides that of the geographic position of Uaxactún, already noted. [The] following sentence "We see that the lines of sight from Stela 20 to Stela 18 and F.a. [misprint for E-I] are 24 degrees north and south of the true east, coinciding with the two extremes at which the sun rises during

the year " should read " We see that the lines of sight from Stela 20 to Temples E-I and E-III are 24 degrees north and south of the true east."

8. Information supplied by the Department of Terrestrial Magnetism, Carnegie Institution of Washington by letter of August 13, 1927, no. F 1.

9. In order to determine if the discrepancy between April 6 (as given by the direction N83 degrees E) and April 5 (as given on Stelae 18 and 19) were significant, the direction to the probable location of the northwest corner of Temple E-II was taken. This is N 85 degrees 10' E a difference of 2 degrees 10', too much to account for only one day. A tentative explanation for this discrepancy of one day has been offered by the Department of Terrestrial Magnetism in the fact that the difference between 97 AD and 235 AD is 138 years, that is, an interval for which the excess of 365.25 days above a solar year would amount to a trifle over one day (one day in 128 years, to be more exact.)

10. Maya dates deciphered by Dr. S. G. Morley; equivalents in. Christian chronology according to the correlation proposed by Dr. H. J. Spinden.

28.4.

OLIVER G. RICKETSON

Report on the Uaxactún Project

YB 27:307–312, 1928

In conformity with the contract granted by the Government of Guatemala to the Carnegie Institution of Washington for the excavation of the ruins at Uaxactún [Chapters 28.1 and 28.2], the third season was inaugurated early in January 1928. The members of the field expedition consisted of Monroe Amsden, in charge, A. Ledyard Smith and Harry E. D. Pollock, assistants.

Immediately upon arrival in camp on February 1, all hands were set to work completing and expanding the buildings erected in 1926 and 1927, clearing the year's growth, and beginning the construction of a dam across a nearby arroyo to provide a future water supply.

On Sunday, February 26, Messrs. Smith and Pollock left to visit a new ruin reported about 5 miles [8.1 km] northeast of Juventud Station. A sketch map was made, showing extensive constructions around a main central mound 80 feet [24.4 m] high. Two stelae, uncarved, were found along the north border of the main plaza. The ruin was named El Paraiso.¹ As the party was returning from this ruin to Juventud, in as

nearly straight a line as possible, it encountered a peculiar wall, 40 feet [12.2 m] long, 2 feet [61 cm] high, and 10 feet [3.1 m] thick. No other walls adjoined it; it was apparently, not hollow, nor could it have served as a roof-comb.² Its function could not be ascertained without extensive excavation, for which there was no time.

On Monday, February 27, ten workmen started clearing Group E of the annual growth, as well as an area to the west of Pyramid E-VII to make easier access to a new dump. On February 29, excavation was started on the northwest corner of Pyramid E-VII, where some of the primary construction, had been exposed the previous season.

The chief effort of the 1928 field season was expended in removing the outer shell of secondary rubble from Pyramid E-VII, in order to expose the primary construction beneath, which will be referred to hereinafter as Pyramid E-VII sub. In this excavation the extremely poor construction of the secondary pyramid made it impossible to obtain very detailed information, though it was ascertained that stairways had ascended to within 20 feet [6.1 m] of the top on all four sides. The apex of the pyramid was the latest addition; inasmuch as six horizontal strata of compact dirt and very small stones were found in this apex, it may well be that each stratum represents an original capping to the whole. These strata were each 6 inches [15.2 cm] deep and occurred at the following levels, numbering from the top down and measuring the height from the plaza floor: 1, 45 feet [13.7 m]; 2, 42 feet [12.8 m]; 3, 41 feet [12.5 m]; 4, 39 feet [11.9 m]; 5, 36 feet [11 m]; 6, 32.5 feet [9.9 m]. The greatest height of the pyramid, ascertained the previous years, was 50 feet [15.2 m].

In the coarse rubble forming the hearting of the apex three cysts were found: Cyst 10, lying on the fourth floor, at the 39 foot [11.9 m] level; Cyst 11, on the fifth floor, at the 36 foot [11 m] level; and Cyst 12 lying between the fourth and fifth floors, about 1 foot [31 cm] higher than Cyst 11.

Cyst 10 was a rectangular grave of large, cut, untrimmed stones and mud. Its long axis extended east and west. It contained the headless skeleton of a female, whose age was estimated as 25 years. The skeleton lay fully extended, face down, the feet toward the west, the right arm extended beneath the pelvis, the left arm flexed with the hand under the left shoulder. The grave itself was 20 inches [50.8 cm] wide and 5 feet 6 inches [1.7 m] long. The west end of the grave was 5 feet 6 inches [1.7 m] from the nearest point on the outside face of the pyramid, the east end 4 feet [1.2 m], and the south side 8 feet [2.4 m]. At this level the summit of the pyramid measured approximately 25 feet [7.6 m] north and south and 15 feet [4.6 m] east and west. The grave was closed with a layer of very

small stones. There was a space of 6 inches [15.2 cm] between the first vertebra and the east wall of the grave.

Cyst 11 lay just north of Cyst 10, though at a lower level. It was semicircular in shape, with the flattened base of the semi-circle to the west and in line with the west end of Cyst 10, and the apex of the curve pointing to the east. It measured 3 feet [91 cm] along the base, north to south, and 2.4 feet [73 cm] along the mid-line, east to west. It contained six pots, three plain redware dishes with flaring rims and three plain brown ware cylindrical pots with covers. These were similar to the dishes and pots found in Cysts 1 to 9 in Temples E-I, E-II, and E-III the previous season. Large stones were placed in this cyst to prevent the weight of the superimposed earth from crushing the vessels. The floor of the cyst was formed of a compact stratum of mud and small stones.

The redware dishes (1, 2, 3) were stacked in the extreme northwest corner, the two lower dishes one inside the other and the third dish, inverted so that it lay rim to rim with the inner bottom one. All were 6.5 inches [16.5 cm] in diameter at the top, 4.5 inches [11.4 cm] at the bottom, and 1.75 inches [4.5 cm] deep.

The brown ware cylindrical pots (nos. 4, 5, 6) were placed in a line running diagonally across the cyst, that is, toward the southeast, from the redware dishes. No. 4, lying nearest nos. 1, 2 and 3, measured 5.5 inches [14 cm] in diameter and 5.5 inches [14 cm] in height; no. 5, next to 4, was 5.25 inches [13.3 cm] in diameter and 5.5 inches in height; and no. 6, next to 5, was 5.5 inches [14 cm] in diameter and 5.25 inches [13.3 cm] in height.

Of the redware dishes, the upper (no. 3) and the lower (no. 1) were cracked; no. 2 was intact. Of the brown ware pots, no. 4 had the cover broken in excavation; it contained two (jade ?) beads, one with red paint on it, and flakes of some silvery colored material; no. 5 was intact and also contained silvery colored material and some partially dried brown gummy material; no. 6, also intact, contained both the silvery and the, brown material (some of the latter still adhering to the sides) and seeds resembling those of the squash.

Cyst 12, like Cyst 11, was semi-circular and occupied the same relative position on the south side of Cyst 10 that Cyst 11 did on the north. It measured 3 feet both along the base line, from north to south, and along the mid-line, from east to west. It contained seven pieces of pottery in all, two plain redware dishes with flaring rims, the top one (no. 1) inverted over the bottom one (no. 2), and five plain brownish redware cylindrical pots with covers (nos. 3, 4, 5, 6, 7). The dishes were placed along the northeast arc of the cyst (at "eleven o'clock," in the parlance of target shooting), and the cylindrical pots were placed irregularly in the central east and west zone from base to apex. As in

Cyst 11, stones placed in the open space prevented the earth above from crushing the pottery.

The two redware dishes were 5 to 5.25 inches [12.7–13.3 cm] at the base and 9.5 inches [24.1 cm] in diameter at the rim, and 2.25 inches [5.7 cm] and 3 inches [7.6 cm] in height. Both were cracked, and in the space between them were two snake's eggs, small pieces of charcoal and a sandy substance with a red-dish tinge. The pots measured from 5 to 6 inches [12.7–15.2 cm] in diameter and 4.75 to 5 inches [12.1–12.7 cm] in height. They were intact and contained variously shells, seeds, a silvery substance, partially dried gummy material and a reddish material on the bottom. No. 7 also, contained two pieces of obsidian, and between nos. 3 and 4 was found an obsidian lancet, measuring 6.5 inches [16.5 cm] by 0.5 inch [1.3 cm], extremely sharp and well made.

Two other redware dishes with flaring rims were found in secondary rubble at the level of the seventh terrace, just along the north balustrade of the secondary stairway. This cache is called Cyst 9; though the dishes were imbedded in solid mud. The top dish was inverted over the bottom one, but nothing was contained between them except three stones, each measured 10 inches [25.4 cm] in diameter at the rim, 6.5 inches [16.5 cm] in diameter at the base, and 2 inches [5.1 cm] deep.

In the new clearing made for the laborers' camp, an olla and pitcher of coarse brown ware, of more recent manufacture, were found lying on the ground. The olla measured 8 inches [20.3 cm] from the rim to the tip of its conical bottom; its greatest diameter, 11.5 inches [29.2 cm], occurred just below the very slight constriction under the everted lip. The pitcher was 7.5 inches [19.1 cm] in depth and the same in diameter.

After the removal of the secondary rubble from Pyramid E-VII (except from the southwest corner, purposely left covered as a control), Pyramid E-VII sub was exposed practically in its entirety. It consists of a terraced platform, with seven different levels. It measures 25 feet [7.6 m] in height, 79 feet [24.1 m] north and south, and 76 feet [23.2 m] east and west at the plaza level. Four main stairways, each composed of three flights of six steps each, mount the centers of the four sides from the base of the pyramid to the level of the fifth terrace. From this level one more flight of five concavely curved steps mounts, on the east side only, to the level of the sixth terrace, the posterior two-thirds of which is raised about one foot [31 cm] to form a low platform called the seventh terrace. The stairway on the east side, which faces the plaza and is the main façade of the structure, is bounded by six large stucco masks, three on either side, and the stairways on the other three sides are bounded by four similar masks each, two on either side. There are, therefore, 18 masks

on the whole pyramid; these have been numbered 1 to 18 according to the following plan: nos. 1 to 8 are the masks of the lowest tier, beginning with the mask south of the East Stairway and passing around the pyramid counterclockwise to no. 8 on the east side of the South Stairway; nos. 9 to 16 are the masks of the tier above, beginning again with the mask on the south side of the East Stairway just above no. 1 and passing around the pyramid counterclockwise to no. 16 just above no. 8; nos. 17 and 18 are the masks of the third tier and lie on the south and north sides, respectively, of the five concavely curved steps which lead from the fifth terrace to the sixth and seventh terraces on the east side only.

Masks no. 2 and no. 10 were uncovered in 1927 and the description of no. 10 already given [Chapter 28.3] will roughly suffice for all the masks in the second tier. Although no two masks are identical, all are strikingly similar in the following respects:

1. Each mask is, roughly, 8 feet [2.4 m] square.
2. All are made of lime stucco, over a built-up stone core.
3. All are of good workmanship, in rather low relief, and primitive rather than sophisticated in treatment.
4. The mouths of all appear as narrow, sunken slits from which depend two lateral, outward-curling fangs, and one central, more ornate, roughly heart-shaped appendage which might be tooth or tongue.
5. All the noses have a specialized decoration, either a tapered roll ornament hanging in a catenary curve between the eyes, or three parallel horizontal bands with gently rounded edges.
6. All have conventionalized head-dresses, perhaps representing feathers; the elements of which are flowing scrolls, untapered and ending in curls with the characteristic Maya blunt tip.
7. The expression of each mask is grotesque, ferocious.
8. The ears, depicted as without ear-plugs, extend the full height of the mask, and are in every case extremely conventionalized.

The lowest tier of masks, nos. 1 to 8, are even more difficult to describe for they are in such bad condition that their original character is scarcely recognizable. They suggest nothing so much as highly conventionalized serpents' heads, but this fact runs counter to the hypothesis that the cult of Kukulcan or the Feathered Serpent was a late Aztec or Toltec influence among the Maya. It is hoped that better preserved and less debatable examples may turn up in farther excavation. These masks are approximately 8 feet [2.4 m] wide and 6.75 feet [2.1 m] high. About 16 inches [40.6 cm] of the top extends above the level of the fourth terrace. The upper half of each mask is composed of conventionalized scrolls, one of which curls in such a way on either side as to suggest eyes. Across the center

of the mask is a horizontal slit obviously representing a mouth, and in it are pointed teeth, but the lateral pendant curling fangs associated with the Feathered Serpent in northern Yucatán are absent. Below the mouth, in the center, hangs an oblong appendage upon which is shown in slight relief a tongue with two outcurling, scrolls; this design, suggesting the bifurcated tongue of a snake, is often seen in northern Yucatán in connection with representations of the Feathered Serpent. The lowest third of the mask, countersunk deeper than those portions described above appears to represent the throat. It shows a dentate design in two horizontal rows, the points down, much like triangular tipped shingles on a house, and this has been interpreted as a crude representation of feathers or scales; this, part of the design certainly does not represent teeth.

The two masks bounding the East Stairway at the level of the fifth terrace, nos. 17 and 18, are smaller and more ornate. They measure 5.6 feet [1.7 m] and 6.6 feet [2 m] in width, respectively, and 5 feet [1.5 m] in height. Each represents a human face with a large, out-curling fang hanging from either side of the mouth. The face is framed by a scroll head-dress above and ears with large ear-plugs on either side. The nose, decorated with a tapered roll hanging in a catenary curve, is greatly exaggerated in both masks, and extends down-in front of and beyond the mouth. The foreheads of both are decorated with a plain plaque in the center. Both these masks show traces of red paint. In this connection it may be noted that Mask no. 10 had a red line, 3 inches [7.6 cm] long and 0.125 inch [0.3 cm] wide, on the left cheek, but the rest of the face had apparently never been painted.

Besides the main stairways facing the four cardinal points on Pyramid E-VII sub, which is accurately located in respect to the true or astronomic points of the compass, there are decorative steps on the various terrace levels below the fifth. They occur just outside the masks (except in the case of nos. 17 and 18, which are above the fifth terrace), and are approximately 4 feet [1.2 m] wide. Compared to the main stairways, which, are 9 to 10 feet [2.7–3.1 m] wide, they seem very small and could have served no essential function, other than to give access to all parts of the masks' faces. The first three flights lead from terrace to terrace, these three terraces being but 3 feet [91 cm] high each; the fourth and topmost flight ascends only 4 feet [1.2 m] of the 9 foot [2.7 m] high fourth terrace, ending against sheer wall too high to climb. The first three terraces and the fifth have simple cornices; the fourth terrace has both a plain basal cornice, 18 inches [45.7 cm] high; and a band, 2 feet [61 cm] wide, raised in relief 2 feet [61 cm] down from the top of the terrace.

The measurements of Pyramid E-VII sub at plaza level have already, been given. The four main stairways which run to the top of the fifth terrace give access to an area 33 feet [10.1 m] north and south, 20 feet [6.1 m] east and west, on which is located (3 feet [91 cm] back from the top of the East Stairway) a low mound or platform of two levels which form the sixth and seventh terraces. This platform is 4.5 feet [1.4 m] high in front and 5.5 feet [1.7 m] high in back the step-up occurring 3.5 feet [1.1 m] from the top of the concavely curved flight of five steps, bounded by masks nos. 17 and 18, which already have been described. Four cysts were found in this platform, Cysts d and e on the lower level near the front, and Cysts f and g on the upper level near the back. No objects were found in these cysts and Cyst f is typical of all four. This cyst was a circular hole, 14 inches [35.6 cm] in diameter and 52 inches [132.1 cm] in depth. Its outlines were sharply definable. A hole 25 inches [63.5 cm] in diameter had been dug through the 11 inch [27.9 cm] thick black flooring, and Cyst f had been sunk at the southern side of this; 5 inches [12.7 cm] to the north lay a very small cyst, f', only 6 inches [15.2 cm] in diameter and 2 feet deep. Cyst f contained about a foot [31 cm] of brown mold and some charcoal in the bottom, which suggests the possibility that these four cysts, each with a little cyst accompanying it, served as post holes for the timbers of a wooden structure on the top of the pyramid. These cysts had been sealed with white plaster at floor level, presumably after the posts had been removed and the secondary pyramid constructed.

Toward the close of the field season, Dr. Kidder and Dr. Morley, and Dr. G. C. Vaillant of the American Museum of Natural History, New York, visited the ruins, Dr. Vaillant coming as ceramic expert upon the invitation of the Carnegie Institution of Washington.

Although the excavation of Pyramid E-VII sub had occupied most of the field season and brought to light for the first time a new type of early Old Empire temple hitherto unknown, unique in style and with interesting variants of the usual Maya features, a most important discovery during the season is due to the work of Dr. Vaillant who sank exploratory trenches at two positions in the plaza and ably interpreted the information gained thereby.

The first of these trenches (Trench no. 1) was sunk at right angles to the east face of Pyramid E-VII sub, a few feet south of its northeast corner. Trench no. 2 was then dug at right angles to no. 1, due south to Stela 20. A third trench, Trench no. 3, was dug on the east side of the plaza, in front of the space between Temples E-I and E-II and north of Stela 18. Conditions here were almost identical with those found in Trenches nos. 1 and 2; floors presumably corresponding to, those already found in nos. 1 and 2 were observed to run be-

neath the substructure of Temples E-I, E-II and E-III, indicating the probable presence below the substructure of an earlier building, perhaps synchronous with Pyramid E-VII sub.

The 1928 expedition is again indebted to the following persons for their many courtesies: to Mr. and Mrs. P. W. Shufeldt and Mr. C. O. Taylor of Belize; to Mr. Robert Masson, of His Majesty's Customs, Belize, and to Mr. G. P. Chittenden of the United Fruit Company. Mr. Ricketson, on temporary leave of absence from the field, is personally indebted to the members of the field staff and to Dr. Vaillant for their efforts in obtaining the material for this report, and for their cooperation in its preparation.

NOTES

1. It is located on P. W. Shufeldt and Co.'s map near a chicle camp of this name.
2. Compare the "wall" reported in [Chapter 28.3].

28.5.

GEORGE C. VAILLANT

Report on the Excavations in the Plaza of Group E at Uaxactún

YB 27:313–317, 1928

A feature of the season's excavations at Uaxactún was the discovery of conditions favorable for an examination of the relationships between the stelae and the structures at Group E. The close of the season prevented a definite interpretation of the data gained, but the historical implications are of considerable import.

The presence of Stela 20 and the primary and secondary pyramids of E-VII gave every promise of fruitful correlation and research. The first step was to find bottom, and from this preliminary pit (Trench 1) trenches, were run west to the primary pyramid and south to Stela 20 (Trench 2). It was possible, therefore, to observe from two sides the stratification. Later, eastward by 150 feet [45.7 m] across the plaza at Stela 19, a trench (Trench 3) was dropped to study the relationships at that point. Unfortunately time was lacking to join by trenching the operations at Stela 20 and Stela 19.

The conditions in Trench 1 comprised a series of four floors overlying a layer of perhaps redeposited refuse. This deposit rested on a fill of rocks mingled

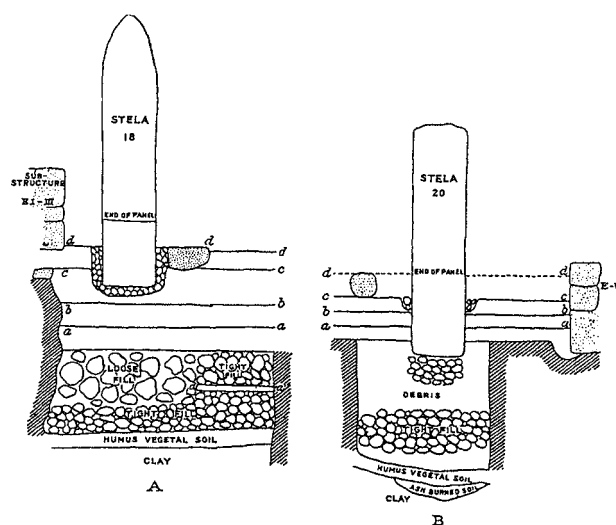


Figure 28.5.1. Uaxactún, excavations in the plaza of Group E. *a.* Trench 3 on east side of plaza near Stela 18; *b.* Trenches 1 and 2 on west side of plaza near Stela 20.

with charcoal, potsherds and, vegetal debris. Underneath this layer stretched a thin stratum of what appeared to be humus, and excavation was stopped after producing pure clay for a foot. In the southwest corner of this trench a pit was dug through the humus into the clay containing ash, burned kernels and burned rocks. This deposit represented, doubtless, a firepit. In Trench 2, excavations were carried only a short distance into the rock fill. Between the fill and the base of the floor occurred the very fragmentary remains of a young adult burial, with two jade beads near the neck.

Beginning from the bottom of the series of strata in Trench 2, we observe, from the section in the accompanying figure, that the original occupation surface was thinly covered with humus on the clay subsoil. Above this is a thick layer of stones mixed with sherds and charcoal. This section looks more like a leveling process in which rubbish layers were spread out and redeposited, than the natural accretion of human refuse. Yet, curiously, above this stone layer the earth is soft again but without the laminations and lenses of ash, vegetal and other debris that are characteristic of most deep rubbish beds.

Resting directly on this soft bed is the primary pyramid, E-VII sub, and extending from its base is the hard white plaster Floor a-a. Directly above, and at times indistinguishable from Floor a-a, is Floor b-b. This latter surface seems to be in the nature of an element of repair and not part of any extensive system of architectural change or addition.

Floor c-c seems to be the product of a plan of alteration. The original pyramid, as described in the preceding report of O. G. Ricketson, Jr., rises in corniced

steps. Unfortunately our section is taken through a different part of the building, i. e. through the balustrade, and does not show this condition. Floor c-c, however, is carried out from the base of the cornice, so that this latter architectural feature disappears. This willingness to sacrifice to the new floor level a significant architectural feature must signify some important external change, perhaps the construction of additional buildings in another part of the plaza.

Floor d-d, the topmost surface, is so badly destroyed by the action of roots and trees that only a vestige remains around the base of Stela 20. However, since the first three floors we have considered belong to the primary pyramid, this fourth must be associated with the covering or secondary pyramid. Stela 20, of early date, 9.3.0.0.0, must be associated with this latest floor, since a cup-shaped hole was excavated through the lower floors to receive the shank of the stela. The lower edge of the frame of the sculptured panel was a little' above Floor d-d.

Across the plaza, 150 feet [45.7 m] to the east, Stela 18 is situated immediately in front of the long substructure on which rest Temples E-I, E-II, and E-III. A trench (Trench 3) was dropped to the north of the monument to find out the relationships of substructures, floors and this stela, which bears the very early date of 8.16.0.0.0. The conditions in the main are very similar to those in Trenches 1 and 2 on the opposite side of this plaza.

In Trench 3, the bottom layer is of clay with a thin layer of humus containing a very few sherds. The next stratum is composed of stones mixed with debris, and from this layer came most of the sherds. At the west end of the trench, a thin plaster floor, a'-a', resting on this level, was exposed. There was not, however, any trace of walls. Perhaps they had been of wattle-work.

Directly above a'-a' is a fill of the same character as below it—dirt and stone mixed. East of a'-a' the upper fill is of pure rock with no dirt in the interstices. In the accompanying figure this condition has been labeled "loose fill"; the state of the lower strata, where the interstices are filled with soil, is entitled "tight fill."

Above this last-mentioned stratum is a thick solid floor a-a, which, as in Trenches 1 and 2, is of plaster, lime and the residue from burning lime. Directly over this floor is another equally hard, b-b. Both these floors pass under the eastern substructure of the plaza of Group E. Up to this point the conditions are practically' homologous with those in Trenches 1' and Floor c-c is thicker than the equivalent surface in the western trenches comprising a foot and a half [45 cm] of material. Directly under the west face of the substructure of Temples E-I to III, there is a stone which may represent a coping. If this be so, there is a strong presumption that the development of the E group was out and east from the primary pyramid of E-VII.

Floor d-d is clearly represented in Trench 3 by a surface coped with stone around Stela 18. This floor is definitely associated with the substructure of Temples E-I to III, since the lower floors all pass, beneath it. Stela 18 is set in a cup-shaped depression, and is wedged firm by small stones. The socket extends through Floor c-c, to a little above Floor b-b. It is not so deeply set as Stela 20. Another point is that while Stela 20 is set with its long axis parallel to the secondary pyramid of E-VII, Stela 18 is slightly askew to the substructure with which it now corresponds.

Levels were not taken to compare the floors, but in the, stratigraphical complexes of Trenches 1-2 and Trench 3, the number of surfaces is the same. The greater thickness of the floors in Trench 3, taking the surface a-a as a fixed level for measurement, is merely an increase of between 6 inches [15.2 cm] and a foot [30.5 cm] in a distance of a little over 150 feet [45.7 m]. While a linking of Trenches 1 and 2 with Trench 3 would give more complete data, the correspondence is close enough to permit the drawing of certain conclusions from the data at hand.

Of the original contour of the low hill upon which Group E is situated, we have as yet no information. Yet the first occupants must have lived directly on its surface without making any great effort to adjust its probable irregularities, by leveling or terracing.

As time went on, however, and judging from the depth of the debris, it was a considerable period, there must have been some rude attempt at leveling, as the presence of so many stones in, the debris attest. But in this stone layer there are also many sherds. This combination seems to indicate a shoveling of debris from the top of the hill to level off the surface. Substance is added to this hypothesis, by the presence of Floor a'-a' in Trench 3.

However, after this leveling, occupation must have continued for some time, since in Trenches 1-2 we find pure debris and a skeleton above the stone fill. It would facilitate interpretation of ground conditions if we knew whether it was a Maya custom to bury in rubbish beds which were contemporaneously accumulating. It is not so easy to account for the fill above, Floor a'-a', which contains stones.

Pottery found in the levels below the a-a floor system consists of wares with yellow-white, red, brown to black, and gray slips. The first three wares have a flaky base clay, but the slip is hard. The Grey Ware is porous and powdery, and is used for storage vessels. The Yellow-White Ware is rarely painted in red, but sometimes a red secondary slip is coated over it. The Brown-Black Ware is decorated mainly by incision and by modeling. The shapes for the red and the Yellow-White wares are low squat dishes with concave bottoms, or deeper vessels, almost conical. The shapes in

brown-black wares are globular bowls, ollas of small size, and cylindrical vessels. Associated with these pot forms are figurines with modeled bodies; in technique the faces are on the border line, between molding and modeling. In expression some heads begin to show Maya features, although there is a "feeling" of the plastic of the unspecialized cultures of Middle America (the so-called Archaic). An owl-whistle was also found. Summing this material up, it seems to be in pot-form, non-Maya, but, in the plastic art, just emerging into that type called Maya. While not resembling it in any but the most general way, the nearest ceramic group is the material found by Dr. Gamio at the Finca Arenal just outside Guatemala City.

Directly over this lower level material, stretches the Floor a-a which is associated with Pyramid E-VII sub. From the preceding report, it will be seen that this structure is not in the Petén tradition of steeply rising slopes broken by narrow terraces. While the masks give the structure a Maya flavor, the stepped profile recalls the pyramid types of the highlands of Guatemala, although it seems improbable that there is contemporaneity between the latter and this undoubtedly early building. Possibly E-VII sub belongs to a common ancestral type.

It will be of the greatest interest to find other structures in Group E of the same period as E-VII sub. The conditions in Trench 3 seem to make such a find likely, for, not only did the floors pass under the substructure of Temples E-I to III, but there is also a formal foundation of dry stone (loose fill), that suggests a considerable enlargement of the original hill top. Floor b-b was laid apparently as a repair surface, but Floor c-c seems to be a connective floor, for the rise in level is more than necessary for the needs of repair. The bringing of Floor c-c up to the cornice level of E-VII sub tends to confirm this assumption. Not enough material was found to indicate the ceramic styles of Pyramid E-VII sub, or the Floor c-c period, for the rubbish deposits of these horizons were not encountered.

As explained above, Floor d-d is the surface associated with E-VII, the substructure of E-I to III, and Stelae 18 and 20. But there is a difference of 138 years in time between these two stelae. At the present we can not say which of the stelae is contemporary with Floor d-d, nor can we show that neither is contemporary with the architecture, having been removed from some other locality and re-erected here. It is significant that Stelae 18 and 19 are badly aligned with the substructure behind them, hinting perhaps at the presence of an earlier structure, but the juncture of Floor d-d with this substructure militates against this assumption. In the masonry forming Pyramid E-VII sub, a fragment of a bowl was found that resembles so closely as to be stylistically identical with a vessel found in the sec-

ond of four groups of burials at the stratified, apparently Old Empire pyramid of Holmul.

The other pottery in the fill also carries the characteristic style of Holmul pottery comprising vessels with porous base clays, and black or red slips like a lacquer. Storage pottery is of porous friable gray-ware striated on the exterior. In shape, the red and black-ware bowls are composite silhouette rim bowls with broad flanges at the point of unión between the rim and the base sections.

The pottery from Temples E-I, II and III, from a casual inspection, seems different from this style, showing cylindrical legs and an absence of the flange, having some resemblance to the latest ceramic period at Holmul. The small stone idol discovered in the season of 1927 might be assigned to the sub-floor period of Pyramid E-VII, but this classification is conjectural.

In short, then, at the E Group at Uaxactún, there was a long period of occupation, punctuated not only by architectural changes in structure, ground-plan and level, but also by changes in the major and minor-arts. A complete series of trenches would yield that which the archaeology of the Maya most needs a chronology based on material culture and possibly even a correlation between the stelae which record absolute time and the sequence of the material culture. We have then the following phases:

1. Original occupation.
2. Floor a'-a' and expansion of the town of the first inhabitants.
- 2a. Possible abandonment of this town, as seen by the burial in Trench 2.
3. Construction of Pyramid E-VII sub and Floors a-a and b-b.
4. Expansion of site of E-VII sub people as seen by Floor c-c.
5. Construction of Pyramid E-VII sub, and the substructure of Temples E-I to III. Insertion of stelae. Stela 18 and 19 may represent a period intermediate between 4 and 5, and people of the epoch may have made the pottery in the fill of Pyramid E-VII.
6. Occupation of the people who left their pottery in Temples E-I, E-II and E-III, and who, perhaps, may have built these temples.

The great point raised by this season's excavation is, how high a culture, as Pyramid E-VII sub attests, existed before the erection of stone monuments by the Petén Maya. We may have discovered the origin of "Maya" culture, but we have yet to find the mother-culture of its originators.

28.6.

OLIVER G. RICKETSON

Report on Miscellaneous Excavations

YB 28:323, 1929

A burial was found in the center room of Structure E-X, lying head to the north, face up, in a shallow grave that been dug through the two lower floors. Two upper floors covered it. The skeleton was that of a male, the skull showing slight occipital flattening. The facial portions had disintegrated; although the mandible was recovered, only 10 teeth were found. The skeleton lay on its back, left arm across the abdomen, the right so flexed that the hand rested on the right clavicle. The pelvic region was filled with ash and charcoal, and from the waist down the body lay more nearly on its right side, the left knee half-flexed and lying over the right. The objects found with the skeleton were all placed around the head; these consisted of four pieces of bone, two shell disks, one shell ring, one annular shell lip-plug with small pits cut on the anterior surface, one whole shell with four perforations, one piece of shell and half a mandible of a carnivorous animal with the end cut off smoothly.

Five pits were dug in Group A, around Temple A-V, Pit 1 to the west, Pit 2 to the north, Pits 3 and 5 to the east and Pit 4 to the south. Pit 1 pierced a floor at 1 foot 6 inches [45.7 cm] and struck blue clay at 4 feet [1.2 m]; Pit 2, 4 feet 6 inches [1.4 m] deep, pierced a floor at 1 foot 4 inches [40.6 cm] and struck marl at 2 feet 6 inches [76.2 cm]; Pit 3, 4 feet [1.2 m] deep, pierced a floor at one foot [31 cm] and struck marl at two feet [60.9 cm]; Pit 4, 3 feet [91.5 cm] deep, encountered no floor and stopped at bedrock; Pit 5, 3 feet 6 inches [106 cm] deep, pierced a floor at 10 inches [25.4 cm] and another at 2 feet 2 inches [66 cm] which overlay 10 inches [25.4 cm] of dirt and limestone, and 6 inches [15.2 cm] of burnt lime, black dirt and small pieces of unburnt lime. Pit 4 yielded a three-legged flat dish of red ware, with rattle legs. Two trenches were dug into the slope north of A-V, to determine whether the apparent talus slope from the artificial retaining wall along the top of the hill had been formed by refuse from the, complex group of buildings above, but this slope was found to be composed of solid limestone under one foot [31 cm] of vegetable humus.

28.7.

OLIVER G. RICKETSON

Report on the Excavations at Uaxactún

YB 28:316–322, 1929

In conformity with the contract granted by the Government of Guatemala to the Carnegie Institution of Washington for the excavation of the ruins at Uaxactún, the fourth season was inaugurated early in January. The expedition consisted of Oliver Ricketson, Jr., in charge, A. Ledyard Smith, assistant archaeologist, Edith Bayles Ricketson, and Enrique Shufeldt, field assistants.

Although Mr. and Mrs. Ricketson arrived in Belize, British Honduras, on January 9, it was not until February 7 that they, accompanied by Mr. Shufeldt, were able to leave for El Cayo, and the ruins. This delay was due to the chaotic transport conditions prevailing in the Department of Petén, Guatemala, as the result of the cessation of work in that district by the P. W. Shufeldt Co., on which previous expeditions had depended for the transportation of supplies. It was finally necessary for the expedition to purchase ten pack mules, to add to the 10 animals already owned, and to organize its own pack train.

Upon his arrival in El Cayo, Mr. Ricketson called officially upon the Guatemala customs authorities at Fallabon, to present his credentials. The expedition arrived in Uaxactún on February 20, and on February 25, after the necessary clearing of the ruins and repairs to the field headquarters had been completed, the excavations in Group E were resumed.

The season's work may be divided into four parts: 1. Excavations in Group E; 2. An examination of the stela to determine possible relationships between stelae and plaza floors, Stela and temples, and to look for sub-stelae caches; 3. A map of the environs of Uaxactún, to determine the number, frequency, locality, and possible relations to each other, of house mounds and chultuns, for the purpose of estimating the population; and, 4. Miscellaneous excavations.

Before proceeding with the description of the excavations in Group E [Chapter 28.4], the following additions to the nomenclature used must be noted: 1. The East Mound: the platform mound, 15 feet [38.1 cm] high, upon which stands Temples E-I, E-II, and E-III; this mound bounds the east side of the plaza of Group E; 2. The South Mound: the platform mound, 16 feet [40.6 cm] high, upon which stands Temples E-IV, E-V, and E-VI; this mound bounds the south side of the plaza of Group E; and, 3. Structures A, B, and D: ill-defined constructions encountered below one or more

plaza floors; they are probably low platform mounds upon which stood former buildings which were demolished during the enlarging of the plaza of Group E.

The object of the excavations made in Group E during the past season was to determine the character and relationship of the four floors uncovered during the previous season [Chapter 28.4]. To this end, two main trenches were dug in the plaza, one running east and west across the plaza just north of Stelae 19 and 20, and the other running north and south approximately in the center of the plaza. With the intersection of these two trenches considered as the central point, the trenches extending from this point were called the North, East, South and West Trenches, respectively. All of these trenches, except the West Trench, were started from pits sunk on the edges of the plaza, Pit 3 in the North Trench, Pit 8 in the East Trench, Pit 17 in the South Trench; the trenches then being dug toward the center, 10 feet [3.1 m] wide on the surface and following the topmost floor that had appeared in the pit. When it became evident that this system would not be satisfactory, since the top floor in some cases disappeared entirely or proved to be only a terrace level, the trenches were dug from the center pit toward the edges of the plaza, still clearing only one floor at a time. This procedure was adopted to preclude the possibility of a careless workman mixing sherds from different strata. Narrow ledges of each floor were left extending into one side of the trench, and these ledges proved to be of the greatest assistance in solving the problem presented by the extremely complex system of floors, repair floors and terraces.

The East and West Trenches, whose combined length was only 122 feet [37.2 m], as compared with 256 feet [78 m] for the combined length of the North and South Trenches, were completed first. A cross-section shows six distinct floors in the central area, the bottommost being called Floor 1 and the topmost Floor 6. Eastward from the central pit these floors slope up gradually, approximately 0.21 inches [0.5 cm] per foot. Floor 1 lies at a depth of 42 inches [106.7 cm] below the surface, and Floor 6 at a depth of 11 inches [27.9 cm]. Judging from the quantities of small stones, about the size of English walnuts, that overlie Floor 6, it is probable that there was once another plaster floor above Floor 6, as the Maya, in Uaxactún at least, often laid their plaster floors on a foundation of coarse gravel. Floors 3, 4, 5 and 6 are relatively closely laid, one upon another, but Floor 2, the plaster surface of which is 2 inches [5.1 cm] thick, lies on a gravel bed 6 inches [15.2 cm] deep in the center of the plaza and diminishing toward the west. From this gravel bed great quantities of sherds were recovered.

Toward the western end of the West Trench, almost directly in front of Temple E-VII. sub, a stone retaining-

wall about a foot [31 cm] high was encountered. This wall was found to be contemporaneous with Floor 1, that is, Floor 1 did not continue under the retaining wall but turned up to meet it in such a way that it could be inferred that the retaining wall was built and the floor laid at approximately the same time. Wing trenches to follow this wall were dug, and the structure, which is called Structure A, proved to be a simple platform, the outlines of which can be traced distinctly on the north and east sides. Of the west and south sides only portions remain *in situ*. Probably the missing portions were removed in order to utilize the stones in the building operations incident to the expansion of the plaza or in the erection of Pyramid E-VII sub itself. Floor 2 ends against the retaining wall, but Floor 3 and all floors above it pass over Structure A. In this vicinity, Floor 1, gradually sloping up, apparently, coalesces with Floor 2. Floor 3 is flush with the terrace-like foundation of Temple E-VII sub; viewed from above the terrace and the floor would appear to be one, but in a cross-section view the terrace turns down and Floor 3 joins it. This type of construction was found elsewhere during the season's excavations, and the excavator must constantly be on guard against confusing terraces and floors that join on the same level; obviously, the pavement in these cases is a later construction.

It was discovered that the floor a referred to in the report of last year's work [Chapter 28.4] was actually the above-described temple terrace, and would therefore correspond to Floor 3. Similarly, Floor d corresponds to Floor 6, Floor c to Floor 5, and Floor b to Floor 4.

A re-examination of Stela 20 was made, and it was found that this monument, bearing the date 9.3.0.0.0 (235 AD) must be associated with Floor 6. Stela 19, bearing the date 8.16.0.0.0, 3 Ahau 8 Kankin (97 AD) on the other side of the plaza is also associated with the topmost floor. Obviously, one of these monuments can not be in its original position, if we suppose that the dates cut upon them are synchronous with their erection. Conversely, if both monuments are in their original positions, the date on Stela 19, since it is the earlier, must have referred to some past event at the time when it was erected. It is the writer's belief that one or both of these stelae have been moved, from their original positions.

The East Trench, viewed in cross-section, shows six floors near the central area, but toward the eastern border of the plaza another floor appears between Floors 4 and 3. This is called Floor 3', and the exact point of its beginning could not be discerned. Floor 3, 32 feet [9.8 m] west of the first step on the East Mound, sloped upwards to coalesce with this extra floor and continues as Floor 3' to the East Mound. It would there-

fore appear that the plaza was widened some time after the laying of Floor 3 and previous to the laying of Floor 4. Floor 4 runs under the East Mound, secondary construction. A narrow trench dug into the East Mound revealed a primary construction immediately inside; this was of stucco over a stone core and consists of 13 steps or terraces reaching the top of the East Mound.

A double row of large squared limestone blocks was uncovered, 22.5 feet [6.9 m] west of the East Mound, running north and south across the East Trench. Their function could not be determined, but it is tentatively suggested that they represent blocks taken from a demolished building and re-used as fill for leveling purposes during a period when the plaza was being extended.

Of the South Trench the space available in this report permits only the most cursory description. Seven distinct lines of stones were encountered, two of them double, running east and west across the trench. Wing trenches to determine the extent and function of these lines of stones were ineffectual, except in the case of the two most southerly rows. The southernmost row appears to be a low retaining wall with a batter. It could be followed to a corner on both the east and the west, where in each case the wall turned north. The northeast corner of this structure, Structure D, could also be determined, but within a few yards of the corner, the north wall was permanently lost under the roots of a gigantic Spanish cedar. The northwest corner was found symmetrically placed opposite the northeast corner, but within a few feet of it the north wall again disappeared. There seems to be sufficient evidence, however, together with the evidence produced by the next most southerly row of stones, which resembled the wall of an inner room, to describe Structure D as a platform mound with cut-stone, battered retaining walls, upon which had stood a building.

The South Trench was continued into the South Mound. Little trace of the secondary construction remains *in situ* here, but evidence of primary construction abounds. The northwest and northeast corners of the mound were determined, but further excavation will be necessary to decide whether the small sections uncovered should be classed as primary or secondary. Both corners are rounded, not square, and the blocks composing the walls are massive and well out, leading one to infer they belong to the earlier construction.

By far the most complicated labyrinth of retaining walls, floors, and re-used walls of demolished buildings was uncovered in the North Trench and the extensive excavations that developed from it. Briefly, the salient features may be described as another low platform mound, Structure B, which apparently had either a lower platform projecting from it on the south side, or was partly superimposed on another and ear-

lier platform mound. Further excavation is necessary here. Floor 1 ends against the bottom of the projection on the south side of Structure B. Floor 2 coincides with the top of the same construction. Floors 4, 5 and 6 pass completely over the whole north half of the plaza. Mound E-VIII, secondary construction, extends in terraces into the plaza, some of the terraces coinciding with or terminating against retaining walls of Structure B. No less than five excellently preserved floors pass completely under Mound E-VIII. Upon trenching into this mound, primary construction was encountered almost immediately, leading to the top in nine steep terraces. As these terraces were too high to step up comfortably, a single cut stone had been placed against each riser as a step. Three such stepping-stones were found *in situ*, the mortar in which they had been set still being present. The construction of Mound VIII sub (terraces of well-out stone heavily coated with stucco) is exactly like that of Temple E-VII sub and the primary terracing on the East Mound. A narrow trench was dug through the facing of Mound E-VIII sub into its core, and continued until its face, perpendicular with the front edge of the top of the mound, measured 22 feet [6.7 m] in height. The core of the mound was found to consist entirely of very large uncut pieces of limestone embedded in a hard marl, and the removal of these boulders from the 22 foot [6.7 m] face required so much effort and entailed such risk that the work on the trench was discontinued. There was no evidence that Mound E-VIII sub contained within it any earlier construction; however, as this trench had been dug because a pit on the outer edge of the mound showed five floors passing beneath it, another pit was sunk at the end of the trench and the same five hard floors were encountered, suggesting that any interior structure might conceivably lie beyond the limits of the trench.

Temple E-VII sub, uncovered during the past season, was examined more closely, with special attention to its relation to the various plaza floors. This study proved very puzzling. Floor 2, with which Floor 1 had coalesced just east of Temple E-VII sub, continued under the pyramid on its east side, but a short trench up to the pyramid on its west side indicated that no floors ran under it there. To explain this difference, a painstaking examination of the floors around the north side of the pyramid was undertaken, but the confusion was so great that no satisfactory results could be obtained. Then a narrow trench was dug into the north side of the pyramid, cutting through the north stairway. At this point two floors ran under the temple and two ended against its base. The topmost of these four floors could be identified as Floor 5; the other three could not be connected actually with known plaza floors, though they checked correctly, counting downward, with Floor 4, Floor 3, and the coalesced Floors 2 and 1.

This trench exposed the heavy stone veneer of Temple E-VII sub, and 9 feet [2.7 m] in from the bottom step a crudely laid terraced wall appeared, rising in eight terraces to a point 20 feet [6.1 m] directly under the platform mound on top of the pyramid [Chapter 28.4]. Whether this crudely laid structure is merely a core upon which Pyramid E-VII sub stands, or is an independent structure over which E-VII sub was built, it is not possible to say. at the present time and further investigation will be necessary. Two points should be noted here: the two floors running under Pyramid E-VII sub definitely continued underneath the interior structure; and the fill between this interior structure and the stone veneer of E-VII sub is radically different from the fill encountered within Mound E-VIII, in that it is composed of irregular but distinct strata of soft white marl, gravel and black clay.

Twenty-eight pits were sunk in the plaza of Group E, of which the more important may be briefly described as follows:

Pits 1, 4, 15 and 18 were dug in the northwest, northeast, southwest and southeast quarters of the plaza, respectively, to determine the depth to undisturbed soil. Pit 1 pierced three floors and was dug 5 feet 11 inches [1.8 m] deep; it was left incomplete still penetrating disturbed strata. Pit 4 pierced four floors and was dug 10 feet 4 inches [1.3 m] deep; it was left incomplete, still penetrating sherd-filled ash and charcoal. Pit 15 pierced four floors and struck bedrock limestone at 8 feet [2.4 m]. Pit 18 pierced four floors and was dug 7 feet 2 inches [2.2 m] deep through disturbed strata, finally striking large stones; it was left incomplete at this point. A charcoal and ash deposit was encountered at 5 feet 2 inches [1.6 m] from which artifacts were obtained, including bone awls and needles, crude flint implements, etc.

Pit 9 was dug in the bottom of the East Trench near the center of the plaza, to a depth of 9 feet 9 inches [2.9 m]. At 5 feet 11 inches [1.8 m] stiff fine black clay; was encountered, and below this, at 8 feet 1 inch [2.5 m], a 7 inch [17.8 cm] stratum of small limestone broken gravel full of sherds.

Pit 20 was dug in the center of the North Plaza of Group E. It pierced seven floors and at 7 feet 8 inches [2.3 m] reached undisturbed black clay.

Pits 12, 13, 14 and 28 were dug west of E-VII sub, primarily to determine how far various floors extended westward from the plaza and the depth to bedrock at various points. Floor 5 ended 11 feet 6 inches [3.5 m] west of E-VII sub; Floor 3 ended 16 feet [4.9 m] west of E-VII sub in Pit 12, which was dug 4 feet [1.2 m] to bedrock; Pit 13 reached bed rock at 2 feet 8 inches [81 cm]; Floor 2 ended 39 feet 6 inches [12 m] west of E-VII sub in Pit 14, which was dug 2 feet 6 inches [76 cm] to bedrock. Pit 14 also exposed a badly preserved skel-

eton, lying on solid limestone, head to the north and face down, at a depth of 2 feet 6 inches [76 cm]. There was no funerary furniture and the skeleton could not be recovered.

Pits 3, 8 and 17 were dug as starting points for the North, East and South Trenches, respectively. Pits 7, 10 and 11 were dug during the previous season [Chapter 28.4], Pit 7 just north of Stela 18 (Trench no. 3 in [Chapter 28.4]), Pit 10 east of Pyramid E-VII Sub (Trench no. 1 in [Chapter 28.4]) and Pit 11 north of and under Stela 20 (Trench, no. 2 in [Chapter 28.4]). The nomenclature is here changed because this season's excavations, removing all the upper dirt, completely obliterated the trenches, which were really in the nature of pits.

As a result of the excavations in the plaza of Group E, I believe it is safe to make a few general observations, though the excavations are still incomplete. The complex of structures called Group E appears to have gone through no less than four distinct periods: 1. First occupancy; ash-pits and rubbish heaps formed; 2. Erection of the earliest platforms; Structures A, B, D; 3. Demolition of earliest buildings, expansion of plaza, and erection of the Primary Type structures, Pyramid E-VII sub, etc.; and, 4. Erection of the Secondary Type structures over the Primary Type buildings, Pyramid E-VII.

So far, no mention has been made of the pottery found at Uaxactún and at this writing there is little to be said. Permission has been obtained from the Government of Guatemala to transport all portable objects to Guatemala City, where Messrs. Ricketson and Smith will take up a residence in order to make an intensive study of all sherds. It is possible, however, to make the following general statements, subject to later corrections:

1. No polychrome pottery occurs below the topmost floor of the plaza (Floor 6).
2. Few sherds of any description occur between Floors 6 and 2.
3. The sherds from the deep gravel layer beneath Floor 2 occur in great numbers and are characterized by: a. polished red or black slip; b. horizontal fluting, and some vertical fluting; c. simple silhouette, vases and dishes.
4. Sherds from beneath the bottom floor (Floor 1), in the so-called Black Dirt, are of the following types: a. Human effigy figurines, characterized by extreme simplicity, free-hand modeling, grooved and punched eyes and nipples, rolled fillets around the head, and relative flatness antero-posteriorly. The figurines are all represented as standing rigidly, the legs formed of one piece, down the center of which a groove indicates the line of separation. Not more than a dozen and a half fragments of figurines of this type were found during the season; b. Animal effigy

whistles; of these only fragments were found; c. Sherds of highly polished red or black-wares, incised after firing with parallel lines and in geometric patterns.

5. In Pit 4, in the ash deposit at the bottom, was found a figurine's arm and shoulder of sun-baked clay with a light-brown slip, dull polish.

The above classification attempts no more than the noting of types which appear to be characteristic of their respective strata. Types of pottery occurring more generally are omitted, as are the finer gradations impossible to determine until all the specimens have been thoroughly cleaned and examined.

28.8.

A. LEDYARD SMITH

Report on the Investigation of Stelae

YB 28:323–325, 1929

An investigation of the stelae at Uaxactún was started on April 1. The purpose of this work was threefold: first, to associate dated monuments with adjoining plaza floors and temples and to determine the reliability of dating the temples by this means; second, to determine the methods used to erect and support the stelae; and third, to discover possible caches under the monuments.

There are 44 stelae in Uaxactún. They are, of course, in different states of preservation, some still standing, others broken off at ground level with bases *in situ*, and some completely uprooted. No study was made of the uprooted stelae, as it proved impossible to find the holes in which they originally stood. Of the 44 monuments, all but seven were examined. Sixteen, were still standing, and 10 were broken off at ground level or slightly above, with their bases still *in situ*; 11 were found uprooted.

This investigation shows that it is not possible to date definitely a temple by the date of the monument in front of it. Generally the floor is broken around the base of the stela, and this condition may be due to the shifting of the stela or to the action of water running down its sides. It may also indicate that the monument has been set through the floor and is therefore of later date than the floor. Even when the connection is perfect and the floor turns up to the monument and is

definitely joined to the temple behind it, one can only say that the temple is probably contemporaneous with the stela. Conclusive evidence that many of the stelae were moved and re-used makes any positive dating of the buildings by means of the stelae unreliable at Uaxactún.

Stela B-5, in B group, will illustrate this point. This stela, of fine hard limestone, was absolutely plain from the floor level up; no traces of carving could be found. Upon close examination, carving was discovered just below the floor level, and one could plainly see that the stone had been chiseled down to remove the carving above the floor level. The carving consisted of a glyph panel, much obliterated, extending to within 8 inches [20 cm] of the base of the stela. Thus the present base of the stela might originally have been the top. Another example is the altar of Stela 9 at Group A; this altar was made from a carved stela (no. 10), and part of the original design may still be seen on the top and bottom. Still another example is to be found at Group E, where an examination of floor conditions seems to indicate that Stela 18 and 19 were set up after Stela 20, which bears a date later than that on 18 and 19.

There were five methods of supporting the monuments. The most common was to place the stela in a hole from 1 to 3 feet [0.3–0.9 m] deep and hold it in position by wedging small stones around the butt and filling with a fine rubble composed of burnt lime, small stones and dirt. A second, frequently used when the stela were set through floors or required additional support, consisted in building a platform around the stela above the top floor. Stela 4, in B group, illustrates this very clearly. A third method was to build the stela into the wall of another structure; thus the base of Stela B-I is held in position by the stones of the lowest terrace of Temple B-V, the butt of the stela extending only 6 inches [15.2 cm] under the floor. A fourth method consisted in building a stone crib below the floor to receive the butt of the monument. There are three examples of this method of support at Uaxactún, namely Stela A6, 6, and A10. These cribs in no way suggest vault construction; they are not nicely fitted, and are made of roughly cut stones. The fifth and most effective method consisted in cutting a hole, 1 to 2 feet [31–62 cm] deep, in very hard marl and shaping it as nearly as possible to the butt of the stela. Between the stela and the marl is tamped a mixture of burnt lime and dirt which acts as a cement.

Caches were found under six of the monuments, and were of three types: 1. eccentric flints, shells, and, worked objects of shell, jade and obsidian; 2. flint and obsidian chips, mixed; 3. obsidian cores and chips, no flint.

The first cache was found under Stela 4, and contained the following objects: eight eccentric flints, three

bats with spread wings shape, three snake shape, two deer-head shape, three eccentric obsidians, deer-head shape, one obsidian core, two small obsidian blades, one jade bead, polished but not drilled, five small jade chips, one small, flat jade figurine, two small, flat shell figurines, two pieces of carved conch shell, two pieces of coral, two small pieces of mineral, probably iron pyrites. These objects were not in a cist, but were found scattered in the rubble under the southwest corner of the monument. The eccentric flints are very similar to those found at Baking Pot (Ricketson 1929); they are probably conventionalized animal forms used with some religious significance.

A cache of similar type was found under Stela A11. It contained the following objects: six eccentric flints, four snake shape, two deer-head shape; two laurel leaf flint blades, two obsidian cores worked to a point at each end; two obsidian cores (possibly eccentric obsidians); four obsidian chips, one sea shell (scallop?), one piece of shell. The flint objects were found around the edges of the monument, and the obsidian and shell beneath its center.

Another type of cache was found under Stela A6. This consisted of 41 obsidian cores, some pointed at each end and others comb-shaped with three teeth; with these was a great quantity of chips and broken obsidian blades. A similar cache was found under Stela A7, containing 30 obsidian cores of the above-noted types and many obsidian chips.

A third kind of cache was found under Stela B2 and A1. Here very little obsidian was found but a great many flint chips, obviously the result of the manufacture of flint implements, were mixed with the dirt under the monuments.

A most unusual find was encountered under Stela 17. Here, under a floor and 6 inches [15.2 cm] from the base of the stela was the mouth of a chultun covered by a flat, circular stone. This chultun had two chambers, one a little to the north and below, the other, directly under the stela. Nothing was found in either chamber.

The results of this investigation of the stelae were disappointing in some measure. It has shown that any certain dating of buildings by means of stelae is impossible, because of the evidence that stelae could be and were moved and reused. Although few caches were discovered, they may be considered important, as the objects found in them conform, in general to the type hitherto found in sub-stela caches and exhibit some new features as well. The methods used to support the stelae show no striking originality or ingenuity, and seem to have been suggested mainly by the type of soil where the stelae was to be placed.

28.9.

A. LEDYARD SMITH

Report on the Map of Environs of Uaxactún

YB 28:325–327, 1929

On February 25, Mr. Enrique Shufeldt was given the task of mapping the country surrounding the six main groups at Uaxactún. The purpose of this work was to ascertain the number of house mounds and chultuns in the vicinity of the civic center, in order to make an estimate of the ancient population.

The following method was used in, making the map: Two main lines of sight were cut, one east and west, the, other north and south, crossing each other at a point 625 yards [572 m] southwest of the main aguada. The north-south line runs through Groups A and B and the east-west line through, Groups D and E. Additional lines were then cut parallel to the two main lines and 100 yards [91.4 m] apart, and other lines intersecting these at right angles at intervals of 100 yards [91.4 m]. The area thus divided into squares is cruciform, each square being 100 yards [91.4 m] on a side. The arms of this cross, each 400 yards [365.8 m] wide, extend 1,400 yards [1280.2 m] to the north, 1,800 [1645.9 m] to the east, 1,600 [1463 m] to the south and 1,000 [914.4 m] to the west of the point of intersection.

After the squares were cut they were numbered and searched. They were purposely made small, because the density of the jungle made it difficult to see the house mounds, and the search of each square had to be accomplished with a minimum of bush cutting.

The Eastern Arm consists of 72 squares, or 720,000 square yards [0.6 sq km]. Of these squares 24 were not searched, as they lay in Group E which had already been mapped. Twenty-nine squares were bajo, or low swampy land, and 19 were high ground. Nineteen house mounds and three chultuns were found. The house mounds were usually elliptical in shape and were found standing alone, two together in an L shape, or three or four around a court. Sometimes a single house mound was in the shape of an L. The chultuns were not always found in connection with house mounds. All of the house mounds in the eastern arm occur on high ground except in two cases, where large artificial mounds had been built in the bajo and house mounds placed on top of them. In the extreme eastern tip of the mapped area a small aguada or water hole was found.

The western arm consists of 40 squares, or 400,000 square yards [0.3 sq km]. Of these 39 were high ground and one bajo. On the high ground eight house mounds

and four chultuns were found. In this area the chultuns were not connected with house mounds.

In the northern arm there are 48 squares, or 480,000 square yards [0.4 sq km]. Of these 18 are high ground, 14 are bajo, and 16 are in Group A. On the high ground 14 house mounds and four chultuns were found.

In the southern arm there are 56 squares, or 560,000 square yards [0.5 sq km]. Of these 38 are high ground and 18 bajo. On the high ground, 24 house mounds and 17 chultuns were found. Of the chultuns, Chultun 3 is the most interesting. It should really be called a cave, for although a hole of the same type as those used for chultuns is cut through the surface rock, the inside is a natural cave, about 23 feet [7 m] long by 18 feet [5.5 m] broad by 8 feet [2.4 m] high; another and smaller cave can be entered from it through a narrow hole in the southern end and small passages just large enough to crawl into lead off to the north and west. This cave was probably formed by the sinking of the limestone floor, and apparently had been used as a dump, for a great deal of broken pottery was found in it. There is also evidence that it had been used for a long time, because all the types of pottery previously found at Uaxactún were present. Some of the best pottery yet found in Uaxactún came from this cave; in addition to the pottery a beautifully worked laurel leaf flint, pieces of human bone, part of a figurine of the flat type, a carved limestone metate and mano, and a broken limestone comal were found.

In estimating the density of the population per square mile [2.6 sq km], the area of land suitable for dwelling purposes must be considered. Of the 2,160,000 square yards [1.8 sq km] under consideration at Uaxactún, 620,000 square yards [0.5 sq km] were bajo, swampy land unfit for the building of houses, and 400,000 [0.3 sq km] were occupied by complex groups of temples, courts and pyramids obviously not intended to be dwelling places for the common people. Hence, only 1,140,000 square yards [0.9 sq km] of the area considered are suitable for dwellings; this equals 0.37 square mile [0.9 sq km], in which were found 63 house mounds. If we consider the average number of persons in a Maya family living in one house to be 7, this would give us 1,187 persons per square mile [2.6 sq km] of habitable land, exclusive of bajo.

28.10.

A. LEDYARD SMITH

Archaeological Work at Uaxactún

YB 30:110–112, 1931

The ruined city of Uaxactún, in the Department of the Petén, Guatemala, was discovered by Dr. Morley in 1916. Study of the hieroglyphic inscriptions upon its monuments indicated that it had been both the oldest longest occupied of all known cities of the Maya Old Empire. Hence, in spite of the great difficulty of carrying on excavations at a site buried in dense tropical jungle and to be reached only by long river and mule-train journeys, Dr. Morley recommended its investigation by Carnegie Institution. It gave, in his opinion, exceptional opportunity for studying the earlier phases of Maya development and for following the progress of culture through the period of greatest brilliance. The project was inaugurated in 1925 under direction of Mr. Ricketson and has continued present time. In 1931 the writer was in charge, assisted by Mr. Smith, Mr. Monroe Amsden acting as business and transport manager.

During previous years attention had been devoted to Group E, a collection of temples surrounding an open court or plaza. Former *Year Books* record the discovery and clearing of the excellently preserved Structure E-VII and the finding under the plaza floor of stratified refuse deposits laid down at a time when Maya civilization was apparently just taking shape. In 1931 we resumed work in the plaza of Group E; carried forward the investigation of Group A, begun last year; tested house mounds; sunk a pit into a natural well-like cavity in the rock; and made casts of a number of monuments.

At the opening of the season decision had not yet been reached as to whether or not the excavation of Uaxactún should be continued beyond 1931. We therefore planned to bring to completion all units of work which had been begun in former years. At the same time, but without committing ourselves to new activities of major scope, we wished to conduct certain tentative investigations in order to make recommendations for the future. To Group E first attention was accordingly directed and a month was devoted to sinking to bed-rock and continuing all the way across the plaza's 10 foot [3.1 m], westward-running trench that had been started at its north end. The purpose of the trench was to cross-section the plaza and determine if it had been built up. It was found that, to level the court, retaining walls had been built at the east end. This had not been necessary at the west, as the limestone dips eastward, being only about 2 feet [61 cm] below ground-level at

the west. The deposit proved to be of great interest, containing stratified *débris* and fill which yielded large amounts of broken pottery, representing sequent periods of the city's early history. Burials were also encountered. In the underlying limestone we encountered a series of rock-cut chambers similar to, but more carefully made than, the *chultunes* or reservoirs found in many parts of the Maya area. Pyramid E-IX was outlined by removal of fallen material encumbering its sides and base. It proved to have stairways on all four sides. The temple which once crowned the structure had completely disintegrated, but there came to light a ceremonial cache of two pottery dishes, set rim-to-rim, containing seven flint implements surrounded by two large obsidians, two flint daggers and a large flint chipped to eccentric shape. The annex-mound on the south side of Pyramid E-VII, trenched during a former season, was further investigated and found to contain a small plastered pyramid, E-XII, which once had staircases on four sides. Some of the original red paint still adhered to a coating of plaster. In excavating the mound we uncovered the south side of the secondary structure which had been built over Primary Pyramid E-VI and which had preserved the latter in the splendid condition in which it was found in 1928. The secondary structure, having been exposed to the weather and the destructive encroachment of the jungle, had been almost entirely ruined, but at this point a portion of it had been protected by the annex-mound. It proved to have masks superimposed upon those of the earlier pyramid. Mounds E-X and E-VIII were also excavated and found to be a single structure. We trenched through E-XII and determined that it was a long, low platform with no building upon it.

Work in Group A, a complex of mounds, buildings and courts with many stelae, located on a ridge about a half mile [0.8 km] from Group E, was started a month after the expedition arrived at Uaxactún. Attention was devoted to Pyramid A-1, which had been partially excavated in 1930. Like so many Maya constructions, it proved to have grown to its final form by several accretions. In this case four pyramids, each of a different type of architecture, had been built one upon the other. The latest pyramid was in very bad condition; the next to latest, or tertiary, revealed a small culminating sanctuary containing some very fine polychrome pottery. Below the sanctuary lay the top of the secondary pyramid. Here was made the most important find of the year: two vaults with burials accompanied by magnificent series of 10 polychrome mortuary vessels in perfect condition. On of the pieces, a cylindrical vase decorated with a procession of priests or deities in full regalia, bore an Initial Series in the monumental manner apparently recording the date 7.5.0.0.0, 8 Ahau 13 Kankin (?). Comment upon this inscription,

which does not lead to the terminal date actually recorded, and which indicates a date not only much earlier than any hitherto discovered, but one which does not accord with the sophisticated style of painting, must be withheld pending its study by Dr. Morley and other hieroglyphic specialists. A peculiar circumstance was the finding in the vessel of the skeletons of 104 shrews, a number equaling eight times 13, the two figures involved in the day and month counts expressed in the Initial Series.

The complex architectural conditions encountered and the great care necessary in noting and removing the contents of the burial chambers resulted in Pyramid A-I not being completely excavated. The primary or innermost structure has not yet been touched.

Among the exploratory investigations mentioned above was the testing of A-V, a large many-roomed building of the so-called "palace" type. The three rooms cleared were found in reasonably good condition. The architecture of Old Empire "palaces" not being well understood, and their function, both in the Petén and in northern Yucatán, being still a matter of doubt, it is felt that further work in this Uaxactún example would amply repay the time and expense involved. Another test-project was the trenching of two house mounds, a quarter-mile [0.4 km] from Group A. An attempt was made in 1929 to estimate the size of the population of Uaxactún by means of a count of the house mounds in a given area, but no excavation having been done in them, it was not certain whether or not they had been occupied contemporaneously, nor, indeed, whether they had actually been the substructures of dwellings. Our trenches demonstrated that these low platforms had, in fact, supported houses of perishable materials. Upon their floors were burials. Pottery was collected which may throw light on the question of their relative date.

A pit was sunk into a "sink hole" or natural well. At a depth of 20 feet [6.1 m], bottom had not yet been reached although potsherds and pieces of obsidian were still being encountered in the black clay with which the well is filled. The shaft should certainly be continued, as it offers possibility of yielding important stratigraphic information.

An arduous but necessary undertaking, was the making of paper squeezes of seven of the dated stone monuments. Upon these are carved some of the most important of all Maya inscriptions. It was therefore felt that a permanent record should be made in the form of casts which could be preserved and studied in museums. Uaxactún is not only a very difficult spot to reach, but the monuments might well be lost to view for centuries should the site be allowed to revert to the impenetrable jungle which the expedition has temporarily cleared away.

The party was most fortunate in having with it three biologists from the University of Michigan: Dr. A. Murie, mammalogist; Dr. J. Van Tyne, ornithologist; and Dr. H. Bartlett, botanist. In addition to being most valued field companions, these gentlemen were able to supply us with many interesting and significant data upon the flora and fauna of the Petén and so enable us to begin to reach an understanding of the environment in which the ancient Maya lived. Dr. W. Cooke of the United States Geological Survey also worked at Uaxactún. He studied the geology of the region, paying particular attention to the bajos or log-wood swamps. Dr. Cooke believes that these low-lying areas, which are now overgrown with a low and almost impenetrable scrubby bush, may formerly have lakes. If further examination confirms this hypothesis, and if the bajos can be shown to have contained permanent water during the period of occupancy of this region by man, many hitherto puzzling problems of water supply and of transportation will be solved.

As result of the season's work, the writer strongly recommends continuation of the Uaxactún project. He feels that Pyramid A-I should be completed; that the palace, A-V, should be cleared and studied; and that attempt should be made to make as full as possible the already very significant, but so far not continuous, ceramic record. Much work, furthermore, still remains to be done in biology, meteorology, soil conditions and other non-archaeological lines.

28.11.

ALFRED V. KIDDER

Uaxactún

YB 31:97–100, 1932

The Section's second major archaeological project in the Maya field is the excavation of Uaxactún, the Old Empire city in northern Petén, Guatemala, which was discovered by Dr. Morley in 1916, and at which, under the successive leadership of Frans Blom, O. G. Ricketson, Jr., Monroe Amsden, and A. Ledyard Smith, work has been carried on since 1924. Uaxactún was selected by Dr. Morley, for intensive work because it was, on the evidence of its hieroglyphic dates, both the oldest and the longest inhabited center of Maya culture. The digging of past years resulted in uncovering a very beautiful early structure embalmed, so to speak, within a

later pyramid; and in the discovery of stratified deposits of still earlier times which carry the story of Maya development back to a period doubtless far antedating the first stone-carved records. For accounts of the excavations at Uaxactún, see [Chapters 28.2–28.10]. These very valuable finds, architectural and stratigraphic, were made in a quarter of the city known as E-Group. They amply justified Dr. Morley's selection of Uaxactún for investigation, in spite of its inaccessible situation and the consequent high cost of conducting excavations there.

In 1931, concurrently with the winding up of work in E-Group, Mr. Robert E. Smith commenced the study of A-Group, the largest and apparently the most important complex of buildings at Uaxactún. A spectacular find of mortuary pottery rewarded this effort [Chapter 28.10; A. Smith 1934]. During the past season the principal effort of Mr. A. Ledyard Smith and his staff, Robert E. Smith and Robert Wauchope, was devoted to further exploration of A Group.

It will be recalled that the Monjas, or "Nunnery," at Chichén was so-called because of its great number of small, cell-like chambers. Buildings of this sort, sometimes referred to as "Palaces," are found in many parts of the Maya area. Their function is not as yet really understood, although, as the above names imply, they have been thought perhaps to have served as residences. The palaces of the Old Empire are very little known. Hence, in spite of the magnitude of the task, a large palace in the A-Group, Structure A-V, was attacked this year by Mr. Ledyard Smith, reconnaissance digging in 1931 having indicated that under masses of fallen material the lower walls of many rooms remained in a good state of preservation.

The building, which rests on a low, roughly rectangular platform of masonry, is some 150 feet [45.7 m] long by 130 feet [39.6 m] wide. Its greatest height, as it now stands, is nearly 50 feet [15.2 m]. The structure consists of four courts surrounded by blocks of cell-like chambers, whose vaulted roofs have, for the most part, collapsed. Of the 4, the North Court and the Main Court, with the rooms adjoining them, were cleared during the season. The excavations showed that the courts lay on different levels, access from one to another having been gained by stairways. The rooms composing the blocks or galleries vary greatly in length; in width they run from 4 to 6 feet [1.2–1.8 m]. Five constructions, tentatively identified as shrines, were found in the construction dividing the Main Court from the South Court. Each one consists of an ante-room and an inner chamber or sanctuary. In the sanctuary of Shrine I there was found a stela bearing the date 9:3.0.0.0.

Under the stela was a cache of eccentrically chipped flints.

Throughout the palace Mr. Smith constantly noted evidenced of changes in the building, old construction having been buried below later additions. There is an abundance of sealed doorways, and many rooms and even whole wings have been added. The palace was evidently at first a small structure, which grew by a slow process of accretion. Various peculiarities of architecture have, been noted as characteristic of different periods. Three distinct types of rooms, for example, are already recognizable; and with complete excavation, which it is hoped may be accomplished in 1933, a true architectural stratigraphy should become evident.

Mr. Smith believes the palace to have been a dwelling place, because the walls of many rooms show evidence of cooking-fires, usually in sheltered corners; and because of the presence of debris of occupation in the form of animal bones, fragments of pottery and broken implements. The shrines, however, indicate that ceremonial practices were carried out in the building; and it is indeed possible that it was originally erected for purely religious purposes, the traces of a baser use dating from late times. Study of the pottery from the different levels and of the distribution of the areas smoked by cooking-fires maybe expected to solve this problem.

While the excavation of the palace was going on, Mr. Robert Smith devoted himself to the examination of certain small pyramidal structures, which, on the evidence of Pyramid A-I, excavated in 1931, might, it was thought, contain burial vaults! This work was planned with the double purpose of studying mortuary customs and of recovering, if possible, additional specimens of the finer sorts of pottery which, as a rule, can only be found in graves. The results were highly gratifying.

Pyramid B-VIII was first opened. From its summit platform a vertical shaft, the mouth closed by a red-painted stone slab, descended to a rectangular chamber 16 feet [4.9 m] below. In the rough masonry of the chamber and of the shaft were footholds and offsets. On the floor lay the skeletons of two adult females, a child and an infant fetal bones were, intermingled with those of one of the adults. Seven pottery vessels, four plain, three with polychrome decoration, and some shell beads, constituted the mortuary offerings. Pyramid B-XI, in addition to several caches of pottery and obsidian blades, yielded a coffin-shaped burial vault 7 feet [2.1 m] long, 2 feet [61 cm] wide and 18 inches [45.7 cm] deep. One end was floored, walled and capped with massive stones; the other end, of much cruder construction, appeared to have been added at a later time. In the vault were the skeletons of two females, accompanied by pottery, a necklace of nearly 500 shell and seven large jade beads, and another necklace of 32 beads of iron pyrites.

Against the base of Pyramid C-I, but evidently constructed before the erection of the pyramid, was a small room-like chamber 6 feet [1.8 m] long, 4 feet [1.2 m] wide and 5 feet [1.5 m] high. On a low, centrally placed dais or altar were the bones of an adult male whose body had originally been placed in a sitting posture with legs crossed, Turkish fashion. Offerings were: four pottery vessels, one a black bowl with red and green decorations; an alligator head pendant of jade, and the fragments of what had evidently been a mosaic mask.

Mr. Smith believes the vault in Pyramid B-VIII to have been a family burial chamber, the indications of such use being the several skeletons of various ages and the arrangement (removable lid, steps, etc.) for ready access to the tomb. The crypt in C-1, on the other hand, he tentatively identifies as a shrine in which the body of a notable, wearing a ceremonial mask and possibly prepared to resist decay, may have been placed, for worship.

Less spectacular, but of doubtless even greater ultimate importance, was Mr. Robert Smith's discovery of a well-stratified rubbish deposit in the A-Group. Partial excavation of this midden yielded great numbers of potsherds, including a large percentage of pieces of the finer decorated wares. The material, being all of later date than that taken in former years from below the plaza of E-Group, will serve, when studied, greatly to lengthen the known ceramic sequence at Uaxactún; it will provide a key to the relative ages of the otherwise undatable isolated finds in caches and tombs; and it is hoped that it will link the Uaxactún series to that of Holmul, the only other city of the Petén whose pottery is now, known. Mr. Wauchope spent a considerable part of the season in a very careful examination of certain small elevations thought to be house mounds. Of such mounds there are literally hundreds in the vicinity of Uaxactún. As they have been used as basis for estimates of population, it was thought desirable to continue the work begun on them in 1931, in order still further to check their identification as places of residence and to seek evidence regarding the domiciliary structures which may have been built upon them. Mr. Wauchope completely excavated four mounds; a fifth was less thoroughly investigated. Three proved to be typical house mounds, long narrow, artificially filled platforms with dressed limestone retaining walls; one or more terraces; and either plastered or unplastered floors, apparently once covered by perishable superstructures. The fourth was presumably religious in function. It consisted of a platform with a sequence of several plastered floors, upon the uppermost of which were low stone walls dividing the space into four very small rooms, probably once covered by a perishable roof. The fifth structure was the central element of a group of which the fourth and one of the above-

mentioned house mounds formed the other units. The building had had masonry rooms with vaulted roofs. It is uncertain whether this was a residence more pretentious than usual or whether it was a small temple, a shrine perhaps, for a group of dwellings. In the mounds, Mr. Wauchope found 11 burials, many stone artifacts, numerous potsherds and 14 vessels.

28.12.

A. LEDYARD SMITH AND
ROBERT E. SMITH

Excavations at Uaxactún

YB 32:92–95, 1933

The eighth season's work at Uaxactún, the Old Empire city in northern Petén, Guatemala, was carried on under the direction of Mr. A. Ledyard Smith with the assistance of Mr. Robert E. Smith and Mr. Francis Richardson. A. L. Smith and Richardson arrived in camp on March 5. Robert Smith remained in Guatemala City, studying the pottery recovered in 1932, until March 31, when he joined the expedition. The party was at Uaxactún until June 6, at which time they left for Guatemala City to study and write up the material acquired during the season.

During the first weeks in the field, activities were limited to the excavation, in A Group, of Structure A-V, a fine example of the so-called "palace," or complex multi-chambered building, a type which, in the Old Empire, has hitherto been very little investigated. The investigation of A-V was started at the end of 1931 and continued in 1932. At the end of the latter season a good deal of light had been thrown on the question of the purpose of this sort of structure. It had also become evident that it would yield a true architectural stratigraphy, which could be correlated with ceramic finds. The program for 1933 was therefore to complete the excavation of the outer structure of A-V as far as possible, and to begin work on the earlier buildings buried underneath, in order to collect samples of pottery from below floors of various periods and so obtain a ceramic as well as an architectural stratification. Pottery recovered was then to be compared to that of E Group (upon which the ceramic periods of Uaxactún had already been established); it was also to be checked against the pottery obtained from a well-

stratified rubbish heap, prolific in sherds, which was discovered in 1932 near the edge of the plaza south of the Palace.

On his arrival, Robert Smith started work on the rubbish heap mentioned above. He enlarged his 1932 pit and isolated a column of refuse for stratigraphic study. In addition to this he partially excavated Temple A-XV, to secure further information on pyramids and their superstructures, and sank exploratory pits in and about B Group in search of more middens.

Richardson cleared two adjoining *chultun*, or jar-shaped chambers cut into the limestone bedrock, at the base of A-XV, each of which yielded a skeleton in very poor state of preservation. He also made a plane table map of A Group showing all elevations, the detail of excavated structures, the probable position of unexcavated walls, and the extent of the mounds covering unexcavated buildings.

A-V, the Palace in A Group, rests on a low, roughly rectangular platform of masonry some 280 feet [85.3 m] long and 240 feet [73.2 m] wide. Its greatest height, as it stands today, is nearly 50 feet [15.2 m]. This building consists in the main of four courts, all but one of which are surrounded by rooms, whose vaulted roofs have in most instances fallen in. The exception is the East Court, which has rooms on but three sides, the east or remaining side consisting of a long, low platform from whose top an unusually broad stairway leads down into the East Plaza. The courts lie at different levels, access from one to another being gained by stairways. The Main Court and the South Court with their adjoining rooms were cleared in 1932. Pits were dug through their floors revealing earlier constructions which had been buried in the process of enlarging the Palace.

During the 1933 field season, excavation of the outer structure of A-V was almost completed. All the upper rooms, the East Court and the rooms overlooking it have been uncovered, as well as a portion of the North Court. So far, 55 rooms of the outer structure have been cleared. These rooms vary greatly in length, width, height and function. Three distinct types of room construction have been found in stratigraphical position. Differences in walls and vaults control, to a great extent, the width of the rooms, the earliest being much narrower than the latest. Early walls and vaults are built of flat uncut stones laid horizontally and held together by the abundant use of cement, the whole roughly plastered. Late construction is of well-cut stones veneer vertically against a hearting; the vaults consist of nicely fitted beveled stones approaching in shape the specialized vault stones of northern Yucatán; all masonry is smoothly plastered. Continued excavation beneath the floors brought to light a buried pyramid under the Main Court and, under the South Court,

a series of buried rooms which in turn had been built over a terrace and against an earlier room opening thereupon. Several hitherto unexplored parts of the outer structure have been penetrated, and earlier construction exposed. At the present stage of the investigation, it appears that the Palace must originally have constituted a small group of independent buildings, which were joined together and added to until they became a single great unit.

The excavations yielded a great number of artifacts, sherds, and figurines which throw much light upon the function of the Palace, and upon the appearance and dress of its inhabitants. Most of the material so far found comes from above the floors of the courts and rooms, but whenever these floors have been penetrated different types and shapes have occurred. Animal and human bones were found in abundance above the floors, usually in sheltered corners. The human bones, as well as those of animals, show signs of cutting. Many of the human long bones had their extremities removed, and the parts of the shaft still connected to the extremities are cut longitudinally. Such specimens were confined to the latest deposits; hence if they indicate cannibalism, it seems only to have been practiced after the general break-up of the Old Empire.

Two new stelae were discovered in the Palace, one carved and one plain. The latter was standing in position, but had been covered by later construction, the former lay in the rubble under the floor of one of the latest rooms. This stela, which is only a fragment, bears the date 9.5.0.0.0. Seven burials were found, some under the floors of the courts, some in the masonry of benches in rooms, others above floor-level with no protection except a few rough stones placed around them. Both sexes and all ages were represented. In every instance the skeleton was flexed. There were very few mortuary offerings. Most of the bones were in a good state of preservation.

One of the most interesting finds in A-V was a fresco which once covered the whole back wall of a room. It shows traces of red and orange, but for the most part is in black lines. Unfortunately, more than half of it had been destroyed by roots and the fall of stones, but from what remains it is clear that a scene of action was depicted. Figures in full costume carrying spears and standards and others dressed only in loin cloths face each other from either end. In the lower right-hand corner is a double-headed serpent with fish swimming into its gaping mouths; and in the corresponding position at the opposite end is a temple in outline. The latter is of exceptional interest, for it shows a complete roof comb. This is our only evidence as to the nature of this crowning feature of, the Uaxactún temples.

To sum up: The work on the Palace during 1933 resulted in recovery of a definite architectural stratifi-

cation, which shows a gradual and logical development of wall and vault construction. The pottery so far taken from below floors of various periods correlates with the building sequence; it also fits perfectly into the pottery sequence previously established, and with that of the pottery from the stratified rubbish heap near A-XV. The sherds from below the earliest rooms belong to Ceramic Period II. From this and other evidence the existence of the Palace must have been an extremely long one. Mr. A. L. Smith believes that this building had a dual function, residential and religious, and that the latter was secondary to the former. Shrines with their altars and stelae indicate ceremonialism, but all other rooms show signs of having been lived in. The walls of many are blackened by cooking-fires and on their floors is debris of occupation in the form of animal bones, fragments of pottery, and broken implements. These remains can not all be attributed to people clinging to the site after its general abandonment, or to later wandering tribes, because similar evidences occur in some of the earliest buried rooms. That there was a post-Old Empire occupation is, however, certain. Rooms whose vaults and outer walls had fallen were, in some instances, roughly blocked off, rather than properly repaired; refuse sometimes lies upon debris of disintegration; burials were made above floors; there is suspicion of cannibalism. All this is characteristic of a degenerate people, but who they were is still a problem.

R. E. Smith conducted excavations in Pyramid B-VIII to determine whether or not the burial chamber discovered by him in 1932 [Chapter 28.11] was constructed before or after the erection of the pyramid. It was found that the burial chamber was erected on the platform of a low pyramid hewn from the solid limestone bedrock. The mortuary chamber formed the core of the additional terraces built up from this natural mound.

Pyramid Temple A-XV was also investigated. Architecturally it corresponded to the earliest member of the Pyramid A-I complex. Its superstructure had been a one-room masonry temple, with a single doorway to the south. The walls of the temple were made of small, roughly cut stones set in thickly spalled mortar and heavily coated with plaster (an early architectural feature at Uaxactún). Directly south of the doorway and resting on the frontal platform was a hollow altar(?) filled with shrew bones. Burned potsherds covered the floor of the temple room, the altar and the frontal platform adjacent to the doorway. About 3 feet [91 cm] below the temple floor two small adjoining crypts were uncovered. One yielded a cache of obsidians and eccentrically shaped flints; the other a poorly preserved baby burial. The plastered walls of both crypts were draped with what appeared to be charred rope, of

which several fragmentary specimens were saved. A second cache of eccentrically shaped flints and obsidians, together with a deer antler, lay above the crypts.

An undated Stela (A-15), broken in two places, was discovered facing the center of the south stairway. Its butt penetrated about 15 inches [38 cm] below the floor at the pyramid base and was associated with a cache containing four eccentric flints, one eccentric obsidian, one conch shell, four jade beads, and five lancet-like obsidian blades. In line with Stela A-15, but about 7 feet [2.1 m] farther south, was a large, round unsculptured altar supported by three stones.

In addition to work on the above pyramids, R. E. Smith carried out extremely important investigations in refuse deposits. Success in study of ceramics at any given site is dependent upon finding an abundance of stratified material. At Uaxactún, an analysis of the sherds found between plaza floors in E Group, within multiple pyramidal construction in Pyramid A-I complex, and associated with various house mounds, had led to a preliminary chronological classification. Not until 1932, however, was a well-stratified and prolific rubbish heap discovered just off the plaza south of Palace A-V. A trench was dug through this midden from south to north and in 1933 a column 10 feet [3.1 m] square was excavated layer by layer. Although the 30,000 potsherds removed from the column have not yet been thoroughly examined, R. E. Smith's study has already showed that polychrome wares existed in each of the six strata; that certain vessel shapes disappeared and new ones took their place; and that three or possibly four sequent periods of pottery making were represented. Finely decorated wares and especially painted pieces were plentiful and excellently preserved. This very valuable material renders it for the first time possible to work out in detail the gradual development of decorative design at Uaxactún. Beside pottery, Pit 14 column yielded bones, both human and animal, implements of bone, flint and obsidian; and beads of shell and jade.

The existence of the stratified midden in A Group suggested that careful searching elsewhere might locate other deposits which would serve to correlate ceramically the other temple groups of the city. As, experience has shown that such deposits may often be found in low-lying areas near buildings, five pits were sunk in the environs of B Group, but without success. It would seem logical to believe that each group had its own dump. Absence of middens, as in B Group, might, in R. E. Smith's opinion, be due to periodical removal of debris for use as filling material in building operations. He also points out that if this practice was general, it might be dangerous to establish chronological sequences on the basis of pottery taken from the interior of substructures.

28.13.

A. LEDYARD SMITH

Uaxactún

YB 33:82–86, 1934

The ninth season at Uaxactún opened on March 2 and closed on May 2. The work was in charge of A. Ledyard Smith, Edwin Shook serving as assistant and cartographer. Robert E. Smith spent the winter at the Institution's laboratory in Guatemala City, studying the pottery collected from this site during the last two years.

The excavations which have been in progress at Uaxactún since 1926 were undertaken to throw light upon certain definite aspects of Maya history. Uaxactún, according to the evidence of the hieroglyphic dates, was the oldest of Maya cities; and, by the same criterion, it was the longest inhabited of all the Old Empire centers. Because of its antiquity, it was thought that it might contain materials illustrating the very little-known formative period of Maya culture; because of its size and its central location it was certain that it would yield valuable information as to Maya civilization in its prime; and because of its occupancy until the end of the Old Empire period, there was hope that it might provide evidence as to the causes for the abandonment of the Old Empire cities and perhaps serve to bridge the archaeological gap which now exists between the Old and New Empires.

Important data upon the formative period were recovered by Dr. Ricketson and Mr. Smith in 1928–31 inclusive at Group E, one of the principal temple clusters of the city.

As has been stated, Uaxactún was believed to be a favorable site for study of Maya culture during the Old Empire. This expectation has been realized by the results of excavation of sundry minor buildings, tombs and middens reported upon in previous *Year Books*; but particularly by three seasons of intensive digging in Unit A-5, the so-called "palace."

Very broadly speaking, the major structures of the Maya may be divided to two groups. One consists of fairly small buildings with simple ground plan usually set on relatively high substructures. As a rule, each contains inner chamber which seems obviously to have been a shrine. Such buildings are probably to be identified as temples. The second group is made up of very much larger edifices, erected on lower substructures. Their ground-plans are more complex. They possess many rooms, arranged, for the most part, in tiers. They have been thought to have been domiciliary, the abodes presumably of priests or rulers, an idea reflected by such names "Nunnery" and "Palace." The true pur-

pose of the so-called "palaces" has not, however, surely been determined, nor, prior to the excavation of Structure A-5 at Uaxactún, had an Old Empire example of this type been more than cursorily examined. Work upon A-5 in 1932 and 1933 proved it to consist of many vaulted rooms grouped about enclosed courts [Chapters 28.11 and 28.12]. Smoked walls and the presence of debris of occupation served to uphold the residential theory; while shrines indicated that it was not entirely devoted to secular uses. Careful study of the abutting of walls and the superposition of building increments showed that A-5 had grown by accretion over a considerable period, during which there took place definitely recognizable changes in architectural practice [Chapter 28.12].

The program for 1934 contemplated completion of the excavation by clearing the still undug north side and by disencumbering early construction already partially exposed under the South and Main Courts. Mr. Smith also wished to collect further ceramic material and hoped to discover additional burials.

By the close of the season the entire outer or late buildings had been finished. Nine new rooms were cleared on the north side of the North Court, bringing the total count to nine shrines and 61 rooms. The walls of the North Court rooms are of late (Type IV) construction. The rooms themselves would seem to have been roofed with wood and thatch, as insufficient ancient building material was found inside them to justify belief, in the former presence of stone vaults.

The excavations under the South and Main Courts proved to be of the greatest interest. At the end of the 1933 season six buried rooms had been uncovered under the South Court. Five of these were of Type II construction and one of Type I. During the past season four more buried rooms of Type I were excavated, one under the South Court and three under the Main Court. In addition to these, two shrines, two low pyramidal substructures, a platform, six stairways, a buried court, a dated stela and three burial vaults were uncovered. It appears that the nucleus of the Palace was a raised court with pyramidal substructures on its east and west sides, which supported rooms looking out over the court. This was later covered by the present Main Court.

Between the building of the nuclear structure and the addition of the last increment to the main structure there were five main periods of construction. There were thus seven periods, four of Type I construction and one each of Types II, III and IV. There is evidence of several periods of enlargement during Period IV. Additions were made upward as well as outward. Old rooms were filled in and others built in front of them to increase the area of the substructure. In some cases the upper parts of rooms were torn away, to make room for

later courts. The earlier construction was only removed when it would have been in the way of later buildings. This would seem to indicate that abundance of easily worked stone was at hand, because the well-cut stones of the buried rooms were not reused. It is to be noted that some of the earliest rooms were in continual use throughout the whole life of the Palace, and that they are often in the best state of preservation.

A great many sherds were recovered from under floors of the various periods. Although this material has not as yet been studied, it seems probable that it will fall readily into position in the ceramic sequence already established for Uaxactún. Previous to 1934, practically no whole pottery vessels had been found in the Palace, but during the past season over 80 such specimens were recovered from burial vaults below some of the earliest construction. Among the pieces recovered were some new types, the most outstanding being richly incised vessels in the shape of seated animals and men. These vessels, which were used to contain offerings, are divided at the waist, the lower part serving as the container, the upper part as the lid. Under Shrine II a cache of nine eccentric flints was uncovered. This is the second cache of nine such flints found in the Palace. The other came from under the carved stela in Shrine I.

Up to the close of the 1933 season, nine burials had been discovered in the Palace, some under floors of courts, some in the benches of rooms, and others, above floor level with no covering save a few rough stones. In every instance the skeleton was flexed and practically no mortuary offerings were in the graves. No burials in vaults had been found. In 1934 eight more burials came to light. Three were of infants. The remaining five were adult skeletons buried in vaults. Two of the vaults were long, low tombs, just large enough to hold a body extended at full length. The sides were made of rough stone capped with large flat slabs. Two others were carved out of the solid limestone below the earliest rooms of the Palace. One of these two was 12 feet [3.7 m] long, 8 feet [2.4 m] wide and 3.5 feet [1.1 m] high. The opening at the top was closed with seven large capstones. The entrance was through the floor of an early room. The last burial found was put through the floor of the buried court under the Main Court. This vault was made in the style of one of the early rooms and was well plastered. At the west end there was a stairway leading down into it from the level of the Buried Court. This end was locked up after the burial ceremony. Especially interesting was the construction put up in conjunction with this burial. On the level of the Buried Court, two enclosures with low, thin walls were built, one to the east and one to the west of the vault, with doorways leading out toward the burial. To the south was a long,

low, thin wall running east and west with a door-way in the center. This wall joined walls projecting from the rooms mentioned above, so that the burial Vault was completely surrounded. Inside the walls the floor of the Buried Court had been punctured with rows of post holes, from the position of which it was obvious that a canopy of some sort had been stretched over the whole area. It seems probable that a great ceremony took place at the time of interment, after which the whole Buried Court was filled in and raised to within 6 inches [15.2 cm] of the level of the present Main Court. There are several instances in the Palace where immediately after a burial in a large vault had been made, the room or court through the floor of which it was sunk was blocked off or filled in and another construction built on top of it. This would lead to belief that after death and burial of a great ruler his successor added to the Palace and changed it to his own liking.

A new stela, dated 9.0.10.0,0, was discovered underneath the floor of Shrine II. It was standing *in situ* and was connected with Type I construction. In 1933 a fragment of a monument bearing the date 9.5.0.0.0 was found in the fill under the floor of one of the latest rooms. This indicates that the minimum amount of time between the use of the Buried Court (Type I construction) and the period of Type IV was 88 years, although it was doubtless very much longer. The total life of the Palace must, indeed, have exceeded 500 years, as it was built subsequent to 9.0.10.0.0, and it was apparently continuously occupied until the abandonment of Uaxactún, which took place after 10.3.0.0.0.

During 1934 Structure A-XVIII was excavated and mapped. It is a two-story building of Type I construction, which Mr. Smith believes to have been used as a dwelling. The upper story has mostly fallen, but the lower rooms are practically all intact. Further investigation was carried on in the Type I Structure B-XIII and Mr. Shook remapped A-Group and the causeway connecting it with B-Group. This map shows the walls of all excavated structures *in situ*, the gross area covered by unexplored mounds, fall and tentative reconstructions of the ground-plans of unexcavated buildings.

The investigations outlined above, with those of former years, have yielded much valuable information as to the architecture and burial customs of the Old Empire. And when study of the large collections of potsherds and complete vessels has been completed, we shall have an excellent understanding of the ceramic history of Uaxactún. Classification and description of the wares and determination of their chronological sequence should also allow us to correlate the pottery periods of Uaxactún with those determined by Vaillant for the nearby city of Holmul. On the basis of the two series, it should be possible to place ceramically any other Old Empire sites in the Petén from which

specimens can be obtained. This will be an important advance, as many cities contain no hieroglyphic dates. Furthermore, detailed knowledge of the Uaxactún types will enable us to identify trade-pieces and to recognize style-borrowings, so that we can eventually obtain chronological cross-linkages with other centers in the Maya area and even beyond its borders. And, specifically, it may well be possible, by means of the pottery, to work out both time relations and cultural contacts between the New and Old Empires.

Already the work at Uaxactún has brilliantly justified the long and firmly held belief of Dr. Morley that this city would yield outstandingly significant data for the reconstruction of Maya history. And the materials gathered there by Dr. Ricketson and Mr. Smith have not as yet yielded a tithe of information inherent in them. Only when they are fully digested and made available through publication, and when comparative studies are undertaken, will their great value become fully apparent.

28.14.

A. LEDYARD SMITH

Uaxactún

YB 34:115–118, 1935

The tenth season at Uaxactún opened on February 23 and closed on March 18. The work was in charge of A. Ledyard Smith; Robert E. Smith and Francis B. Richardson served as assistants, and Edwin Shook as surveyor.

The greater part of the season was devoted to continuation of the excavation of Structure A-V, the so-called "Palace." This great multi-chambered building was originally chosen for investigation because no Old Empire example of its type had previously been excavated. Work on A-V began at the end of the 1931 field season and continued through the winter of 1932, 1933 and 1934. For statements regarding the archaeological significance of Uaxactún see [Chapters 1.4, 1.10, 28.2 to 28.13]; for accounts of earlier work on Structure A-V see [Chapters 28.11 and 28.12].

At the close of the past season the whole outer structure of A-V had been uncovered, and earlier walls and rooms were exposed behind walls and under courts of later construction. In 1932 and 1934 some work had been done on these and four distinct types

of superstructures had been found in stratigraphic position. For description of the several types of superstructures see [Chapter 28.12].

The program for 1935 called for further investigation of the remains of the older buildings, and search for the nucleus from which the Palace started. It was also hoped that the pottery found in association with the various periods of construction would amplify, and serve as a check upon, the Uaxactún ceramic sequence that had been built up as result of the Institution's previous excavations. Work progressed satisfactorily. A wide trench, cut through the north side of the Palace at ground-level, gave access to the Buried Court, facilitating removal of dirt and providing an excellent cross-section of the building.

By the end of the season a number of rooms had been cleared, a new buried pyramid had been uncovered, and the whole northeast and part of the northwest corner of the Period III substructure were exposed. This very impressive platform proved to be faced with well-cut stones laid up on a batter and to rise, with the interruption about midway of a narrow terrace, to about 22 feet [6.7 m] above the level of the East Court. Its two exposed corners are inset and rounded. The platform supports another low platform which in turn supports eight Period III rooms.

The masonry of the various types of substructure proved to be of great interest and much was learned regarding the quality and amount of lime cement used and as to fills interpolated between binding layers. Rough walls, it was found, were built within the hearting to keep the fill in place during construction, and wooden beams were placed horizontally in the fill as an added support. Substructures were carefully observed in relation to their superstructures. Substructures, like superstructures, changed in their type of construction, the succession being in general from large rough stones laid horizontally and deeply set into the hearting, to thin veneers of well-cut blocks. With further investigation it should be possible to establish a definite correlation between superstructure and substructure masonry so that if only one is visible the type of construction used in the other would be known without excavation.

To date, 62 rooms, 14 buried rooms, five shrines, two buried shrines, four courts, one buried court, three dated stelae, and various caches and burials have been found in the Palace.

During the past season, 23 burials came to light. These were of all types and all periods and ranged from adults of both sexes to babies. There was one instance of a mother with fetal child. The positions of the skeletons varied from fully extended to closely flexed. Imprints of the fabrics used to wrap the bodies were found in several cases in the dried mud on the

walls of the burial chamber. The graves varied from well-made vaulted rooms, containing a great many offerings to simple holes in the fill below room or terrace floors. The mortuary pottery is, as a rule, of a more advanced type than that represented by the sherds in fills of the same period; many pieces of local manufacture are represented. In this one seems to see a predilection in funerary practice, for novelties and imported wares. Much whole pottery and great quantities of sherds were recovered, which are now being studied in Guatemala City. This work has not been completed, but it may be said that the sequence of types so far found in the Palace follows that previously established at Uaxactún. The two most interesting and beautiful vessels were a red barrel-shaped vase on an annular base, carved with four seated human figures in full costume; and a cylindrical vase of polished black ware covered with a thin coat of plaster upon which a series of figures is painted in pastel shades and with the delicacy and sureness of line characteristic of the finest codex painting. In a cache was found a set of nine obsidian flakes skillfully incised with figures of deities. Such objects have hitherto come to light only at Tikal. From all the evidence so far recovered from the Palace it would seem that the function of this complex building probably changed during the long period of its use. There are strong indications that during its last phase it served as living quarters as well as for religious ceremonies. It has been suggested that the purpose of structures of this type was to house priests and acolytes. They were also undoubtedly used as store houses for the elaborate paraphernalia, connected with the many ceremonies carried on throughout the year.

During 1934 most of the superstructure of Temple A-XVIII was excavated and mapped. In 1935 this work was completed. It is an 18 room building, two stories high, standing on a large platform. The upper story is reached by an interior stairway. The exterior was decorated with 14 large stucco masks set in panels. An interesting find made in A-XVIII was three-quarters of a bow which the Department of Agriculture of Guatemala identifies as the wood of the guayacan or cortés negro tree.

In Group B the excavation of Structure B-XIII was continued. This one-story building is of two periods and has many architectural features of interest.

In the course of remapping Group B, Mr. Shook discovered two large artificial reservoirs. One of these lies west of the causeway joining Groups A and B and the other is southwest of the Main Plaza of Group B, from which it received the drainage. Group B is built on a natural hill which has been leveled in some places and built up in others. A possible ballcourt was located; only slight excavation will be necessary to determine whether or not it is such.

There is fairly good evidence of two roads, one from west and one, from the north, leading into Group B. These are artificially leveled, areas extending out into the bush. They are comparable to the entrances into an Indian town of today, where the paved streets run a short distance beyond the town and, there join the trails and rough roads of the surrounding country. There is no evidence at Uaxactún of any such long and well-made highways as the *sacbé*s of Yucatán.

Material was gathered for an attempted time-correlation, by means potsherds, of the various major groups of structures at Uaxactún. Robert Smith carried on this work by means of test pits in plazas and trenches into mounds. At the end of the season a preliminary survey was made of a new group (H) discovered about 225 yards [205.7 m] south of Group E. It consists of two separate plazas surrounded by mounds of size.

28.15.

A. LEDYARD SMITH

Uaxactún

YB 35:115–117, 1936

The eleventh season at Uaxactún opened on February 29 and closed on May 30, with A. Ledyard Smith in charge, Edwin Shook acting as assistant and surveyor, Sr. Federico Soberanis as Guatemalan Government inspector. Practically the whole season was devoted to excavations in Structure A-V, the so-called Palace. Work on this multi-chambered building was begun in the spring of 1931 and has been continued during the past four winters. Statements regarding the archaeological significance of Structure A-V and accounts of earlier work are contained in [Chapters 28.11 to 28.14].

By the close of the 1934 season the outer parts of A-V had been cleared and evidence of earlier buildings found. In 1935 some of the older construction inside the Palace was uncovered and a wide trench, cut to bedrock, was run through the north side of the building to the Buried Court. The program for 1936 called for completion of the investigation of the Palace. It was hoped to trace the various periods of construction in the Palace from the nucleus from which it started, through to its last addition. To this end two more wide trenches were cut through the building, one east and west, the other north and south. So heavy a schedule

necessitated the employment of double the amount of labor used in previous years. The two large trenches, carried down to underlying limestone, completely transected the Palace. Two excellent cross-sections of the whole structure were thus obtained, which show plainly the method by which it was gradually built up.

First, the very uneven surface of the limestone was leveled by cutting away or filling in. In some instances the rock was cut to form the lower part of a terrace wall. The earliest floors were then built. The first floor, close above bedrock, supported a low, plastered, oval platform with a step at one end. Although no post holes were found, there can be little doubt that it once supported a house of perishable materials. On floors above this there came to light several fragments of similar platforms, one complete example 5 feet [1.5 m] above the bottom. It was oval in shape with a rectangular front terrace. The floor of the higher oval section was pierced by four post holes, the terrace by two, showing definitely that it once supported bush house. Using the original post holes, Mr. Smith made a reconstruction of the house. Two graffiti of bush houses supported by similar platform from a door jamb of one of the Period II rooms, served as a guide for restoration.

Above the house platform the type of construction changed. The floor directly overlying it supports the earliest truncated pyramid with vaulted superstructure. Following this there is a sequence of buildings showing gradual development both in substructures and superstructures, the most marked change having been from the use of large, roughly cut stones laid horizontally, to the production of true cut-stone veneer. For description of the several types of superstructures, see [Chapter 28.12]. The various building levels were clearly evident, and stratigraphic collections of sherds were gathered from each. These have not yet been studied, but they appear to confirm the ceramic sequence so far established for Uaxactún. It was of interest to find that polychrome wares first occur in the Palace in connection with the earliest vaulted buildings.

Much new archaeological information accrued. It was learned, for example, that the earliest terraces supporting stone buildings possessed rounded, inset corners similar in shape to those used in the next-to-last period. Another interesting discovery was of certain re-used stones, perforated and originally T-shaped. These resemble stones forming the roof decoration of a building represented in fresco in Room 37. One new buried room, one cache, two animal burials, and 20 human burials were found. The graves were of particular interest in that they were of all periods from earliest to latest, and varied greatly in construction.

The face of Stela 26, bearing the well-preserved and very early date 9.0.10.0.0, was cut from the monument and shipped in two fragments to the National

Museum in Guatemala City. For further information concerning Stela 26 see [Chapter 28.13].

In addition to the work on the Palace, the small reservoir east of the causeway joining A and B Groups was partly excavated, the causeway was investigated, and the ballcourt in B Group was uncovered. The reservoir lies about 100 feet [30.5 m] west of the causeway. It is rectangular, measuring 42 [12.8 m] by 48 feet [14.6 m], long axis east and west. In its construction the natural clay had been dug out to a depth of about 8 feet [2.4 m] at the center and gradually sloped up to the surrounding ground level. The bottom had then been covered with a 3 inch [7.6 cm] deposit of sand supporting a complete pavement of large stone slabs. These in turn were covered by an 8 inch [20.3 cm] layer of sand. Around the edge was a row of stone slabs placed horizontally. The reservoir, in a slight hollow, obtained the drainage from the higher ground in the immediate vicinity.

A trench was dug into the west side of the causeway connecting A and B Groups. The retaining wall was found to be so badly fallen that it was impossible to tell whether it had been vertical or sloping. The plastered floor of the causeway was then examined. It proved to turn up to parapets proximately 3 feet [91 cm] high on both sides of the causeway.

The ballcourt in B Group, lying at the north end of the causeway, is formed by two parallel rectangular structures, their long axes north and south. The intervening space is 14 feet [4.3 m] wide and 57 feet 6 inches [17.5 m] long. Of the two plastered floors discovered, only the upper has so far been red. This turns up on either side of the court to vertical, stone veneered. It is 2 feet [61 cm] high. From the tops of the walls terraces 13 feet [4 m] wide slope and 4 feet [1.2 m] to meet the 3.5 foot [1.1 m] vertical veneered walls of the upper terrace, which drops down vertically on the outside to plaza level. No markers were found in the alley or on the terraces, but such may occur when the upper floor of the alley is removed. This ballcourt is almost identical to one investigated by the University of Pennsylvania at Piedras Negras.

The large reservoir west of B Group was bushed, and a pit dug in its north side exposed a retaining wall. Much more work will have to be done before definite results can be obtained.

28.16.

A. LEDYARD SMITH

Uaxactún

YB 36:135–137, 1937

After 12 seasons of intensive investigation, the Division's activities at Uaxactún were brought to a close on May 15, 1937, and the camp and permanent equipment were turned over to the Government of Guatemala. Originally selected by Dr. Morley for excavation because, on the basis of its dated monuments, it was both the oldest and the longest inhabited of Old Empire Maya cities, Uaxactún has paid consistently, rich scientific dividends. Work there is now being terminated not because the site is even approaching exhaustion, but in order to allow Mr. Smith and his associates to bring up to date their studies of, and publications upon, the large collections and the abundant data already recovered. And it seems probable that when these tasks have been accomplished problems will have been formulated which will call for comparative research at other sites rather than for further work at Uaxactún.

Discovered by Morley in 1916, Uaxactún was revisited by him for epigraphic study in 1921 and 1922. In 1923 its geographic position was ascertained by W. A. Love, of the Institution's Department of Terrestrial Magnetism, and in 1924 F. Blom and W. M. Amsden mapped the site in preparation for the opening of excavations by O. G. Ricketson in 1926. The first five seasons were devoted to stratigraphic study of the early pre-stela deposits in Group E and to clearing various surrounding structures, the most important of which was the excellently preserved Pyramid E-VII Sub [Chapters 28.3 to 28.15]. During these years, all monuments at Uaxactún were carefully examined for sub-stela caches, and squeezes were made of the best-preserved monuments.

In 1931 activities were shifted to Group A, where, during the past seven years, the major part of the work has been concentrated on Structure A-V, a large and long-occupied palace type complex which contained invaluable stratigraphy, both ceramic and architectural. Also wholly or partially excavated were Structures A-I, A-II, A-III, A-XV, and A-XVIII, and a most important rubbish heap rich in pottery was discovered. A reservoir west of the causeway connecting Groups A and B was examined, as well as several structures in Group B, the most interesting of which were a ballcourt and Structure B-XIII. Testing was done in Groups C, D, and F, and in 1935 a new group, H, was discovered south of Group E.

During 1937 the investigation of Structure A-V was completed by determination of certain hitherto unascertained building sequences, and by collection of several pottery samples to check against those of previous years. Structure A-XVIII was further examined, its substructure being found to consist of three terraces. A trench into the south side of the building through the central doorway revealed, in the terrace in front of the doorway, an incised pottery vase surrounded by four eccentric flints and three eccentric obsidians, and containing two jade beads, two jade ear plugs, and a jade idol 10 inches [25.4 cm] high, weighing 11.5 pounds [5.2 kg].

Structure A-II was excavated because it is associated with the two latest dated monuments at Uaxactún Stela 12 (10.3.0.0.0) and Stela 13 (10.0.0.0.0). It proved to be the latest type of building so far uncovered at this site. What little of its superstructure remained showed that on its east side it had five doorways separated by masonry piers, the only example of this arrangement found at Uaxactún. The breadth of the temple's single room and the paucity of fallen masonry indicated that it had been roofed with beams and mortar or thatch, probably the latter.

The excavation of Structure B-XIII, begun in 1935, was sufficiently advanced to prove that it had undergone several reconstructions, all of Period I masonry, and that some of its rooms once supported beam and mortar roofs. On the back wall of one of these rooms was a well-preserved fresco depicting a small unvaulted building, within, in front of, and behind which are many elaborately garbed figures apparently engaged

in a ceremonial. Below the main part of the fresco is an alignment of 72 day signs in consecutive order starting with 12 Imix and ending with 5 Eb. Many of these glyphs present hitherto unknown variants of recognized forms. Sr. Antonio Tejeda, staff artist in Guatemala City, made a special trip to Uaxactún to copy the fresco.

Structure B-XII, a two-room building north of B-XIII, was of interest in that, although it is of Period 1, its vault approaches the later type which utilizes well-shaped bevel-faced stones rather than flat uncut stones. This would suggest that vault construction was beginning to be refined before veneer stones were employed in the walls of buildings.

Other work in Group B was an unsuccessful search for markers in, and for a possible earlier structure below, the ballcourt excavated in 1936. Investigation of the causeway connecting Groups A and B revealed an earlier causeway below the one studied in 1936. It differed from the latter in its lack of a parapet and in that its sides rose in two terraces. Ceramic evidence connects the early causeway with Period 1 construction.

Structure E-X was further examined. The three rooms of this well preserved building were cleared in 1927. During the past season it was discovered that these three units were originally a single long room. On the roof was uncovered a roof comb, a single long, narrow chamber, its back wall resting on the back wall, its front wall on the capstones, of the room below. This produced a frontal terrace. Access to the roof comb was gained by two narrow elbow-shaped passages through the capstones of the lower vault.

29.0. ZACUALPA

Robert Wauchope spent two months of excavation at Zacualpa for the Carnegie Institution of Washington in 1935. His investigation established the first archaeological sequence based on stratigraphy and comparative typology for this region of the central highlands of Guatemala. Wauchope returned in 1947 for another brief field season. The results were later published by the Middle American Research Institute at Tulane University.

29.1.

ROBERT WAUCHOPE

Zacualpa

YB 35:128–130, 1936

Investigations at Zacualpa, in the Department of Quiché, were carried on by Mr. Wauchope from No-

vember 27, 1935, to March 5, 1936. Mr. A. L. Smith and Dr. Ricketson accompanied him on preliminary trips to Zacualpa early in November and the Chairman spent two weeks there in February.

The excavations were undertaken at the suggestion of Dr. S. K. Lothrop, who visited the place in 1933, and who has in press a publication on the results of his study of collections made by "pot-hunters" in this and other parts of the Department. The most significant of the pottery and artifacts described by Dr. Lothrop are believed to have come from two tombs at Zacualpa. It was hoped that additional material would be obtained through excavation. The project fell in line, also, with the Division's general program for an archaeological survey of the Guatemala highlands.

The season's work consisted of: 1. Excavation of Group C, an assemblage of low mounds located on the terrace thought by Dr. Lothrop to have contained the looted tombs; 2. Excavation of a pottery-yielding section of the barranca which cuts into the north margin of Group A; 3. The drawing of a plane-table map of all

mounds in that part of the Zacualpa valley known as La Vega. During his two week visit, the Chairman made further examination of the barranca, excavated a cache of vessels in a low terrace between Groups A and C, recorded all artifacts for the forthcoming publication on Zacualpa, and collected surface sherds from mounds in the vicinity of La Vega. On their preliminary visit to Zacualpa, Messrs. Smith and Wauchope mapped a small group of mounds on the plateau across the river west of the modern town. In April Mrs. Ricketson began a study of the ceramic material recovered.

Group C lies on a terrace near the southwestern margin of the valley; it comprises several, long, low, rectangular mounds surrounding a small plaza. Three of these were excavated.

C-I, at the north corner of the terrace, exhibited five periods of growth. The first construction in C-I was probably the earliest in Group C, for the assemblage of its three small platform substructures and the manner in which rubbish had accumulated around them, indicate that they formed an independent nucleus from which the group of mounds later developed. Although the pottery has not yet been fully studied, the apparent absence of Plumbate Ware and animal-head legs from the first three periods of C-I, and their occurrence in all phases of the other mounds, confirm the architectural evidence. The outstanding pieces found in this mound were a large polychrome jar containing a cremation and some finely carved bones; a large incensario with spiked rim, twisted handles, traces of blue paint, and a well-molded human head with applied necklace, ear-plugs, and forehead decoration of intertwined serpents.

From the general appearance of the pottery, artifacts, and building construction of C-I, it seems likely that the platforms were for ceremonial use, while a series of adjacent rooms, which presented corresponding periods of occupation, were residential. The unit may have been the home of a person of consequence for it was more pretentious than the average house-mound and was advantageously located not far from the three main ceremonial centers of the city.

C-II, at the west corner of the terrace, also presented five periods of development. This mound again afforded excellent opportunity for stratigraphic study and yielded a far richer collection of ceramic material. The deposits of the earlier periods were marked by thick charcoal-bearing rubbish deposits, while those of later periods contained five cremations, four of which had been deposited in jars. These conditions suggest that C-II in its earliest stages was a house site with rubbish dump, which was burned and subsequently used as a crematory cemetery. The late intrusive cremation at C-I was probably contemporaneous.

The ceramic material from C-II presents a few outstanding features: abundance of Plumbate Ware of sev-

eral types, and of a finely (tuff?) tempered orange ware; several types of animal-head legs of the rattle type, probably mold made; fragments of two perforated incensarios and two painted jars, one of which bears a design recalling the dragon motif of Coclé, Panama.

C-III, facing the plaza from the southeast, had been much damaged by "pot-hunters"; four periods, however, could still be identified. Features of this mold were a looted tomb with walls of stone masonry; stone pavement and well-constructed terraces of stone on the northwest side; three large terrace postholes, in one of which the point of a main post was still preserved; clay floor-drains and a stone sub-terrace gutter, the latter graded and with a right-angle turn toward the plaza; a large unslipped brown ware jar containing several pounds of clay prepared for potting. C-III yielded, in addition, 10 complete vessels, five burials and four cremations.

Two interesting architectural features were common to the three mounds in Group C: adobe clay floors and wall plaster thoroughly burnt to a brick-red color; multiple pits in the adobe-clay floors. The function of the pits is unknown.

All cremations at Group C post-dated the inhumations.

The collection of artifacts from Group C is featured by an abundance of chipped obsidian points, obsidian flake-knives, polished green stone celts, clay fire-dogs, manos, and metates. Examples of other types of artifacts characteristic of the Guatemala highlands were perforated stone hammers or digging stick weights, green stone figurines, jadeite beads, a corrugated bark beater, worked sherds and sherd spindle-whorls. Set side by side in the clay plaza floor between C-I and C-II were a human figure of stone and a clay tiger head.

Among the objects from the barranca at Group A were about 40 complete vessels, a dozen green stone figurines, many jadeite beads, and two clay earplugs. The barranca pottery together with 12 vessels removed from two caches half-way between Groups A and C was quite distinct from that of Group C, the absence of Plumbate Ware, finely (tuff?) tempered orange wares, and animal-head legs, and the occurrence of certain Petén-like shapes and painted decorations suggesting the probability that it was older. Although few traces of bones were found in either of the two latter excavations, it is probable that they were grave caches.

A type of pottery common to all three localities and found on the surface throughout the valley is the "duck pot," a curious inverted vessel-shaped object with a handle and animal head at the top.

Out present knowledge of Guatemala highland archaeology does not permit very definite conclusions regarding the excavations at Zacualpa. There is as yet

so little to which the Zacualpa material may be compared or to which it may be contrasted, that we must be content to regard the season's investigation as part of the groundwork on which future conclusions are to be based. In general the pottery gives an impression of lateness, with foreign affiliations chiefly southern. Plumbate Ware, the Coclé-like design already mentioned, and small bowls supported on three tall legs reminiscent of Costa Rican forms, are among the outstanding examples to be cited.

Certain forms, however, resemble pottery from Teotihuacán, while bowls with basal flange and one polychrome sherd from the barranca seem to indicate

that Petén influence was also felt during an earlier period at Zacualpa. Figurines were scarce, "Archaic" forms apparently absent, and with the exception of Red on Buff scroll-decorated bowls, the painted wares were probably all importations. The general run of paste and slip was inferior. The only other decorative feature that seems typical of Zacualpa, and this only at the barranca and the mid-valley caches, consists of shallow vertical flutings often found in sets of three or four on the sides of shallow, straight-sided, dark brown and black ware bowls. To the above characteristic ceramic features should be added the particularly well-molded animal-head legs of Group C.

30.0. HONDURAS

30.1.

GUSTAV STRÖMSVIK

Honduras

YB 40:292–295, 1941

The work of excavation and repair at the ruins of Copán, Honduras, which has been in progress since 1936, was continued during the past winter. Mr. Strömsvik was assisted by Mr. Robert F. Burgh, Mr. Arthur W. Wheelwright, and Mr. Leonard J. Currie. The major activities of the season were completion of repair of the two temples at the Ball Court, and re-setting of the upper elements of the Jaguar Stairway. Mr. Burgh accomplished a thorough survey of the minor ruins in the valley. As in former years, the Government of Honduras cooperated most effectively, providing all labor, including five master masons specially sent to Copán, and transporting, without cost to the Institution, supplies from the railhead at Chiquimula in Guatemala.

The temples at the Ball Court were large and handsome structures with elaborately ornamented façades flanking the two sides of the court's playing alley. Their massive vaults had collapsed, filling and covering the lower parts of the several chambers of each temple with stone and rubble. In 1940 this was cleared away

and the still standing outer walls were solidified by the method developed by Messrs. Morris and Strömsvik in their work on the Temple of the Warriors at Chichén Itzá and followed in all subsequent repair operations. Solidification is made necessary by the fact that the original adhesive qualities of the ancient lime or mud mortar have more or less been destroyed through action of percolating rain water, with such weakening of the masonry as to render walls incapable of standing for any length of time, once the supporting debris has been withdrawn. In such cases a wall is cleaned and photographed, and the cut stones of the outer veneer are numbered and removed. If the hearting is found in bad condition, it also is taken down and rebuilt with fresh lime mortar; but if sound, it is allowed to stand and the facing is relaid in cement, each stone occupying exactly its original position. Finally, the wall is capped with cement to prevent further entrance of water.

During the past season the inner walls of both temples were accorded the above treatment. Of the East

Temple, the south end, including the vaults of the south and southeast rooms, was rebuilt to its former height. This restoration was particularly desirable, as no example of the interesting and highly typical Maya corbelled vault remains standing at Copán. It was possible because the original stones, though fallen, were still available; and it could be done with confidence, as a sufficient number of the lowermost stones of the vault were found in place to allow accurate calculation of their angle and height.

The wide doorways of this and other Copán temples had been spanned with heavy beams, whose decay, incidentally was one of the major factors in bringing about the collapse of the upper walls. In the restoration, the lintels were made of reinforced concrete cast to the size and shape of their wooden prototypes. The façades over each doorway had been decorated with sculptured panels representing a gigantic and highly conventionalized parrot with protruding head and claws. Since the depictions had been composed of dozens of relatively small carved stones tenoned, like a mosaic, into the wall, and since these elements had been broken and scattered when the façades fell, and some had been carried away in recent times, the correct reassembling of the panels was so uncertain that the spaces occupied by them have, for the time being, been left vacant. The stones have been carefully numbered and preserved, however, and it is possible that further study will result in a satisfactory solution of this oversize jigsaw puzzle.

The West Temple was cleared and its walls reset as high as the second course above the medial molding. Farther up it was not possible to go because this temple, lying nearer to the road than does its mate, had largely been robbed of cut stone for use in building the modern town of Copán.

In connection with the work on the temples, the badly displaced facing of the terraces and steps surrounding the north end of the Ball Court proper was taken down and relaid. This produced a proper setting for Stela 2, which stands upon the north platform, and links the latter with the structures bordering the whole complex. Also, to the south of the East Temple, the lowest terrace of the high Pyramid 26 was rebuilt, thus making clear the relation between the Hieroglyphic Stairway, mounting that pyramid, and the Ball Court. During this operation there were recovered and replaced certain hitherto missing elements forming the base of the Hieroglyphic Stairway's north balustrade.

A second major undertaking was concerned with the Jaguar Stairway in the East Court. The lower part was repaired in 1938, but this increased the necessity of completing the construction, including the magnificent Venus mask panel (so-called because of large hieroglyphs of that planet on either side of the mask).

The task involved the removal of the existing remains, the building of a solid masonry foundation, and the replacement of the upper terraces, the stairs, and the mask itself.

While work was under way in the East Court, opportunity was taken to repair the vaulted drain which runs eastward under Mound 19 and opens on the river front. Former excavators had dug a large cut into the mound, causing a serious cave-in of the fine example of Maya vaulting in this drain. The interior was rebuilt, and the steps of Mound 19 were replaced as far as possible without reconstructing the whole stairway.

In 1939 some inscribed stones came to light around the roots of the giant ceiba tree, standing on the east end of the mound of Temple II; on further investigation blocks forming an almost complete hieroglyphic panel were extracted from beneath the enormous tree. This panel, from the north side of the east entrance, corresponded in size to others previously known to flank either side of both the north and south doorways of the temple. During the past season search was made for the companion panel at the south side of the east entrance. It was found partially crushed, but all pieces were present, constituting the only complete hieroglyphic panel recovered from Temple II. This structure had four doorways, each framed by two panels, each panel containing from 15 to 18 glyph blocks. Thus the eight texts comprised about 140 glyph blocks, many more than any other temple in Copán can boast. For this reason it has been decided to call it "The Temple of the Inscriptions." The panel found in 1939 was removed to the Copán Museum, as it could not well be replaced, without destroying the giant ceiba; the one discovered this year was reset in its original location.

In 1940 the opening of a drain was found under the west end of the Acropolis. This solved the puzzling problem of how disposal, had, been effected of the great amounts of water which fell each rainy season on the Ceremonial Court, the Middle Court, and the Court of the Hieroglyphic Stairway. This season the drain was excavated, with great difficulty as it measured only 45 by 50 cm and was completely full of hard-packed refuse. It proved to have been built of three tiers of well fitted masonry, laid on a paved floor, and covered with wide capstones. Several of the latter, had broken and tipped downward into the drain, further hampering the work of clearing it. A stoppage had taken place at the far end, apparently when the west side of the Acropolis fell into ruin, and most of the many potsherds found in the passage occurred there; among them was a complete water jar shaped much like those used in the valley today. The caved-in entrance of the drain was repaired, and the outlet cleared to permit free flow for the water that has hitherto accumulated in the Court of the Hieroglyphic Stairway.

During the digging of the escape ditch through the high pile of debris fallen from the Acropolis, two skeletons were encountered, both apparently of young men. Although the bones were in the last stages of decay, the teeth were well preserved; the six upper front teeth of each skeleton were inlaid with jade.

Repairs were made of several sculptures: fine double-headed monster at the west end of the Court of the Hieroglyphic Stairway, Altars H' and I' at the south of the West Court, and Altar G in the Ceremonial Court.

Mr. Burgh devoted the major part season to completion of the map locating the outlying ruins of Copán. The area covered was about 18 sq km, within which the ruins, the Copán River, minor drainages, roads, and settlements at shown at a scale of 1:10,000. Control established by a system of triangulation on the higher hills, and a number of the stations were marked by permanent stone monuments. The meridian was determined by astronomical observations, the datum by barometric readings. Mapping of ruins was done with a plane table. The majority of the sites were pyramids, terraces, and courts bordered by mounds; the rest were clusters of small mounds. All sites, however small, were drawn to scale and the various types are identified by conventional signs on the map. Sites were numbered serially within the areas designated by Dr. Morley (1920, Plate 3).

Six ruins were mapped at a scale of 1:500, with a contour interval of 0.5 m. No excavation was attempted at these sites, save at no. 2 in area 9, where a large, handsomely cut stone in the center of the court was overturned to ascertain whether hieroglyphics were present on any of the buried faces. None was found.

Sketches at a scale of 1:1,000 were made of 26 ruins, with cross sections and notation of the presence or absence of cut stone and sculpture.

The commonest type of outlying structure at Copán proved to be a court bordered by mounds on three, or sometimes on all 4, sides. No system of orientation was evident. Apparently these sites were residential, the mounds, rubble-filled and faced with cut stone, serving as platforms for dwellings. They are not all contemporaneous, and as it is likely that some of the larger mounds served for many consecutive occupations, they may be expected to show many alterations and enlargements. Occasionally, a single large mound was accompanied by many lesser ones, perhaps platforms for smaller houses.

There were several unusual structures. The great court of Ostuman, about 2.5 km west of Copán Village, was doubtless a complex of religious structures. To judge by the absence of sculpture, it was earlier than the Main Group. On El Plan de las Mesas, a high hill northwest of Copán, are several structures of curious shape built of roughly quarried stone. The most west-

erly is a round tower, 8 m in diameter and 1.5 m high. One fragment of rude sculpture suggests a later date than the primitive masonry would imply. Just 0.5 km east of the Main Group, in the midst of a dense cluster of plazas and mounds, there is a causeway about 10 m wide throughout its length and about 1 m high. If this was a roadway to the Main Group, as seems likely, there is no positive trace of its westward extension.

It cannot be assumed that sites with roughly hewn stones are earlier than the others, because it is possible that they represent the rubble interior of mounds from which the better-cut stones were removed for use elsewhere.

Excavation was done at Site 8:16, a refuse area in a gully east and north of Stela 6. No house remains were encountered, but occupational debris was found, its maximum depth being 2 m. Two levels of occupation were in evidence. The upper, a mixed stratum varying in depth from 20 to 50 cm, was contemporaneous with the Old Empire remains in the Main Group. In this level were three burials, all badly decayed. Between the upper and lower levels was a thick white deposit, the remains of a plastered courtyard, or perhaps a house area from which the stones had been removed for use elsewhere. The lower deposit had a maximum depth of 1.5 m. It apparently long antedated the upper level, as the pottery was of early types, much with "Usulután" (wax process?) decoration, chiefly on tetrapod plates. Sherds of ollas were characteristically ornamented with a band of clay pinched on around the girdle. A few sherds of stuccoed ware were found. Hundreds of small incense burners, 6 to 8 cm high, came to light, whole or fragmentary. They were decorated with punctate designs. Most surprising was a sherd of polychrome ware at the bottom of the deposit, 2 m below the surface. It was red and black on yellow, and technically superior to any of the later wares. Snail shells occurred by the thousand, and there can be no question that this was a kitchen midden.

30.2.

GUSTAV STRÖMSVIK

Honduras

YB 41:249–259, 1942

As in former years, the activities of the Copán Expedition, a project sponsored jointly by the Government of Honduras and Carnegie Institution, comprised both

repair of buildings and excavations with purely archaeological objectives. Mr. Strömsvik was again in charge, assisted by Mr. Douglas Elliott and Sr. Jesús Núñez, the latter completing the Spanish catalogue of the large collection now housed in the Copán museum.

The work of preservation was concentrated on the Temple of the Inscriptions (Temple II), which in its day was perhaps the most imposing of the many elaborately adorned buildings of the Acropolis, as it dominated both the Court of the Hieroglyphic Stairway and the West Court. In previous seasons much repair had been carried out on the temple proper, and the great range of steps mounting to it from the Court of the Hieroglyphic Stairway had been cleared of debris and its upper parts consolidated. Much remained to be done, however, on the other side, where the stairway rising from the West Court to the first platform and that from the platform to the temple were badly broken down. Also, the seven terraces flanking the stairways had been so badly warped and the masonry so skewed by the enormous weight above them that it was deemed advisable to take them down stone by stone and rebuild them. As has always been Mr. Strömsvik's practice in such work, the areas to be dismantled were carefully surveyed and photographed, and each stone numbered before removal. Study of the plans and sections made clear certain previously unknown features of construction, and there came to light, during the removal of fallen material, a number of fine sculptures fallen from the western and southern façades of the temple. In addition to the resetting of the western stairways and terraces, the south side of the temple substructure, the east half of the south stairway, and the southwest corner of the temple were rebuilt.

In former years the East Court had been entirely cleared, save for a great pile of fallen masonry in the northeast corner. This pile not only detracted from the appearance of the court, but offered the only hope of recovering sculpture from Temple 20, the greater part of which had gradually been eaten away as the Copán River, before its diversion, cut into the Acropolis. The heaped debris was cleared away, the excavation bringing to light materials which proved that the entire west façade of the temple had fallen forward onto its frontal stairway. From the heap came several hundred pieces of carved stone, among them some of the finest yet found at Copán: geometric elements, grotesque animal and human forms, dozens of Ahau faces of various sizes, and many finely sculptured human heads, from half natural size to as much as 0.8 m high. These showed such great individuality as to suggest that they were portrait studies. There were also recovered more fragments of the large bat figures found earlier at the edge of this heap. It is thought that the bats were roof ornaments, standing free atop the west façade.

Most of the above-mentioned sculpture is now arranged in rows along the steps of Temple 20; certain outstanding pieces have been moved to the Museum.

Another phase of preservation work was the solidification of the tunnel under the Temple of the Inscriptions, about 30 m of which were lined with lateral masonry walls and roofed with a corbeled vault, to guard against possible cave-ins and leave the tunnel open for inspection by students and visitors who may wish to see the many interesting superimposed constructions that went into the building of the Acropolis. Minor tasks were the repair of a large jaguar sculpture on Platform 20, which now lacks only the head and the feet on the left side; and the setting upon a solid base of the gigantic head at the northeast corner of the Temple of the Inscriptions.

The more strictly archaeological work of the season was largely confined to digging in search of burials, and stratified rubbish deposits in the vicinity of the Acropolis. During the rainy season of 1941 two burials had been washed out of the riverbank 200 m south of the Acropolis. Following this lead, a trench was run west from the bank, revealing an extensive and long-used cemetery. In the excavation of no more than 150 cubic meters of earth 25 burials were found, from close to the surface to a depth of over 3 m. Three distinct strata were found from close to the surface to a depth of over 3 m. Three distinct strata were recognizable: the uppermost assignable to the late or Great Acropolis period; the to the first or Early Acropolis period; the lowest, in which hardly any cut stone was found, to the pre-Acropolis period. Although most of the burials combined no mortuary offerings, some were provided with pottery vessels and jade, shell and clay ornaments. About 50 pieces of pottery, whole or repairable, were recovered. Most of the skeletons were so rotted that only the teeth could be preserved. A number of these were inlaid with jade. Burials of the three periods may be characterized as follows:

Late or Great Acropolis Period: Bodies usually placed flexed in rectangular masonry cists of well squared stones; inlaid teeth common; great variety of pottery types, shapes, and colors; polychrome abundant; Copán adaptation of Usulután Ware; Yojoa Ware appears; great quantities of the small, crude votive vessels usually called *candeleros*. Tentative dates for this period: 9.10.0.0 to 10.0.0.0 in the Maya time count.

First or Early Acropolis Period: Bodies laid flexed in open ground, occasionally in burial cists of cut stones; inlaid teeth present; Polychrome and "Copán Red" pottery appear; many basal-flanged bowls; Copán adaptation of Usulután style common; Incised Black Ware common; carved slab-legged cylinders with lids; many *candeleros*. Tentative dates: 8.15.0.0 to 9.10.0.0.

Pre-Acropolis Period: Three skeletons found, all extended; two in crude oval burial cists of uncut stones, and river boulders, roofed with large unshaped slabs; length of skeletons as they lay in the ground: 1.61, 1.62, and 1.63 m; no inlaid teeth; pottery: Red on Buff, ring-base bowls with red trim, true Usulután plates with large bulbous legs, Red on Cream effigy jugs, carved slab-legged cylinders with lids; many candeleros. Tentative dates: ? to 8.15.0.0.0.

Metates without legs and with tapering handstones were common in all three strata, as were clay griddles.

During the season the museum catalogue was greatly amplified; many fine sculptures were repaired and placed on exhibit; and five new showcases were installed, containing pottery, ornaments, and skeletal material, among which is a complete skull with inlaid teeth, of the Early Acropolis period.

30.3.

GUSTAV STRÖMSVIK
Honduras and Guatemala

YB 48:231–232, 1949

During the past season no archaeological excavation took place at Copán, but an experiment in preserving archaeological sculpture should be recorded. Sculpture that has lain in the ground for some time is subject to minute plant growth, such as lichen and fungus, whose roots loosen the tiny particles of the surface of the sculpture; rain and wind continue the erosion. The sandstone at Quiriguá and the tuff at Copán are particularly liable to this action. Some years ago Sylvanus G. Morley sprayed Stela K at Quiriguá with a hardening agent, but the monument is again covered with lichen and fungus. Early this season Mr. R. E. Smith sent a new hardening agent to Copán for experimentation. The six lowest steps of the Hieroglyphic Stairway were carefully cleaned and dried; the viscous fluid was then applied with a brush. It will be some years before the results can be seen.

Progress was made toward completing a report on the three superimposed ballcourts at Copán [Chapter 31.4]. Considerable work also was done in amplifying, checking, and correcting the specimen catalogue at the Copán Museum as a preliminary step in the

preparation of a report on the cultural material in the Copán Valley.

In March, Strömsvik went to Guatemala for consultation with the Chairman of the Division. About this time, near the town of Asunción Mita, Department of Jutiapa, several mounds of ruins were in danger of being razed by the construction of the Roosevelt Highway, whose route lay directly across the biggest and most important mound, locally called Cerro de Laja. Strömsvik consequently went there at the beginning of April to obtain all possible information before the mounds were destroyed and to cooperate with the Institute of Anthropology and History of Guatemala, which defrayed half of the costs and supplied the services of Sr. Gustavo Espinoza, who assisted most ably in the excavations and explorations.

At the Cerro de Laja, which was our chief concern, a room filled with debris was completely excavated in order to examine the structural and architectural details, particularly the vaulting. This is the southernmost occurrence of the vault so far found in the Maya area. There can be no doubt, moreover, that the structure is of Mayoid origin, for numerous fragments of Maya Polychrome and Copador pottery were found in the debris, thereby placing the remains in the Classic period.

There undoubtedly are other rooms in this large mound, which will soon be removed completely by the highway work. At that time the details of construction should be recorded as they become apparent.

The countryside surrounding Asunción Mita was given a hasty reconnaissance: Brunton compass survey maps were made of four main ruins and some minor ones. The main groups were designated A, B, C, and D (Cerro de Laja is Mound 1 in Group A). In Group A lies the best-preserved ballcourt, from which were removed two parrot-head sculptures now to be seen in the entranceway of a house in town. These heads, like those at Copán, were cut to stand vertically in the benches. Another less well preserved ballcourt is located in Group C, west of the road and uphill from Group A. Groups A, B, and C are located south of town, between it and the bridge of Tamazulapa. All appear to be more or less of the Late Classic period, in part contemporaneous with the Acropolis at Copán. These groups consist mainly of small courts each dominated by a larger structure. All constructions, of mud and slate on lava-block foundations, are oriented roughly to the cardinal points. Another type of construction seen in these groups is the tombs, of which there seem to be a great many, both sacked and untouched. All are vaulted.

Group D is located 1 km due north of town. It consists of a number of round, much eroded mounds, irregularly placed one, built of mud with very little

admixture of river boulders and no slate. Wherever a road cut through a mound, potsherds were gathered. These proved to be of Usulután Ware and decoration, very similar to ceramics of the Miraflores phase in the Guatemala highlands. No polychrome pottery was recovered at Group D.

There apparently was a pre-Columbian settlement just where the town of Asunción Mita is now located. We were told by inhabitants that whenever one digs artifacts turn up. A typical stone "yoke" and some pottery showing accentuated phallic symbols have been found here. Mexican affinity is suggested, and one wonders if the remains may be Pipil.

In reviewing the findings at Asunción Mita and vicinity, we seem to see three phases of occupation: 1. A population of Mexican stock apparently resided here at the time of the Spanish conquest, how long is unknown. 2. There was a Classic Maya phase of unknown duration, contemporaneous with one phase at Copán, when Copador pottery spread over parts of Honduras and El Salvador. That was the high point in the Maya culture. 3. There apparently also had existed an earlier settlement, characterized by earth mounds and Usulután pottery, and probably contemporaneous with the Miraflores phase in the Guatemala highlands.

31.0. COPÁN

Copán is one of the most extraordinary archaeological sites in Mesoamerica. The Carnegie Institution of Washington carried out an ambitious excavation and restoration program at the site from 1935 to 1946, except for the years when work was suspended because of World War II. Work at Copán was undertaken with two objectives: repair the stelae, other monuments, and the best-preserved buildings to protect them from disintegration; to gain, in the course of this repair, all information possible regarding the history of the site. The Honduran government supplied all labor and materials for the repair work and defrayed the costs of incidental transportation. It purchased the land enclosing the Main Group of ruins and established it as a national monument, employing workers year around to keep the site bushed and in good repair. The CIW supplied the technical staff and directed the course of excavations. Hieroglyphs were documented, the stelae were repaired and uprighted where needed, some of the architecture was restored, and many tombs were excavated. Perhaps one of the most beneficial endeavors was the rechanneling of the course of the Copán River, which prevented further destruction of the site. Be-

ginning in the mid-1970s work at Copán has been continuous. In 1975 Gordon R. Willey of Harvard University went to Copán to design a long-term program of research and restoration to be sponsored by the Honduran government; in 1977 Claude F. Baudez, of CNRS, directed the first phase of the project. In 1980, William T. Sanders and David L. Webster, both of Pennsylvania State University, directed the second phase, and in 1985 the Copán Mosaic Project, directed by William L. Fash, of Harvard University was begun. Extensive excavations have been carried out in the Acropolis in a project involving Fash and Ricardo Agurcia Fasquelle of the Instituto Hondureño de Antropología e Historia, Robert J. Sharer and David Sedat, and E. Wyllys Andrews V. In 1980 UNESCO declared Copán a World Heritage Site.

31.1.

SYLVANUS G. MORLEY

Copán Expedition

YB 25:277–282, 1926

Toward the end of March, Dr. Morley left Chichén Itzá for Guatemala by way of Veracruz and the land route down the Pacific Coast. He was accompanied by Joseph Linden Smith, the artist, and Robert A. Franks, Jr., as assistant. John Lindsay, a field observer of the Department of Terrestrial Magnetism, joined the party at Guatemala City on April 3, and the following week all proceeded to the ruins of Copán in western Honduras.

The object of this expedition was to check the accuracy of previous observations on the Copán astronomical base-line, a line of sight running east and west across the Copán Valley connecting two of the hieroglyphic monuments, the so-called Piedras Pintadas, Stelae 10 and 12.

These two monuments stand on opposite sides of the valley, 4.1 miles [6.6 km] apart in an air-line; the western one, Stela 10, on the crest of a hill 2,779 feet [847 m] above sea-level, and the eastern one, Stela 12, well down on the side of, an even higher hill, at an elevation of 2,553 feet [778.1 m] above sea-level.

Because of the fact that it had been erected on the crest of a hill, and not on the side, and also because it is slightly higher than Stela 12, Stela 10 practically stands clear against the horizon, or very nearly so, as observed from Stela 12. And since the bearing of the line between these two monuments is almost east and west, it has long been suspected that some sunset observation had formerly been made from Stela 12 looking toward Stela 10.

From observations made for the Institution at Stela 12 on March 8, 1916, by Arthur Carpenter, data were secured which were interpreted by Professor R. W. Willson, of the Harvard Astronomical Department, as indicating that the sun set behind Stela 10 as observed from Stela 12, 20.3 days after the vernal-equinox and 20.6 days before the autumnal equinox, that is, that the sun set behind Stela 10 as observed from Stela 12 twice a year, once on April 9, on its apparent march north, and again on September 2, on its apparent return south. Both these monuments have Initial Series dates inscribed upon them, and Stela 12, a Period-Ending date as well (Table 31.1.1).

Dr. H. J. Spinden (1924:134–135) in his work on Mayan dates, wherein he has attempted to establish a day for day correlation of Maya and Christian chronology, has reached the following Gregorian equivalents for these three dates (Table 31.1.2).

Table 31.1.1. Calendrical Decipherments, Copán.

Stela 12		
9.10.15.0.0	6 Ahau	13 Mac
9.11.0.0.0	12 Ahau	8 Ceh
Stela 10		
9.10.19.13.0	3 Ahau	8 Yaxkin

Table 31.1.2. Correlation of Maya and Christian Calendars.

9.10.15.0.0	6 Ahau	13 Mac	January 11, 388 AD
9.10.19.13.0	3 Ahau	8 Yaxkin	September 6, 392 AD
9.11.0.0.0	12 Ahau	8 Ceh	December 15, 392 AD

He further supposes that the line of sunset originally established by Stelae 10 and 12 fell on September 6 and its reciprocal, April 5, and that later this line was shifted presumably by moving Stela 10 to the north so as to mark the line of sunset on April 9 and September 2, the dates indicated by the Carpenter observations in 1916. He argued that September 6 might have had a ceremonial importance in connection with the planting of the second crop and therefore called it the first position of the autumnal station, while September 2 was called the second position of the autumnal station. It was pointed out that the four day change may have been made to affect a coincidence with the closing day of Katun 12. The first autumnal date September 6 is recorded on Stela 10 and on Altar U; the second autumnal date, September 2, is recorded on Altar U in striking combination with its reciprocal April 9, and is reached by the famous 6 Caban 10 Mol, which is of more frequent occurrence than any date at Copán. The association of these dates on Altar U is [shown in Table 31.1.3].

To these coincidences was added the fact that the Initial Series of Stela A declared April 5, the reciprocal of September 6.

It had become a matter of considerable importance therefore the exact azimuth of the line joining Stela 10 and Stela 12, which with the other data, such as the exact latitude and longitude of Copán; length of the line of sight, and relative elevations of the two monuments, would determine the exact dates the sun would set behind Stela 10 as observed from Stela 12.

Through the kindness of the Director of the Department of Terrestrial Magnetism and of Dr. Fleming, John Lindsay, a field observer of the Department, was detailed, with all the necessary instruments, to accompany Dr. Morley to Copán and to make check observations on this supposed astronomical base-line. The party reached Copán on April 6. The first task was the clearing of the crest of the hill where Stela 10 had formerly stood, and the re-erection of that monument as nearly as possible in its original position. The former

Table 31.1.3. Decipherment of Calendrical Inscriptions, Altar U, Copán.

9.15.8.10.12	2 Eb	0 Pop	April 9, 480
9.15.9.0.2	9 Ik	10 Mol	September 6, 480
9.15.9.10.17	3 Caban	0 Pop	April 9, 481
9.16.12.5.17	6 Caban	10 Mol	September 2, 503

position of Stela 12 on the eastern side of the valley was also prepared for the observations, and a bench mark established where it had stood for future reference.

Solar observations were made on April 9, 10, 12, 13 and 14, 1926, at Stela 12. The latitude and longitude at this stela and the azimuth of the line joining Stela 10 and 12 were determined by repeated observations. The direction of the sun's path was also determined on the above dates and enough data secured to determine the exact position of the sun at sunset, as viewed from Stela 12 on any day. It appears from the final calculations, that the sun would set behind the mountain, which lies behind Stela 10 as seen from Stela 12, and exactly on the line extended between these two monuments, on April 12, 1926.¹

The following summary of Mr. Lindsay's observations on the astronomical base-line at Copán has been prepared by the Department of Terrestrial Magnetism:

1. So near as can be determined from the observations and from independent calculations depending upon the geographic position of Copán, the sunset on April 12, 1926, was behind Stela 10 as observed from Stela 12, the local time of the sunset behind the low ridge being 6 h 07 m which is in good agreement with the results obtained from Mr. Lindsay's graphs. At this time of year and for the approximate latitude of Copán, the sun sets about one minute of time later each day.
2. Assuming the length of line between Mound 3 and Mound 16 to be 960 feet [292.6 m] as taken from the surveyed maps by A. P. Maudslay and G. B. Gordon, then the air-line distance between Stela 10 and Stela 12 is 21,734 feet [6,624.5 m]. Of course, this distance will be affected by the same percentage of error as the assumed base, namely, 960 feet [292.6 m], may be.
3. The distance between the point at the center of the sun's disk at the time of setting on April 11 and at the time of setting on April 12, as measured along the crest of the hill where the western monument stands, is 135 feet [41.2 m].
4. Apparently on April 12, 1926, the sun set almost exactly behind Stela 10 as viewed from Stela 12, that is to say, its center was practically over Stela 10, when it sank behind the low ridge a mile [1.6 km] or so beyond Stela 10.
5. From measurement of vertical angles, Stela 10 is 226 feet [68.9 m] higher than Stela 12. Referring to publication 219 of the Carnegie Institution it is noted

that from data given this difference in elevation would result as 129 feet [39.3 m], since the elevations above the plaza given are Stela 10, 228 m, and Stela 12, 188.6 m, a difference of 39.4 m; the difference in elevation as determined from vertical angles should, of course, be much more nearly correct.

6. Assuming that the point on the church spire at Copán sighted upon by Mr. Lindsay in measuring the vertical angle from Stela 12 is about 70 feet [21.3 m] above the plaza, it appears that Stela 12 is 595 feet [181.4 m] higher than the plaza; thus the height above sea level of Stela 12 may be reckoned as 2,553 feet [778 m], whence from the data given under 5. The elevation of Stela 10 above sea level is 2,779 feet [847 m].
7. The difference in elevation between Stela 10 and Stela 12 as indicated by a single aneroid reading by Mr. Lindsay at each point is 292 feet [89 m].
8. The distances determined from the triangulation using as a base the length of line between Mound 3 and Mound 16 as 960 feet [292.6 m] are as follows: Stela 12 to church in Copán, 6,352 feet [1936.1 m]; Stela 10 to church in Copán, 15,558 feet [4742.1 m].
9. The geographic coordinates as determined from Mr. Lindsay's observations are [shown in Table 31.1.4]. And the azimuth of the line from Stela 12 to Stela 10 is 98 degrees 51'.0 west of true south.
10. The values of the magnetic inclination, and declination, were determined on Mound 3 at the Main Structure, the declination being 7 degrees 10' east and the inclination 42 degrees 26' north.

These results, although they differ by three days from those derived from Mr. Carpenter's observations made just 10 years ago, agree with those made by Dr. Gordon more than 30 years ago, and should be accepted as correct. Mr. Lindsay, in addition to being a highly trained observer with an exceptional field technique, had the advantage of a complete outfit of instruments, theodolite, chronometers, aneroid barometers, boiling-point apparatus, etc., and the data he gathered may be accepted as final.

There is evidence that Stela 10 may have stood 4 feet [1.2 m] south of its present position, though this is not sufficient to throw the sunset along the line extended by Stelae 10 and 12, as much as a single day earlier, i. e. back to April 11 or forward to August 31. The artificial terrace upon which this monument was erected is 72 feet [21.9 m] long north and south, and 50 feet [15.2 m] wide east and west, but instead of standing

Table 31.1.4. Geographic Coordinates of Stelae 10 and 12, and Church, Copán.

Point	Latitude North	Longitude of Greenwich
Stela 10	14 deg. 51'.0	89 deg. 08'.1
Stela 12	14 deg. 50'.4	89 deg. 04'.5
Church	14 deg. 50'.7	89 deg. 06'.4

at the middle of its long dimension, that is, the middle of this terrace as viewed from Stela 12, Stela 10 is 8 feet [2.4 m] nearer the northern end than the southern end, that is, it is 4 feet [1.2 m] north of the middle point.

Calculations made at the Department of Terrestrial Magnetism indicate that in order for the sun to set on April 9 along a line extended by these two monuments, as used by Spinden in his correlation, it would be necessary to shift Stela 10, 405 feet [123.4 m] south of its present position, which shift would carry it completely off the terrace built to support it and on to the rough crest of the hill.

The best explanation of the line extended by these two monuments appears to the writer to be the following, though definite proof thereof lacking. It is the general custom in western Honduras at the present time to burn off the fields some time early in April to clear them for planting at the beginning of the rainy season, a month later. It is certain, that after burning had once been started, no sunset observation on Stela 10 would have been possible from Stela 12. Such was the hazy, smoke-laden condition of the atmosphere from April 9 to 14 of the present year at Copán, that even with a high-powered telescope it was impossible to see Stela 10 from Stela 12 at sunset, and without any instrument of precision it would have been even more hopeless. Indeed, the only way it was possible to secure the azimuth of this line was by erecting behind Stela 10 an enormous pile of fat-pine faggots, 16 feet [4.9 m] long and 10 feet [3.1 m] high, and setting fire to it at night. This caused such an illuminated field behind Stela 10 that, even in spite of the heavy pall of smoke overhanging the valley, it was possible to see the monument outlined against this illumination and to secure the azimuth of the line.

The writer believes these two monuments were erected in the positions which they now occupy in order to coincide with the line of sunset on April, and further, that this was the day which the priests at Copán had selected for the formal firing of the fields, since an earlier burning would have given time for bush to have grown up again before the advent of the first rains early in May when planting could be begun; and finally when in the course of its progress north, the sun having at last sunk behind the western hills at a point directly above Stela 10 as observed from Stela 12 (that is, on April 12), then, but not until then, were the ancient inhabitants of Copán and its environs permitted to burn their fields against the fast approaching rainy season. In short, it appears probable that these two monuments were a giant gnomon, which marked for the inhabitants of the city the position of the sun on the day which their ritual indicated as that upon which their fields should be fired, that is, made ready for the coming planting season; or, as Spinden has not

unhappily named it, "the beginning of the agricultural year," which for Copán at least, judging by the observations made this year, would seem to have fallen on April 12.

Spinden has recently advanced significant arguments tending to show that April 12 was the emphatic position of Venus in the natural year, reached in various calculations, and that this date pairs with August 30 which is also prominently declared. The Initial Series on Stela A at Copán give 9.14.19.8.0, 12 Ahau 13 Cumhu, April 5, 471. This not only gives the reciprocal of September 6 but it also coincides with an inferior conjunction of Venus with the sun. The heliacal rising of the planet occurred four days later on April 9; and 0 Pop, the Maya New Year day, took place three days after this on April 12. At the height of the Great Period 9.15.10.0.0 equaled August 30, 481, and fell in a year when 0 Pop was April 9. Moreover at Tikal this date is emphatically associated with April 9 perhaps to emphasize the shift that is being made. Also, 9.19.0.0.0, 9 Ahau 18 Mo is only one day less than the reciprocal of April 12, being August 29. Finally on Stela F at Quiriguá the certain dates refer to the revised base line. These can be arranged as [in Table 31.1.5].

Here the 19 year cycle of Meton is used to give the same place in the natural year and the same phase of the moon between the first two numbers and it may be added that 0 Pop was April 9 in 480 to 483 and April 5 from 496 till 503.

The three readings by Gordon, Carpenter and Lindsey of the azimuth of the line connecting Stelae 10 and 12 have a considerable divergence, Lindsey's being 23' greater than Gordon's and 38' less than Carpenter's (Table 31.1.6).

Then there is the tilting of the line which is neglected in Professor Willson's interpretation and possibly certain other minor elements.

It is becoming increasingly apparent, and very largely through the Institution's investigations, that astronomical considerations influenced the placement,

Table 31.1.5. Calendrical Decipherments, Stela F, Quiriguá.

9.15.10.0.0			
19.5.0	3 Ahau	3 Mol	August 30, 481
9.16.9.5.0			
5.1.0 subtract	1 Ahau	8 Mol	August 31, 500
9.16.4.4.0	1 Ahau	13 Mol	September 6, 495

Table 31.1.6. Azimuth Lines From Stela 10 to Stela 12, Copán.

Gordon	N 80 deg. 47' W
Carpenter	N 81 deg. 47' W
Lindsey	N 81 deg. 09' W

that is, the positions, where the Maya monuments were erected; and that in many cases they were used as giant gnomons for marking specific lines of sight establishing specific astronomical phenomena. So fruitful, indeed, has this line of investigation proved in the past three years, as for example Frans Blom's discoveries in regard to the lines of sight extended by Stelae 18, 19, El and 20 at Uaxactún in 1924 [Chapter 28.1], and the discoveries of O. G. Ricketson, Jr., in the Caracol at Chichén Itzá in 1925 [Chapter 38.6], that it is confidently anticipated further study in this particular direction will be richly repaid.

NOTES

1. More than 30 years ago Dr. G. B. Gordon, in charge of the Third Expedition of the Peabody Museum of Harvard University to Copán, had reached the correct azimuth of the line extended by Stelae 10 and 12, giving the day April 12 and its reciprocal August 30, the same pair reached by Mr. Lindsay this year (Morley 1920:133–134).

31.2.

GUSTAV STRÖMSVIK

Copán

YB 34:118–120, 1935

The work at Copán in western Honduras was undertaken, in cooperation with the Honduran government, for two purposes: to repair and protect the remarkable stelae and other monuments for which these ruins are famous; and to secure data bearing on fundamentally important problems of Maya sculpture, architecture and ceramics.

Copán is a classic site for Maya archaeology. It was first brought to general notice by Stephens' and Catherwood's pioneer investigations; Maudslay's unrivaled photographs and drawings of the Copán sculptures, made in the [18]80s, gave tremendous impetus to Maya research; in the [18]90s nine extensive excavations were carried on at Copán by the Peabody Museum of Harvard University; Spinden based his great work on Maya art very largely upon the Copán carvings; and Morley made its inscriptions the subject of the first of his exhaustive epigraphic monographs. In spite of so much activity, neither the "dirt archaeology" of Copán itself nor the relations of the city to

other centers of Maya development is adequately known, for the work of the Peabody Museum was done before the introduction of modern methods of excavation, and both Morley and Spinden confined their studies to single aspects of culture. The current project should therefore result in accumulation of many significant new data. The first year was devoted primarily to such repairs as were most urgently necessary; reassembly and re-erection of the many broken, fallen and, leaning stelae; and preliminary steps to prevent further destruction by the Copán River of the enormous mound known as the Acropolis.

Mr. Strömsvik, assisted by Mr. Deric Nusbaum, was in the field from January to June, inclusive. Equipment, tools and food-supplies were bought in New Orleans and shipped through Guatemala by rail to Chiquimula, whence they were transported across the mountains to Copán by the Government of Honduras.

Actual work started on January 15th. The ruins, being completely overgrown, had carefully to be cleaned before an adequate idea could be formed as to the number of damaged monuments which required attention. Timbers for tall stout scaffoldings were assembled, and Col. Antonio Sans, paymaster and representative of the Government arrived with two picked masons. By the end of January the repair was well under way, starting with Stela 4 in the Great Plaza, a monument very badly broken by its fall and repeated milpa fires.

An excavation was also started under the base of Stela A, on the east side of the Plaza. This stela was leaning so badly, apparently as result of a recent severe earthquake, that it was in danger of falling, as were Stelae H and P. One of the first steps was therefore to secure these stelae without stout wooden braces until they could be straightened and their bases strengthened. Earthquakes occurred almost daily, in stronger and weaker degrees.

In order to straighten a stela, the butt must be freed on all sides to allow it to be restored to vertical position without undue strain upon the tall stone shaft. In such clearing of their bases excellent opportunities were afforded for study of the manner in which stela had originally been erected, and for observations of the cruciform offertory chambers usually found beneath them. Eighteen stelae were thus examined for dedicatory offerings. These proved, for the most part, to consist of pottery vessels, the majority of crude ware, a few of finer workmanship. Other objects found in the cruciform vaults were seashells, coral and disintegrated cinnabar. Probably the most important discovery of the season was the finding, under Stela H, together with some broken beads of jade and other stones, of two tiny gold fragments, the legs of a small hollow figurine, which in complete state perhaps

served as a pendent to a necklace formed by the beads. That most of the latter were in pieces seems to indicate that they were broken ceremonially before being placed under the stelae, as most likely was also the gold figurine. Thorough, but unsuccessful, search was made for the rest of the figurine. The bits recovered are the first objects of gold which are definitely assignable to the Old Empire period.

Research upon the specimens, particularly those of pottery, found in connection with the Copán stelae is outstandingly important, because of the fact that these monuments bear hieroglyphic dates which permit them to be ranked in chronological order. And, when the correlation question has been settled, we shall be able to place them in terms of the Christian calendar. Thus the sub-stela objects, already serialable relative to each other, and doubtless eventually even datable, provide valuable materials not only for determination of the nature and the rate of Maya culture growth, but also through comparative study of trade-specimens, to establish cross-links between certain stages of Copán culture and developments in other areas, within and without the Maya field.

Several trenches were dug in the Great Plaza to define relations of the stelae to the plaza levels, and of the latter to surrounding structures. Many potsherds and fragments of implements came to light, as well as a cache of several hundred large obsidian blades.

Other activities of the 1935 field season were restoring of a partly destroyed burial chamber in the East Court, the only accessible roofed structure in the ruins; the laying out and partial supervision of the clearing and leveling of a new flying field, near the ruins; and the fencing of the entire Government reservation, both ruins and flying-field, to keep out cattle and unauthorized visitors. A number of altars and sculptured stones were repaired and examined for ceremonial offerings; and those that had been moved in recent years were restored as nearly as possible to their original positions.

Much thought was given to ways and means of preventing the Copán River from cutting farther into the high bank forming the east side of the Acropolis. Since Maudslay's time, some 50 years ago, the river has eaten away a strip approximately 10 m thick by 100 m long, reaching from the base to the top of the Acropolis, a height of 35 m. The remnants of two richly sculptured structures have been lost, and much destruction is threatened. The cut made by the river forms at present the most spectacular and instructive archaeological cross-section in the Maya area. The problem of guarding the Acropolis from the assaults of the small but intermittently raging river proved a difficult one. Many plans were formed and discarded, such as building a solid breakwater the length of the exposed

face, or chaining a floating protection of boomed logs along its front; but the expense of importing the necessary large quantities of cement and iron was found to be prohibitive. It was finally decided to adopt the radical expedient of changing the course of the river by opening a ditch across a tongue of land to the east. This will bring the channel, straight down the valley, some 100 m away from the ruins. It is thought that a relatively small canal will serve to start the river on its new course, and that it will do most of the necessary digging itself.

31.3.

GUSTAV STRÖMSVIK

Copán

YB 35:117–120, 1936

The current field-season at Copán comprised the months of December 1935 to May 1936, inclusive. Mr. Gustav Strömsvik was in charge, assisted Mr. Aubrey S. Trik. Col. Antonio Sans, representative of the Honduran government, most efficiently and tactfully handled the employment labor and the transportation of supplies. Principal activities were diversion of the Copán River, tunneling into the Acropolis, mapping the Acropolis, and repair of Temple 22.

Of most immediate practical importance was the turning of the Copán River away from the site. For centuries this stream, subject to violent minor floods, has been undermining and washing away large parts of the ruins. The most evident damage has been caused to the enormous central group known as the Acropolis, as is proved by early Spanish accounts and by the photographs and plans of Maudslay and the Peabody Museum made 50 and 40 years ago, which show that the Acropolis formerly extended considerably farther to the south.

The problem of protecting the Acropolis was studied during the 1935 season, and it was decided to open a canal across an ox-bow bend, throwing the river, by means of a diversion dam, into this new channel. The canal was accordingly dug by Government labor, under supervision of Colonel Sans in the summer of 1935.

To haul the large quantities of rock required for the dam a specially equipped dump truck was shipped by sea to Puerto Barrios, by rail to Zacapa and thence driven to Copán. No motor car had hitherto penetrated this part of Honduras and the last 25 miles [40.2 km]

over mountain mule-trails necessitated five days of unremitting toil. A mile [1.6 km] of road was then built up the river to the dam-site, a loading hopper was constructed, and work was begun on the heaps of uncut stones and *débris* left by earlier excavations. Some 7,000 tons of this material were thus clear from the Court of the Hieroglyphic Stairway and put into the dam. Early in March the water was turned into the canal, but the heightening and thickening of the dam continued until the end of the season. It remains to be tested by the floods of the coming summer.

Extensive tunneling operations were conducted in the Acropolis as a first step in the study of this vast complex which, like so many Maya constructions, grew to its present size by the piling of building on building clear evidence that the Acropolis contains a number of accretions is offered by the cut made by the river on its eastern face, where a whole series of earlier floor levels and several sections of masonry wall have been exposed. It was therefore certain that an extensive stratigraphy of architectural remains must lie within, and it was hoped that well-preserved buildings might perhaps be found, as has been the case at Chichén Itzá and at Uaxactún.

Toward the close of the last season Tunnel I was started in Mound 11, at the side of Stela N in the Court of the Hieroglyphic Stairway. An underlying stairway was immediately encountered, only 2 m below the outer stairs. The solid adobe and stone fill of the structure rendered tunneling comparatively easy and safe. Lack of proper digging tools, however, and particularly of means for lighting and ventilating the work rendered continuation in 1935 inadvisable. This year a small electric plant was imported to supply light and, by means of fans, to insure circulation of air. Work on Tunnel I was continued, and another, Tunnel II, was opened into Mound 26, beside the foot of the Hieroglyphic Stairway. Tunnel I was run up the 19 steps of the buried stairway, along a low, terrace and up several more steps, upon the highest of which was found an as yet undeciphered hieroglyphic inscription 2 m long. The tunnel was driven to the very center of the mound, where the difficulty of disposing of the *débris* became so great that it was temporarily abandoned.

Tunnel II was dug through the talus of *débris* at the base of the mound, through two courses of the facing masonry of the lowest outer terrace, and into the hearting of the pyramid. The first few meters consisted of rough quarried stones set in adobe mixed with lime. Then the basal courses of an earlier pyramid were found. The faced-stone covering, if such had existed, had been removed. The fill of this older, construction, contained more and purer adobe and fewer stones; the latter, for the most part water worn boulders, were laid in regular horizontal courses between thick layers of

adobe. The tunnel was continued until a cross-wall of small, roughly faced stones was encountered, some 10 m from the outer terrace. Following up this wall toward the south, a badly defaced and chipped stucco mask panel was found, adorning the side of a low terrace. Further digging proved that the upper part of this terrace had been mostly removed before being covered over. A downward-sloping drift was then started, going under the base-courses of the terrace, in search of still earlier constructions. It was run inward and down through the above-mentioned adobe and river-boulder fill, eventually reaching a thin layer of black, sticky, contained potsherds, charcoal, and animal bones. Beneath this midden was virgin soil.

When Tunnel I had been completed, a new one, Tunnel III, was started to the east side of Stela N, and pushed straight into the mound, through the stairway followed in Tunnel I. It penetrated three superimposed stairways, eventually reaching a very flat stairway; this was followed upward in the hope of finding a hieroglyphic inscription similar to that laid bare in Trench 1; the top step, however, was plain. Valuable series of potsherds and numerous small artifacts were gathered from the various levels. A pit sunk through the innermost and lowest structure found in Tunnel III, which is a low terrace under Stair 4, revealed several floor-levels. Virgin soil was reached at about the same depth as in Tunnel II. None of the potsherds from the pits or tunnels, even those from beneath the lowest floors, appeared to be typologically more archaic than those from the source; the ceramic material, however, has yet to be examined by a specialist. At present it therefore seems probable that the site of the Acropolis and adjacent mounds was reclaimed from the river and the enormous mass of construction erected in a comparatively short time. To accomplish this the population of the vicinity of Copán must have been large. It seems reasonable to believe that the ancestors of the builders of the Acropolis must also have lived in the valley; some presumably on the higher land, here the remains of their settlements should have escaped destruction by the floods which seem periodically to have swept the lower-lying terrain. When these have been found, materials of great importance should accrue.

A third activity was the beginning of a detailed map of the Acropolis and adjacent structures, a project undertaken during January and February by Edwin Shook before he left for Uaxactún. Mr. Shook not only surveyed such parts of the ruins as remained uncovered by *débris*, but also made a number of minor excavations to determine the location of mound and plaza corners. A number of interesting sculptures were thus brought light.

Reconstruction was confined entirely to Temple 22. This most beautiful of all Copán buildings, located

on the north side of the East Court of the Main Group, has been gradually falling to pieces due to the action of vegetation and weather; and in December 1934 a heavy earthquake reduced it to a shapeless mound.

Work was begun by Mr. Trik in December by clearing away the trees and brush which were beginning to envelop the ruin. Excavation was started at the entrance of the temple. Only a few courses of the jambs were found in position, but the wall-stones were in place almost up to the spring of the vault. Although standing, the walls were leaning heavily and it was necessary to relay them in cement.

Practically all the carved stones in the sculptured decoration of the interior doorway, the outstanding feature of the building, had fallen. They had not suffered greatly and could largely be replaced in their original positions as shown in Maudslay's photographs. In reconstructing this sculpture the ancient method of supporting the stones and vault over the doorway became evident. This had involved the use of long wooden beams which fitted into specially cut stones and rested on the top course of the walls on either side of the doorway. The original beams had rotted, dropping the carved stones down on the wall, and giving a deceptive appearance that the stones were *in situ*. In rebuilding this portion of the Temple, Mr. Trik used two strong mahogany beams to carry the sculpture. The only lacking stones are those which spanned the actual opening of the doorway and a few pieces from the east side. It is possible that these may be found and the restoration of the sculpture be completed by further excavation outside the temple.

Attention was next turned to the elaborate decoration on either side the doorway. The east side of the façade was excavated, bringing to light unexpectedly large parts of the wall and of the flanking sculptures. Although the entire composition can not be restored, enough remains to show that a gigantic serpent head formed the entrance to the temple. The mosaic of carved stones on either side represents the eye and cheek elements, and breaking out from the wall on either side, is a large curling fang which rests on the upper step of the stairway. The face of the step is carved to represent the teeth of the lower jaw. The doorway, between the eyes and fangs, forms the mouth.

Few artifacts were found in Temple 22, but a great number of broken pieces of sculpture from an earlier structure occurred in the fill of the walls; practically all were painted a dark oxide red and several showed small patches of bright green plaster.

Mr. Trik devoted much time to study of the construction, plan and decoration of the building. Sketches illustrating structural methods were made, and measured drawings of the sculpture begun. From these architectural restorations will later be prepared.

31.4.

GUSTAV STRÖMSVIK

Copán

YB 36:137–139, 1937

The third season of cooperative work by the Government of Honduras and Carnegie Institution of Washington at Copán opened December 1, 1936, to take advantage of the full six months of dry winter weather. Activities of the year were further attempts to protect the ruins from destruction by the Copán River; study and repair of the Hieroglyphic Stairway; and completion of study and repair of Temple 22. As in former years, the Government has defrayed all costs of labor and of the transportation of supplies. Dr. Jesús M. Rodríguez, Minister of Public Education, under whose auspices the project is carried on, visited the site several times during the season for conferences with Mr. Strömsvik, Dr. Morley, and the Chairman. Dr. Rodríguez' unremitting interest in and support of the work have, not only been of great practical value but have also permitted personal contacts highly prized by the Division's staff. Thanks are likewise due to Colonel José A. Rivera, government representative at Copán.

In the struggle with the river, the dam which had been built in 1936 and later washed out by the summer floods was replaced by a longer dam reinforced by several hundred piles, and the diversion canal was widened and deepened. Signs of a flank attack by the rising waters of early summer were becoming evident when Mr. Strömsvik left Copán in June, and it is possible that complete diversion of the river may never be feasible. If so, protection by rip rapping will have to be afforded, the base of the Acropolis. It is imperative that this important structure be saved. Repair of the magnificent Hieroglyphic Stairway was begun. Dr. Morley, who was at Copán for a month in the late winter studying new epigraphic material, and assembling and arranging the fallen sections of the stairway preparatory to their replacement, reports that about 62 steps constituted the original flight. Only the bottom 15 were *in situ*. Fifteen others, however, had slid downward en bloc. These, excavated in the 1890s by the Peabody Museum of Harvard University and laid out in the plaza in their proper order, were replaced during the past season in the position which it is almost certain they had formerly occupied.¹

Discovery of a ballcourt between Structures 9 and 10 near the Hieroglyphic Stairway (tentatively dated by Dr. Morley at 9.17.4.0.0) was perhaps the outstanding event of the season.² It overlies two earlier ballcourts, the middle one possessing three finely carved,

circular stone "markers," the oldest showing traces of having had circular plaster "markers" decorated with paint.

Mr. Trik completed the excavation and repair of Temple 22, which he began in 1936. Last season, attention was devoted to the clearing of the mound and to reassembly of the interior sculpture. It was found that enough of the building was standing to justify continuation of repair, and to permit thorough study of one of the most important and most complete structures in Copán.

Work was resumed by clearing the north room of debris. The sculptured stones originally over the interior doorway were found piled in the room, where they had been placed by some earlier excavator and subsequently covered by falling walls. These stones completed the sculptured decoration of the room.

The west transverse room yielded information on vault construction. There a wooden lintel over a niche had rotted, allowing a large section of the vault to fall en bloc with the stones still in position, showing a fine construction of long, carefully fitted, corbelling stones. Exceptionally long-tenoned vault stones were found throughout the building, about 80 cm being an average, but some reaching a length of 1.3 m. The weakness of the vault was apparently in the lack of a strong binder rather than in the cutting and setting of the stones.

The ground plan of the temple was found to be quite different from any of the published plans in that the east and west rooms are not symmetrical, while the north room does not have the two narrow wings shown in all earlier plans. It was evident that the temple had never before been completely cleared, as niches in the north and west rooms, a passageway in the east room, and a dais in the west room had not been discovered.

Investigation of the base courses of the walls showed that its original design had been changed during construction and gave clear indication of the method followed in laying out the rooms when the building was begun. This was done by setting single courses of stones at about floor level, thus providing lines to be followed as the walls were erected. Where changes in plan occurred, such courses were covered by the new walls.

The platform on which the temple stands was cleared and repaired, and the stairway leading up to the platform was reset. This consists of eight steps about 8 m long and contains some of the largest stones used in Copán. Several are over 2 m long and weigh approximately a ton and a half.

Evidence that the temple had been used as living quarters after its abandonment as a ceremonial building was found in the form of occupational refuse. Dur-

ing the clearing of the rooms and terrace floor, numerous artifacts and pieces of sculptured decoration were encountered. Among these was a beautifully chipped obsidian ceremonial blade measuring 33 cm in length. The outstanding piece of sculpture was an unusually well-preserved head of the Singing Girl type, from the west side of the platform. It, with other similar pieces, formed a part of the façade decoration.

A study of the scattered sculpture was begun, particularly of such parts as could definitely be assigned to some part of the building. As no part of the upper zone was standing, this examination was limited to the elaborate masks on the four corners of the temple and to the large serpent mask forming the entrance. Unallocated stones were sorted and piled where they will be available for further study.

In connection with reconstruction of the Hieroglyphic Stairway, the summit of Mound 26, up which the stairway led, was investigated in order to find the level of the temple platform, as one check on the number of steps in the stairway. No indications of a building were evident until removal of surface debris revealed large, scattered fragments of a very thick, hard floor. By fitting these together, like sherds of pottery, most of the outline of a chamber was reconstructed. Its limits were clearly indicated by the turned-up edges of the flooring where it had abutted the walls, and the doorway was located by pieces which projected beyond the line of the front wall. Forty-four, beautifully carved stones were found. These had formed part of a four course frieze of full-figure glyphs, probably across the medial wall, two courses apparently in the wall and two in the vault. Two stones of the lower course had cord-holders, indicating that the band had been carried on wooden beams over an interior doorway. Some 70 similar stones from the slopes of Mound 26 are now in Peabody Museum and in Tegucigalpa. It is probable that they are part of the same frieze and that the assemblage can be completed. If so, it will constitute the longest inscription now known in the very rare full-figure hieroglyphs.

A small amount of digging was done on the southwest corner of the mound in order to locate the terrace walls. Four of the upper terraces were found and recorded and the excavations refilled as protection from further destruction.

NOTES

1. Dr. Tozzer kindly supplied copies of original notes and photographs from the files of Peabody Museum, without which this undertaking could not have been carried out.

2. Other new dates deciphered by Dr. Morley are: the step of Temple 11 (9.16.15.0.0) and Altar W' (9.18.0.0.0).

31.5.

GUSTAV STRÖMSVIK

Copán

YB 37:147–152, 1938

The fourth season of cooperative work by the government of Honduras, and Carnegie Institution opened December 1, 1937. Mr. Strömsvik, in charge, was assisted by Aubrey S. Trik and J. M. Longyear, the latter devoting himself to ceramic studies. Volunteer assistants were Miss Margaret Ennis, George E. Roosevelt, Jr., Donald Barrow, and Harvey Fite.

The work of protecting the main group of the ruins against further damage by the river is believed to have been brought to a successful conclusion during this season; the pole dam built in 1937 withstood the summer's floods, except for minor erosion around both ends during the peak of high water. As had been hoped, the diversion canal dug in 1936–37 was amply widened and deepened by the river itself and when the floods subsided the stream confined itself to its new course. By repairing and extending the pole dam and by building it much higher with stone and earth removed from the ruins it was greatly strengthened.

Mr. Strömsvik continued excavation and repair of the ballcourt discovered in 1937. Like other Maya ballcourts, it consists of a long rectangular playing area bounded on either side by a low vertically faced bench, from which sloping surfaces rise to a second vertical wall. The present court differs from other known examples in having been adorned with six monolithic parrot heads, three on either side (one at each end, and one at the center of the upper edge of the sloping surfaces). Although all six heads had been thrown down, the butt or tenon of the center head on the east side was found *in situ*, and the head at the south end of the west bench lay in such a position that its original location could be determined. These two heads were reset. They supply evidence which will permit eventual replacement of the remaining four.

On the east side of the court a narrow and much weathered hieroglyphic band runs upward from the center of the lower bench, crosses the sloping surface, and terminates at the central parrot head. From such glyphs as were legible Dr. Morley, in 1937, obtained a tentative reading of the date 9.17.4.0.0. In the course of this year's work it became necessary temporarily to remove one of the slabs of the band. It proved to be a reused stone from a similar, earlier band, doubtless belonging to one of two older, dismantled ballcourts found, in 1937, underlying the present court. The stone in question bore an excellently preserved and almost

complete Initial Series introducing glyph whose variable element represents the Venus sign, which, according to Dr. Morley, should only occur at 9.4.0.0.0, 13 Ahau 18 Yax, approximately 260 years prior to the apparent date of the latest ballcourt.

General repair of the ballcourt comprised re-laying the flat stones of the whole playing surface and parts of the sloping surface pavements, which had been forced out of level by pressure of tree roots; and rebuilding the vertical faces of the two basal benches.

Mr. Strömsvik also replaced certain elements of the Hieroglyphic Stairway and of its intricately carved balustrade, and made studies looking toward possible further reconstruction. To date have been added to what remained standing of the stairway only stones whose former position was known. Mr. Strömsvik, however, considers it advisable to complete the entire flight. Practically all the rest of the blocks are available, and although their exact original order will probably always remain uncertain, their resetting in the stairway would not only restore to this extraordinary construction its former impressiveness and beauty, but would preserve from damage the stones at present lying scattered in the court. Needless to say, the elements so reset would be so marked as to distinguish them, for students, from those found *in situ* and those regarding whose place there is no doubt. Mr. Trik devoted the season to Mound 11. This work was undertaken in order to preserve the remains of the temple and substructure, and to study the structure as an architectural unit in the complex of the Acropolis. The temple crowning the mound has undergone more or less excavation at various times since Maudslay's initial work there some 50 years ago. At the beginning of the 1938 season it was a tree-covered mound with little of the original construction showing through the vegetation and fallen debris.

The first consideration in the clearing of the mound was protection, from damage by material being removed from above, of the exposed sculpture of the Reviewing Stand at the foot of the south slope, and of Stela N and its altar at the base of the north side of the mound. The former was shielded by a covering of earth and stone and Stela N was guarded by erecting a barrier of poles halfway down the slope. Excavation was begun by opening a passage through the central chamber to the south doorway of the temple.

Clearing the center and west part of the interior of the temple revealed that on the north a gallery, about 30 m long, extends the full length of the building. There is a small central chamber, 60 cm above the level of the north gallery, and a small south vestibule on the same level as the north room. In the south wall of the north room, on either side of the central chamber doorway, are two stair wells. The west well was completely exca-

vated and reset to a height of eight risers. Although no part of the building exists above the spring line of the vault, it is certain that it formerly possessed a second story. This is indicated by the two stairways, by the massive solidity of the plan, and by the fact that the walls of the north room had been reinforced by two secondary walls about one meter thick, evidently built to help support the load imposed on the vault by upper construction too heavy for the original three meter span of the room.

In the floor of the central chamber an opening 1 m by 60 cm was found at the foot of the east wall. Débris and fallen wall stones had completely filled the opening, which proved to be the entrance to a shaft leading down into the substructure of the building. The shaft for 2 m down is constructed with three step-like projections and a narrow ledge, which reduce its size to about 75 cm by 40 cm. At the edge of the lowest projection it is enlarged to about 1.3 m by 65 cm, and the walls run vertically down for 3 m to a plaster floor. The masonry walls are built up from the level of the substructure and are an integral part of the temple construction. In the two side walls are pairs of post holes, probably used to facilitate descent.

Many human bones and teeth, as well as animal remains, were found mixed with the debris filling the shaft. At 25 cm above the floor fragments of two large stone incensario lids were found, one decorated with a hieroglyphic band. Enough pieces were recovered to enable Mr. Thompson to read the date as 9.17.2.0.0, 10 Ahau 8 Cumhu. Just below these fragments was a thin layer of earth mixed with ash and charcoal containing the remains of a scattered cache. Numerous obsidian blades, bird bones, human teeth, and sherds were found, as well as parts of a deer bone beautifully carved in low relief with human figures and a hieroglyphic inscription. The remainder of the cache consisted of several small shell beads, bone tools and a deposit of some vegetable fiber heavily coated with red pigment.

When the shaft was entirely cleared, a circular cut was found in the floor, the opening sealed with two rough stones. Below these were cached a small turtle carapace, two *Spondylus princeps* shells, and a rough, hard green stone.

The sculptural decoration within the temple comprises two hieroglyphic panels on the jambs of the north doorway, a highly conventionalized serpent mask framing the doorway to the central chamber, a similar mask around the opposite doorway of the same chamber, and two hieroglyphic jambs at the south doorway. A new inscription was uncovered at the west doorway of the north room. It had been concealed by the secondary construction and was badly scattered by the falling vault and walls. All the stones were recovered, however, and the inscription almost

completely reassembled. The date was read by Mr. Thompson as 9.17.0.0.16, 3 Cib 9 Pop. Although a great number of stones from the other panels were recovered, only a small part could be reassembled because certain necessary pieces have not yet come to light.

The walls and terraces of the substructure on the south side were cleared and solidified. This operation included repair of the Reviewing Stand, built out from the lowest south terrace. The stand consists of a flight of six steps, 16.3 m broad, leading to a battered terrace wall. The top step bears a hieroglyphic inscription flanked on either side by a kneeling figure holding a serpent in one hand and a scepter in the other. The steps were realigned, the inscription repaired, and the scattered parts of the figures reassembled the heads and scepters of both figures had been lost until this season, when excavation uncovered those of the west figure. The head is a magnificent example of stone carving, well preserved and of an unusual facial type. The parts of the east figure had been lying in the West Court, badly weathered, but had not previously been recognized as belonging to the Reviewing Stand.

An unusual feature of the substructure is a series of small rectangular niches, about 60 by 60 cm, built into the wall of the second terrace. Eight of these were excavated and repaired. Two were found to continue into the mound and to connect by a narrow passage. At either end of the passage is a small chamber about 1.3 m by 60 cm. The whole construction was originally capped with large stones, some measuring as much as 1.7 m by 0.5 m by 0.35 m. No indication of the use of the chambers was found.

The west side of the mound was excavated in order to check terrace levels and construction details. A stairway with a battered balustrade was found to lead to the west doorway of the temple. No repair was carried out on this side. On the north side only enough was done to recover the plan of the temple and to reveal the condition of the façade. Very little of the north part of the building remains.

Future work in the Mound 11 complex will be limited to solidifying the foundations of the temple on the north, now in very precarious condition, and to clearing the great stairway which descends on that side to the Court of the Hieroglyphic Stairway.

The Jaguar Stairway on the west side of the East Court was also repaired this season with the assistance of Mr. Harvey Fite of Bard College. This stairway, a secondary construction built over an earlier flight of steps, consists of a run of eight steps built out from a terrace wall which takes the form of a low bench about 1 m high, a setback 60 cm deep, and a battered wall 1.5 m high, topped by a wide vertical course. In the battered zone on either side of the stairway a large rampant jaguar stands in high relief from the wall.

Very little of the wall was found in position and the jaguars had completely fallen. Mr. Fite recovered all the parts and reassembled the figures in the wall, repairing the broken pieces with cement. The work was completed by resetting the terrace, and realigning the stairway. A portion of the north end of the terrace was left open in order to show the original construction over which it was built.

Mr. Longyear this year inaugurated at Copán a series of ceramic studies, which it is hoped may be extended to cover the southeastern part of the Maya area. The season's work was devoted to the pottery of Copán and included the digging of a number of test pits and trenches, as well as study of sherds and vessels recovered in past seasons while resetting stelae and running trenches into the Acropolis. Through the courtesy of Dr. Jesús María Rodríguez, Minister of Public Education of Honduras, Mr. Longyear was able to bring a large sample of sherd material to the United States for study.

Advent of the rainy season unfortunately ended digging before excavation of the earliest deposits was completed, but on the basis of present material, three ceramic periods can be recognized. In the earliest or Pre-Acropolis period, Usulután Ware, a type characteristic of the most ancient horizon so far identified in the highlands of Guatemala, and in Salvador, was introduced into Copán. Although Usulután constitutes a large percentage of the Pre-Acropolis pottery, there is evidence that this ware did not make its appearance until the latest phase of the period. The succeeding Acropolis period saw the decline of Usulután and the beginning and rise of polychrome pottery. The zenith of Copán ceramics was reached at this time, both in variety of types and in excellence of decoration. Carved Brown Ware and hematite redware are diagnostics for the latest phase of the Acropolis period. The last or Post-Acropolis period was represented by material from a dump lying on the surface of the Temple 22 pyramid. The sherds from this dump are unlike those found in the test pits and tunnels, being largely coarse-textured, thin-walled Utility Ware, and from their position above the latest floors of the temple, are believed to be the product, of people who inhabited the Acropolis after the decline of Maya civilization at Copán.

Connections between the pottery of Copán and that of other sites in the Maya area are as yet indefinite. A few specimens of late Ulúa Valley I and Lake Yojoa pottery were recovered in deposits of the Acropolis period, and Petén polychrome types seem also to be represented here, but very meagerly. More work must be done in the areas surrounding Copán before the latter site can be assigned its proper place in the Maya ceramic complex.

The dating of Copán pottery periods remains vague, for tie-ins between stratigraphical test-pit material and dated monuments and buildings have not yet been satisfactorily determined. At present it might be suggested that the Pre-Acropolis period goes back an indefinite length of time before the early part of the ninth cycle; that the Acropolis period runs from the early part of the ninth cycle to 9.18.0.0.0; and that the Post-Acropolis period follows that. The Acropolis period will almost certainly be subdivided after further digging and study.

Future work in this area should be concentrated on: a. A further study of Copán ceramics, embracing a search for both very early and very late types and the correlation of Copán types with dated monuments and buildings; b. Intensive research in Salvador on the problems of pottery sequences in that country and their relations with Copán and other areas; c. Investigations in Honduras to the east and north of Copán to determine the avenues and areas of contact between Copán and the Ulúa drainage.

31.6.

ALFRED V. KIDDER

Copán

YB 38:241–242, 1939

The Copán Project, inaugurated in 1935 and jointly supported by the Government of Honduras and the Carnegie Corporation, has had two main objectives: the clearing and repair of buildings and monuments, and the gathering of detailed archaeological data. The former is primarily a task of conservation: to make available for present-day visitors and scholars and to preserve for future generations the unrivaled architectural and sculptural treasures of this outstanding center of Old Empire civilization. The conservation work has naturally produced much new information regarding the antiquities of Copán and various supplementary investigations have been made for the purpose of studying special aspects of the ancient culture.

For several miles up and down the narrow valley of the Copán River are mounds strewn with cut stone and fragments of sculpture. These remains of the city's minor temples cluster most thickly about the Acropolis, a central dominating structure built up generation after generation by successive additions and enlarge-

ments until it became a huge and lofty complex of temple-pyramids, terraces, stairways, and courts. On the Acropolis, in a great plaza adjoining it, and at various smaller groups in the valley, stood the intricately carved stone monuments so typical of the greater Old Empire cities. The stelae and their accompanying altars bear the hieroglyphic inscriptions, the partial decipherment of which has told us practically all we know regarding the astronomical and calendrical knowledge of the Maya. Those of Copán are numerous and exceptionally fine, but, like the richly sculptured temples before which they stood, the stelae had for the most part been thrown down and shattered by earthquakes and the impact of falling trees.

The first season at Copán was devoted largely to the assembling, mending, and re-erection of stelae. During the second, exploratory tunnels were driven into the Acropolis to determine whether or not, complete buildings had been sealed beneath later accretions. This was often done by the Maya, but at Copán the tunnels proved that older temples were normally torn down before additions were made. Substructures, however, were found to have been left intact and valuable data were recovered regarding their nature and the successive stages by which the Acropolis grew to its present enormous size. Also in the second year, there was begun the excavation and repair of Temple XXII. This was probably the finest and is certainly the best preserved of the culminating buildings on the Acropolis. Work upon it was finished in the third season, during which attention was also given to the consolidation of the great Hieroglyphic Stairway and the excavation of an interesting superposition of narrow courts in which an ancient ceremonial ball game had been played. The fourth year saw further work on the stairway and ballcourts, but the major activity was the repair of a second temple, XI, together with the elaborate series of terraces leading up to it. From 1935 on there was a long struggle with the Copán River, which for centuries had been eating into the Acropolis. Finally, in 1937 Mr. Strömsvik succeeded in turning this seasonally rampant stream into a new course well away from the ruins.

Concurrently with the program of conservation there were carried on studies of architecture, sculpture, and pottery, which have yielded great amounts of data, intrinsically interesting and particularly useful for comparison with findings in other parts of the Maya area.

During the past season Mr. Strömsvik, assisted by S. Boggs, continued work on Temple XI, the most important discovery being that of a long, well-preserved hieroglyphic inscription flanking one of the temple's principal doorways. Mr. Strömsvik also undertook further repair of the Hieroglyphic Stairway, replacing a

number of carved blocks of which the exact former position is unknown but which, lying scattered at the foot of the stairway, were exposed to serious damage. These stones are being set in such a way that future students cannot confuse them with the steps actually found in place. In their present location they not only are safe from harm, but serve to restore to the stairway much of its original grandeur.

Miss Tatiana Proskouriakoff spent several weeks at Copán gathering materials for a series of drawings which will convey much more clearly and graphically than can be accomplished by any other method the probable appearance of the various buildings as they existed during the city's occupancy.

J. M. Longyear devoted a second field season to study of the pottery of Copán. In 1938 he had identified the major local types and had determined the succession of the principal ceramic periods. The present year, additional test pitting and trenching netted some 20,000 more pottery sherds. Among them are many of sufficient size to give better information than had previously been available regarding the shapes of vessels and their decoration. They also include a number of pieces of nonlocal manufacture which throw light upon chronological relations and trade contacts between Copán and other cultural centers both within and without the Maya area. Miss Shepard was at Copán in April to gain firsthand information as to archaeological and geological conditions in the valley, and to make preliminary technological observations on the pottery.

During the season the Government of Honduras constructed at the modern town of Copán a museum to house the pottery and other small specimens found in the excavations, and such finer pieces of sculpture as require protection from the weather. The museum building, erected under Mr. Strömsvik's supervision, contains exhibition halls, library, laboratory, and storage rooms.

31.7.

GUSTAV STRÖMSVIK

Copán

YB 39:264–265, 1940

The work of excavation and repair at the ruins of Copán, Honduras, which has been in progress since

1936 in cooperation with the Government of Honduras, was continued during the past winter. Mr. Strömsvik was assisted by Mr. Frank Lee. The two major activities of the season were completion of the resetting of the great Hieroglyphic Stairway and further investigations of the ballcourt and the temples adjoining it.

The Hieroglyphic Stairway, perhaps the most imposing single element ever achieved by Maya architects, rose between wide sculptured balustrades to a temple crowning a lofty pyramid. From bottom to top, carved upon the risers of its 62 steps, ran a calendrical inscription, the longest so far discovered in the Maya area. When the work of repair was started, the lowermost 15 steps were still in their original position; 15 others that had slid-downward en bloc almost certainly came from a space beginning 12 steps above. The blocks of stone which had composed the rest lay about the court in front of the stairway, where they had been carried during the course of earlier excavations at Copán.

With the assistance of Dr. Morley, the order of the blocks was worked out as fully as possible, and they have now been replaced in the stairway. This was done not only to restore the stairway to its former magnificence, but also to preserve the inscribed stones from the vandalism and natural deterioration to which they were exposed in the court. Some of the steps are incomplete; a few possess only one or two of their original stones, the others having been either crushed beyond recognition or carried away. But all rebuilt sections are now so marked that the student can distinguish between those elements which surely occupy their correct positions, those which are probably rightly placed and those as to which doubt exists. They are also set in such a way that the order of the individual stones can easily be changed in the event that further research indicates errors in the present arrangement.

The stairway was decorated with a central ascending line of human figures, five seated and one reclining. The first seated figure was found in place at the tenth step; many years ago the second, which was at the twentieth step, was, with permission of the Honduran government, taken to the Peabody Museum of Harvard University; the third lying in fragments in the court, has been restored on the thirtieth step; and the reclining figure rests on the thirty-seventh. The fourth seated figure is restored on the forty-fourth, the uppermost on the fifty-fourth. A smaller standing figure has been placed in the center of the short unsculptured stairway which continued upward from the pyramid's summit platform to the top of the substructure supporting the temple. The latter had long ago collapsed, and the elaborately sculptured stones which ornamented it were found scattered on the

flanks of the mound. Its hard lime floor, though much broken by falling rocks and torn apart by tree roots, still remained. The pieces were fitted together and cemented in place to indicate the size in shape of the temple's single chamber.

The stones composing the balustrades of the main stairway, having been relatively small, were badly crushed in the general ruin of the structure; many of them, too, seem to have been carried away for building purposes during the years before the government put a stop to that practice. Such as remained we assembled and reset. "Owl elements," wing-like stones on each of which was carved a conventional owl's head in front view, occurred at intervals of five steps. Being broader than the balustrade, they protruded from its sides.

Excavation, study, and repair of the ballcourt were continued. It had been determined, during former seasons, that the existing court had been the latest of three such structures which had successively occupied approximately the same position. During 1940, the plans of the two earlier courts were worked out from such parts of them as had remained buried below the latest one. Of the two temples which had flanked each of them, very little was left. It was determined that the first court had been built on virgin earth and connected with earlier structures to the east and south. The second was built on exactly the same plan as the first, but the floor level was raised about 60 cm. The latest court was raised about 20 cm above the second and was situated about 6 m to the north and 2-5 m to the west, the north end having been swung some 4 degrees west of the axis of the earlier courts which was about 2 degrees east of true north. This change was apparently made when the latest increment of the pyramid of the Hieroglyphic Stairway was added. All three courts are of the same size, with benches of the same height, width, and pitch of slope. Only the latest court was paved with stone. Hieroglyphic inscriptions and sculpture were found only with the two latest courts. The paving of the playing surface of the third court, which had been much disarranged by tree roots, was relaid in 1938; during the past season both benches were repaired and four large stone parrot heads that had fallen from the benches were replaced, thus completing all 6, three on a side. The low vertical walls back of the sloping benches were rebuilt, and the substructures of both flanking temples were reconditioned. The outer walls of the temples were relaid up to the spring of the vault. At two places the stepped vaults of these temples are still in position to within a couple of courses of the capstones, but these must be consolidated before long, to prevent collapse and loss of this important evidence of vault construction.

Minor activities during the past season included the repair and re-erection of stelae and Altar 13, the

raising and blocking-up of Altar 14, and the re-erection of the uncarved stelae of this altar. For its better preservation, Stela 6 was also repaired and re-erected. The perplexing problem of how the Court of the Hieroglyphic Stairway was drained was solved: a drain 65 cm deep and 70 cm wide was found entering under the west end of Mound 11, starting about 20 m west of Stela N and running southward under the Acropolis; the outlet could not be found. A small tomb with a badly decayed skeleton was found in the north end of Mound 7; two of the accompanying vessels may be of southern origin, and the third is of Plumbate Ware, which may indicate that the burial dates from after the close of the Old Empire. The most striking single find of the season was the gigantic and well preserved human head, carved in stone, at the northeast corner of Temple II. It is 85 cm high and is part of an enormous human figure which adorned the northeast corner of the temple; the hands and feet had been found years ago. There is another much broken head which belonged to a similar figure at the temple's northwest corner.

Mr. Shook spent six weeks at Copán, making a detailed study and section of the north half of the river-cut face of the Acropolis, with minor excavations to determine the lowest building levels. He also excavated a glyphic panel at the east end of Temple II. This is the eighth panel of this type found in that temple, but the only one with its complete text in good preservation. During his stay, Mr. Shook added to the master map of the Main Group all data which had accrued since 1937.

31.8.

GUSTAV STRÖMSVIK

Copán Project

YB 45:201–203, 1946

The 1946 activities of the Copán Project were as follows: repair of the earthquake damaged monuments at the ruins of Quiriguá; study of the cause of the deterioration of the monuments at Quiriguá and Copán; continued digging at Copán for recovery of ceramic material; re-erection and repair of the remaining four stelae in the valley of Copán; mapping and reconnaissance digging for ceramic material at the supposed site of Chaves' conquest of the Maya under Copán Calé.

On January 15 repair work started at Quiriguá, on Stelae E and J, damaged by the severe earthquake of August 1945, which caused much destruction in the neighborhood. Both E and J had been erected and repaired by the Carnegie Institution in 1934. The violence of the shake having caused considerable chipping around the lines of the old fractures, it was necessary to replace these chips and strengthen the shafts against further damage.

In the case of Stela E, previously broken across the neck of the figure, two steel dowel pins, placed in 1934, had held the top from being thrown off, but had not prevented a slight rocking action that dislodged a number of fairly large flakes on both sides above and below the line of fracture. To prevent a similar occurrence in the future, a 2.5 inch [6.4 cm] hole was drilled lengthwise through the center of the shaft, three 0.75 inch [1.9 cm] reinforcement steel rods, 25 feet [7.6 m] long, were threaded down through this, and the remaining space was filled with a mixture of half sand and half ordinary cement. Afterward the flakes that had been thrown off were replaced and held with iron pegs set in holes drilled through the fragments and into the monument. Such cracks as were left were filled with cement and drilling dust of the same rock, a mixture approximating the natural color of the stone.

Stela J, originally broken across the feet of the figure and badly chipped around the break, was repaired in 1934. At that time a steel rod was placed in a hole longitudinally drilled from top to bottom. This had held the shaft upright, but did not prevent some rocking and more chipping during the recent shake. This season it was reinforced by sinking four clamps, spanning the crack, into the four sides of the stela. The clamps were of 1 inch [2.5 cm] steel, over 1 m long, with points 15–20 cm long drilled into the face of the monument. The chips were replaced in the same manner as on Stela E, and the rods were covered with a similar cement-dust mixture. The present repair should make Stela J at least as strong as it was originally.

During delays in the work on the stelae, Zoomorphs M and N were cleaned, repaired, and set on low pedestals. Materials and labor, as well as quarters and board for Mr. Strömsvik, were supplied by the United Fruit Company.

During the more than a decade in which the monuments at Quiriguá and Copán have now been under close observation, considerable deterioration has taken place. This is caused by mosses and lichens whose tiny roots penetrate between the particles of the stone and loosen them, apparently by both mechanical and acid action. It is imperative for the future preservation of the monuments to remove these growths and prevent their re-establishing themselves, and to find a hardening agent for the softened surfaces. Obviously

the Maya faced the same problem, both at Copán and at Quiriguá; their practice, however, of coating monuments with lime plaster and in some cases with red paint must have served to prevent the damage now caused by this type of vegetation.

To fill gaps in existing knowledge of ceramic sequences at Copán, several exploratory trenches were opened south of the Acropolis, after February 10. These were continued and enlarged by Dr. Longyear after his arrival at Copán March 22.

A resident of Copán, digging for adobe in a small mound at the southern edge of the village, found eight fine large jade plaques, each carved on one side with serpent motifs, and a human figure in the classic Copán attitude with hands on breast. At the main ruin there came to light an interesting early drain running toward the river from a long-buried court in the present flying field. This was followed for about 200 m. It was found to have been built in several sections, but had become closed and forgotten during the later centuries of the city's existence.

On recommendation of Dr. Morley, the four remaining fairly complete unrepaired stelae in the Copán valley were re-erected and repaired as far as possible. These are: Stela 10, the West Piedra Pintada; Stela 13, the East Piedra Pintada; Stela 15, lacking its lower third, from Copán village, set up in the museum yard; and Stela 19, in the small valley west of Hacienda Grande, set up in its original position.

Study, cataloguing, and repair were carried out in the Copán Museum, but much more remains to be done.

At the invitation of Mrs. Doris Zemurray Stone, the valley of the Comayagua River was visited during the last week of February. The many Comayagua sites, representing a long period of occupation, merit closer investigation. A very interesting burial cave, newly discovered, was also partly explored. An archaeological museum has been opened in the town of Comayagua; it contains important specimens the study of which will throw much light on the complex problems of Copán and neighboring sites.

The site, mentioned by Fuentes y Guzman in his *Recordación florida*, where Chaves found and fought Copán Cael in the sixteenth century was visited in order to obtain pottery dating from the early historic period. Sr. Jesus Núñez, the representative of the government of Honduras at Copán, and Mr. Strömsvik left Copán by air April 22 for Nueva Jocotepeque. Riding up the broad Lempa valley, past the village of Vado Hondo, the party arrived at the village of Santa Anita; here they were shown a fine polychrome "Copador" vase that had been found with a burial in the river bank about 1 km above the village, where there is a group of rubble mounds on an alluvial plain. In the

riverbank were seen sherds of Copador, bichrome, and monochrome pottery, and fragments of round-bottomed metates and two-faced manos. About four hours' ride up the valley, past Santa Fe, brings one to the settlement of Piñuelas, the last before crossing badlands to the site now called El Rincon del Jicaque, which is supposed to be the site defended by Copán Cael. It is on a mesa in the Comayagua valley, a peninsula almost encircled by the Lempa River, which there flows in a canyon 80–100 m deep. The narrow neck is closed by a rough stone wall, 2–3 m high, and could be very easily defended. On the east side an intricate system of toe holds gave access to the river; these were probably used only during sieges. Over 50 house mounds were noted, but excavation would no doubt reveal many more. Only one mound had pyramidal form, about 3 m high, probably the substructure of a small temple or shrine. The house mounds were rectangles bordered by a base course of rough stones, with tamped gravel and ash floors raised about 20–30 cm above ground level. The small amount of rubble on the floors suggests that walls were of wattle and daub and roofs of thatch. Fragments of unshaped slab metates and short two-faced manos were found. Considerable digging in the scant topsoil yielded very few potsherds, mostly from crudely made water jars. It is obvious that the site was but briefly occupied.

31.9.

JOHN M. LONGYEAR
Copán Pottery

YB 45:203–205, 1946

Dr. Longyear spent six weeks at Copán in March and April 1946, gathering ceramic data to supplement the material collected in previous years [Chapters 31.5 and 31.6] and observing the results of excavations conducted at Copán during the last few seasons. Six stratigraphic trenches were dug for pottery specimens, a large portion of the latter being brought to the United States for study. In addition, all vessels excavated since 1939 were photographed and described, and the catalogue of the museum at Copán was brought up to date. At the conclusion of his stay in Copán, Dr. Longyear paid a short visit to San Salvador, to inspect the pottery excavated at Tazumal in 1943–44 by Mr. Stanley H. Boggs.

A rich burial area, some 200 m south of the Acropolis, was selected as the site of the principal stratigraphic trench dug at Copán this season. Excavations had been made here in 1942 by Mr. Strömsvik [Chapter 30.2], and deep sherd-bearing deposits found. The new trench, 18 m long, was excavated in blocks 1 m sq taken down in arbitrary levels 50 cm in thickness. The other five trenches, to the west and south of the Acropolis, yielded specimens supplementing those recovered from the principal trench.

From field observations the following tentative conclusions may be drawn: The lowest stratum in the trenches consisted of a dense deposit of monochrome and bichrome sherds, intermixed with large quantities of fresh-water snail shells, together with a few handmade figurines of Playa de los Muertos type. Overlying this earliest level, the first polychrome pottery appeared strongly characterized by basal flanged bowls of Petén Tzakol type. In the uppermost, or latest, strata, the polychrome changed to local styles, with occasional specimens of Ulúa-Yojoa wares. In the main, this sequence had been worked out in 1938 and 1939, but two of this year's discoveries were of outstanding importance: the association of handmade figurines with the earliest Copán pottery, and the great preponderance of basal-flanged bowls in the early polychrome levels.

Burials found this year conformed to the sequence established by Strömsvik in 1942 [Chapter 30.2]; that is, early interments were extended, with monochrome and bichrome pottery offerings, whereas later skeletons, with inlaid teeth, were buried in flexed position, and offerings, where present, included polychrome wares. In addition, two crude secondary burials were uncovered in a rubbish deposit just west of the Acropolis. It is possible that these are associated with the post-Acropolis occupation of Copán.

Shortly before the end of the season, a level representing an early land surface was discovered in an old river cut south of the Acropolis. This level lay below a stratum containing the earliest pottery yet found at the site, and was separated from it by 40 cm of sterile river clay. About 5 sq m of the deposit was uncovered and carefully excavated before the end of the season. Averaging 10 cm in thickness, it consisted almost entirely of charcoal, flint and obsidian chips, and broken animal bones. Not a single potsherd or other evidence of ceramic industry was recovered. The charcoal appeared to be scattered rather evenly through the deposit, and thus may have resulted from some natural cause, such as a forest fire. Later in the season, however, Messrs. Kidder and Strömsvik excavated further

and located some fire-blackened stones, possibly the remnants of a hearth. The most interesting feature of this early level is the flint and obsidian collection, which consists entirely of irregular flakes, no prismatic cores or parallel-sided blades, so common in the pottery levels above, having been found. None of the flakes have been worked into definite tools, but most of them bear secondary use-chipping, along one or more edges. In fact, it is possible to distinguish whole groups of rude implements, such as scrapers and points, by the characteristics of these reworked edges. In an area of flood-plain river deposition, we cannot claim great antiquity for this, level solely on the basis of the 40 cm stratum of sterile clay separating it from the pottery-bearing strata above. It is almost impossible to believe, however, that any deposit contemporaneous with the ceramic industry at Copán could accumulate without the presence of a single potsherd or obsidian blade. At present, therefore, this level must be assigned to a pre-pottery stage, and be considered to represent the most primitive culture yet found in this part of Central America.

Dr. Longyear has also been engaged in study of the design motifs of Copán polychrome pottery. His analysis, although still in an early stage, shows that the local painted wares were rigidly stylized, both in decorative motifs and in the shapes of the vessels on which given motifs could be placed. It is now possible to isolate these Copán styles from those of imported wares, and also to identify them whenever they occur in the ceramic context of other sites. The importance of this study was fully realized when the pottery from Tazumal, El Salvador, was examined. Many of the polychrome wares of the latter site resemble Copán vessels so strongly that there can be no doubt they both stemmed from the same artistic tradition. In other respects, however, the two ruins are entirely different. Here, then, is another example of the duality of Maya culture, first emphasized by Thompson. The basic or lay trait of pottery manufacture and design bridges over the more obvious dissimilarities between Copán and Tazumal dissimilarities caused by Copán's falling under the influence of the classic Maya hierarchic cult, while Tazumal remained unaffected by it. Further studies of this sort will not only greatly enlarge our knowledge of ancient Mesoamerican cultural origins and relations, but will also help divert the field archaeologist from the straight and narrow path of stratigraphic sequences and statistical potsherd analyses, a path from which it would do many archaeologists no harm occasionally to stray.

32.0. NICARAGUA

32.1.

FRANCIS B. RICHARDSON

Nicaragua

YB 40:300–302, 1941

As was stated in the introduction to this report, Mr. Richardson, who went to Nicaragua to study relatively recent stone sculpture, was diverted from that end by the necessity of investigating a series of ancient human footprints found in deeply buried volcanic deposits near Managua.

A similar discovery had been made in the seventies by Earl Flint, who was working for the Peabody Museum of Harvard University. Flint's attribution of great age to the footprints was received with considerable skepticism, no attempt was made to follow up the discovery, and the whole occurrence was soon practically forgotten. Mr. Richardson, however, who had read Flint's reports and his correspondence filed at the Peabody Museum, felt that the matter should be investigated further. On arrival at Managua, he accordingly made inquiries and learned that footprints were still from time to time encountered in a quarry in El Cauce, a short distance west of the city. He, at once visited the site, where by great good fortune the workmen were just bringing some of the tracks to light.

Extensive excavations, carried out with the cordial support of President Somoza, revealed most interesting conditions, best summarized by quoting the preliminary report of Dr. Howel Williams, of the University of California, who, on being appealed to by the Division, generously sacrificed his Easter vacation to fly to Nicaragua and examine the deposits.

Before the footprints were made, there had probably been millions of years of volcanic activity, as they are underlain by hundreds of feet of ash. It may be, however, that about the time the prints were formed the craters, a short distance south of Managua, burst into unusually violent eruption. I hope that microscopic study of the deposits will throw light on this point.

Just before the prints were produced, volcanic "mud flows" (technically known as lahars) swept across the plains around Managua and emptied into the lake. It may be that these were formed by temporary damming of the rivers that drain from the highlands to the

south, at a time when the cones and craters of Asososca, Nejapa, Tiscapa, etc. were particularly active. Whatever the cause of the lahars, and other possible causes are easy to imagine, they inundated a wide area. Soon after they came to rest, the prints were impressed. I say "soon" because the deposits left by lahars tend to harden rapidly. Somewhat similar deposits were laid down on the slopes of Lassen Peak in California in 1915 and within a few hours it was difficult to stamp an impression on them with the feet. Lahars which sweep down from the volcano of Java are known to behave in the same way. Incidentally, the laharc deposits of Managua are remarkably like those which buried Herculaneum in AD 79.

Shortly after the making of the prints possibly even while they were being made they were covered by a thin veneer of black cinders. Then followed another lahar, another eruption of black cinders, and then a rapid succession of thick lahars. These last are now represented by the thick stratum quarried and used as a building stone in Managua.

An interval of quiescence ensued. In the region of El Cauce, rivers excavated a channel some 20 m wide and at least 3 m deep. They cut not only through the layers of volcanic mud but far into the underlying ashes. Slowly the channel was filled with sand and gravel. Subsequently, a distant volcano, perhaps in the vicinity of Masaya, erupted showers of white pumice. About El Cauce the pumice accumulated to a depth of approximately 50 cm. Once more quiet followed. Rivers cut new channels through the pumice; elsewhere a soil up to 1 m thick was developed. Renewed eruptions covered the soil with ash; another soil, up to 30 cm thick, was formed; more ash fell, and finally the topmost layer of soil on the present surface was laid down to a depth of 1.25 to 1.5 m. The record of events since the prints were impressed is thus a long one, as four layers of soil were formed and a deep river channel was cut.

The tracks were made by a number of barefooted adults. All those uncovered by Mr. Richardson were going in the direction of a point which at present protrudes into the lake some 500 m to the northwest (others, however, are reported by quarrymen to be differently oriented). First to pass over the area examined were four or five individuals, who sank ankle deep into the then fresh and very soft mud. Somewhat later others passed. The deposit had by that time become much firmer, but its surface was still sufficiently plastic to receive absolutely perfect impressions. These indicated that the people had been walking rather than running; the steps are so short as to suggest that they may have been carrying heavy burdens.

One is, of course, tempted to infer that the makers of these tracks were fleeing from an eruption. Tracks of deer, otter, a large bird, and a lizard made at approximately the same time, and on what must then have been a bare open plain, hint at a disregard of danger that might be taken as evidence of panic. Since, however, only a few square meters of this intriguing record have so far been exposed, it is unsafe to speculate too freely.

The problem of greatest importance is, of course, that of the age of the footprints. That they are of respectable antiquity is beyond doubt, but in the absence of contemporary artifacts we have no archaeological evidence bearing on this point. In the surface humus laid down after all volcanic activity had ceased there are, however, many potsherds, and some of these appear to represent a relatively early culture. If so, and if one allows time for deposition of the intercalated humus strata and the cutting of the now buried stream bed through the thick layers of hard rock overlying the footprints, the latter may indeed be extremely old.

During the coming season the trail will be followed as much farther as means will permit. Although it is perhaps too much to hope that remains of people themselves will come to light, it is possible that artifacts may be found, and probable that further evidence will be obtained as to conditions obtaining at the time the footprints were made. Careful search will also be made in the humus immediately below, for that of course represents the surface on which the people must have lived prior to the outpourings of mud. The alluvial material in the stream bed will be examined, as well as the beds of humus laid during periods of quiescence. Stratigraphic studies will be carried on in the latest humus. Relatively large amounts of this can be sectioned, as its excavation will not entail quarrying off the great overburden that masks the deeper deposits. Finally, every attempt should be made to ascertain the approximate age of the flows by volcanological research and the use of such chemical and spectroscopic techniques as can be brought to bear on the problem.

It is to be hoped that the site of these remarkably interesting and possibly very important evidences of prehistoric man may be acquired by the Government of Nicaragua, and the footprints exposed this year and next be preserved *in situ* as a national monument.

President Somoza has already aided the work of conservation by the building a diversion dam and the opening of a large drainage ditch, which will turn flood water away from present and future excavations.

32.2.

FRANCIS B. RICHARDSON

AND KARL RUPPERT

Nicaragua

YB 41:269–271, 1942

As was recorded in the last annual report, tracks of barefooted human beings and of various animals and birds are from time to time found during quarrying operations in a deeply buried volcanic stratum at El Cauce in the vicinity of Managua. In 1941 Mr. F. B. Richardson investigated a recently discovered set of these footprints. The layer in which they occur was the product of an eruption from some vent on higher land. From it a sheet of semiliquid mud flowed down toward Lake Managua, and while this was in process of hardening, but still plastic enough to receive perfect impressions, the people and animals passed across it. Almost immediately thereafter a fall of dry cinders covered and preserved the tracks. Subsequently the area was blanketed by other mudflows, now, like the footprint stratum, hardened to stone. Later the entire series of layers was cut through by a small stream whose bed, in course of time, became filled with silt and water-rolled boulders. Still later there was a heavy fall of pumice, followed by an interval of quiescence with further stream erosion, deposition of humus, more pumice falls, and, finally, a cessation of volcanic activity and the deposition of the present topsoil to a depth of 1.25–1.5 m.

That a long time must have elapsed since the making of the footprints is certain; but until the volcanological studies of Dr. Howel Williams, of the University of California, who is cooperating with Mr. Richardson in this investigation, can be carried farther, no estimate of the period involved is possible. In the meantime, however, Mr. Richardson has continued work at the site, and Mr. Karl Ruppert devoted the past season to study of the archaeological remains found in the recent surface deposits.

The area of the original discovery was widened and the tracks were followed for a distance of some 20 m. A careful count showed that 17 persons had passed, going in a straight line toward a low promontory that juts into the lake. The tracks originally identified as those of deer have since been shown to have been made by a large peccary.

Another discovery of animal prints, made during the past season, promises to be of great interest, both archaeologically and paleontologically. At a stone quarry on higher land some distance away there has

been exposed a sequence of mudflows, apparently from the same source as those of El Cauce. The lowest of these, which may well represent the identical flow seen at the base of the El Cauce series, was found by Mr. Richardson to contain tracks of a large cloven-hoofed creature. Latex casts were submitted to Dr. Thomas Barbour, of the Museum of Comparative Zoology at Harvard University, and to Dr. Paul O. McGrew, of the Field Museum in Chicago, both of whom identified the prints as those of bison, an animal which never seems before to have been reported from Central America.

If man and bison, an animal certainly long extinct in the region, are found to have been contemporaneous, we shall have evidence of the high antiquity of the El Cauce footprints, which may indeed be the oldest traces of human occupancy yet found in Middle America. It is therefore outstandingly desirable to gain even the smallest scrap of knowledge as to the culture of these people. The prospects of such a discovery are however, remote, as the surface on which they lived now lies buried under several meters of solid rock, pumice, and earth and is accessible only in the few relatively tiny spots where quarrying operations have removed, the overburden. The vicinity of the footprints is not promising, as the pre-mudflow land thereabouts was a gentle slope, apparently an open and perhaps barren plain. As such it would have been ill suited for a dwelling place, and the chances of finding artifacts on, it are very slight. But since the government drainage ditch made it possible to reach part of the old surface at one side of the footprint area, it, seemed worth to expose and search as much of it as was reachable. Some 60 m of footprint stratum were, accordingly removed and the top 30 cm of the underlying deposit passed through a fine-meshed, screen. Nothing, unfortunately, came to light.

Through the good offices of President Somoza, the site has been acquired by the Government of Nicaragua and a resident custodian has been appointed. Over the tracks Mr. Richardson has erected a permanent building, whose tiled roof protects them from the weather while its open sides permit their examination at close hand.

Although determination of the age of the footprints is primarily a volcanological problem, a minimum date, archaeologically speaking, can be arrived at through study of the cultural remains in the superficial deposits, for the oldest of these must be much younger than what lies under the great accumulation below. Mr. Ruppert therefore devoted the season to surface excavations at El Cauce and elsewhere in the neighborhood of Managua.

The pottery-bearing level of brown soil at El Cauce is 3 m above the footprint stratum, varies in thickness

from 1.3 m to 1.6 m, and, according to Dr. Williams, "while apparently of aeolian origin, much must have been laid down by running water." A number of pits and trenches were dug and yielded abundant sherd material apparently of a single not very remote period.

During the previous season a burial ground had been discovered east of El Cauce and south of the railroad tracks. In some of the boot-shaped jars were fragments of human bones. The area was re-examined during the current, season. Although a number of caches of vessels were uncovered, none contained skeletal material.

A high point of land northwest of El Cauce protruding slightly into the lake seemed a likely place for a series of trenches. The yield of sherds was extremely small. In general the wares are similar to those from El Cauce. The number of sherds worked as net-sinkers was relatively large. Sherds obtained from trenches at Las Mercedes Airport, 9 km east of Managua, were again of wares similar to those from El Cauce.

At the close of the season a mound to the east of El Cauce, on the property of Don Salvador Salgado, was examined. A pit in the top of the mound is said to have,

been made by pothunters. A trench on the north side extending from the valley floor inward to the center disclosed a rough stone-faced platform 50 cm high and 6 m wide. The mound, 3.5 m high by 10 m in diameter, resting on this platform was faced with unworked stones. Near the center and 2 m above its base was a cache of three vessels. The sherds, varying little from those at El Cauce, did however include several pieces of Usulután pottery, a ware which, in Guatemala and El Salvador, is found only in the earliest ceramic horizon. The presence of Usulután fragments, probably dating from a period long anterior to the erection of the mound and owing their presence there to accidental inclusion in its fill, argues for a relatively ancient occupancy of the Managua Valley subsequent to the latest volcanic activity.

Analysis and interpretation of the ceramic material have not yet been made. A wide trade in pottery vessels is, however, attested by the presence of sherds of Honduranian (Ulúa Valley and Lake Yojoa) and Salvador wares. Over 75,000 sherds were examined and sorted, and a representative collection will be brought to the United States for final study.

33.0. QUINTANA ROO

33.1.

GUSTAV STRÖMSVIK, H.E.D.
POLLOCK, AND HEINRICH BERLIN
Exploration in Quintana Roo

YB 53:289–292. 1954

The explorations described below were carried on by Strömsvik and Pollock between February 23 and 28, and by Berlin and Strömsvik between May 24 and 29, 1954. Previously, one of our workmen from the village of Telchaquillo, Yucatán, had been sent into the area to gather information on the location of ruins and to report on roads and living conditions. His report assured us that we could make the trip by truck and that we could obtain some food supplies and camp facilities at the village of Ichmul, the site of certain ruins we wished to observe.

The first trip started from Telchaquillo, going by way of Tekit, Teabo, Ticul, and thence to Peto over the newly built highway from Mérida to the last-named town. The second trip left from Mérida, using the highway to Peto. Beyond Peto, and the end of road normally considered passable by automobile, our course was generally east through the village of Progreso (12 km from Peto), Dzonotchel (24 km), and Calotmul (31 km) to Ichmul (43 km). This is the old road from Peto to Santa Cruz de Bravo, now known as Carrillo Puerto.

Immediately east of Calotmul, we stopped to observe a small ruin site of four mounds. Two of the mounds are each about 8 m in height, one being a pyramidal structure, the other probably having been a two- or three-storied palace-type building. On both structures Puuc-type stones are lying about, and part of a vault of very crude masonry is visible near the bottom of the second. The vault cannot be placed as to type in this relatively unknown area. Possibly it is to be associated with the crude vaulting, seemingly of late period, seen subsequently at Okop. The remaining two mounds at Calotmul were smaller and without notable features showing.

Ichmul, which lies just over the border in Quintana Roo, is an old settlement, as is shown by Ciudad Real's mention of the town in the sixteenth century. At present it is more notable for its colonial than for its aboriginal ruins. Overgrown streets and tumbled-down remains of colonial buildings extend a kilometer or more in all directions from a large central plaza. Two imposing churches, the second and bigger one never completed,

a cuartel, and an unfinished cabildo face on the plaza. The more important aboriginal remains, consisting of three large pyramidal mounds and the ruins of an enclosed quadrangle, all rising from a large terraced platform, lie just south of the plaza. Other terraces, courts, and smaller mounds lie farther south, and another group of ruins was observed east of the plaza of the town. On each of the principal pyramids are elaborate fortifications in the form of head-high walls of stone, clearly of colonial or later origin. Tradition in the settlement, which consists of a schoolmaster and possibly a dozen families that seem only recently to have taken up residence in the abandoned town, is that the fortifications were built at the time of the War of the Castes. The eighteenth century date of the unfinished church, however, suggests that the place was abandoned at an earlier time.

As might be expected in a town of the size that Ichmul once was, the ancient Maya structures are in a shocking state of ruin. They were undoubtedly used as quarries to build the impressive colonial structures, and the fortifications on each pyramid have leveled the remains of any buildings that may have stood there. In the eastern and largest of the pyramids about halfway up the mound, we observed and explored a system of vaulted passages that ran into the center of the structure. These were of crude construction, built entirely of roughly shaped but otherwise unworked stone. Toward the western edge of the ruins, just south of the colonial cuartel, the section of a partly fallen vault protruded from the side of a large platform. This was of interest in showing a sequence of different kinds of masonry. The primary vault, which was of Puuc-type construction, was built against, and was clearly later than, a battered wall, apparently the old face of a terrace, of well cut and dressed veneer masonry. This wall might be of Puuc Period or earlier. Inside the vault, and secondary to it, was a smaller vault of crude masonry comparable to that seen in the eastern pyramid. This sequence suggests that the crude style of masonry is later than typical Puuc construction, but we should not put much weight on this single example.

We obtained a small, and hardly adequate sample of pottery from a single trench and from digging around the western vault in Ichmul. The sherds were mostly of colonial and Puuc types. There as a sprinkling of sherds similar to, southern Classic types. Owing to the difficulty of distinguishing Mayapán Red Ware from colonial pottery, in the absence of distinctive rim forms, one cannot be certain that Mayapán Period ceramics are not represented at Ichmul. Only further excavation can answer this question. On the basis of pottery findings and of architecture, one guesses the major period of the site to be Puuc, or Late Classic.

About 4 km south of Ichmul is the abandoned colonial settlement of Querul or Xkerul, a name one suspects to be a Spanish corruption of a Maya word. Halfway along the trail to this site we noted an ancient road, or *sacbé*, which we followed to its termination at a pyramidal mound north of the ruins of a colonial church. The mound, which stood about 9 m high, was a tumbled mass of fallen stone with no standing masonry showing. It was the only ancient structure, with the exception of the *sacbé*, seen at Querul. The *sacbé* is 10–12 m wide and at places stands at least 2 m high. We did not trace the road to its terminus at Ichmul, but there is little doubt that it runs to that site. There is no reason to think that the pyramid at Querul and the *sacbé* are not of the same period as the ruins of Ichmul.

Strömsvik and Pollock made a trip of a single day to the ruins of Okop, or La Aguada, as the site is locally known, and the subsequent journey of Berlin and Strömsvik was devoted entirely to that site. The ruins lie southeast of Ichmul on the road to Santa Cruz de Bravo. The only sizable settlement passed was Sabán, an old colonial town that appears also to have been abandoned and reoccupied, 23 km from Ichmul. Eleven kilometers farther along one passes a tiny cluster of huts that preserves the name Okop, and 2 km beyond is the small freshwater lake that gives the name La Aguada to the ruins. There is a group of a dozen mounds 100–200 m west of the lake and another group about 1 km north. The two are connected by a *sacbé* 12 m wide.

During the few hours spent by Strömsvik and Pollock at the site, only the northern group was examined, although the existence of the southern was noted. The group consists of three good-sized pyramids, ranging from about 9 m to 15 m in height, and several smaller mounds that rest on a large platform some 150 m north and south, and that much or more in an east-west direction. The pyramids are arranged about a plaza on this elevation. To the east of the pyramids are more mounds, but we did not explore that area. South of the great platform is a small pyramidal mound on the east edge of what seems to have been another plaza or court. In this second plaza, Strömsvik discovered a sculptured stela, half-buried and caught in the roots of a huge breadnut tree. In attempting to extract the stone, we broke our only axe, and it was not until the second trip to the site that the stela was finally brought to full view.

Two of the pyramids, the northern and eastern, support partially standing temple buildings at their summits. These are small, single-room structures built of crude masonry with rough vaults that step inward from the four sides of each room. The northern building has a single column in its doorway. Mixed with the crudely shaped stones of the walls are occasional

well cut stones of Puuc type. Over each entrance, in front of the lintel, is a sunken panel, a feature typical of late, East Coast architecture.

The stela, the only sculptured monument discovered at the site, shows a human figure carved in low relief with a short panel of hieroglyphs to the figure's right and a full-length panel to the left. The top of the stela, carrying the head and neck of the figure and the upper parts of the glyphic panels, is broken off and was not found. The glyphs are too eroded to be legible, but a fair amount of detail of the human figure remains. It shows a personage with toes pointed straight out at an angle of 180 degrees. Across his chest, from lower right to upper left, he clasps a Ceremonial Bar. On stylistic grounds, Proskouriakoff believes that the sculpture can be dated as early in the Late Classic Period, possibly around 9.9.0.0.0–9.11.0.0.0 in the Maya calendar.

As previously mentioned, the southern group lies about a kilometer distant from the ruins just described and is connected, to them by a *sacbé*. About 50 m short of the southern end of the ancient road, where it merges with a high terrace, is a round stone altar, 1.5 m in diameter, without carving. The principal structure of the group is a pyramid that rises some 20 m above the terrace and possibly 30 or more meters above natural ground level. The pyramid faces north; at the foot of the stairway is another circular altar, 2 m in diameter, also without carving. On top of the pyramid are the remains of a small single-room temple building. The strikingly heavy walls which enclose the tiny room are built of the same crude masonry seen in the temples of the northern group, and here again is seen at least one Puuc-type building stone among the otherwise undressed stones.

No other standing masonry was noted here. At least a dozen more mounds make up the group, the most notable being a large enclosed quadrangle just south of the pyramid.

No pottery that might assist in dating the ruins was recovered at Okop. The character of the remains, particularly the stelae, suggests that the major period of construction and of occupation of the site was Classic, probably Late Classic. The small temples on top of the pyramids seem to be of East Coast style and presumably are of later date.

33.2.

WILLIAM T. SANDERS

*Ceramic Stratigraphy of the
East Coast of Yucatán*

YB 53:292–293, 1954

Under a Carnegie Institution fellowship, Sanders began an archaeological reconnaissance of the East Coast of Yucatán. This survey was particularly directed toward learning the ceramic stratigraphy of that area and relating these findings to the better-known pottery of central and western Yucatán. Ever since the publication of Lothrop's monumental work on East Coast architecture it has been known that Toltec (Tula) influence in basic architectural forms, if not appearing in specific details, was general and widespread on the East Coast. The exact relation of this architectural style to that of the Toltec-Chichén and Mayapán Periods in central Yucatán is of great importance to an understanding of late period history in the northern Maya area. It was hoped that surface collecting of sherds and small-scale excavation at a number of East Coast sites might at least define more sharply, if not solve, those problems. The northern and northeastern coastal areas were selected as the beginning point for this ceramic survey. Most of the coast from Holbox on the north to Tulúm on the south was visited and worked. A number of sites in northern inland Quintana Roo were also tested.

One of the principal difficulties in doing work in this area is the lack of transportation facilities and of manpower for even small-scale excavation. It was decided to hire a small crew of workers from the Yucatán-Quintana Roo border town, of Kantunilkin for the entire field season. The quality of labor there is unusually high. The season was started at the often noted but never adequately described site which is of some size, situated in the village of Kantunilkin. It is an excellent jumping-off point for field work in northern Quintana Roo, there being two routes open to the coast. One is passable with jeep or truck and runs almost due north to village of Solfarino about 30 km away. From Solfarino there is a typical Yucatecan *tranvia*, or narrow-gauge rail line goes as far as Chiquila on the coast, opposite Holbox and at a distance of about 15 km. Along this route and the shores of Laguna de Yalahau six sites were visited and excavated.

The second route is a mule trail which goes from Kantunilkin to Leona Vicario (Santa Maria), about 30 km. From Leona Vicario there is another *tranvia*, about 40 km in length, which goes to the coast, terminating

at Puerto Morelos. Four inland sites were excavated along this tranvia.

Most of the remainder of the season was spent visiting and testing sites on the mainland, all within a kilometer of the beach, from El Meco, just opposite Isla Mujeres, in the north, to Tulum in the south. Three weeks were spent on Cozumel Island, an area rich in late-period sites. Fifteen sites were tested on the mainland, including such well known centers as Tulum, Tancah, Xelhá, Palmul, and El Meco. Approximately 11 sites were excavated on Cozumel Island. Most of these places were reached by boat; actually, more mileage was covered on foot, during the season as a whole, than by any other mode of travel.

At some sites adequate sherd samples were impossible to obtain because of the rocky terrain and the exceeding smallness of the site, in certain cases a single shrine situated on a rocky beach head. In at least 20 sites, however, good to fair sherd samples were obtained, although good building or occupation stratigraphy was rarely met.

Besides being tested for ceramic data, a high percentage of the sites were at least roughly mapped, and standing structures were photographed and drawn.

Extensive trail cutting was done in the vicinity of ceremonial centers to obtain data on house-mound types and their density. Also, information was collected on agricultural techniques and production by interrogation of workers from Kantunilkin, Leona Vicario, and Cozumel.

In general, the sites found or revisited are small and not very impressive in size, in quality of architecture, or in number of sculptured monuments. The largest seen was Tulum. The average site in the area is of one of two general types: 1. A single plaza ceremonial center surrounded by from three to five buildings, or 2. An isolated single-temple, or at times two-temple, beach shrine. The East Coast architectural style as defined by Lothrop seems to be a strictly coastal phenomenon, not seen at any of the inland sites visited.

Chronologically, the sites excavated run from Early Classic to the Conquest. This dating is based on architectural notes and a preliminary look at the pottery. Red Ware is abundant, and some of it looks like Mayapán Red. Censer Wares certainly related to Mayapán varieties are also common. Fine Orange is present at a few sites, but is exceedingly rare; no Plumbate was noted.

34.0. COBÁ

Coba is located around five small lakes. A series of elevated stone and plaster roads (sacbes) radiate from the central site to various smaller sites. Some of these causeways go east to the Caribbean coast, and the longest runs over 100 km to the west to the site of Yaxuná. The site contains several large temple pyramids, the tallest, known as Nohoch Mul, being 42 meters in height. Coba is estimated to have had at least 50,000 inhabitants at its peak of civilization, and the built up area extends over some 80 square km. The site was occupied by a sizable agricultural population by the first century. The bulk of Coba's major construction seems to have been made in the Middle and Late Classic periods, about 500 to 900, with most of the dated hieroglyphic inscriptions from the 600s. However Coba remained an important site in the Postclassic era and new temples were built and old ones kept in repair until at least the 1300s, and possibly as late as the arrival of the Spanish.

Knowledge of this expansive site was never completely lost, but it was not examined by scholars until the 1920s. John Lloyd Stephens mentioned hearing reports of the site in 1841, but it was so distant from any known modern road

or village that he decided the difficulty in trying to get there was too daunting. For much of the rest of the middle of the 1800s the site could not be visited by outsiders because of the Caste War of Yucatán. Maler visited Coba in 1893 and took at least one photograph, but unfortunately did not publish it and the site remained unknown to the archeological community. Thomas Gann was brought to the site by some local Maya hunters in 1926 and he later published the first description of the ruins later that year. Gann gave a short description to the archeologists of the CIW Chichén Itzá Project, which sent out an expedition under J. Eric S. Thompson. Thompson's initial report of a surprisingly large site with many inscriptions prompted Morley to mount a more thorough examination of the site. Thompson made a number of return visits to the site through 1932, in which year he published a detailed description. The site remained little visited due to its remoteness until the first modern road was opened up to Coba in the early 1970s. The Mexican Instituto Nacional de Antropología e Historia began archeological excavations in 1972 under the direction of Carlos Navarrete. At the beginning of the 1980s another

road to Coba was opened, regular bus service begun, Coba became a tourist destination with many visitors visiting the site on day trips from Cancun and the Riviera Maya. Only a small portion of the site has been cleared and restored.

34.1.

SYLVANUS G. MORLEY

The Four Cobá Expeditions

YB 25:274–277, 1926

The most important contribution of the year, indeed of the past five years in the field of Middle American archaeology, was the discovery, by the Institution’s Third Cobá Expedition, on May 24 of the site of Macanxoc, 50 mi. east and slightly south of Chichén Itzá. This site lies a mile and a half [2.4 km] southeast of the main group of Cobá, the existence of which has been known for 85 years, and is chiefly important because of the presence of eight sculptured monuments presenting eight Initial Series dates, practically trebling the number of Initial Series previously known in the entire peninsula of Yucatán, and promising to throw a flood of light on the early history of the country.

The ruins of Cobá were first noted by John Lloyd Stephens in 1841, although he did not visit the site personally.¹ Teobert Maler, the Austrian explorer, seems, however, to have been at Cobá, since a photograph of the so-called Castillo there taken by him is in the Museum of History and Archaeology at Mérida.

Dr. T. Gann and E. L. Crandall, the latter being the staff photographer of this First Expedition, visited the site on February 23 and 24, on behalf of the Institution, discovering two sculptured monuments (Stelae 11 and 12), both of which were so badly weathered, however, as to prevent the decipherment of their inscriptions.

Dr. A.V. Kidder and J.E.S. Thompson, G. Wiggin and R. A. Franks, Jr., the Second Expedition, were at Cobá and Nohoch Mul, an outlying suburb, March 16 to 18, and discovered two other sculptured monuments (Stelae 9 and 10) which also were so badly weathered as to prevent decipherment of their inscriptions.

Toward the end of May (22 to 28), Messrs. Thompson and Jean Charlot, the Third Expedition, visited Cobá, and on May 24 discovered the ceremonial center of the entire group, Macanxoc (meaning in Maya appropriately “it cannot be read”) with eight sculptured monuments (Stelae 1 to 8) presenting the eight Initial Series mentioned above.

During the week of June 4 to 11, Dr. Morley and Mr. Thompson, the Fourth Expedition, visited the site, and the final decipherments of the several dates were then made.

Of the eight monuments at Macanxoc, Stelae 7 and 8 are so badly weathered that beyond the bare fact that they formerly had had hieroglyphic inscriptions, no decipherment was possible. On the other hand, two of the remaining 6, Stelae 1 and 6, present two Initial Series each, a very unusual, though by no means unknown, feature in the *Corpus Inscriptionum Mayarum* (Morley 1948).

The following readings were made, those marked (?) though probably correct as given, are still subject to slight doubt (Table 34.1.1).

If the dedicatory dates (that is, the contemporaneous dates) of Stelae 6 and 1 are 9.9.10.0.0 and 9.12.0.0.0 respectively, following the usual Mayan practice where the latest date on a monument generally indicates the time of its erection, it will be seen that the monumental sequence at Macanxoc represents a series of lahuntun or 10-year period markers, a monument having been erected at the end of each 10-year period, or lahuntun, the city was occupied, according to a very ancient and practically universal Mayan practice (Morley 1920: 565–580).

It will be noted from the above table also, that one lahuntun ending, namely 9.9.10.0.0, was marked by the erection of two different monuments, Stelae 6 and 4, and that another, 9.11.0.0.0, has no corresponding monument at all.

It seems highly probable, however, in view of the fact that there are two other monuments at Macanxoc, Stelae 7 and 8, the inscriptions of which are too weathered to read, that one or the other of them originally recorded this missing lahuntun ending, thus making the sequence complete. Further, since both these monuments are certainly earlier than Stelae 5 and 1³ on stylistic grounds, it is not improbable that the other recorded the lahuntun ending 9.9.0.0.0, the next earliest in the sequence for which no corresponding monument has been found, making it the earliest monument at this group.

Table 34.1.1. Calendrical Decipherments, Stelae 1–5, Cobá.

Stela 6	9.9.0.0.0	3 Ahau	3 Zotz	354 AD
Stela 6	9.9.10.0.0	2 Ahau	13 Pop	364 AD
Stela 4	9.9.10.0.0	2 Ahau	13 Pop (?)	364 AD
Stela 3	9.10.10.0.0	1 Ahau	8 Kayab (?)	373 AD
Stela 2	9.10.10.0.0	13 Ahau	18 Kankin	383 AD
Stela 5	9.11.0.5.9	11 Ahau	18 Chen	403 AD
Stela 1	9.11.0.5.9	4 Muluc	17 Kayab	393 AD
Stela 1	9.12.0.0.0	10 Ahau	8 Yaxkin	413 AD

If Stelae 7 and 8 formerly recorded the lahuntun endings 9.9.0.0.0 and 9.11.0.0.0, as there are good grounds for believing, we will have a sequence of eight monuments marking seven consecutive 10-year periods, that is, from 9.9.0.0.0 to 9.12.0.0.0, presumably the length of time during which the city, where, they had been originally erected, was occupied.⁴

The style of architecture of the buildings and terraces at Macanxoc is so late, that there can be little doubt that these monuments were originally designed for some other location, and that they were re-used in late New Empire times, being erected where they now stand, perhaps as much as a thousand years after their original use in middle Old Empire times.

The two latest monuments, Stelae 5 and 1, present long series of time periods, at least 18 in the case of Stelae 6, and 19 in the case of Stela 1, every term of which has the same coefficient, that is, the number 13. It would seem as though originally 20 of these 13s had been recorded on each of these stelae, and in the case of Stela 1 the series terminates with 0 katuns, 0 tuns, 0 uinals, 0 kins, and the normal date 4 Ahau 8 Cumhu, the beginning point of Maya chronology, the two glyphs recording this latter date being separated by the corresponding Supplementary Series. The exact nature of these long numerical series is uncertain, but the repetition of the number 13 and the record of the normal date 4 Ahau 8 Cumhu suggest that they may have been priestly calculations dealing with the beginning of the Maya time count.

The real significance of Macanxoc, and its fundamental importance in the reconstruction of ancient Maya history lies in this group of eight contemporaneous stelae, which date from the early part of the Middle Period of the Old Empire, the latest date at Macanxoc, 9.12.0.0.0 on Stela 1, antedating the earliest date at Chichén Itzá, 10.2.10.0.0, on the lintel in the Temple of the Initial Series, by more than two centuries, thus pushing back the discovery of Yucatán a century earlier than the date given for that event in the Books of Chilam Balam.

The Macanxoc discoveries have enormously increased the authenticity and prestige of the Tulúm and Chetumal Bay Initial Series, 9.6.10.0.0 ([Chapters 1.4, 1.6, and 1.10]; Lothrop 1924) and 9.8.0.0.0 respectively, as representing contemporaneous dates. It may now be claimed with some reason that there is a continuous chain of dated sites running up the eastern coast of Yucatán linking the Old Empire region with the New Empire: La Honradez⁵ the northeasternmost Petén site now known), Chetumal Bay, Tulúm, Macanxoc and Chichén Itzá, the distances between any two successive links being not more than 125 miles [201 km] (Chetumal Bay to Tulúm) and in most cases much less.

In view of the new evidence afforded by the Macanxoc stela it now seems necessary to conclude that as early as the latter part of the Early Period of the Old Empire, perhaps a century and a half earlier than the date given for this event in the Books of Chilam Balam, Yucatán had been discovered via the East Coast route. The lacunae between the dated monuments from 9.6.10.0.0 (Stela 1 at Tulúm) down to the closing date at Macanxoc are less than 30 years in all cases. In fact the greatest chronological gap now comes between the closing date at Macanxoc and the earliest date at Chichén Itzá, less than 50 miles [80.5 km] apart in point of distance, but presenting a gap of more than two centuries in point of time.

The Macanxoc discoveries give strong color also to the very early tradition, reported by Padre Lizana that the original colonization of Yucatán was from the east; though greater numbers subsequently entered the peninsula from the west; and that in later times cenial (the Little Descent) had become synonymous with east and nohenial (the Great Descent) with west (Lizana 1633:4).

It seems not improbable that the region south, east and west of Cobá may yield other links in this chain of cities, which will still further shorten both the geographical and temporal gaps, until a continuous line of dated sites will have been found extending along the eastern edge of the peninsula intimately connecting the Old with the New Empire. For this reason the further investigation of the Cobá region is strongly recommended.

NOTES

1. The first notice of Cobá is given by J. L. Stephens in his *Incidents of Travel in Yucatán* (1843:2:340-341). In 1841 he was told of the site by the cura of Chemax, who had heard of it from Maya Indians living in the vicinity, but the trails thither were so overgrown and the distance itself so considerable, that neither Stephens nor his informant ever visited the ruins.

2. For a list of monuments presenting two Initial Series see Morley (1920:401), making a total of eight Initial Series for the six monuments.

3. Stelae 5 and 1 are the two latest monuments at Macanxoc on stylistic grounds, since they are the only two which were sculptured on all four sides, all the others being sculptured on one face only.

4. The *ukahlay katunob* from the Book of Chilam Balam of Maní states that the province of Ziyan Caan was occupied for 60 years before the Maya settled at Chichén Itzá (Brinton 1882b:95). Is this total of 60 years for the sojourn at Ziyan Caan merely the long arm of coincidence, or could Macanxoc or some place nearby have been at one time the principal center of this Province of Ziyan Caan?

5. This site was discovered in 1910 by an expedition from the Peabody Museum of Archaeology and Ethnology of Harvard University under Alfred M. Tozzer.

34.2.

H.E.D. POLLOCK

Report on the Cobá Expedition

YB 28:328–329, 1929

On February 21, Mr. Pollock left Chichén Itzá for Valladolid and proceeded eastward from there to Cobá. The object of the expedition was the examination and photographing of two newly discovered stelae. These stelae were found, and numbered 13 and 14 in accordance with the system of enumeration previously established at this site,

Stela 13 stands about 200 yards [182.9 m] east of the southeast end of Lake Cobá and about 25 yards [22.9 m] north of the main trail between Cobá and Macanxoc. Situated at the foot of a large mound, it faces south. The stela was apparently enclosed by a low wall about 10 feet [3.1 m] square with low antae projecting forward on either side of the stela proper. The outline of the enclosure is marked by a single course of stones at ground level, while within the square there is no fallen material other than from the antae and rear wall which stand approximately 2 and 4 feet [0.6–1.2 m] high, respectively. This would indicate that the enclosure may have been merely outlined at floor level, while it is quite certain that there was no roof.

The stela is in a bad state of preservation. Near the left edge a raised panel runs from top to bottom and carries the faintly visible outlines of incised hieroglyphs. At the lower right, a leg shown in profile is clearly discernible from mid-thigh to heel, which, in conjunction with faint traces of a waist and shoulder, suggests a standing figure facing to the left. Two broken parts of the stela were found and replaced, but a portion of the topmost glyph is still missing. The few glyphs are worn beyond all hope of decipherment. The monument measures 9 to 10 inches [22.9–25.4 cm] in thickness, 35 inches [88.9 cm] in width and 68 inches [172.7 cm] from the highest point to the bottom of the sculpture; the bottom 6 inches [15.2 cm] of the shaft are unsculptured.

In the process of preparing the stela to be photographed, it was discovered that it was set about 18 inches [45.6 cm] into the floor of the enclosure, and that 12 inches [30.4 cm] of sculpture were thus hidden. The low height of the monument and the existence of only 6 inches [15.2 cm] of unsculptured stone at the base point to the possibility that several feet of the lower end may have been broken off and the stone reworked to its present condition. Keeping in mind the early dates but rather late architectural types,

known to exist at Cobá, these facts can not help but suggest that the stela was set up in its present position by a later people than the actual sculptors, perhaps as a venerable object rather than a contemporaneous record.

Stela 14 is situated about 200 yards [182.9 m] south of the main trail and slightly west of due south from Stela 13. This places it on the isthmus between Lakes Cobá and Macanxoc. It is at the foot of a large mound running north and south, but itself faces southwest. In general, the local situation is similar to Stela 13, with antae on either side of the monument.

This stela is in a more broken condition than the former, and the existence of hieroglyphs highly uncertain. In the lower left corner a small kneeling figure faces to the right, while in the center is faintly, traceable the outline of the main figures with feet at an angle of 180 degrees and standing on what was probably the representation of a captive. In the lower right corner is another small figure that may or may not be in a supplicatory attitude. Between 25 and 30 broken pieces of this stela were replaced, and a large block of three parts, that pretty surely formed the upper right corner of the monument, was fitted together, but not replaced, because of the badly weathered edge of the standing section. The measurements are: thickness, 14 inches [35.6 cm] at the base, tapering upward; width, 55 inches [1.4 m]; height, 62 inches [1.6 m] from the highest point to the bottom of the relief; at least 18 inches [46 cm] below this is unsculptured.

As in the case of Stela 13, this stela was set into a floor, but all sculpture ceased at the floor level with a carved border line coinciding with plaster marks from the floor. Beneath the floor a fragment of well-sculptured stone, which did not belong to the Stela, was found, but no other fragments came to light during the digging.

Time was so limited as to prevent any considerable exploration of the site. In a reconnaissance of two hours along the isthmus between Lakes Cobá and Macanxoc, however, several interesting architectural features were noticed, and an additional stela in completely ruinous condition was discovered. The site strongly gives the impression that more stelae are, to be found here, and it is felt that this city, which apparently possesses both Old and New Empire connections would well repay more systematic examination.

34.3.

ALFONSO VILLA ROJAS

Survey of the Cobá-Yaxuná Highway

YB 32:89, 1933

The long *sacbé*, or raised highway, which originates at Cobá, has been believed to join that city with the ruins of Yaxuná, some 60 miles [96.6 km] to the west. Both ends of the road had been examined, and Captain Bennett recently traced it well eastward from Cobá, but no complete traverse had been made. This was done by Mr. Alfonso Villa during the past winter. Mr. Villa, with a force of 12 Maya Indians, left Yaxuná on February 27, and devoted three weeks to cutting his way the entire length of the *sacbé*, through to Cobá, making a measured survey and recording features of

archaeological interest encountered en route. He reports that the road is from 30 to 34 feet [9.1–10.4 m] in width and that it is raised to a height of from 2 to 8 feet [0.6–2.4 m]. It was built by erecting retaining walls of large, roughly faced limestone blocks and filling between them with rough stones, which became progressively smaller toward the surface. Its actual roadbed was finished with a smooth coating of lime plaster. For 43 miles [69.2 km] eastward from Yaxuná the road runs almost perfectly straight; in the last 19.5 miles [31.4 km] before reaching Cobá it makes five slight changes of direction. At intervals there are mounds built close to the highway, and near Cobá are several monuments bearing badly eroded hieroglyphs. At 21 miles [33.8 km] from Yaxuná was discovered a limestone cylinder 13 feet [3.9 m] long, 2.25 feet [0.7 m] in diameter, and about five tons in weight, which, it is thought, may have served as a road roller.

35.0. TABASCO AND VERACRUZ

35.1.

KARL RUPPERT

San Andrés Tuxtla

YB 37:153–154, 1938

At the invitation of Sr. Arq. Ignacio Marquina, Chief of the Office of Prehistoric Monuments of the Mexican Government, Mr. Ruppert as representative of the Carnegie Institution spent the months of November and December 1937 in cooperative investigations with Sr. Lic. Juan Valenzuela and Sr. Agustín García Vega in the region of San Andrés Tuxtla, southern Veracruz.

The greater portion of the time was spent at Matacapam and on the island of Agaltepec in Lake Catemaco. Sites near Matacanela and on the outskirts of Catemaco were examined. Matacapam comprises over 40 mounds, of which three of the most promising were excavated in part and trenches for stratigraphic collections of potsherds were made in two mounds and three plazas.

One of the mounds excavated disclosed a pyramid rising in two terraces with batter and vertical super-element. The pyramid-facing of ground lava rock and adobe clay formed a hard durable surface which has well withstood the elements. A second mound,

also rising in terraces, was definitely circular. The nature of its superstructure was not ascertained.

All material collected was sent to the National Museum in Mexico City, where Mr. Ruppert, on his return from the Institution's later expedition to Quintana Roo, spent the months of June and July with Sr. Valenzuela studying the ceramics. Distinctive local types for Los Tuxtlas were not determined. Pottery of the Red on Orange second period of Monte Alban and a Gray Ware with incised decoration similar to that of the third period of Monte Alban are relatively common throughout the various levels. Certain wares are reminiscent of the Isla de los Sacrificios, and the black painted faces of figurines common to the Huasteca also occur.

The southern Veracruz area is archaeologically almost unknown. The above-noted preliminary investigations have yielded valuable information as to contacts with neighboring localities. However, the local wares must first be identified as a foundation for future work, as they will serve to correlate this culture with those already studied or under investigation.

35.2.

ALFRED V. KIDDER
Veracruz

YB 38:242–243, 1939

A second activity carried on in cooperation with a Latin American government was the investigation of certain archaeological sites in southern Veracruz. In this Mr. Ruppert participated with Lic. Juan Valenzuela and Ing. Agustín García Vega of the Mexican National Institute of Anthropology and History.

Veracruz has always been recognized as an area of much archaeological interest. The beautiful small stone carvings and the smiling pottery heads of the Totonac country are in many museums. Large sites are abundant. But neither local cultural sequences nor relationships with other parts of Middle America have been worked out. The latter, in particular, should be important, for there must have been contacts between this rich coastal belt and highland Mexico. Furthermore, southern Veracruz occupies a strategic position as regards migrations of peoples or cultures from Mexico into Yucatán. There are, as well, striking but as yet unexplained resemblances between certain Veracruz sculptures and those of Guatemala's Pacific coastal plain.

When, therefore, the Mexican government in 1938 proposed to the Institution a joint survey of the region, the invitation was gladly accepted and Mr. Ruppert was delegated to work with the above-mentioned Mexican archaeologists.

Two seasons have now been spent in southern Veracruz, attention having been directed to the general region of Los Tuxtlas. Excavation of numerous mounds has yielded interesting data on architecture, ceramics, and stone carvings. And while the collections, especially the pottery, have not been sufficiently studied to permit definite conclusions, there is indication of connections with Monte Alban in Oaxaca, Teotihuacán in the Valley of Mexico, the Huastec district of northern Veracruz, and Kaminaljuyú in the Guatemala highlands.

At the close of the field season in June, Mr. Ruppert visited Tapachula, Chiapas, near the Guatemala border, to examine Izapa, a large and apparently important site containing a number of carved stone monuments.

35.3.

HEINRICH BERLIN
Tabasco and Campeche

YB 52:284–287, 1953

Archaeological reconnaissance in the Mexican states of Tabasco and Campeche were carried on under a Carnegie Institution Fellowship. The immediate object was to find sites of Toltec and Postclassic period occupation. As the New World Archaeological Foundation and the Smithsonian Institution were conducting researches in the southwestern and western sections of Tabasco, those areas were obviously not included in the survey.

Berlin left Mexico City January 8 and returned May 24. The field work was devoted mostly to recording sites, collecting surface sherds, and running test pits at places which seemed from previous information to bear on the problem. A short visit was paid to Mayapán at midseason in order to establish contact with the staff members of the Department working there, and at the end of the season two weeks were spent at the Mérida headquarters in making a preliminary analysis of the pottery collected and arranging its proper storage.

Field work began at Villahermosa, where the local museum was visited. The first place inspected was Cunduacan, the old Cimatan, where only a few unimpressive mounds were found. Subsequently a more important group of mounds with a definite plaza arrangement was encountered in the vicinity of nearby Huimango. More scattered archaeological mounds were seen between Cunduacan and Comalcalco at Finca Santa Rosa, Galeana and Iquinuapa. At the last-mentioned site a plaza arrangement was again observed.

Brick and mortar of lime made from burned shell were encountered for the first time as building material in mound constructions at Finca Esperanza, south of Comalcalco. At Comalcalco proper the known ruins were visited briefly. At Santa Margarita, between Comalcalco and Aldama, two *hachas*, or thin stone heads, which had been unearthed recently, were photographed.

The whole northwest coast of Tabasco is characterized by large lagoons with a great abundance of shells, suitable building material in an area which is lacking in rock. Shell was employed in the numerous mounds of the Ahualulcos ruins, which are on an island among swamps near the Santa Ana River. Pieces of pottery of fine, Late Classic finish, now in the museum at Villahermosa, are reported to have come from this site. Random sherds collected there would sug-

gest, however that the occupation at Ahualulcos started, in Preclassic times, and that it may well have continued into the Postclassic period.

Subsequently the ruins of Bellote, discovered years ago by Désiré Charnay, were examined during a stay of two weeks at the site. The mounds cover about half a square kilometer, and in several of them the use of shell as building material was noted again. Most of the work was devoted to the mound where Charnay had excavated previously. The debris of the older excavation on top of the mound was removed in order to establish the outline of the temple (?) platform. Charnay's statement that it represented at least three or four periods and that brick was used could be confirmed. An isolated stucco glyph was found on the middle construction, and an Ik glyph within a stucco medallion on the most recent one. Thus the platform walls had classic Maya decoration on the southern façade on both sides of the stairway. The occupation of the site, however, must have begun earlier and have lasted considerably longer. A pit dug into the mound fill of shell yielded, beneath a sealed floor, one Chicanel-style bowl and a coarse incised vessel. Another pit at the base of the same mound led to the discovery of a multiple grave full of large storage vessels, which were only partially excavated. Most of them were arranged in pairs, one serving as cover for the other. These crude vessels are for the moment not diagnostic, but the fact that they were accompanied by a Fine Paste Ware vessel and probably were associated with an unmistakable Fine Orange jar would suggest that the time of the grave was near the end of the Late Classic or even in the Postclassic period. Surface sherds collected at Bellote and at the nearby island of Francisco Chable confirm the postulated long occupation.

The coastal strip east of the lagoons is slightly raised over the southern swamps and thus provides permanent dry areas on both sides of the mouth of the Grijalva River. It is not surprising, therefore, that we find here many testimonials of pre-Spanish occupation. A more or less continuous row of mounds extends from Chiltepec to Frontera. At Hacienda El Coco the owner had trenched one of these mounds; an additional trench was made in the same mound by Berlin during a three-day stay. It disclosed the existence of two superimposed structures of walls of mortar simply spread over the earth fill. Few sherds were found, but as the owner had kept the pottery collected in the first trench, mostly Fine Orange Ware, this could fortunately be photographed. At the modern village of Juarez the group of mounds illustrated years ago by Berendt was identified.

Mounds continue along the east side of the Grijalva River, and the following sites were visited: Las Minas, El Zapotal, Concepción, and El Encanto. The last-men-

tioned place is on the left bank of the San Pedro y San Pablo River. At Las Minas, as well as at El Encanto, the use of brick was again noted.

Farther east, in Campeche, a visit was made to the site of Atasta, where in 1944 M. W. Stirling had seen interesting sculpture and stucco work. Preliminary digging resulted in the discovery of a carved stone tablet of poor workmanship showing a prowling jaguar (?). Another sculpture, which belonged to a farmer and showed a human head in the jaws of a snake, was photographed. Considering all the sculpture so far found around Atasta plus some which is in the local museum of Ciudad del Carmen, it becomes evident that we are dealing with a local school of sculpture which is completely different from the classic Maya and which is difficult to classify at present. A copper point found in our trench at Atasta suggests a late occupation of the site.

East of Laguna de Términos a newly reported site 3 km west of the railway station of Escarcega was visited. Material for road building had been taken from the group of mounds, and two building phases were exposed in one of them. Well cut stones were used in the older phases; the temple platform had inset corners, and the stairway was divided at the highest step into two sections by a protrusion of the temple platform.

In Tabasco again, the site of Tiradero was visited. E. W. Andrews had reported abundant Preclassic, pottery there in a railway cut. No excavation could be made in the center of the mound where the road had cut through, because no permit could be secured. A pit dug near by produced Chicanel material. It could further be established that this particular mound belongs to a vast archaeological site located in one of the bends of the San Pedro Martir River. A broken plain stela was found on the main plaza. A pit dug near the stela did not result in the finding of expected floors, but the pottery encountered showed Preclassic material throughout and a few Fine Orange and Fine Gray sherds in the upper levels. No standing buildings were observed, but in at least one of the mound groups their former existence seems very likely.

After a two days' visit to Palenque, the lower course of the Usumacinta River was surveyed starting from Tenosique. Mounds were noticed between Tenosique and Balancan at Guanál, Estapilla, Canizán, Multe, and Santa Ana.

South of Balancan, the important site of Arenitas, first reported in 1951, was visited. Arenitas has a huge main plaza 150 by 50 m with single mounds at the ends the long axis, and rows of mounds along the sides. The large single mound at the north end of the plaza is about 18 m high; the stairway faces south, and several of the exposed steps show good workmanship in cut

stone. Pieces of stucco decoration and wall fragments are scattered along the bases of the mounds. If excavated, the site will undoubtedly prove to be of major importance.

Farther down the Usumacinta, Emiliano Zapata, mounds were observed at Tierra Blanca and Corral Nuevo. At the first site the owner of the ranch there had collected a few archaic figurine heads. Below Emiliano Zapata an excavation was made near the mounds of Tecolpan on the left bank of the river. Abundant Fine Orange pottery was found together with fine classic Maya figurine heads. At a nearby cut of the river at Rancho El Tren some Preclassic and Early Classic Maya sherds were collected. The Tecolpan region may well yield a continuous stratigraphic sequence of Maya pottery of the Tabasco plains.

The island of Chinal, near Jonuta vaguely mentioned by Charnay, was partly explored, but only some low mounds with a few pre-Spanish sherds were found at Rancho Pajalal.

In the mounds of Jonuta much brick-work was noted, employed in the usual fashion as facing for the pyramids with a final cover of shell mortar. North of Jonuta along sand mounds were found alongside the Usumacinta at Ramonal, Quien Sabe, Sitio Nuevo, Paraiso, and Encarnación and another brick mound at Finca Oaxaca on the San Pedro y San Pablo River.

The last two sites to be visited were Tamulte de las Sabanas and the ruins of Tortuguero. Tamulte de las Sabanas is a Chontal-speaking village. In the outskirts in a nearby barranca, there is a place of worship with about five natural sandstone rocks where pagan offerings are still made, such as lighting of candles or pieces of wood, killing of birds, ritual eating, and drinking of aguadiente. Only men perform these rites.

In company with Carlos Pellicer, director of the local archaeological museum of Villahermosa, the ruins of Tortuguero were visited. Since Blom's visit the tailpiece of Stela 2 has been broken off, but with the help of a newly found fragment, it was possible to identify the present two fragments of the stela, the new piece, and the plain shaft referred to as Monument 4 by Blom as being a single work of sculpture. In the plaza where Monuments 2, 3, and 4 are scattered, a new small carved stone fragment was discovered and called Monument 5. On one side an Initial Series is still visible, inscribed with bar and dot numerals. The baktun coefficient is clearly 9 and that of the katun between 12 and 15, 14 being most probable. The other glyphs are too weathered to establish a definite reading, but 9.14.10.0.0 5 Ahau 3 Mac is suggested as a possible solution. Nothing of the design on the front could be made out, with the exception of two parallel rows of three glyphs each. Only the numerical coefficient of 3 in C1 and of 8 in C2 could be deciphered.

A fallen stone column was found approximately 100 m south of this plaza. It is more than likely that more sculptures will be discovered at the Tortuguero ruins, once the forest, which now covers almost the entire site, has been cleared.

35.4.

HEINRICH BERLIN

Tabasco and Campeche

YB 53:293–295, 1954

As the surface collections of the previous field season in Tabasco had revealed a great abundance of Fine Paste Wares (including Fine Orange), the 1954 season, again under a Carnegie Institution fellowship, was devoted to carrying out excavations at six sites representing Late Classic and Postclassic horizons, in order to obtain larger and stratigraphic samples of this important material. Berlin was in the field from January 11 to April 15. Until February 27 he was accompanied by Carlos Navarrete, a student of the Escuela Nacional de Antropología e Historia of Mexico City, with whose assistance it was possible to run a greater number of test pits.

At the beginning of the season the ruins of Palenque were visited. The director of the local school at Palenque village possessed a painted stucco glyph which he had found at the temple of the nearby site of Xupa. Thus it seems likely that the piers of this small temple had stucco inscriptions in the fashion of the Palenque temples, a fact which had escaped all previous visitors. A careful search at the foot of each pier should result in rewarding finds.

The first dig was done at Tecolpan, below Emiliano Zapata, on the left bank of the Usumacinta River. Pits were opened at several places near the base of the main pyramid, in the surrounding swamps, and on an elevation in the swamps. Only a few surface sherds were found in the swamp pits, probably coming from backwash from the main group. This absence of sherds in the swamps is evidence that in prehistoric times this region already was swamp and therefore not inhabited. On the other hand, in the pit on the elevation, probably a house mound, sherds were found almost to the ground-water level. The digging around the main pyramid duplicated the findings of last year. Several burials were encountered in the various test pits, but

none was associated with any ceremonial offering, nor was there any consistency in their orientation, though supine position was predominant.

At nearby El Tren a few Preclassic and Early Classic sherds had been picked up last year. This season, unfortunately, only one day could be devoted to the making of a hasty test pit. It yielded a high percentage of Early Classic material, showing in the polychrome ware notable similarities in design and color to the Petén material of the same epoch. Yet in the Late Classic pottery of Tecolpan, Tepeu-like polychrome is virtually absent.

The Late Classic fine paste horizon was met again at Jonuta. The character of the deposit and stratigraphic situation there are peculiar: a black, 1 m thick layer, heavily packed with sherds, emerges from the Usumacinta waters just northeast of the town and, after gradually rising for 30 m, reaches the top of the right bank, continuing southwest for several hundred meters. It is in this layer that the famous Jonuta figurines occur. A fine collection of figurine heads, mostly belonging to whistles, in the possession of Sr. Omar Huerta was photographed. Despite the great variety, recurring types could be recognized and classified into major groups. In a subsequent visit to the local museum of Villahermosa, several Jonuta subtypes were identified in the figurine collection on exhibit.

At this museum are housed all monuments of the Tortuguero ruins, brought there, since last year. They can now conveniently be studied. In addition to the monuments already known, two hitherto unknown fragments were brought to the museum. These are Monument 7, the trunk of a statue of which only the back is in fair condition; and Monument 8, probably the lower part of a standing sculpture. The first is similar to Monument 3.

The sherds excavated at Huimango in the Cunduacan district seem to belong to the Late Classic Jonuta horizon. Fine Paste Ware at Huimango, however, is more of gray variety than of the accustomed orange.

Another site where excavations were undertaken was Juarez in the Cintla region close to the battlefield where Cortés, his famous victory over the Indians of Tabasco. The top of the main mound was cleared and much ceremonial ware recovered, such as fragments of incense burners, ladle incense burners, small Atlantean figurines, and clay models of temples. Human faces and general workmanship are extremely crude. The associated fine paste wares show almost no decoration and are radically different from the ones found at Tecolpan and Jonuta. All the material was concentrated on the rear of the top platform of the

mound and was covered only with an insignificant layer of humus. Evidently it represented the last offering deposited there before the site was abandoned as a religious center. As no more recent material has been found so far in this region, we can hardly be wrong if we interpret the Juarez pottery as belonging to the last few centuries prior to the conquest.

A similar situation was met at Tamulte de las Sabanas. On the rear of the top platform of the main mound of a major group, ceremonial and fine paste wares again were encountered, and in this case associated with copper bells, a definite proof of relatively recent age.

In the modern village of Tamulte there still exists a local tradition of pottery making, done by women only. This pottery is not-traded outside the village. Besides the normal ollas, comales, and so on, they make potstands (called *met* in the native Chontal language) and heavy-walled tubes (*xun*), which are used three at a time as firestones, a suitable substitute in a region where stone is completely lacking.

Finally, at Atasta (Campeche) a very low platform was excavated and a small earth mound trenched. On the platform was a modeled stucco jaguar, which had formed part of its decoration. The façade of the mound was built only of stucco without the use of any stone. At the center two legs of a person in dancing attitude were still recognizable. In front of it was a small round altar platform, the walls of which were also done in stucco.

The trenching of the mound resulted in the discovery of two minor graves, one at the level of its foundation, the other near the top of the mound. The ceramic material recovered from both graves belongs to the same epoch, the previously established Postclassic fine paste coastal horizon. One should bear in mind, however, that the excavations at Atasta were limited to a few acres and that the real history of the site and its immediate neighborhood probably extends over a much longer period of time.

The excavations of 1954 in Tabasco have revealed two fine paste ware horizons. One is Late Classic and centers around Jonuta, where it is associated with beautifully executed Maya figurines. The other is Postclassic or even Protohistoric and is found along the Tabasco and southwest Campeche coast. One is tempted to ascribe this last material to the Chontal-speaking tribes which inhabited the Tabasco coast at the time of the conquest and still inhabit part of it. The change in the aesthetic concepts may be due to the influence of foreign groups producing a stimulus which the coming of the Spaniards prevented from developing a fresh art style.

36.0. YUCATÁN

36.1.

ALFRED V. KIDDER

Archaeological Work in Yucatán

YB 34:123–126, 1935

As was stated in the last *Year Book* report [Chapters 1.22 and 1.23], the 10 years of intensive excavation at Chichén Itzá are being followed by an interval for the publication of those units of work which have not yet been treated monographically; and for research upon certain problems raised by the Chichén Itzá diggings which can not be solved save on the basis of investigation elsewhere in the peninsula. The Institution's headquarters at Chichén Itzá have, however, been kept open to serve as a base for the field-workers. Dr. Morley was, as usual, in residence. He devoted his time to preparation of his compendious report upon the inscriptions of the Petén, and to further studies, in collaboration with Mr. Roys and Sr. Rubio Mañé, upon the history of the Xiu family, former rulers of the city of Uxmal.

Several conferences were held at Chichén Itzá during the spring, when new material gathered by Messrs. Roys and Rubio Mañé was compared, collated and combined with data collected in previous years, and many gaps in the story of this most interesting and ancient family were filled. Sr. Rubio Mañé made

an extensive search of all church records in the Xiu region for items concerning the Xius; it is felt that when he has completed his examination of the 250-odd notarial books in Mérida, practically all known sources for Xiu material will have been exhausted. Dr. Morley also excavated a mound near the town of Oxkutzcab, for the purpose of locating, if possible, the site of the church of the former Maya village of San Juan Bautista Yaxacumche, where the Xiu family lived during the Colonial Period.

The mound lay about 50 m east of an old Spanish well, still known by the name of San Juan; and this fact, together with its location on what had been the east side of a plaza, the proper position for a Roman Catholic church, indicated that it might be the remains of the former church of San Juan Bautista Yaxacumche.

The excavations disclosed a foundation mound some 40 m long, 30 m wide and 2 m high, its longitudinal axis east and west, its east, north and west sides faced with, four courses of masonry arranged in retreating steps, like the narrow-treads of a steep stairway;

these treads were about 15 cm wide. On the south side they are so much wider (1.5 m) that it would seem the mound originally faced in this direction.

Traces of a plaster floor could be distinguished here and there about 30 cm above the top of the fourth course of masonry on the east, north and west sides. There was so little debris above this floor level and what there was contained so few stones, being composed mostly of earth and lime plaster residue, that it was evident there had never been a masonry superstructure. On the other hand there was sufficient debris to indicate a former superstructure of saplings and thatch, its walls perhaps daubed with mud or lime plaster.

The excavations yielded a considerable quantity of potsherds, but no whole or even restorable pieces. These were examined by Mr. H. B. Roberts, who reports that 80 percent are of common wares, which throughout the prehistoric and historic periods show no marked change and are therefore of little value for chronologic determinations. The remaining 20 percent were of a type unknown to him, though he felt that they might be allied to the wares of the Puuc region.

The excavations established that this mound was not the remains of a Roman Catholic church, but whether it dates from before or after the Conquest could not be settled by the evidence at hand. When the significant 20 percent of the ceramic remains shall have been identified, its chronologic position will be clearer.

THE ARCHITECTURAL SURVEY

The purposes of the Architectural Survey have been outlined in earlier reports [Chapters 2.1 and 2.2]. It was there pointed out that the architecture of the Maya was a highly important part of that culture and as such might be expected to reflect the growth, development and general course of Maya civilization. In its broader aspects, then, the Architectural Survey is to be regarded as a step toward the reconstruction of Maya history. More specifically, its aims are the determination of cultural and ethnic movements and the establishment of time sequences as reflected in architecture.

At the start of operations in 1932, the hill region of Yucatán, known as the Puuc, was selected as the initial point of attack. This was done primarily because of the large aggregation of comparatively well-preserved buildings that occur in the area, and secondarily because of the relative ease of access to these ruins. It was thus believed that at the outset the survey might amass a considerable body of data that should serve as comparative material for further work. While the Puuc ruins were to be the starting point for comparative architectural study, certain other sites in Yucatán that held promise of considerable importance, and thus, might be termed strategic in indicating architec-

tural trends, were noted as prospective localities for work in the near future. During that season operations were carried on at the large site of Labná and at several small sites in the Sabacché region of the Puuc, the season being brought to a close with work, at the strategic site of Yaxuná in the center of the peninsula.

The Architectural Survey did not enter the field in 1933 but returned to Yucatán late in the autumn of 1934. A continuation of the study of ruins representative of the Puuc region was the main objective, and work at the large sites of Sayil and Kabah occupied the greater part of the season. A certain amount of work was also carried on at the ruins of Holactún in the savanna of Xcalumkin in Campeche, and a brief visit was paid to the Maxcanú region, notably to the ruins of Oxkintok. In addition to the strictly architectural work of the earlier season, the sites of Sayil and Kabah were mapped, a sketch map was made of that part of the Xcalumkin savanna that includes the ruins of Holactún, and observations were taken to determine the geographical coordinates of the sites of Labná, Sayil, Kabah and Holactún.

Reviewing the results of the survey up to the present time, it is felt that certain facts dealing with the environment of the Puuc region, or more precisely the effect of the environment upon the ancient culture, are beginning to be understood. It is, for example, interesting to note that a region which probably harbors more known remaining than any other area in Yucatán appears to be the most fertile agricultural region in the peninsula; also that due to an almost complete absence of natural water supply the inhabitants resorted to the artificial storage of rain water in underground cisterns, known as chultunes, and that great numbers of specialized, platform-like structures were created for this purpose. Turning to matters pertaining more strictly to building remains, the ruins of Labná, Sayil and Kabah exhibit a certain uniformity of plan in that each possesses an artificial causeway, or *sacbé*, with a general north-south axis and with important buildings or groups of buildings at each terminus. There is, moreover, some reason to believe that intercity causeways may have existed, one connecting Kabah and Uxmal being a distinct possibility.

Construction practices have been studied and thoroughly recorded, and a large amount of decorative detail, both architectural and monumental, has either been discovered or has been recorded for the first time.

In attempting to evaluate the work of the Architectural Survey in Yucatán, it is felt that real progress has been made toward the original objective of collecting a body of architectural data to serve as comparative material for further work. An obvious lacuna in the knowledge of Puuc architecture is found in the absence of an adequate architectural study of the out-

standingly important city of Uxmal. It is hoped, however, that this will shortly be filled by publication of the extensive researches made at the site by Tulane University. It is also highly desirable that a rapid reconnaissance be made of a number of lesser sites in the Puuc. All the information thus far collected confirms the previously existing belief that the architecture of the region is remarkably homogeneous. It has thus been extremely difficult to discern architectural trends and developments within the area. Due to the scarcity of superposition of buildings that yield information without resorting to excavations beyond the scope of survey work, it has also been hard to interpret architectural styles in terms of chronology. These difficulties suggest that the survey must pay increasing attention to distribution of architectural types as opposed to stratigraphic sequence at any one site.

The small amount of work that has been carried on outside, or on the borders of the Puuc has led to rather different results. While there is a woefully small amount of architectural data preserved at Yaxuná, there is every reason to believe that two types of construction, one of them linked with the Puuc and each representing a different time period, occur there. Somewhat similar conditions seem to be present at Oxkintok, judging from a brief inspection of those ruins. The remains at Holactún-Xcalumkin, on the other hand, do not suggest two or more clear-cut periods of occupation but rather an unbroken development of architectural style that appears closely related to that of the Puuc.

It thus seems that the greatest opportunities for observing architectural development and for arranging architectural styles in time sequences lie outside the Puuc. In spite of that fact it is not believed that the relatively intensive work carried on within the area has been wasted. The homogeneity, possibly even static quality, of Puuc architecture makes it an admirable norm with which other types may be compared. It is probable, moreover, that only through a fairly complete knowledge of this architecture will developments in other regions be intelligible.

36.2.

E. WYLLYS ANDREWS

Yucatán

YB 41:257–263, 1942

It is curious that the most heavily populated and geographically best-known section of the Yucatán peninsula

has remained almost entirely unstudied by the archaeologist. The ruins on the low plain to the north of the Puuc hills and to the west of Chichén Itzá are represented in scientific literature by only the briefest references.

During a stay in Yucatán from December 1941 through June 1942, Mr. Andrews carried out preliminary studies at 10 ruined sites within a radius of 40 km from Mérida. At three these, Mr. Brainerd undertook stratigraphic excavations for pottery, and at certain others surface collections were made and subsequently examined by Mr. Brainerd.

Perhaps most interesting of the season's finds was a group of sites indicating widespread, architectural activity in northern Yucatán during early Old Empire times. These illustrate a style of temple architecture rigid in itself and distinct from the elaborate patterns of later pre-Mexican construction on the northern part of the peninsula. The chronological separation of the distinctive early and late styles is attested by actual superposition of buildings, the occurrence of transitional forms, and the association of distinct pottery types with the two architectural styles.

The early architecture is distinguished by a special structural technique. Wall masonry is of large, roughly faced blocks, leaving little or no space for cement hearting between the two faces. Vaults are of deeply tenoned flat slabs, apparently never pre-shaped, set in roughly corbelled courses with much fine rubble and cement. Wall faces are evened with considerable spalling, but vault faces are composed entirely of it, as the crude ends of the flat slabs offer no regular surface. Wall and vault surfaces were finished with a thick coat of plaster. Neither wall nor vault shows any suggestion of veneer.

The form achieved is both constant and simple. Basal moldings either are absent or are composed of a single course of rough blocks. Medial and superior moldings consist of a single rectangular member. The upper façade is normally covered with stucco designs in deep relief, which often extend onto the moldings. Carved stone is never used in façade decoration.

Later pre-Mexican architecture of the region is characterized by the use of very finely shaped and faced stone in a thin veneer a rubble core, both in wall and in vault. No spalling was needed, and a thin coat of plaster sufficed to form a very smooth surface. Basal moldings, usually complex, are almost universal. Medial and superior moldings follow a three-member pattern, the upper and lower elements triangular in section. The upper façade is characteristically heavily adorned with mask panels or a variety of designs made of up of mosaic small carved elements, where stucco relief is found, it is secondary.

Excavations in a small section of the acropolis at Acanceh revealed that the famous temple with the

stucco reliefs belongs to the earlier pattern. It was originally built close to the north edge of a truncated pyramid about 8 m high. Later, the platform was extended some 60 cm, and a new face added to the pyramid, the sides of which were covered with white stucco and painted with designs in red. A further stage of construction extended the platform a considerable distance farther north; and on this addition, some 50 cm above the original floor level was built the long, narrow building facing the Stucco Temple. The new edifice, although retaining the essential block-wall and slab-vault structural technique, varied somewhat in external form. It stood on a 35 cm tall, single-member basal molding, and although retaining the simple rectangular medial and superior moldings, replaced the strongly, retreating upper façade of the Stucco Temple with a taller vertical one. Excavation showed that during the use of the court between these two structures, the floor level was raised five times. Finally, temples were filled with rubble, their doorways were sealed with masonry of the early type, and the entire area was filled in to the level of the roofs to serve as foundation for buildings in the later architectural style. This final phase is represented by no standing rooms on the acropolis, but is evident from an abundance of carved stone façade ornaments, typical veneer wall blocks, finely cut, deeply tenoned vault stories, and full-width doorjambs. Associated with each of the developmental phases mentioned were sealed deposits containing potsherds which should be correlatable with Brainerd's more extensive stratigraphic material from the slopes of the acropolis. A preliminary examination indicates the probability that all stages through the filling-up of the court between the two early temples belong to pre-Puuc times. It is probable, moreover, that the large pyramid in the city plaza, originally covered by a later structure but now considerably exposed, also belongs to the early horizon. Visible fragments are characterized, by the use of inset stairways, rounded, inset corners, a lack of finely cut stone, and the use of large panels of stucco relief. The plan is strongly reminiscent of that of early Petén substructures.

As early as 1911, Seler suggested that the buildings at Acanceh were earlier than those generally known in Yucatán. He also pointed out a strong resemblance between Acanceh architecture and that of Aké and Izamal to the north, and suggested that the latter sites might be assigned to an early period. Acanceh and Aké, both large ruins, are conspicuously ignored in the conquest-period historical traditions of the local natives. Landa states in regard to Izamal, "There is no remembrance of their builders and they appear to have been the first." During the present season, brief visits were made to Izamal and Aké. The majority of remains at both sites are definitely not in

the Puuc tradition, which is easily recognizable even in the debris of wholly fallen buildings. Nor do they consist of the entirely uncut stone whose use followed the abandonment of fine veneer in Yucatán. Substructures and, in some cases, buildings were made of great, roughly faced cubical blocks differing only in size from those of Acanceh and other early sites. The stucco decoration of the Izamal pyramids is remarkably similar to that of the mound in the plaza at Acanceh. Finally, Brainerd states that sherds from below the plaster floor of one of the final additions to the mound complex south of the Convent of San Antonio at Izamal are referable to the basal-flange horizon in the Petén. This reference is paralleled by the orderly distribution of ruins at Aké around rectangular plazas, an arrangement characteristic of the Petén sites but not found in the cities of the Puuc and Mexican horizons in Yucatán.

Evidence that these differences are chronological rather than geographical is to be found at Cuca, 10 km east of Aké. Here the remains are entirely of buildings in highly evolved Puuc style with no trace of the megalithic or block construction discussed above.

Ten days were spent at the ruins of Dzibilchaltún (also locally known as Xlakah), 15 km north and slightly east of Mérida, where Brainerd was conducting ceramic excavations. One standing temple there belonged clearly to the early style both in structural technique and in external form. But a number of minor traits hinted a possible developmental transition to the Puuc style. The structure had a low basal molding, and the wall stones were more finely cut than those of Acanceh, although showing no tendency toward veneer. The spring course of the vault was of very carefully faced stone, in strong contrast with the rough slabs of the vault itself. The end walls carried a thin false vault spring, a characteristic of Puuc architecture found in neither of the early temples at Acanceh. Pottery from between two floors in one of the rooms has tentatively described by Brainerd as immediately antedating that found in the Puuc sites. This earlier architecture seems to have included the greater part of the construction at Dzibilchaltún. Visible fragments of a filled-in and almost completely buried structure in another part of the site show identical masonry and outer façade form, and indicate that at least large parts of an elaborate stucco façade similar to that at Acanceh remain intact under later construction. Other lower wall and vault fragments are in this tradition, and the general plan of the site is characterized by Petén like aggregations of mounds around orderly plaza systems. However, a few carved façade stone elements strongly reminiscent of Mexican-period Chichén Itzá art bespeak at least, some later occupation. These remains are very common in a single court at the eastern edge

of the site, and rather rare elsewhere. Although a number of glyphic stelae are too badly damaged to offer any hope of translation, it is clear that none carried Initial Series.

About 40 km west and slightly south of Mérida and 6 km southwest of Kinchil are the ruins of Tzeme, a very large site covering several square kilometers. A large part of the town of Kinchil and the neighboring hacienda of Santa Maria have been built with stone taken from its monuments; and two grotesque life-size human statues from Tzeme have been removed to the Mérida Museum. Although no standing buildings remain, two periods of occupation are evident. At the center of the site is a group of tall pyramids around a rectangular plaza. Near by are several groups of lower pyramids similarly arranged around smaller plazas. Atop these mounds are vestiges of small structures in the block-wall and slab-vault tradition, entirely lacking carefully cut stone. In the center of the plazas, however, and scattered outside the central area, are numerous remains of distinct rubble and veneer structures with carefully squared full-width jambs, specialized vault blocks, and a variety of sculptured façade elements. These buildings clearly belong to either the Puuc, or the Chichén Mexican period.

Reports were received of the small site of Chuhkú about 15 km southeast of Tzeme, containing at least one well preserved standing temple. Many residents of Kinchil can serve as guides.

Through the kindness of Don Fernando Cervera, it was possible to spend a number of days at the large ruins on the Hacienda Yaxcopil, 25 km south and slightly west of Mérida. The ruins, about 1,500 m east of the hacienda buildings, seem to have been occupied from very early times through the Puuc and Chichén Mexican periods. Although no excavation was undertaken, much pottery from the latter periods was found on the surface. A small amount of red lacquer ware may indicate a short overlap into the last phase of pre-Spanish culture, or a small continuous population in that era. The central group of ruins is distributed around a long, narrow plaza, at one end of which is a pyramid approximately 12 m high, ascended by four stairways. Atop the complete ruin of the superstructure is a geographical bench mark with the legend N 20 degrees 45'05", W 89 degrees 42'18". This large mound is called *Tanmul*, meaning "Central Pyramid," by which name the site is occasionally known. Present superstructure debris in the central group is characterized by a quantity of veneer stone, but this may be of secondary origin. About 250 m south of this complex is a large, low platform mound bordered by four ranges of room's surrounding a central court. Several rooms of the northern range are still standing and locally called *Aka'na* (House in the Dark), by which

name the whole site has also been known. Several phases of construction are apparent. An original 5-room structure was built in style clearly transitional between the early and Puuc periods. The lower walls are faced with a poorly cut, irregular veneer, but the vault is made of flat, almost unfaced, blocks so crudely set that the face consists largely of spalling. Moldings are complex but still rectangular in section, varying in form as a support for elaborate channels of deep relief in painted stucco which covers the upper façade zone. There is no carved stone. In two later stages, a series of rooms was built around this unit in a very different manner. Their rubble walls bear a thin veneer of finely cut, beautifully squared stone laid in perfect courses. Vaults are of the characteristic "boot-shaped" and beveled blocks, equally carefully set; and the upper façade zone was covered with panels, and masks in carved stone mosaic. The outer corners bear on each face a line of carved rosettes from medial to basal, molding. The doors, simple in the interior structure, become triple, with jambs and round pillars carved in typical Puuc style. The *Aka'na* will richly reward future excavation, for in the construction of the later rooms, the stucco façade of the older temple was carefully sealed in and remains largely intact. Remains of the later Puuc period architecture are distributed generously over the site, as are those of the following era of Mexican influence. Several long, low mounds bear a central row of altars formed of crudely cut megaliths, and have no trace of further masonry superstructure. Another common form of building is the round-columned, flat-roofed colonnade of Mayapán type, whose walls (as at Mayapán) are of crude block rather than veneer masonry. This fact, in connection with the small amount of red lacquer ware in surface pottery, indicates Yaxcopil's importance for future study as possibly spanning the gap between the veneer tradition of the Puuc and Chichén Mexican periods and the uncut block masonry which later replaced it. This possibility is not known to exist at any other site on the peninsula.

Minor excavations were undertaken at one further ruin apparently occupied in pre-Puuc times. This site, 500 m east of the Mérida-Uxmal highway at Kilometer 39.5, is on the hacienda of Sihunch'en, whose name it has been given. Recently there were a number of standing buildings, but these have been in large part demolished and their stone ground up to resurface the nearby highway. Fragments of two buildings were left, both of which seem to be in the earliest architectural tradition. Walls are of large, coarse blocks with no rubble fill, vaults of the familiar unprepared flat slabs. No basal molding was used. Medial and superior moldings were one-member and rectangular. As usual, a lack of cut stone accompanies an elaborate

stucco façade, in this case largely fallen. One building had but a single long, narrow room, colonnaded in front with very crudely rounded stone columns without pedestal but with a roughly squared capital, on which rested very crude stone lintels. The total door height was only 122 cm. Masonry in both buildings is much cruder than any observed elsewhere during the present season. It may reflect relative antiquity, or merely a lack of architectural skill at this small site. Not enough pottery was found to offer much clue to dating, although a few sherds were of pre-Mexican slate which could be assigned to either Puuc time or slightly before.

Another period of Yucatán history came under study in the course of a month's work at the ruins of Mayapán. Eight buildings were either largely or entirely cleared; and a number of minor excavations served to round out the picture thus obtained. The site and its surrounding wall were mapped by Patton in 1938 [Chapter 1.27].

A minor early occupation of the site is indicated by a number of re-used, finely cut stones in the buildings of the central group. No structures of this period remain, however, although it is possible that an unexcavated interior building immediately below the present superstructure of the Pyramid of Kukulcan (Structure 10) may belong to that horizon. These remains probably correspond to an underlying stratum of pottery (about 8 percent of the whole) found by Brainerd to be similar to that of the Mexican period at Chichén Itzá.

The vast majority of remains at the site consist of small unit shrines and colonnaded palace-type structures employing either thin-drummed round columns or anthropomorphic supports for flat beam and mortar roofs, as did a few atypical structures whose plans were almost certainly copied from Chichén Itzá prototypes. The resemblance of the large round tower at Mayapán to the Caracol at Chichén has often been mentioned. The latest superstructure of the great pyramid at Mayapán is identical in plan with the Chichén Castillo, although very differently constructed and with unvaulted roof. Two small round temples excavated had ground plans similar to that of the Casa Redonda at Chichén.

Except where a few stones were re-used from the earlier period mentioned, both walls and vaults at Mayapán were constructed of completely uncut, rough blocks, with no tendency toward veneer. No prepared outer face is recognizable on blocks in fallen debris, and the absence of cubical form made coursing next to impossible. Although no façades at Mayapán stand as high as the medial molding, it is evident from debris that the profile was normally that of a single two or some time three-member molding with restricted

upper zone, and the elaborate carved stone-mosaic so typical of earlier period façades was absent.

The major occupation of Mayapán may be clearly assigned to a period later than that which at Chichén Itzá is represented by the architectural efforts seen at the ballcourt, Castillo, Temple of the Warriors, and related structures. But certainty as to whether architectural effort had entirely ceased at Chichén during the Mayapán period must await the discovery of specific associations between certain late structures at Chichén (the Temple of the Initial Series, the Temple of the Interior Atlantean Columns, etc.) and deposits of pottery from one of the two periods. Although certain of the larger temples at Mayapán undoubtedly drew inspiration for their plan directly from Chichén, the constructional techniques of the six sites are uncompromisingly distinct. The earlier veneer traditions persisted at Chichén through the end of architectural activity. On the other hand, the relation between Mayapán and the cities of the east coast of Yucatán is unmistakably close. Structural techniques are almost identical, and parallels in external form are striking. Both groups emphasize the colonnaded palace with round columns and anthropomorphic roof supports; and the simple unit shrines which form a large part of the structures in the two groups follow closely in the same plans. The lack of carved stone façade decoration in the two areas parallels the restriction of the upper façade zone and simplification of the molding pattern. Other details such as walls surrounding the cities (Mayapán, Xelhá, Tulum) imply further connection. It will be seen in Brainerd's report that available ceramic evidence equally strongly indicates that the so-called "Mexican Period" remains at Chichén Itzá form a horizon earlier than that of Mayapán and the East Coast cities. The above considerations suggest that the conventional division of peninsular culture into a "Maya Period" and a "Period of Mexican Influence," by no means delineates the significant phases of its development. In the evolution of art, architecture, and ceramics, three quite different divisions seem clearly indicated by data now available:

1. The earliest architecture in Yucatán is characterized by walls of large, crudely faced blocks, vaults of flat, entirely unprepared, corbelled slabs, and a complete absence of carved stone façade decoration. Rough wall and vault faces were smoothed by a thick coat of stucco, which was also used in the execution of elaborate reliefs in the upper façade zones. This period of occupation is seen at Cobá in the east, and is strongly represented in the Mérida region. Pollock and Shook have described contemporaneous and very similar architecture at sites running from Maxcanú in the Puuc to Bacná in central-western Campeche. Brainerd characterizes associated ceramics by absence of evolved

slateware, and affinities with Tzakol and perhaps Tepeu 1 in the Petén. The lower limits of this occupation are at least as early as the end of Cycle 8.

2. Sometime in the second half of Cycle 9, a drastic change took place in north peninsular culture. From block-wall and slab-vault architecture, there was a sudden transition to rubble construction covered by only a thin veneer of finely cut stone. The simple external building form gives way to the complex but rigid patterns associated with the architecture of the Puuc region, where the new forms may have developed. The stucco façade was replaced by elaborate panels of carved stone mosaic. Along with this change in architecture came an equally striking development of slatewares in pottery; the earlier wares disappear, and ceramic resemblances to the Petén are confined to tenuous similarities to Tepeu. This new culture does not seem to have been of foreign introduction, for the new architectural and ceramic forms had their origins in the previous period. Early in Cycle 10, continental Mexican influences appear at Chichén Itzá, either coincidentally with or shortly after the abandonment of the Petén cities and those of the Puuc. During the so-called Mexican period at Chichén Itzá, these influences altered the superficial aspects of local culture, but notably failed to affect to any extent the fundamental architectural, sculptural, or ceramic techniques. Architectural innovations are seen in such features as replacement of the basal molding by a battered lower

zone, and the prominent use of serpent columns and stairway balustrades. But the basic construction of rubble buildings with a thin stone veneer remained unchanged until the abandonment of the site. New religious motifs in sculpture accompany no great change in style. Finally, although imported trade pieces make their appearance in connection with changes in shape and design in local pottery, slatewares maintain undisputed dominance.

3. The second great change in Yucatán culture took place about the middle of the fourteenth century, and was quite as radical as the first. Veneer was abandoned, to be replaced by the use of uncut, rough blocks in a masonry more similar to that of modern native houses than to any earlier archaeological remains. Vaults are made of crude masonry, but are no more frequently used than the flat beam and mortar roof. A new temple form, the unit shrine, becomes numerically dominant. The colonnaded palace, which first appeared late in Period 2, takes on new form. Columns become universally round rather than square, and anthropomorphic roof supports are common. In sculpture, forms appear which bear little resemblance to previous artistic efforts of the Maya. In pottery, the slatewares vanish, to be replaced by what Vaillant called "Red Lacquer Wares" and (perhaps later) crude figurine incensarios. The new architectural forms persisted for the century and a half or two centuries until the Spanish conquest.

37.0. CHACCHOB

Chacchob, located north of the Puuc hills and 15 km southeast of the modern town of Teabo, has been known as a walled site since 1845, when an article on the site entitled “Una ciudad murada” was published by Fr. Estanislao Carrillo in Registro Yucateco. The site is relatively small, enclosed by a masonry wall measuring some 1,400 m in circumference. Monumental architecture is confined to a single complex and a few small structures, none of which is very elaborate. The site was probably occupied for a very short period of time within the Cehpech Ceramic Complex, 800–1000 AD. The site was surrounded by a masonry wall and was probably founded as a fortified community rather than later fortified. The site was the object of a three-day survey in 1952 by Harry Pollock and Stromsvik, and was later mapped, together with two other walled sites, Cuca and Dzonot Aké by David Webster during the winter of 1976–77.

37.1.

H.E.D. POLLOCK AND
GUSTAV STRÖMSVIK
Chacchob, Yucatán

YB 51:259–263, 1952

The ruins of Chacchob are in the District of Tekax, some 13 km by road and 10 or 11 km airline southeast of the town of Teabo. The site was first brought to the attention of the public over 100 years ago in an anonymous article that appeared in a Mérida periodical of the time. The part of the account that particularly has caught the attention of archaeologists is the statement that the ruins are surrounded by the remains of an ancient wall. Walled sites in the lowland Maya area are rare, and their occurrence is important because of certain implications as to the social structure and the general character of the civilization of the builders.

Although the information provided by the anonymous antiquarian of a century ago has from time to time been made use of by modern authors, the truth of his assertions, so far as is known to the present writers, had never been confirmed by competent archaeological opinion. The work of Carnegie Institution at Mayapán, the largest and most important walled city known in Yucatán, made it of peculiar importance not only to verify the existence of a possibly similar, nearby

site, but to know something of the character of the remains.

In May 1951, Eugenio May, a Yucatecan employee who has worked for many years with the Department, was commissioned to visit Chacchob and to report his observations, particularly with reference to any indications of a wall surrounding the ruins. May spent two days at the site, and his report left little doubt but that the ancient settlement had in fact been walled. It was consequently planned that further reconnaissance should take place during the 1952 field season.

Pollock and Strömsvik, traveling by truck, left the Institution's base camp at Telchaquillo February 27. The road, the old highway to Tekit, ran southeast through the ruins of Mayapán. Just short of Km 12, and approximately 10 km from the center of Mayapán, the site of Chumul was noted at the left of the road. This moderate-sized group of ruins, which was visited on our return journey, rests on a hill. The principal pyramid is clearly seen from Mayapán, and because of its natural elevation gives the impression at that distance of being a much larger structure than it is. This pyramid is flanked by lesser pyramidal structures, one on each side, and several mounds of indeterminate character complete the group. Although all buildings are fallen, the character of the masonry and the stone cutting, the architectural decoration, and certain monoliths mark the ruins as of the Puuc Period. Features observed include finely cut lintels and full-width jamb stones, colonnette façade elements, tapered columnar (*picote*) altars, and a rectangular altar.

Passing through Tekit (Km 21), a sizable town, our road continued south-southeast toward Chumayel and Teabo. At Km 25 we reached Hacienda Ukúm, where there are ruins and where May in the previous year had discovered a sculptured stone built into the floor of the abandoned machine house of the hacienda. This stone, which was photographed on our return trip, appears to have been a door jamb. It carries a rather typical Maya figure, erect and with plumed headdress, facing a vertical row of glyph blocks and standing above two horizontal rows of glyph blocks. The 13 or 14 hieroglyphs represented have not been deciphered. The sculpture and the character of the jamb stone suggest this to be a work of the Puuc Period, an impression strengthened by the presence of certain architectural elements (spools) typical of that period. A superficial view of the nearby ruins, disclosed them to be no more than mounds of stone, but better preserved structures may lie hidden in the forest.

Chumayel was passed at Km 34, and Teabo, a town of about the same size as Tekit, at Km 38. Teabo clearly was once an aboriginal settlement. A huge mound of rock, a large city block in area, from which much of the present town probably was built, gives ample testi-

mony to the size of the structure that has withstood four centuries of quarrying and still remains a massive bulk of stone. Across the street from this great pile are the ruins of a large and once beautiful convent of the colonial period.

Leaving Teabo, we continued southeast on the road that eventually reaches the village of Xaya. At Km 48 we reached Hacienda San Diego Max, once a henequen plantation, now turned over to cattle raising. The hacienda is the property of Jose Dolores Salas of Teabo, who most kindly offered us the use of his buildings, apologizing for their roofless condition. Here we made camp, our information being that this was as far as the truck could go. It was later discovered that with a small amount of clearing the road was passable as far as Chacchob. Our entire journey from Telchaquillo to San Diego Max consumed approximately 4 hours and 30 minutes (running time), of which 1 hour and 40 minutes were devoted to the 10 km from Teabo to San Diego Max. It was subsequently determined that the additional 3 km to the ruins was a trip of 20 minutes by truck.

Chacchob, now the site of a small cattle ranch, lies east-southeast of San Diego Max, on the road to Xaya. The ranch and the ruins are reported to be on the lands of the latter village. Previously this terrain was a part of Hacienda San Diego Max, and the corral walls, which include many stones, from the ruins, and the masonry curb of the well are unquestionably products of the period of hacienda ownership. This well is worthy of note. At first sight it appears to be of artificial construction, typical of the innumerable wells dug during the colonial period and in later times. On closer examination, however, it is apparent that only the curb and a small depth of fill below are man-made. The well proper is a natural bottle-shaped opening reaching down to water, in other words, a cenote. Deep rope cuts in the rim of natural rock below the artificial fill indicate centuries of use and almost surely date from the period of the ruins. This was the only source of water observed by us, or reported by the natives, within the area of the ruins. We did, however, hear of other natural water sources not far distant.

The ruins of Chacchob, which are surrounded by a wall, occupy a relatively small area covered for the most part by low, scrubby brush. Our explorations were confined rather closely to the territory within the wall, but there is no reason to believe that structures of any size lie beyond that limit, although house mounds may extend an indeterminate distance in any direction. The area outlined by the wall is a rough oval, some 500 m on the long axis, which runs east-southeast and west-northwest, and approximately 350 m on the shorter dimension. Passages through the wall were noted at the northeast, southeast, and southwest, with refer-

ence to the center of the oval, and what probably had been a passage was observed at the northwest

The ranch and well lie almost at the center of the ruins. Immediately to the north of center are two pyramidal structures, and a similar structure is just to the south. These range in height from possibly 6 m to 10 m, the highest being the northernmost. Farther south is a large, low rectangular platform, some 50 by 60 m, with a fallen, once vaulted building on the western edge. It is this building and the pyramid south of the ranch that have furnished much of the stone for the corrals and other post-conquest construction. In the eastern part of the site, approximately on the long axis, is the largest structure in the ruins, the so-called Castillo. An irregularly shaped platform that supported the remnants of once vaulted structures as well as house platforms occurs in the western part of the area. Remains of house platforms are scattered throughout the site, their number and concentration not being known.

Five days were devoted to exploration and study of the ruins. During that period data for a sketch map were gathered, architectural details were recorded, and a small amount of pottery was collected. No sculpture of consequence was noted.

The wall surrounding the site was a matter of primary interest. It differs from the wall of Mayapán in that it follows a course clearly selected to utilize, wherever possible, natural elevations of the terrain. This is strikingly apparent in the southeastern, southern, and western sections, where the wall follows natural ridges several meters in height for a distance that comprises something like two-thirds of the circumference. On the other hand, the Chacchob wall is very similar to that of Mayapán in design and construction. It consists of an inner bench and a higher, outer parapet, the whole built of rather large, roughly shaped stones. The parapet is for the most part formed of large stones set on edge, and generally does not rise more than 30 or 40 cm above the bench. Remains of a plaster floor on top of the bench at one point clearly indicate how that part was finished, and it is entirely possible, that all surfaces once were plastered.

The total thickness, of the wall would seem to average about 4 m. It is difficult to give any estimate of the present maximum height because of the confusion, without excavation, between what is natural and what is artificial. It would seem reasonable, however, to guess that the parapet attains at places a height of at least 2 m above ground. Maximum total height, including natural elevation, must be at least 6 m, probably more. Gates are simple cuts through the wall, the best preserved, those at the southeast and southwest, being about 2 m wide. Steps are visible leading up to these gates, this being made necessary by the natural rise.

The only structure sufficiently well preserved to offer any appreciable amount of architectural detail is the Castillo. This large complex of terraces and adjoining courts covers an area approximately 60 by 100 m. The principal and dominating building is a pyramid which rises in two great terraces to a height of 13–16 m above ground level, the difference in elevation being due to the natural slope of the terrain. No trace remains of the temple building that once must have crowned the pyramid. The structure faces west, as is shown by the stairway that rises from a courtyard at the foot of the pyramid. This courtyard is formed by ranges of vaulted rooms, some of which are still standing, that extend west from the northwest and southwest corners of the lower terrace of the pyramid. To the south of the pyramid and of the courtyard are other courts and terraces, some of which supported vaulted buildings now fallen.

There is good reason to believe that this large architectural complex grew by accretion. Construction may thus have extended over considerable time, and more than one cultural period may be represented. The fact nevertheless remains that all architectural details well enough preserved to form reliable criteria point to the Puuc Period. The vaulted rooms at the western foot of the pyramid are unquestionably of Puuc-style, and there are indications that the pyramid was built contemporaneously with these rooms, although this is by no means certain.

Nowhere else at the site was there noted standing masonry that would indicate the period of construction. There were, however, many examples of loose building stones which, by reason of design and style of workmanship could be associated with the Puuc Period. Only the wall around the site, because of its similarity to the wall of Mayapán, and a somewhat aberrant group of house platforms suggested any other period of occupation.

A number of structures that appeared to be the remains of dwellings were observed. These occurred both on platforms that supported the debris of vaulted buildings and on platforms with dwelling-type remains only. The characteristic plan is that of a rectangular room, or a series of two or three rectangular rooms, outlined by low stone walls, one or two courses high. Door-ways to rooms were frequently marked by jambs of larger stones. These low walls presumably were the foundations for houses of perishable materials. There also were instances of simple platforms which showed no surviving traces of houses but which might well have supported perishable construction. These house platforms occurred singly on a larger platform or terrace, or in groups of two or three that formed a small courtyard.

At no place was there noted the typical Mayapán type of dwelling with benches, nor was there noted an instance of a rear room [Chapter 1.40]. A group of houses with low walls that employed much cruder, stone work than all others seen suggested a different period of construction, but there was nothing to suggest a similarity to Mayapán. On the whole, the dwellings we observed approximate more closely the low walled remains, presumably domiciliary, that are found in the Puuc area.

During our last day at Chacchob time was available to dig one trench in search of pottery. This was located near a house platform. Soil was found to a depth of 40–50 cm before bedrock was encountered. Two arbitrary levels were maintained, each about 20 cm in depth. Only 165 fragments of pottery were recovered. R. E. Smith examined this material after our return to Telchaquillo. Thirty-six of the sherds were too eroded or too fragmentary to be identified; the remainder were typical of the Puuc Period. Nothing was noted that might be considered intrusive in Yucatán, nor was there a single sherd that might be suspected of belonging to the Mayapán Period. There were no significant differences in the pottery from the two levels in the trench.

We returned to Telchaquillo on March 4, having devoted five days to our reconnaissance of the ruins. The results of our work may quickly be summarized.

Chacchob is a small site surrounded by a wall. In many respects the wall is similar to that which encircles the ruins of Mayapán. On the other hand, the architecture of Chacchob, or such of it as was observed, both formal and domestic, seems to be of the Puuc Period. This time of occupation is further attested by the small sample of pottery recovered. As walled sites of the Maya lowlands are commonly considered to be of a period later than that of the Puuc, and roughly contemporaneous with the major occupation of Mayapán, these findings were unexpected. Interpretation of these observations, however, should proceed with caution. Our evidence is fragmentary, and there certainly remains the possibility that Chacchob underwent a late period of occupation, traces of which were not seen or not recognized by us. The wall around the site may represent that period, but in such case there should be other, contemporaneous remains. Before any conclusions are reached, it would be well to have a better knowledge of the house platforms and a much larger sample of the pottery.

38.0. CHICHÉN ITZÁ

Chichén Itzá is a largest Maya site in northern Yucatán with numerous buildings in various states of preservation. There is no above-ground water in the Yucatán peninsula, and the three natural sink holes (cenotes) providing plentiful water year round, made Chichén Itzá a natural spot for a settlement to develop. Two of these cenotes are still in existence, the most famous being the Cenote of Sacrifice (Cenote Sagrada), which was probably dedicated to the Maya rain god Chac. Offerings of jade, pottery, and incense have been recovered from the cenote, long a place of pilgrimage. Although Chichén Itzá was a major center by 600 AD, the city experienced its greatest growth and power after the collapse of the sites in the central lowlands to the south. Some of the notable Classic period structures at Chichén Itzá include a fine complex of buildings in the Puuc architectural style, known as Las Monjas (The Nunnery). To the east is La Iglesia, a small temple decorated with elaborate masks of the rain deity. To the north is the Caracol, a round building on a large square platform. This was an observatory with its doors aligned to view the vernal equinox. Apparently about 987 AD a Toltec king named Quetzalcoatl, arrived here

with an army from central Mexico, and made Chichén Itzá his capital, and a second Tula. The art and architecture from this period shows a blending of Maya and Toltec styles. The Temple of the Warriors at Chichén Itzá seems to have been built as a copy of Temple B at the Toltec capital of Tula. This is a stone building (originally with a wood and plaster roof) atop a stepped pyramid, with the columns in the interior carved with the likenesses of warriors. At the top of the stairway leading to the entrance of the temple is a type of altar-statue (chac mool). Dominating the center of Chichén Itzá is the Temple of Kukulcán, also referred to as El Castillo. This stepped pyramid with a ground plan of square terraces with stairways up each of the four sides to the temple on top. Great sculptures of Plumed Serpents run down the sides of the northern staircase, and are set off by shadows from the corner tiers on the spring and fall equinox. Seven ballcourts have been found at Chichén Itzá, one northwest of the Castillo is the largest ballcourt in ancient Mesoamerica. It measures 166 m by 68 m. The interior sides of the ballcourt are lined with sculpted panels depicting ball players. Built into one of the exterior walls of the ballcourt is the Temple of

the Jaguar, which features a jaguar throne. Chichén Itzá also has a variety of other structures densely packed in the ceremonial center of about 5 sq km and several peripheral sites. The Maya chronicles record that in 1221 a revolt and civil war broke out, and archeological evidence confirms that the wooden roofs of the great market and the Temple of the Warriors were burned at about this date. Chichén Itzá went into decline as rulership over Yucatán shifted to Mayapán. While the site was never completely abandoned, the population diminished and no major new constructions were built. The Sacred Cenote, however, remained a place of pilgrimage. In 1531 Francisco de Montejo claimed Chichén Itzá and intended to make it the capital of Spanish Yucatán. After a few months an indigenous insurrection drove off Montejo and his forces.

Modern investigations at Chichén Itzá began in 1838 which Benjamin Norman, followed by John Lloyd Stephens, published accounts of their visits to the ruins of Chichén Itzá. About 1890 the United States Consul to Yucatán, Edward H. Thompson bought Chichén Itzá and spent some 30 years exploring the ruins and dredging artifacts from the Sacred Cenote. In 1924 the CIW began a 20 year excavation and restoration project, which included restoring many of the buildings at the site. In 1961 the Sacred Cenote was again dredged, but more thoroughly by Mexico's Instituto Nacional de Antropología e Historia (INAH). In the 1980s INAH excavated and restored some additional buildings. Chichén Itzá is today a World Heritage Site and a very popular tourist destination. It is the most visited of the major Maya archaeological sites.

38.1.

EARL H. MORRIS

Report on the Excavations at Chichén Itzá, Mexico

YB 23:211–213, 1924

On May 27, after one week's preliminary work, consisting of cutting new growth and burning the vast mass of timber felled in 1923, excavations were begun in the Court of the Thousand Columns at Chichén Itzá. The first point attacked was the natural entrance to the Column Group walking westward from the Castillo, a passageway through the building which flanks the western side of its main plaza. The building, which it transects faced the west and consisted of a thick back wall, paralleled by four rows of rounded

columns, the fallen drums of which were scattered over the area excavated. The passage itself was about 6 feet [1.8 m] wide. It had been roofed with a typical Maya vault where it passed through the back wall, but had not been covered thence eastward.

Leading through the terrace, which supported the building along the north side of the main plaza, was a partially choked tunnel, only the extreme ends of which had fallen. This was the next feature excavated. It proved to be 66 feet [20.1 m] long, 4 feet 9 inches [1.5 m] wide at the bottom and 6 feet 5 inches [1.9 m] from floor to capstone. The exposed faces of the terminal stones of the arch, both at the north and the south ends of the tunnel, had been elaborately sculptured motifs being jaguars and macaws.

The principal excavations of the season were centered upon the extreme northeast corner of the Column Group. The structure cleared there. Has been designated the Northeast Colonnades. It is an edifice 100 feet [30.5 m] in length by 49 feet [14.9 m] in width, facing south. The east, north, west, and the ends of the south boundaries were solid walls, but the remainder of the support of the super structure was a series of columns, rectangular in cross-section. These are distributed in five rows from east to west, the northern four being 10 columns in length; the south, which is in reality the interrupted south wall, having only 8. These 48 columns vary little from 2 feet 4 inches [71 cm] from north to south and 2 feet [60.9 cm] in opposite direction, and are separated by an average distance of 7 feet 2 inches [2.2 m]. Their original height was practically 8 feet [2.4 m] above floor-level.

The columns being rectangular, there was no necessity for capitals. Only the fifth and sixth columns of the two back tiers were sculptured. Graven into each face is the figure of a warrior in full regalia. Inclosing the two sculptured columns of the northernmost tier is an altar or throne extending thence to the rear wall of the building; it is 13 feet 3 inches [4 m] east and west, 7 feet 3 inches [2.2 m] north and south, by 3 feet [91.4 cm] high. The walls consist of a battered lower zone surmounted by a vertical cornice. Both of these elements were elaborately sculptured, the former with figures of warriors, the latter with intertwined serpents, from the mouths of which issue other warriors.

Bordering the east, north, and west walls is a broad bench, upon the rear edge of which is a row of stone slabs, their tops leaning against the walls, thus providing a sloping surface with an angle which would have afforded a convenient back rest for any one reclining upon the bench.

The arches of the building run parallel to the longer dimension, that is, east and west. These had rested upon pairs of hewn timbers which spanned the space from wall to column, or from column to column as the

case might be. At the western end, where preservation was best, the proportions of the beams and every detail of arch construction were recovered. It was possible to ascertain that 106 beams had been used in the roof construction.

The hard, polished lime floor and the entire interior of the building had been painted, a rich deep red being the dominant tone. The bounding walls had been embellished with designs, composed, in the one place where the elements could be distinguished, of serpents and feathers done in yellow, blue, green, and red.

There was ample evidence of secondary construction. A rectangular room had been cut out of the northeast corner of the great hall by walling-in the spaces between columns, and extending from the altar westward, all intervals between the columns of the second tier from the north had been filled with dry-laid walls, probably for the purpose of holding up timbers which had begun to fall. Reused sculptured stones were plentiful in the secondary masonry, many in the northeast room evidently having come from the front façade, and several in the dry-laid wall having been torn out of the face of the altar.

The north side of the building, which rests upon a high embankment heaped up upon the sloping margin of a dead cenote, had begun to fall previous to abandonment. In an effort to strengthen the first column in the back row westward of the altar, a wedge of masonry had been built between the column and the rear wall. Forming the bulk of this were five Atlantean figures, and a sixth was found in one of the intercolumnar secondary walls.

The principal units of the façade, were a battered basal zone, a vertical medial one, and a sculptured upper zone. At the west end of the south wall, owing to the fact that this part had been buried by the hearting of a stairway built subsequently against it to give access to a higher temple to the westward, the entire sculptured zone, though riven by settling and the roots of trees, was in place, thus revealing the nature and arrangement of some of the motifs. The lower cornice was composed of three members, of which the central band consisted of intertwined serpents with disks between the coils. At the western terminus the grotesque head of one of the serpents stood out in high relief, and beside it was a block, graven to represent the rattles of the tail of the serpent which extended in the opposite direction. Filling the vertical expanse above the serpent's head were two grotesque masks, one above the other. Surmounting these was an upper cornice, a repetition of the lower zone, except that the stones of its upper member were elongated, their tips forming the edge of the roof. Eastward from the mask panel, and separated from it by a plain band, was a vertical panel consisting of three disks or shields in relief.

Masks and shield panels, alternating with grotesque human figures, continued thence to the southeast corner of the building where the arrangement was the same as previously described at the western end, except that the line bisecting the 90 degree angle formed by the corner would have been the medial line both of serpent's heads and masks. The western end of this façade was taken down and reset in cement, and the lower cornice replaced from fallen elements at the eastern end. The series of terraces leading from the north side of the structure down to the floor of the adjacent dead cenote will be cleared of débris and repaired next year.

The western terminus of the Northeast Colonnade abuts a much higher mound, on the south end of which there had been a small one-roomed structure of which only the basal courses remained. The platform on which it stood was composed of rough stones, filling and heaped up against and around an earlier edifice extending at right angles to the Northeast Colonnade. Whether it was pre-existent or contemporaneous has not as yet been determined. The southern end of this partly buried temple was excavated. Being the portion which was not filled up to form a base for the elevated one-roomed temple, and, therefore available for subsequent use, it had been remodeled to form an individual structure, facing east, of essentially the same form as the Northeast Colonnade. The columns here are round, but surmounted by rectangular capitals. There are two doorways and one row of columns between them and the rear wall. A wide bench flanks the south and west walls. Extending forward from this to, and somewhat beyond the central pair of columns, is a platform analogous to the one in the Northeast Colonnade. Throughout the building is of relatively poor construction. Extending into the mound at the northern limit of excavations, a portion of the sculptured façade is in place, revealing a large disk or shield as one of its elements.

The two buildings cleared seem to confirm the type of the most prevalent form of column-supported structure at Chichén Itzá, the features of which are a rectangular ground-plan with arches paralleling the longer dimension, a bench contiguous to the end and back walls, and an altar or throne at the center in the rear.

As might be expected in this class of excavation, the minor objects recovered were few; a fair quantity of potsherds, two nearly complete vessels, a few shell beads, a jade celt, and several flaked blades of obsidian.

With the completion of the replacement of the façade at the southwest corner of the Northeast Colonnade, the field work for 1924 was brought to a close on July 12.

38.2.

J. O. KILMARTIN

*Report on the Survey and Base-Map at
Chichén Itzá, Mexico*

YB 23:213–217, 1924

In accordance with arrangements made by the Carnegie Institution of Washington and the United States Geological Survey, I proceeded from Washington on November 21 and sailed from New York on November 24 to Yucatán, Mexico, to undertake surveys of various natures for the Carnegie Institution at the ruins of Chichén Itzá, arriving at the port of Progreso on November 30 and at Mérida a few hours later.

After presenting my credentials and letters of introduction to the governor of Yucatán, the late Don Felipe Carrillo, and to Don Felipe Cantón, president of the Archaeological Society of Yucatán, both of whom assisted greatly in facilitating my arrangements for supplies and transportation to Chichén Itzá, I proceeded to that place on December 5 and began immediately to take up with Mr. E. H. Thompson, the owner of the hacienda of Chichén, the proper location of the 100 acre [0.41 square kilometer] tract provided for in the lease arranged by Dr. S. G. Morley several months earlier.

This having been completed, the next work undertaken, according to instructions, was the collection of building stone, palm leaves for thatching, and poles for the new house to be built in front of the Casa Principal as well as for the laborers' houses to be built to the south of the Park Chichén, and also a preliminary survey and study of the Group of the Thousand Columns.

A scale of 50 feet [15.2 m] to one inch was selected for the map of the Columns, and this work was completed the latter part of January.

The principal work at Chichén Itzá during the 1924 field season was the topographic map of the site, which covers nearly a square-mile [2.6 sq km].

After several days of close inspection of the ruins in the Federal Archaeological Zone, as well as those surrounding the Castillo for perhaps three quarters of a mile [1.2 km] on each side, an area was selected with the Castillo as the center; the border lines to extend as far there from as was deemed necessary.

It was found from the survey of the Group of the Thousand Columns, which was made on a scale of 50 feet [15.2 m] to an inch, that a scale would have to be adopted that would show clearly a distance of from 4 to 8 feet [1.2–2.4 m], 4 feet [1.2 m] being the average width of walls of buildings and 8 feet [2.4 m] being the average distance of columns from center to center.

Measurements taken on approximately 500 columns showed that they averaged 1.91 feet [58 cm] in diameter, while measurements on about 100 capitals gave an average of 1.70 [52 cm] by 2.12 [64 cm], and it was also found by a like number of measurements of distances between columns that they were not equally spaced, ranging anywhere from 7.7 to 9.9 feet [2.4–3 m] in distance apart (center to center). According to the above figures, a scale of 1:2,400 or 200 feet [61 m] to 1 inch was selected. This later proved to be very satisfactory, for sufficient detail could be shown on each building so that it could be readily identified.

The next question of importance was the selection of a suitable contour interval. After taking several measurements of slopes and depressions and plotting these to scale, it was found that a contour interval of 5 feet [1.5 m] would depict the country with sufficient accuracy for all purposes.

The above details having been decided, a point on the lowest step inside of the south balustrade of the west stairway of the Castillo (the best preserved of all) was selected as the starting point, and this was later tied into a position established on the platform of the Castillo by the Geodetic Commission of Mexico, in a scheme of triangulation extended over the peninsula in 1918. This position is 5 feet [1.5 m] north of the west column in the entrance to the outer chamber of the Castillo, and is in latitude 20 degrees 41' 01.324" north and longitude 88 degrees 34' 09.444" west, and all projection lines are based upon it.

Positions of the points marking the corners of the Federal Archaeological Zone were obtained from the Comisión Fomento and were plotted on the map to be used as control. These positions did not agree with plane-table positions in each instance, so an adjustment was made to take care of these errors.

The first line of traverse extended from the selected position on the lowest step of the west stairway of the Castillo, which was also used as the datum plane to which all contours and elevations are referred, along the roadway to the Hacienda Chichén, thence turning west and north following the trail past the Monjas and back to the point of beginning. The closure error on this line was very satisfactory and did not require adjustments. Distances were read to the nearest foot [31 cm] and elevations to the nearest tenth with a Gurley alidade and stadia rod graduated to hundredths of a foot.

With the completion of this circuit, a point in front of the Caracol and on the trail was used as a starting point and a line carried west to the border of the map, approximately 2,400 feet [732 m], and at intervals of 200 feet [61 m] lines were cut north and south to the north and south borders. This method was repeated over the entire area which was gridironed into 200

foot [61 m] squares. Plane-table stations were established at alternate intersections, and elevations were established midway of all lines and at angles to the center of squares enclosed by lines from this and other stations. It will be seen by the foregoing that every 1,600 square feet [148.6 square m] was controlled by 13 elevations. To get these elevations it was necessary to cut lines that totaled approximately 40 miles [64.4 km] in length through the brush, which at times was so dense that it was possible to cut only half a mile [0.8 km] a day with the aid of eight men.

During the course of the survey it was found necessary to extend the borders of the map in each direction on account of new ruins discovered, which conflicted with the border line as selected with the Castillo as a base. This procedure, however, had to be abandoned when it was found that the borders could be extended indefinitely in each direction and still take in a ruin of some kind. The numerous ruins found during the survey were, to no little extent, covered with a heavy accumulation of debris and vegetation which rendered it very difficult to trace out their lines of construction.

In many instances the Maya seem to have selected a hillside and built to the level of the top, rather than construct an entirely artificial terrace. This was very confusing, for it made the tracing and location of contour lines difficult and indefinite.

The first carved stone found was that of a figure, presumably of a deity, in a sitting position, in the bottom of the dry cenote just to the west of the Monjas. This figure was almost completely buried in the sediment of the cenote and was either carved *in situ* or close by, or else it had tumbled from the ruin just above to the west.

The next stone was of the Chacmool type and was found just south of this cenote and west of a very much destroyed ruin about 200 feet away.

The third stone found was the head of a snake in the process of being carved out, in a small artificial depression or quarry about 800 feet to the west of the south end of the Ball Court. This sculpture is of importance because it shows clearly the process of carving stone in the immediate vicinity where found. Judging from its location it would appear that the Maya obtained the major portion of their stone from ledges which had been broken up by natural processes, that is, by the breakage of the roofs of subterranean chambers and the exposure of a mass of dissected rock which was later fashioned into various shapes for building purposes.

The next stones of importance were two which had been carved into snake tails and shaped in a right-angular form; these were found about 400 feet east of the slight angle in the road before entering the gates of

the *planta* at the schoolhouse. The location of these stones would suggest that a building was in the process of construction somewhere, but there was no evidence of construction lines on this terrace.

Close by these stones, and a few hundred feet to the north, is found a tiger carved in deep relief on a rock ledge. There is no evidence of further cutting with the intention of removing this stone elsewhere.

The next, which conclude the list of important stones found, were those just east of the Federal Monument on the trail that leads to the Cenote of Sacrifices, on the Great Terrace. These stones are of a very heavy relief and show extensive use of feather decorations. There is no building close by that might suggest their provenance.

The most important group of ruins found outside of the Archaeological Zone is that which has been designated the Northwest Group located north and west of the Great Ball Court. This group is remarkable for its deep and well-preserved carvings.

In the center of this group was found a small mound about 4 feet [1.2 m] high, which resembles closely the tombs found directly in front of the Osario. With Mr. E. H. Morris, I trenched into the center of this mound to a depth of about 5 feet [1.5 m] and discovered that it was not a tomb but presumably a sacrificial altar. The numerous mounds, temples, terraces, altars, and various other structures at this group are so extensive that they can not be described here, but will have to be covered in subsequent reports.

Measurements of the Great Terrace show that it contains an area of 47 acres [0.2 sq km] and had been built up in some places to a height of 25 feet [7.6 m]. On this terrace are located the major buildings, the Castillo, the Great Ball Court, and the Group of the Thousand Columns; and the lesser buildings, the House of the Eagles, the Tomb of the Chacmool, and a nameless structure.

Foremost among the interesting facts discovered in this group of buildings may be said to be the acoustic properties of the Great Ball Court. Tests made with the human voice, as well as with a small phonograph located in the North Temple, showed that the voice carried remarkably clear to the South Temple, 500 feet away, when a person was talking in a natural tone.

In a slight break in the south wall of the principal pyramid of the Group of the Thousand Columns, were revealed mural paintings of a dark red and yellow. This building is completely covered with debris and vegetation, and excavations here might reveal paintings and sculptures remarkably well preserved.

Numerous paved roads were traced leading away from the Great Terrace and in each case they appear to have been covered with plaster and flanked on both sides by low walls perhaps 2 feet [61 cm] wide.

Upon the completion of field work and after pointing out to Dr. Morley numerous features observed at Chichén Itzá and going over the area mapped, I left Yucatán on June 10, arriving in Washington on June 17. After a short leave of absence I returned to Washington to complete office work on the maps which were turned over to the Institution on July 24 ready for engraving.

Thanks are due to the many persons who assisted in various ways in all this work, and especially to Mr. W. M. James, of Mérida, and Mr. O. Gaylord Marsh, American Consul at Progreso, who so kindly extended their services whenever needed. Thanks should also be expressed to the United States Geological Survey for its cooperation in this work and the numerous facilities, which it has extended.

38.3.

EARL H. MORRIS

*Report on the Temple of the Warriors
(Station 4)*

YB 24:252–259, 1925

The pyramid temple upon which excavations were centered during the season of 1925 is situated contiguous to and northward of the northwest corner of the Court of the Columns. This structure, which had not been cleared of forest since Maudslay's visit in 1889, had remained the largest edifice in the city untouched by the hand of modern man. When the undergrowth had been removed, it was seen that the pyramid and the temple surmounting it had been reduced by time and the elements to a square-cornered hill, 50 feet [15.2 m] in height, differing in appearance from a natural one chiefly because of the profusion of faced and sculptured stone strewn down its slopes.

In common with the other structures composing the Group of the Thousand Columns this pyramid rests upon the vast artificial terrace upon which the Castillo, the Ball Court, and in fact most of the Toltec-Maya portion of the city was built. The talus of debris, fallen from the temple above, rose from this major terrace level across the entire eastern side of the pyramid and along the eastern end of the north side as well. Toward the western end of the northern exposure the debris encroached upon detritus from the Temple of the Tables, filling the passage between the pyramid and the substructure of the latter to a depth of as much

as 8 feet [2.4 m]. Along the south side of the pyramid there is a V-shaped gully, draining to the east, through which one may ascend from the major terrace to the surface of the mound covering the western end of the north range of the Group of the Thousand Columns, which passes in front, that is, west, of the pyramid. This latter is a long and relatively low mound formed by the collapse of a rectangular building with its longer axis running north and south, and which faced west. A wide rib of hearting with a more gradual slope than the debris on either side of it, its base buried beneath a mass of fallen step elements, indicated that the stairway to the temple above, ascending the western face of the pyramid, had risen through this long low structure.

Before excavation the summit of the pyramid was a series of hummocks and depressions with here and there a rectangular block of stone, apparently *in situ*, protruding from the surface, the arrangement of these indicating that the rows of columns had run from north to south. Among the detached, elements, arch stones and fragments of roof ornaments were conspicuous. On the proportionately broad western terrace, the two large tail pieces of the serpent columns at the entrance, as well as rectangular elements of the once vertical bodies, lay as they had fallen from the façade, while a battered Chac Mool figure lay midway between them. Except the latter, which had been partly turned around in an attempt to remove it to Mérida, these stones lay as shown in Maudslay's illustration of Mound 18 (Maudslay 1889–1902:3: Plate 63).

The work of excavation was begun late in February, and continued until the closing days of June. The crew of workmen varied in number from 15 to 50, and in addition, during the latter part of the season, seven masons and their assistants were placed upon the repair work, and these together with burners of lime and diggers of white earth to mix therewith augmented the force to a maximum of 85.

The Temple of the Warriors, as the structure on the summit of this pyramid has been styled, was completely excavated by the end of June. All of the debris on the northern and southern sides of the pyramid had been removed, and a bulk equivalent to the mass which had been cleared out of the temple and dumped down the eastern slope had been carted away. In addition a drift, the width of the stairway, had been out through the low building at the western foot of the pyramid, and a passage had been made between the northern end of the structure thus transected and the southwest, corner of the substructure of the Temple of the Tables.

With one exception all fallen columns in the area excavated, were set-up again. The repair of those portions of the temple-walls which could be replaced in

their original positions with absolute certainty was approximately, half completed, and about one-fourth of the facing of the pyramid had been reset before the beginning of the rainy season put an end to the work.

Although its symmetry is marred by the addition of the structure lying west of it, for purposes of description the pyramid crowned by the Temple of the Warriors may be considered as a block of masonry 133 feet [40.5 m] square, and between 36 and 37 feet [11–11.3 m] in height. The basal element is a platform, varying from a few inches up to a foot and a half [46 cm] in height, evidently erected for the purpose of providing a foundation more nearly level than irregular surface of the major terrace. The battered face of this foundation, which has been found *in situ* along the north, east, and one-half of the south sides of the pyramid, is composed sometimes of one and sometime of two courses of stone. The narrow terrace, or walk, bordering the true foot of the pyramid averages slightly more than 3 feet [91 cm] in width. From this level upward, the face of the pyramid was symmetrically divided into four multiple zones or platforms, a general description of one of which will, with slight variations dimensions, suffice for them all.

The lowest element is a battered wall 5 feet 6 inches [1.7 m] in height rising with a gradient of 65 degrees to 75 degrees from the horizontal. The corner stones are excellently hewn slender blocks tapering from base to tip. The stretch of wall between them consists of four courses of smoothly faced blocks, varying in height, and very closely joined.

Surmounting this battered wall is a vertical 6 inch [15 cm] cornice, composed of a single course projecting from 6 to 7.5 inches [15–19 cm]. Set back 2 inches [5 mm] from the upper margin of this is a two course vertical band 2 feet 3 inches [68 cm] in height, elaborately sculptured. The terminal blocks of this band, composed of single stones, are recessed, their corners being flush with the cornices above and below them, and their recessed portions flush with the carved band. Above the latter is a second 6 inch [15 cm] cornice like the one beneath, projecting the same distance. From the brink of the upper cornice to the foot of the multiple zone there is a very slightly sloping terrace, 3 feet 2 inches [96 cm] in width.

Decorative elements appearing in the sculptured bands are pairs of semi-reclining male human figures, feet to feet, elaborately clad, each bearing a long plumed staff, these pairs being separated by two squatting creatures sitting either face to face or back to back. The jaguar and the eagle are plainly identifiable in these non-human pairs, but the identity of the third figure; a chunky, thick-haired, stubby-tailed quadruped has not yet been determined. Usually a speech-scroll issues from the mouth of the man, beast, or bird as the case

may be, and various other scrolls appear around the figures.

Portions of all elements of the face of the pyramid were found *in situ* up to, and including, the lower cornice of the fourth multiple zone. Inasmuch as the distance thence to the top of the pyramid is just sufficient to allow for a finishing vertical band and its overlying cornice, it may be justifiably inferred that the arrangement of the fourth multiple zone was essentially the same as that of the lower three. However, it is still an open question whether its vertical band was sculptured or not. At present it would rather appear that it had been plain.

From the brink of the fourth multiple zone, the summit of the pyramid extends back, with a gradient sufficient to provide good drainage, to the foot of the temple. The original widths of the three platforms on the north, south, and east sides have not been calculated as yet, but the western platform, that is, the one in front of the temple, is 25 feet 10 inches [7.9 m] wide.

The hearting of the pyramid is of masonry throughout. This great mass was raised a course at a time. Over the previous course a layer of stone was spread, the interstices were filled with smaller stones, and then lime mortar was laid over the area, troweled smooth, and allowed to set before the next layer was put down. Thus the individual courses rest upon a smooth surface, but are not bedded in mortar.

Much of the building material was reused from older structures. Practically every type of structural element has been found built into the core of the pyramid, such as faced blocks from vertical walls, cornice blocks, arch stones, and sculptured elements, both in relief and in full round.

An indeterminate number of earlier structures once occupied at least portions of the area of the pyramid. Two have been identified, one at the southwest corner, the other at the northwest corner. The roof edge of the former was found at the level of the terrace surmounting the second multiple zone. A pit sunk to a depth of 15 feet 6 inches [4.7 m] in the southwestern corner at this point revealed a complete façade of a Toltec Maya building, viz., battered basal zone, battered cornice, vertical zone, vertical cornice, vertical zone, vertical cornice and roof margin. The temporal relationship of this structure and the pyramid will be considered at another point.

The second partially enclosed, partially dismantled building is revealed by a floor level and a standing column in the northwest corner of the pyramid. This floor level is approximately halfway up the pyramid, and the warriors carved on the sides of the column face west, proving that whatever was the area covered by this building its front was toward the west.

The Temple of the Warriors proper is approximately 69 feet square [6.4 m square], with its only entrance facing west. A cross-section of the outer face of the wall reveals a battered lower zone 5 feet [1.5 m] in height, rising at an angle of 77 degrees, an 8 inch [20 cm] battered cornice receding at an angle of 63 degrees, a vertical zone 6 feet 6 inches [1.9 m] in height and an 8 inch [20 cm] vertical cornice. The remainder of the elevation may in the end be calculated with reasonable accuracy, but as no portion of the upper walls remains *in situ*, a restoration would be more or less hypothetical. The elements wanting to complete a typical Toltec-Maya façade would be a vertical zone, a vertical cornice, and a roof margin. Thus while the treatment of the outer walls to the height of the doorway is established beyond doubt, the part above this is as yet undetermined. The battered basal zone and battered lower cornice are unsculptured. The carving upon the remaining vertical band on the north, south, and east sides described as one: a pair of duplicate, grotesque masks, one above the other the medial line, forming the apex of the angle, occupies each of the four corners. Midway between them, that is, at the center of each wall, there was another pair of masks, like the terminal ones, except that they are on a flat between the bird-like claws, and within the widely gaping jaws of the serpent appears a human head carved in half round.

The entrance to the temple is gained through a triple doorway, 25 feet 8 inches [7.8 m] in width, the division into three being accomplished by two magnificent serpent-columns, the bases of which were found *in situ* and the other elements fallen in such alignment that they could be reassembled with no possibility of error. Against either jamb is a false column or pilaster, 1 foot [31 cm] thick and 1 foot 5 inches [0.4 cm] wide, with the figure of a warrior carved on each exposed face. The sides of the jambs protruding beyond the pilasters were also sculptured.

The horned serpents' heads with opened jaws, most skillfully carved, are about 4 feet 7 inches [1.4 m] long and lie flat upon the terrace; rising behind them are the rectangular bodies, each composed of seven blocks with horizontal, dimensions of 2 feet 2 inches [66 cm] by 2 feet 4 inches [71 cm], and each embellished with incised scales and flowing plumes. Surmounting each body is a tail piece projecting forward, not quite so far as the head; with upward flung, handsomely graven rattles terminating in a tuft of plumes. The wooden lintels of the triple doorway rested on these columns at a height of 12 feet 2 inches [3.7 m] above the floor, but the plumed tips reach upward an additional 3 feet [91 cm]. The existence of the wooden lintels, which once capped the doorways, is known from inference only, since all three of them had been completely destroyed.

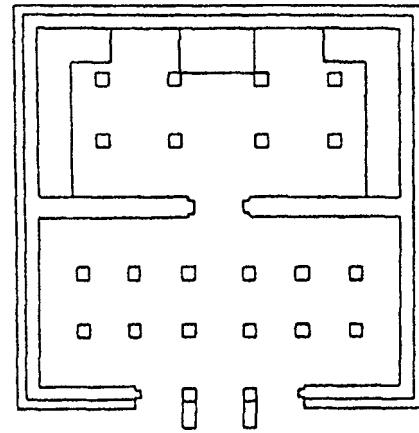


Figure 38.3.1. Chichén Itzá, Temple of the Warriors, plan.

Beyond the portal lies the outer chamber, a hall 61 feet [18.6 m] north and south by 29 feet 2 inches [8.9 m] east and west. Dividing it longitudinally are two rows of six columns each, symmetrically placed, each column 12 feet 2 inches [3.7 m] in height. The roof had been in the form of three vaults running from north to south, and had rested upon wooden lintels connecting these columns. These wooden lintels had been 8 inches [20 cm] in thickness. The plaster marks on the capstones show a width of slightly more than one foot [31 cm] for the arch cap. Detached stones suggest that there had been a vertically faced course 4 inches [10 cm] in height, immediately below the cap stones. The height of the arch will eventually be learned from a study of the trapeziform stones, which formed the exposed surface where the arch was inserted in the end walls of the room. All that can be stated now is that the vaults were very high, as shown by the fact that the material in the roof was sufficient to fill the temple to the average height of the columns, or 12 feet [3.6 m] plus.

In the center of the back or eastern wall of the outer hall a doorway 10 feet [3.1 m] wide gives access to the inner chamber. This door was 7 feet 11 inches [2.4 m] high, and its functional width was reduced to the same dimension by a false column or pilaster against each jamb. Both pilasters and jambs are sculptured on the three exposed surfaces like those of the main portal.

The inner chamber has practically the same dimensions as the outer one. Four rows of two columns each cross it from east to west. The roof, which these supported, had consisted of five vaults running east and west, that is, at right angles to those in the outer chamber, the central one having a span of 13 feet 9 inches [4.2 m], the other four a span of 9 feet 9 inches [2.97 m]. A bench 5 feet 7 inches [1.7 m] wide and 2 feet 10.5 inches [87 cm] high, with a marginal cornice 6 inches [15 cm] in height projecting 3.5 inches [8.9 cm],

flanks both end walls of the room, and turns to follow the east wall, north or south as the case may be, for a distance of 7 feet 7 inches [2.3 m].

At the extreme back of the temple occupying the space between the east wall and the eastern pair of columns which support the extraordinarily wide central arch, there is a beautiful altar 14 feet [4.3 m] in length, 7 feet 10 inches [2.4 m] in width, and 2 feet 8 inches [81 cm] high. The top surface or floor is composed of three rows of slabs paralleling the wall, five each in the front and center rows, and eight in the back. These are supported by 19 Atlantean figures and eight conical stone posts placed tips downward, each having a square capital like the typical round columns of this group. Many of the elements of the altar had been reused. Several of the Atlantean figures, for example, were too tall for the height of the altar, and in consequence their feet were let down into the floor. In such cases, other feet replacing the buried feet were modeled of lime mortar to convey the impression that the figures stood on the plane of the floor. This treatment was also applied to some of the stone posts. Moreover some of the finely worked floor-slabs in the center and front rows evidently had been torn out of previously existing altars since the interlaced serpents carved upon their edges were found not only upon exposed surfaces, but also upon inside surfaces which were hidden by other of the floor-slabs.

The columns in both chambers are elaborately sculptured. The face of each column shows the same general plan of treatment: a priest or warrior standing above a panel carved to represent a heteromorphic head which also occurs between the marks on the exterior walls of the temple as already noted. Above each figure is a second panel constituting a distinct decorative element. The columns were painted in brilliant colors, and in fact the entire interior of the building, floor, walls, and roof, was finished in colors. The smooth, highly polished lime floor was painted a rich dark red. Subject to slight local variation, a dado 5 feet 6 inches [1.7 m] high encircled the bases of the interior walls. Beginning at the floor level, and going upward, there is a 3 foot 6 inch [1.1 m] band of red, a 5 inch [13 cm] one of blue, a 6 inch [15 cm] one of red, a 5 inch [13 cm] one of yellow, and a 7 inch [18 cm] top one of black. Continuing thence upward to and including the roof cap, were depicted a great variety of subjects: men, animals, birds, serpents, fish, plants, and marine scenes. Since the best preserved paintings are now to be found on the fallen stones, the relationship and arrangement of the individual subjects can not easily be determined.

Painted embellishment was not confined to the interior alone, however. All sculptured stones which had been sufficiently protected from weathering for

color to remain upon them, whether from the temple proper or from the pyramid, showed traces of red, blue, and green. The battered basal zone of the temple exterior retained plaster in places to a depth of 2 inches [5 cm], consisting of upwards of 100 coats. Nearly every coat bears daubs and splashes of pigment which dripped from the brushes of the painters at work on higher sections of the walls. One coat deeply buried by subsequent applications of white lime plaster, was covered with bold, rather carelessly drawn murals in red, yellow, white, black, and green. The parts of this which have been laid bare depict male human figures bearing long staffs like those in the hands of the reclining men in the sculptured bands on the sides of the pyramid below.

In the light cast by partial excavation, the structure at the western the pyramid, or as it has been called the Northwest Colonnade, is a building approximately 150 feet [45.7 m] in length and 45 feet [13.7 m] in width, facing west. It contains four rows of rectangular columns running from north to south, the three eastern rows having 16 columns each, and the western one only 14 columns, because the positions of the terminal columns in this latter case are occupied by the antae of the front wall.

Standing in front of the Northwest Colonnade the following arrangement is revealed: first three steps leading from the general level of the major terrace to the frontal platform 12 feet 3 inches [3.7 m] in width which supports the Northwest Colonnade. The temple stairway is as wide as three intercolumnar spaces of the Northwest Colonnade. In line with each of the two included columns, a balustrade leads over the steps from the major terrace level to the frontal platform. Built out from the riser of the upper step is a block of masonry, and tenoned into it, and projecting out over the balustrade, is a serpent's head. The northern one of these was found *in situ*, but the southern one is missing.

Counting inward from the frontal platform, the temple stairway begins just behind the base of the third row of columns. Since the Northwest Colonnade is four intercolumnar spaces in depth, it is seen that the base of the stairway extends out halfway into the lower hall. Occupying the positions of the two columns of the inner tier, which normally would have risen from that part of the floor now occupied by the base of this stairway, there are two columns rising from the stairway, their bases being on a level with the tops of the other columns in the same row, both to the north and south of them. Across the stairway the fourth or inner vault of the Northwest Colonnade was omitted, and the eastern half of the third vault as well. The western side of this third vault was continued upward fully twice its natural distance until it reached and was supported by the two elevated columns rising from

the stairway. Thus the approach to the Temple of the Warriors lay through the Northwest Colonnade, and the base of the stairway, which lay within the confines, of this lower hall, rose beneath an inclined roof.

The stairway is flanked by broad low balustrades which were interrupted in their central parts by the vertical walls forming the ends of the intersected inner vault of the colonnade. The parts of the balustrades below this wall are in place and are carved in low relief with representations of the rattles and sinuous body of the plumed serpent. That portion of the balustrades, which would have been above the roof of the colonnade is now fallen. Two very large serpent heads found on the surface, one at each side of the stairway, however, presumably were tenoned in the tops of these balustrades, projecting over them just as in the case of the smaller ones in the balustrades in front of the lower hall.

The first 10 steps of the stairway had been deeply buried, and were perfectly preserved. The individual steps presented little variation from a riser and tread of 10 inches [25 cm] each. The stones were so skillfully cut and joined that this stairway ranks as the most excellent in point of construction yet found at Chichén Itzá. As many as 26 coats of lime plaster had been applied over the steps, some of them having been painted red. In the debris covering the base of the stairway were found a fang and three horns belonging to the heads of the serpent columns of the Temple of the Warriors and two human statues carved from stone, all cast down from above in comparatively ancient times, doubtless by the hand of man.

The Northwest Colonnade encroaches upon the western slope of the pyramid to the extent that the two lower multiple zones of the latter do not occur at all, the outer face of the colonnade wall rising from the terrace at the top of the second multiple zone a yard [91 cm] distant from the foot of the third.

Here arises the question as to the age of the façade found buried in the southwestern corner of the pyramid. Obviously this façade belongs to an earlier structure, and in preparation for the erection of the pyramid, all of it, even to the inner facing of the wall in question, was torn down. Presumably the Northwest Colonnade is secondary to the pyramid. In conformity with this assumption, the two lower zones of the pyramid once continued to the general level of the major terrace on its western side, and were eventually torn out to allow for the construction of the back wall of the Northwest Colonnade.

So far there has been found little to indicate whether the Temple of the Warriors was erected previous to, contemporaneous with, or later than the range on the north side of the Court of the Columns, the western end of which lies immediately south of the pyramid. However, the extreme western end of this range is

composed of certain units, some of which, if not later modifications of the original structure, at least show that they are secondary to the pyramid.

Excavations in the gully mentioned as occurring parallel to the south side of the pyramid disclosed a passage, its floor at the level of the major terrace, continuing westward 48 feet 5 inches [14.8 m] from the southeast corner of the pyramid. The southern boundary of this passage is the sloping basal wall of the substructure beneath the north range of columns. The east and west axes of the latter and of the pyramid are not exactly parallel, converging toward the west. Thus the passage is 10 feet [3.1 m] wide at the east and 9 feet [2.7 m] wide at the west. At the western end a poorly built stairway of 12 steps leads up to a platform 28 feet [8.5 m] long and 16 feet [4.9 m] wide, its floor being partly composed of and partly a continuation of the terrace at the top of the first multiple zone on the southern side of the pyramid. That this stairway and platform were built in after the bounding structures were in existence is shown by the fact that the walls of both continue beneath and are hidden by the fill.

The purpose of this stairway and platform is not apparent because there is no doorway giving access to the platform nor any other stairway leading away from it. The western boundary of the platform is a wall composed of two distinct portions. The southern 9 feet [2.7 m] is a right-angled northward extension of the rear wall of the building forming the northern side of the Court of the Columns. The wall then turns at right angles to the west and continues to a junction with the back wall of the Northwest Colonnade. It extends downward past and less than one foot [31 cm] distant from the sculptured band of the first multiple zone of the southern side of the pyramid, and hence is assuredly secondary thereto. If future excavation proves this northern extension of the building is part of the original plan of the North Colonnade, that structure will be shown to have been built later than the pyramid. If it does turn out to have been an addition, other evidence will have to be sought to settle the question of the relative ages of those several units.

The space between the base of the second multiple zone of the pyramid and the aforementioned back wall of the North Colonnade is a blind alley less than 5 feet [1.5 m] in width, bounded at the west by the rear wall of the Northwest Colonnade and at the east by a wall forming the northern portion of the eastern boundary of the platform at the head of the secondary stairway. This alley was never roofed, at least with masonry, and there is nothing to indicate its function.

Considering the unit comprised of the Temple of the Warriors and the Northwest Colonnade as a whole, it is evident that perfection of surface appearance, rather than stability, was the desideratum of the build-

ers. The stones forming the wall faces are very thin, their maximum dimensions being at the margins of the tooled faces where they touch the edges of the blocks above, below, and beside them. The cornice elements are the only blocks with long tenons which firmly tie them into the hearting of the masonry. The effect is much as if one were to remove, with horizontal cuts, the browned top crusts from loaves of bread, and then stand them side by side on end to form a wall face. Such a flimsy shell could have been pried off without difficulty with a sharpened stick.

This lamentable structural weakness is conspicuous in the Ball Court, the Temple of the Jaguars, the different parts of the Group of the Thousand Columns, and to a greater or less degree in all the Toltec-Maya buildings at Chichén Itzá. These stand in marked contrast to such structures as the Monjas and the Akabtzip, which owe much of their preservation to the fact that their massive component blocks reach deep into the hearting.

During the closing period of hybrid brilliance at Chichén Itzá, the Temple of the Warriors must have been one of the most important sacred places in this city of temples. Its position is commanding. Standing beside the Chac Mool midway between the portal and the stair head, one looks past the so-called Temple of the Chac Mool directly into the lower chamber of the Temple of the Jaguars. At the left, the Castillo towers skyward, while nearer by the Group of the Thousand Columns extends far to the south and east. At the immediate right, that is, to the north, lies the Temple of the Tables and not far distant the Sacred Way leading down to the Cenote of Sacrifice. Although built upon a pyramid only half as high, the Temple of the Warriors covers twice the area of the Castillo and in the magnificence and richness of its sculptured ornamentation far excels the higher temple. Indeed in importance it may be reckoned as second only to the Castillo, which was the principal sanctuary of Kukulcan, the patron deity of Chichén Itzá.

38.4.

EARL H. MORRIS

*Report on the Mural Paintings of the
Temple of the Warriors (Station 4)*

YB 24:260–262, 1925

Before the great pyramid at the northeast corner of the Group of the Columns was cleared of undergrowth,

traces of paint were visible upon stones fallen within the last decade from the inner face of the east wall of the Temple of the Warriors upon its summit. Excavation revealed that walls, arch stones, columns, the floor, the altar, and stairway, in short every unit of surface area, had been completely covered with color. Of greatest interest were the frescoes which had decorated the walls and corbelled arches of the temple's interior. In two places it was possible to trace these designs as they appeared *in situ*. The other frescoes recovered were upon fallen wall and arch stones, excavated from the wreckage which filled the temple to a depth of 12 feet [3.7 m]. Nearly a thousand of these latter were recovered, and of these about 850 have been deposited in a storehouse at the hacienda for safe-keeping.

The unfortunate as well as unprecedented hail storm of April 14 destroyed 177 painted stones, but 154 of this number had already been copied in color, thus reducing the total loss to but 23 stones. In all, more than 200 stones were copied by Mrs. Morris during the current field season, and her studies of the decorations of the Temple were of great assistance.

The interior of the temple in ancient times must have presented a sight of barbaric splendor, an almost bewildering array of intricate designs in brilliant colors. The effect of time upon the pigments has softened their sharpness and, while detracting in no way from the brilliance of the original colors, it has enriched and mellowed them.

The surface of the walls was first prepared with lime plaster of a fine, smooth texture, and while this was still wet a general background of solid color was applied. A second, and sometimes even a third, coat was then added. The brush strokes indicate the use of a large, coarse-fibered brush, and in all but one section a thin, very fluid paint. Whether the medium in which the pigments were mixed was water, copal, or some unknown substance, is yet to be determined. In a few instances, the background remained the white-color of the natural plaster, but for most of the frescoes, varying shades of red were used. A few traces of an earlier layer of colored plaster.

The Maya palette presents a wide variation of hues built upon a few fundamental colors. Reds shade from the deepest "Indian red" through the orange reds to a vivid vermillion. Yellows vary from burnt sienna and ochre shades to a pale lemon. Greens and blues are nearly indistinguishable where the color arcs cross, though at extremes of the spectrum nearly a dozen different tones are represented. Black and a light red-dish-tan are invariably employed for outlining. The latter seems to have been first applied to light, plain surfaces with a fine, narrow brush as a complete preliminary outline of the figure to be later filled in with color. The last step was a re-outlining of every detail in

a fairly vivid black. On dark surfaces, the black was utilized for a general preliminary lining only, and after color had been applied without a guide, it had completed the details of the outline.

Owing to the great variation of shades employed, it is probable that most of the tones were acquired by mixing the pigments fresh for each figure or general group. The sources of the colors, with the exception of the red which could have been procured from the bark of at least three different kinds of trees, are at present unknown.

No shading was attempted. The color was laid on flat, and seemingly sufficiently thickly over small areas to obviate the necessity for a second coat. Nor was there need for retouching. The Maya draftsman and colorist wielded a sure brush, sufficiently flexible to limn in a single stroke of the hundreds depicted in the temple, giving to each distinct character and individuality.

The paintings on the walls begin 5 feet 6 inches [1.7 m] from the floor. This basal zone is covered with a dado of broad stripes: 3 feet 6 inches [1.1 m] of black at the bottom, and above this 6 inches [15.2 cm] of blue, 6 inches [15.2 cm] of red outlined in black, 6 inches [15.2 cm] of yellow, and again 6 inches [15.2 cm] of black. An exception to this arrangement is found in the south half of the outer chamber, where the broad bottom band is painted red instead of black. On the surface of the blue, wave-rippled water bordered with white foam, floats a canoe with its prow carved in the likeness of a human head. Nearby, a man is wading and another is swimming. A large fish is also swimming about. Other stones show different species of fish drawn with what seems to be a remarkable fidelity to nature. Sea-weed, jelly-fish, eels, and boatmen, the latter paddling both in standing and sitting positions, are found.

Of equally frequent occurrence are lines of warriors in ceremonial procession, or advancing in double quick time as if to battle. Men in less formal pursuits are also presented, bound as captives, as bearers of the dead, and as carriers transporting burdens by means of the inevitable tumpline.

Genre subjects are found, in a tower-like structure, fenced, henequen plants, houses, a burning roof, and a pot set upon the fire. Tigers, deer, birds, and plants likewise occur, although in more or less fragmentary condition. Of great importance is the omnipresent feathered serpent, which winds throughout the groups more in the spirit of an all-pervading patron deity than as any particular unit of the design, the treatment throughout being free, realistic, and natural.

The two extremes in Maya murals as they are now known are to be found at Tulum and in the Temple of the Jaguars at Chichén Itzá. In the former, the codex-

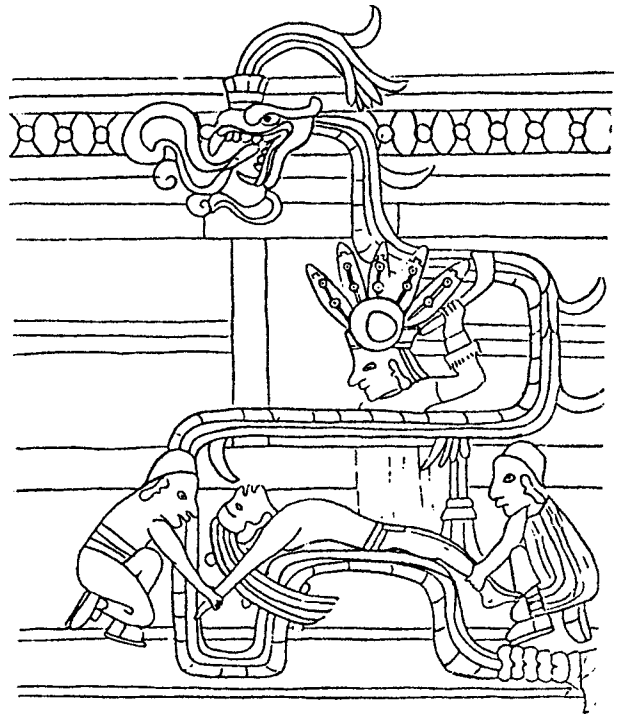


Figure 38.4.1. Chichén Itzá, Temple of the Warriors, reconstruction drawing.

reminiscent gods strike the last note of ceremonial conventionalization, both in subject-matter and style; in the latter, scenes of ordinary daily life are depicted with a boldness and ease entirely free of conventional crystallization.

The murals in the Temple of the Warriors fall midway between these two. The processional arrangement of elaborately garbed warriors and the invariable speech scroll (both concepts derived from the Toltecs), a uniformity in hair treatment, snakes conventionalized to a state far more decorative than natural, point to an art cast in the mold of custom. On the other hand, everyday scenes, natural posturing, and realistic details occupy at least half of the decorated space.

A diversity of skin pigmentation, within the same groups gives rise to interesting surmises. Men with dark red, tawny, light tan, or blue striped, black, and spotted skins are all to be seen side by side. There seems to be no color differentiation to indicate sex, but beyond this nothing can yet be determined.

Dress and ornament form another interesting study. Fun dress in the formal style includes as a general rule an elaborate plumed headdress, capable of infinite variation, a long feather cape, and a loin cloth. This was varied by the wearing of a single long robe decorated either to resemble the spots of a jaguar skin or a decoration of jade beads, fringed as it reaches the feet. All these garments were flat and stiff, the repre-

sensation of soft drapery falling in folds apparently being beyond the brush of the Maya artist of this period.

A more informal dress consisted of plumed head-dress and loin cloth, or a single white garment of medium length without head covering except, possibly, a close-fitting skull cap.

Lastly, four representations were found of men without any clothing at all, two being stripped from tip to toe. One had his arms bound behind him, the others were obviously ceremonial dancers.

Footgear was invariably the same, except in the case of the stripped captives. The sandal was composed of a sole, a narrow side piece, and some sort of ankle tie. Within these limits, however, infinite variety is achieved.

The figures were usually heavily ornamented. Jade, copper, and gold predominated, with the occasional introduction of some substance colored a vermillion (coral?). The figure wearing the most jewelry had a pair of earplugs, a noseplug, beads in his hair, a necklace and breast plaque, bracelets, anklets, and beads or bells around his knees.

The personal arms borne by the warriors seem to be inadequately represented. Shields and additional long cloth armguards are to be seen, and likewise handfulls of long and short darts, feathered at the shaft and triangularly tipped. In no case is an *atlatl* or spear-thrower clearly discernible, though often gripped in the same hand as the darts one finds an object resembling a throwing stick or boomerang. This may be a conventionalized representation of the *atlatl*, which they undoubtedly possessed.

As the entire temple is studied section by section, the evidence increasingly persuades one that a great number of artists took part in its mural decorations. The individualistic treatment of subjects, coloration, drawing, and general skill add further interest to the interpretation of these paintings.

The decoration of the arched roof was, in general, similar to that of the walls, but on a much lower plane of technical skill. Meticulously treated subjects were avoided and large, simple designs alone appear, and these are marked by distinct crudity. In some cases the paint was applied on the stone itself, hence the preservation of the design has been more complete than on the walls proper.

The base of the exterior wall of the temple sloped at a slight angle to a cornice 4 feet 10 inches [1.5 m] high. This is covered with many coats of plaster. About two-thirds of the way in (that is, from the outside) a design-bearing layer was brought to light. An area 5 feet long of these outer coats was peeled off and copied. These exterior designs were on a large scale and were crude in quality. The section uncovered represented a warrior carrying a large plumed staff (?).

As the rainy season came on, it was observed that the altar in the sanctuary of the temple was being denuded of the plaster coating which carries the painted decoration. Efforts to save this by a generous use of successive coats of ambroid were only partially successful and, in order that nothing might be lost, scale drawings were made of all three elevations and the two interior lines of Atlantean figures, and these were painted in their original colors.

38.5.

EARL H. MORRIS

Report on the Temple on the Northeast Bank of the Xtoloc Cenote (Station 3)

YB 24:263–265, 1925

Mrs. Morris was largely instrumental in carrying on the work which was begun at Station 3 along the cenote's edge on February remains of a stairway were found at this point, and although its dimensions can only be approximated, it was probably about 20 feet [6.1 m] wide and ascended at least 6 feet [1.8 m] by means of eight steps. The top step gave on to a terrace paved with hard, smooth plaster painted red. Later work revealed the presence of an earlier terrace 3 inches [7.6 cm] below the level of the first.

When excavated, the structure facing the cenote was found to have been a temple built in the shape of a "T," the horizontal axis extending from north to south 52 feet 8 inches [16.1 m], the vertical east and west axis being 37 feet 2 inches [11.3 m] long. Owing to the gradual slope of the ground toward the cenote the southern two-thirds of the temple rises from a basal terrace reaching a maximum height of 3 feet [91 cm]. The northern end rests directly upon the ground. Two steps, 29 feet 8 inches [9 m] wide, lead from the terrace to the platform.

Entrance to the temple proper is gained through five doorways in the western façade passing between four round columns with rectangular capitals, and the two adjoining antae. These doorways give into the largest chamber, a colonnaded hall, 48 feet [14.6 m] long and 13 feet [4 m] wide, occupying the entire horizontal axis of the "T," the roof having been supported by six additional columns like those in the doorways,

arranged in a single row down the middle. The free ends of the antae forming the outer door jambs were originally sculptured, but the details have been obliterated by weathering.

In the northeast and southeast corners of the hall, two small benches were found, each 3 feet 6 inches [1.1 m] wide and 1 foot 6 inches [46 cm] high, but of unknown length, since the ends of both had been destroyed in ancient times. It is becoming increasingly evident that such benches were a constant feature of temples of this type, this being the fourth found during the past two years.

Four large flat stones, resembling roof capstones, were found lying side by side, forming a rectangle at the foot of the bench in the southeast corner, though for what purpose it was not possible to ascertain.

Two steps lead up from the eastern side of the colonnaded hall through three doorways into a smaller chamber, measuring 19 feet 5 inches [5.9 m] long by 6 feet [1.8 m] wide. Two square columns carved with figures of warriors and priests, done in a similar though inferior style to those discovered last season at the Northeast Colonnade, form the triple doorway in the west wall noted above.

A finely worked painted capstone was found, in the southeast corner of this middle chamber. Traces of a banding of deep-blue paint still surrounded that part which would have been exposed to view in the finished floor. All further traces of the design had been obliterated.

The only certain example of secondary usage was found in the chamber. Three carved stones, bearing no relation either to the wall or to each other, were found in the eastern wall next to the north jamb of the door leading into the third chamber, or sanctuary.

The sanctuary is the same size as the middle chamber, and was entered through a narrow doorway only 2 feet 6 inches [76 cm] wide, the only entrance to this innermost chamber. These doorjambs were carved in the likeness of men wearing long robes beaded with jade or spotted to represent jaguar skins. The lintel over this doorway was covered with carving of a crude sort, the only discernible parts of the design being portions of a snake's body and, in the lower left-hand corner, two anthropomorphic figures presumably serving a fire burning upon an altar.

Against the middle of the back or east wall of the sanctuary, an altar or raised dais had been built, its front reaching to within 2 feet 10 inches [86 cm] of the doorway. Within this narrow space and directly in front of the middle of the altar, an accidental blow of a pick on the final day of excavation revealed the presence of a small, sealed vault a few inches below the plaster finish of the floor. On excavation this proved to be almost completely filled with earth and stones, but

a few fragments of fragile bones were recovered from the filling. Although final analysis has not yet been made, these bones are believed to be those of a small child.

By far the most notable discovery made in this temple was that the back wall of the arch in the sanctuary immediately above the altar had originally presented a handsomely sculptured panel. Two-thirds of the elements which had composed it were found, fallen within the sanctuary or at a short distance outside, whither they had been carried to build into an old Spanish wall.

The subject matter of this panel has already been described. Of almost equal interest, however, was the highly satisfactory re-assemblage of its scattered and disassociated elements, which it was possible to make, giving its original size and shape, as well as convincing proof of its former position in the now fallen roof of the sanctuary.

As its carved elements began to emerge during the excavation of the sanctuary their similarity of treatment led to the plotting of both their vertical and horizontal positions, each stone being lettered as it came out, and its corresponding position noted. When excavations were completed it was found that 12 sculptured elements had been recovered from the sanctuary, and one from immediately outside.

The close similarity of these carved blocks at first led to the conclusion that they had been removed from a sculptured panel in some other structure, but on account of the unwieldy character of the large, irregular roof blocks, all attempts at fitting them together at first proved unsuccessful. The beautiful character of the relief, however, suggested drawing each element singly to scale, and this procedure was immediately followed by the most surprising and satisfactory results. Reduced to this easily handled form, it became possible to fit most of the fragments together, and this led to the outside of the temple, and to the subsequent recovery of six more, for a total of 19, or about two-thirds of the original panel.

A study of the positions where the 12 blocks inside the sanctuary were found established not only where this panel had fallen from, that is, the back arch above the altar, but also how it had fallen, that is, the topmost elements first and farthest, that is nearest to the doorway. The successive tiers in astonishingly regular order had rested higher and nearer to the arch, until the lowest rows were reached, which, if they had fallen at all, must have remained exposed on the surface of the mound, since these are invariably the elements which were found outside at a distance. Furthermore it is to these lower rows, which were exposed on the surface, that the greater number of the still missing elements are to be assigned.

Elements of the typical three member cornice were observed in the debris outside, but no evidence of further decoration was found.

The work of preservation and repair was confined strictly to saving unstable walls and columns still *in situ*, and to replacing those drums, capitals, and wall stones which had been displaced by the removal of debris in the course of excavation.

38.6.

OLIVER G. RICKETSON

Report on the Repair of the Caracol

YB 24:265–267, 1925

The condition of the building called the Caracol was noted as in “urgent need of immediate repair” in 1924. As a result of this examination and further study early in the season of 1925, a statement of the specific repairs contemplated, accompanied by diagrams, was sent to the Department of Anthropology in Mexico with a request for permission to do this work at once, in order to prevent the collapse of the structure. Permission having been granted, the work was carried out with three objectives in view: 1. To prevent the collapse of Window no. 1; 2. To support the outer wall on the west, and 3. To support the outer wall on the southeast. The complete erosion of the original mortar in these last two areas necessitated the removal of dirt and fallen stones, and the replacement of stones *in situ*, laid in cement.

It was felt that the preservation of Window no. 1, long suspected of having been used as an observatory, was the most important operation. This aperture is a rectangular passageway, 8 feet 3 inches [2.5 m] long, 2 feet 10 inches [86 cm] high, and 2 feet 3 inches [69 cm] wide, facing W 8 degrees 30' N (magnetic). The western jamb was found to be leaning toward the west so that it was 6 inches [15.2 cm] out of plumb, and the northern jamb of the eastern end rested precariously on a single rock, itself without any solid foundation. To build a buttress in order to support this latter, it was first necessary to develop a base sufficiently solid by repairing the west wall.

Work was consequently begun at this point, directly over the West Doorway. Two conditions hitherto un-noted were revealed: 1. The necessity of obtaining faced wall-stones by searching and digging in the fallen

debris to west of the building, and 2. The extraordinarily precarious condition of the inner wall of the outer circular vault.

These conditions were overcome by building up the outer wall three courses above the 5-member cornice. Wall stones from the debris below were used, and need not be replaced when final repairs are undertaken. The second condition was the more difficult of solution, as the removal of a single vault stone would have brought down the whole top. Nor could the debris above be removed, as it was the weight of this pressing down on the tenons of the wall-stones that prevented the vault itself from collapsing. Cement was forced into the spaces between the stones; after this hardened, all above was removed as far as possible, and more cement poured tenons of the vault-stones.

The cap-stones above the vault of the inner circular corridor in the northern quadrant having fallen, these were replaced laid in cement, and from these two solid foundations a “skin” of cement was built up around rocks in position until a firm support could be placed under the eastern jamb of Window no. 1. The whole top of the structure was then cemented to prevent erosion by the heavy rains, the cement being worked in between the stones after the original crumbling mortar had been removed. In this work only loose, superficial stones were removed, and no effort was spared to maintain original stones in their original positions.

The third and last area of repair mentioned above was the outer wall on the southeast. Inasmuch as the tenons of the vault-stones were exposed here the work consisted entirely in the filling-in of intervening spaces with cement and small wedges.

During the excavations for wall stones a small vase was found intact. It was of a burnished ware with a metallic luster.

The removal of the loose, superficial dirt and stones revealed three new constructions of interest, whose functions, it would seem, could only have been for making astronomical observations.

The first of these is Window no. 2 (Maudslay 1889–1902:3: Plate 21) has a photograph which shows Window no. 2; Stephens (1841:2:298) also figures a drawing clearly showing Windows nos. 1 and 2. It is a small, rectangular passageway, 9.5 inches [24 cm] wide, 1 foot 2 inches [36 cm] high, and 5 feet 2 inches [1.6 m] long in the mid-line, bearing S 42 degrees W (magnetic). As it is level, a view through it intersects the horizon, giving a maximum angle of vision, that is, by moving the eye from one diagonal to the other, of 20 degrees 45'. The maximum angle of vision vertically is 15'.

The second construction was a third line-of-sight, called Window no. 3. It too is a small, rectangular pas-

sageway, 6 inches [15.2 cm] wide, 1 foot 1 inch [33 cm] high and 6 feet 4 inches [1.9 m] long. Through this aperture the maximum horizontal angle of vision is 10 degrees 45', and the vertical angle 23 degrees.

Both of these constructions emerge through an interior wall to the east and south of Window no. 1, which, with what is left of the interior wall on its north, presumably indicates the former presence of an observation chamber at this point, now, however, entirely destroyed except for this southwest corner; and further that the probable entrance to such a chamber was by way of the spiral staircase in the core of the building.

The third construction uncovered was a circular vertical shaft, roughly a foot [31 cm] in diameter, extending down through the core. No estimate of its depth could be made, as a plumb-line was stopped at about 6 feet by washed-in earth; water, however, poured down the shaft came out the core into the inner circular corridor at the spring of the arch. Complete excavation will be necessary to determine whether or not this shaft leads into a central room located in the masonry of the core, and if so, whether or not it could possibly have been used for the meridian sight of any celestial body.

Observations were made through Window no. 1 at frequent intervals. The maximum angle of vision on the horizon is 30 degrees. It was noted that the sun set on the diagonal drawn from the northeast corner to the southwest corner on March 21, 1925, that it passed northward 15 degrees and set along the midline on April 28, 1925, and that it then continued northward going 5 degrees south of the diagonal drawn from the southeast corner, and the southwest corner on June 22, 1925. The function of this window as a solar observatory for determining the summer solstice and the equinoxes would seem, therefore, to be established.

The results of these field observations at the Caracol were sent to the Department of Terrestrial Magnetism for analysis and the Director, Dr. Bauer, under date of June 24 has written Mr. Ricketson concerning them as follows:

The description of the windows of the Caracol as given in your letter of May 30 is interesting evidence of a knowledge of practical astronomy among the early inhabitants of Yucatán. In the following notes the jambs are designated right and left as when looking out, and azimuths or directions are astronomical: a. Window 1. The direction, right inner jamb to left outer jamb is due west; b. Window 3. The direction, right inner jamb to left outer jamb is due south; c. Window 2. The direction, left inner jamb to right outer jamb is in azimuth 59 degrees reckoned westward from south or in amplitude 31

degrees; and d. Window 1. The direction, left inner jamb to right outer jamb has the same amplitude north of west (31 degrees) as c is south of west. The amplitude of the Sun at setting on March 21, was 0 degrees or due west which accords with the direction under a. On April 28 its amplitude was 15 degrees north of west, hence it appeared exactly down the midline of Window 1 as you observed. The Sun's amplitude on June 21 at Chichén Itzá is 25 degrees, consequently it will not be seen setting in the direction given under d as you anticipated, but about 5 degrees further to the left or westward. The directions c and d are the directions of the Moon at setting when its ascending node is in the vernal equinox; that is when its declination is a maximum, about 28 degrees 36'. Nothing apparently marks the direction of its setting 9.5 years later when its maximum declination for the year is reduced to about 18 degrees 25' and its amplitudes became 20 degrees north or south. Window 3 is not high enough for direct observations of the Sun at noon or the Moon at meridian passages; hence, if it was constructed for such observations, it must have been the shadows of the jambs cast by the Sun or, Moon that were noted. Directions a, b, c, and d mark astronomical directions of local importance whether intentionally or unwittingly, but two directions remain for which I can assign no reason at the present time. The above directions have been computed with the assumption that the Sun and Moon set over a practically level stretch of country. It is possible that nearby mountains, deep valleys, or other landscape features, of which we have no information, might alter the computed directions several degrees.

It should be noted that inasmuch as the country surrounding Chichén Itzá is literally as flat as a tabletop, no correction for neighboring topographic features, as suggested in the last paragraph above, has to be applied to the figures given.

In conclusion attention should be called to the fact that the stones framing the eastern or "observation" end of Window no. 1 were cemented as they stood, no attempt being made to correct their positions even though the correction was obvious, so that all future observations may be made without fear that the corrections in the positions of the stones has in any way been conducive to or suggestive of spectacular or desired conditions.

38.7.

OLIVER G. RICKETSON

*Report on the Temple of the Four Lintels
(Station 7)*

YB 24:267–269, 1925

This small temple in Old Chichén Itzá is a rectangular structure 41 feet 9 inches [12.8 m] long, from east to west, and 16 feet 10 inches [5.1 m] wide. It stands on a low platform roughly 20 inches [51 cm] high, 81 feet [24.7 m] long east and west, and 66 feet [20.1 m] wide. The temple faces north, the principal entrance being opposite two steps in the center of the north side of the platform. Directly in front of the entrance, 3 feet 6 inches [1.1 m], is another step, 10 inches [25.4 cm] high, and at the very threshold another step of the same height. The doorway is double, having a massive central column of three square blocks, each 33 inches [93.8 cm] square by 21 inches [53.3 cm] high. Above these there is a rectangular capital 39 inches [99.1 cm] square and 8 inches [20.3 cm] high, and below is a corresponding pedestal. This square column is flanked on either side by a doorway, 6 feet [1.8 m] high and 3 feet 6 inches [1.1 m] wide. The outer jambs of both of these doorways consist of two hewn monoliths, one for each opening, 6 feet [1.8 m] high, 1 foot 6 inches [46 cm] wide, and 2 feet 9 inches [84 cm] deep. The lintels above these two doorways are each of a single piece of stone bearing hieroglyphs in panels on their soffits and external (northern) faces. The lintel (no. 2) over the east doorway is 4 feet 3 inches [1.3 m] long, 10 inches [25.4 cm] high, and 2 feet 7 inches [79 cm] deep, and the lintel (no. 3) over the west doorway varies from its mate only by fractions of an inch.

In the excavation necessary to free the fallen western monolithic jamb and to clean the area directly in front of the temple, a total of 11 carved stone heads with depressions in the top were found. All of these were found right-side up, so that it might be inferred that they occupied their original positions, being covered with fallen debris, and that they did not themselves fall from above. By far the greater proportion of them had the “twisted doughnut” ornament, usually associated with Tlaloc, the Rain God.

Inside, the temple is divided into at least two rooms,¹ the smaller of which lies at the east end. It is 12 feet [3.7 m] long, and 8 feet 9 inches [2.7 m] wide, the entrance to it being through a doorway opening from the larger western chamber of the temple. This doorway is 3 feet [91 cm] wide, and the lintel above it is carved with hieroglyphs on the soffit and on the side facing the interior of the temple, that is, west. The wall

pierced by this doorway bears a three member medial cornice, a type of decoration found on the outside of buildings. Its presence here, on an inner wall, is not explicable, especially as it could not be determined by the jointure of the stones in the corners that this small chamber represents an older temple to which had been subsequently added a newer construction to the west. Also, the dates of all lintels in this temple are the same: 11.9.13.0.0. In this doorway was found a coarse red bowl.

The fourth and last lintel spans a doorway 2 feet 6 inches [76 cm] wide, which pierces the western wall. It, like the others, bears glyph-panels on its soffit and on its external (western) face.

In concluding, it might be added that the massiveness of the rectangular column in the main entrance, the unusually large size of the wall-stones, and the great length of their tenons, all argue that this structure (or at least the materials of which it was made) is of an earlier epoch than the Toltec period at Chichén Itzá, when smaller building blocks were used.

Less than 200 yards [183 m] to the south, another small rectangular temple with three rooms was noted. It also faces north, and is 57 feet [17.3 m] long, east and west. The entire front of this building having collapsed, it was inferred by the intact back and partition walls of its three rooms that access to them must have been through the three main doorways in the front, the plain lintels of which were all found. The south or back wall still standing, however, gave evidence of elaborate decoration; this consists of a band of column-like carvings in low relief and great areas of wall-stones carved in a denticulate design, resembling a similar decoration in the Monjas.

Both of these structures from the style of their architecture as well as from the dates on the hieroglyphic lintels would appear to date from the Middle Period of the city's history, from 965 to 1191 AD, that is, during the second occupation but before the advent of the Toltec conquerors.

NOTES

1. The complete excavation of the temple was not attempted, work being confined to that necessary for replacing the hieroglyphic lintels in their original positions on the door jambs.

38.8.

KARL RUPPERT

Report on the Secondary Constructions in the Court of the Columns

YB 24: 269–270, 1925

On April 14, there occurred at Chichén Itzá the heaviest hail-storm within the memory of anyone living in the region. The individual, hail-stones, were in many cases 1.25 inches [3.2 cm] in diameter, and such was their size and number that they had not entirely melted 24 hours later.

The most striking effect of this fall of ice was that it literally beat the forest bare. Scarcely a leaf remained on a tree; the bush in every direction looked like a December landscape in the United States, the trees gaunt and naked, stripped completely of their foliage. Even the undergrowth, bushes, vines, grasses, etc., were beaten to the ground until the city was exposed to view, as doubtless it had not been since the days of its final abandonment in the middle of the fifteenth century.

This general denudation and clearing of the ruins brought to light many hitherto unsuspected archaeological features, among others a number of low secondary constructions in the Court of the Columns and advantage was taken of the unique opportunity to make a preliminary survey of them before they should have disappeared again beneath the swiftly growing bush.

The survey revealed about 58 structures and mounds which may be classified according to shape as: 1. Rectangular, 2. Round or oval, 3. Irregular, 4. L-shaped, and 5. Square. The structures are somewhat unevenly arranged in the court in four great rows, extending from north to south.

There are 25 rectangular structures which vary in size from no. 1, the smallest, which is 3 by 8 feet [91 cm by 2.5 m], to no. 4, the largest, which is 34 feet 8 inches [10.6 m] by 13 feet 9 inches [4.2 m], the long axis of 19 of them being east and west. In some cases, they are composed only of an outline of unworked, worked, and even discarded sculptured stones set in the ground, level with the Court floor. In others the outlining stones may be one, two, or even three tiers high, in which latter case the enclosed area has been filled. When the enclosed area is level, or not more than 6 inches [15.2 cm] above the court floor, in many cases it is paved with discarded wall stones. Two structures in diagonal corners of the court bear striking similarities. In the northwest corner, no. 3 is composed of rectangular column blocks, and no. 4, in the southeast corner is made of seven rectangular column blocks.

Both are arranged in the form of a rectangle with an average length of 5 feet [1.5 m] and a width of 4 feet 5 inches [1.3 m], their long axes being east and west. The enclosed area in each is raised a foot [31 cm] above the level of the court floor; and each has a cylindrical column drum in its center.

Structures 11, 20, 21, 31, 52, and 23 are L-shaped. The last two may prove on excavation to belong to another group. In each case the base of the "L" is toward the east, with the long arm along the south. No. 11 is the largest of these L-shaped structures. It is raised a foot [31 cm] above the court floor level, and is paved with wall stones except in the southeast corner, where column drums have been set in the floor for that purpose. The long arm of the "L" toward the west is not paved, being merely outlined by a row of cornice and wall stones. This structure measures 55 feet [16.8 m] on the south, 21 feet 8 inches [6.6 m] on the east, 13 feet 9 inches [4.2 m] at the north end of the short arm, and 11 feet 6 inches [3.5 m] at the west end of the long arm.

Five of the structures at present fall into the square group. The best preserved of these is no. 22, in the southwest corner between what may be a small ballcourt and the south end of the West Colonnade. It is formed by a low terrace, 45 feet [13.7 m] on the east, 44 feet [13.4 m] on the south, 46 feet [14 m] on the west, and 43 feet [13.1 m] on the north. A small temple had been built on this terrace, of which the talud and cornice still remain. The entrance is from the east.

Structure no. 45, along the south edge of the court, consists of five circular stones that have been set in the floor of the plaza in two rows extending north and south. The stones average one foot [31 cm] in diameter and each has an aperture in the center, 6 inches [15.2 cm] in diameter. These stones may well have been supports for awnings or flag-staffs. Another group of similar perforated circular stones is known to have existed formerly in the central part of the court, but only one of these now remains *in situ* (no. 14).

The round or oval-shaped structures are mostly mounds in which the outlining walls are not easily discernible. Of this class, four out of seven have their long axes east and west. The largest, no. 34, is located in the southeast quarter of the court. It is oval in shape, rising 2.5 feet [76 cm] above the plaza level, and measures 17.5 feet [5.3 m] north and south by 15 feet 5 inches [4.7 m] east and west. This mound is formed both of large dressed blocks and crude unworked stones.

There are 15 structures belonging to the irregular group. These are mostly mounds which on excavation will fall into one of the other classes. The shape of no. 32 is not well indicated. The east, north, and west sides are straight, with the south side rounded. The mound measures 24 feet [7.3 m] north and south, and 18 feet

[5.5 m] east and west and is raised 3 feet [91 cm] above the plaza floor level. On the west side, just north of the curved outlining wall, is what appears to be a series of three steps. Mr. Morris made a test pit in the northeast corner of this mound in 1924, exposing a group of column drums. One other structure, no. 8, was partially excavated by Mr. E. H. Thompson some years ago. This area measures 13 feet [4 m] by 12 feet [3.7 m] and is now marked by an oval depression in which a cache of column drums was found. With the exception of these two mounds, no excavation has been done in the court.

Perhaps the most salient feature of most of these low constructions is the very general presence in them of re-used material from other buildings, such as sculptured blocks, column drums, wall, and cornice members. This secondary usage of earlier building elements argues for a comparatively late origin, which is in keeping with the crude masonry characterizing them. Indeed, it seems fairly safe to conclude that they date from a period when the city, having already passed its zenith, was on the decline, and in some cases they may even date from post-Conquest times.

It has been suggested that they were house foundation-platforms, dating possibly from as late as the Spanish Period, or that they were market-stalls, the surrounding court being the great market-place of the city in ancient times, or again that they were dance platforms such as Bishop Landa describes, or even places where sacrifices might have been made in public. But the correct explanation of their former use must await further excavation and study. Such is their number and location, in the very center of the Group of the Thousand Columns, that it would seem advisable to continue, the investigation of these structures so happily exposed by the great hail-storm of April 14.

38.9.

SYLVANUS G. MORLEY

Archaeology

YB 25:259–273, 1926

With the current field season (ending June 15) the Chichén Itzá Project has completed its third year and is now fully organized. The staff for 1926 was as follows: Sylvanus G. Morley, in charge; E. H. Morris, archaeologist in charge of excavations; Karl Ruppert,

assistant archaeologist; G. C. Vaillant, assistant archaeologist; J.E.S. Thompson, assistant archaeologist; Jean Charlot, artist; Mrs. E. H. Morris, artist; E. L. Crandall (U. S. Department of Agriculture), photographer; Juan Sopena, assistant photographer; and Miss Katarina Jameson, secretary and bookkeeper. Miss Jameson was obliged to return to the United States in March owing to illness, and her duties for the last half of the season were discharged by Mr. Ruppert and R. A. Franks, Jr.

Dr. Morley left Washington on December 15 for Mexico City, to confer with Mr. José Reygadas Vertiz, the Director of Archaeology, as to the plans for the current season. While there he delivered two illustrated lectures in Spanish under the auspices of Dr. J. M. Puig y Casauranc, Minister of Public Education; one on the work of the Institution at Chichén Itzá during 1925, and the other upon the Maya and Aztec hieroglyphic writing. These lectures were broadcast from the sending station at the Ministry of Public Education, and were heard in Yucatán.

In addition to the regular members of the staff, the Chichén Itzá Project has received valuable field assistance during the year from outside sources. In January, Mr. Clarence Hay, Research Associate in Mexican and Central American Archaeology of the American Museum of Natural History, New York, visited Chichén Itzá, for the purpose of studying the façade of the Temple of the Warriors, to ascertain whether or not it would be feasible for reproduction in facsimile in the projected Mexican Hall at the American Museum. He found that the dimensions of its façade are such that it may be reproduced in full size in the space available for this purpose.

Mr. Hay was accompanied by Arthur Austen of the Fogg Museum of Harvard University, an expert in removing frescoes. Through the courtesy of Mr. Edward A. Forbes, Director of the Fogg Museum, Mr. Austen spent 10 days at Chichén Itzá and tried out several different processes for removing the paintings on the fallen wall stones from the Temple of the Warriors. These experiments were only partially successful, owing to the extremely enamel-like quality of the Chichén Itzá plaster, which last year proved impervious even to ether, the solvent of ambroid, and this year, to glue and, water. Mr. Austen is of the opinion, however, that further laboratory work may improve the technique sufficiently to permit its successful application to the Chichén Itzá mural paintings.

Dr. F. I. Proctor visited the ruins in January, making extensive experiments in the use of stereoscopic photography. Highly satisfactory results were obtained, particularly in the copying of hieroglyphic texts, the full value of the relief being rendered with life-like accuracy; and it would appear advisable to continue this work in the future.

Dr. Thomas Gann of British Honduras arrived at Chichén Itzá early in February, and accompanied Mr. Crandall on the Institution's First Expedition to the ruins of Cobá. Dr. Gann reports the discovery by him of a new hieroglyphic stela at a site on Chetumal Bay in southeastern Yucatán presenting the fifth Initial Series yet to be found in the entire peninsula. This records the early date 9.8.0.0.0 (approximately 334 AD)[Chapter 1.12].

In February, Joseph Linden Smith, the well-known artist and delineator of archaeological subjects, was the guest of the Institution at Chichén Itzá, for two months. During his visit he painted 11 pictures, showing details of the sculptural decoration, bas-reliefs, etc., from the Temples of the Warriors, Jaguars and Initial Series. He also accompanied Dr. Morley on his trip to Copán in April and painted two full-size pictures of Stelae H and N there. The first public showing of these canvases was at the Annual Reception and Exhibition, held at the Administration Building on the evening of December 10.

In March Mr. Ignacio Marquina, architect of the Department of Archaeology, came from Mexico City to inspect the excavations and repair work, and also to consult with Dr. Morley as to where and how the Department might most advantageously use the \$8,000 it is to expend at Chichén Itzá annually, as provided for under Article 27 of the Institution's contract with the Mexican Government.

Dr. Walter Lehmann, of Berlin, and Dr. H. J. Spinden, of the Peabody Museum of Archaeology and Ethnology at Harvard University, also visited Chichén Itzá, in March. The former made copies of the mural paintings and bas-reliefs in the Temple of the Jaguars, and the latter a special study of the hieroglyphic lintels.

Under an arrangement with Dean Edgely of the Harvard School of Architecture, Dr. Kenneth J. Conant of the University faculty visited Chichén Itzá at the end of May and early in June and made four architectural drawings of restorations of the Temple of the Warriors, the Caracol, and the Northeast Colonnade. Perhaps better than any other form of presentation, short of an actual model, an architectural drawing shows the original appearance of a building; and Dr. Conant's restorations of the Temple of the Warriors and the Caracol convey a vivid impression of the former magnificence and dignity of these structures.

Excavations at Chichén Itzá, during the year, were carried on at four different stations: The Temple of the Warriors (Station 4); The Northwest Colonnade (Station 10); The Caracol (Station 5); and, The Group of the Initial Series at Old Chichén Itzá, (Station 13).

A special report covering excavation activities at the Temple of the Warriors and the Northwest Colon-

nade [has been prepared] by E. H. Morris, archaeologist in charge of excavations.

THE TEMPLE OF THE WARRIORS

The most notable find of the year at Chichén Itzá was the discovery of the serpent columns and sculptured door jambs of an earlier temple had been partially destroyed and partially incorporated in the northwestern corner of the pyramid supporting the Temple of the Warriors, Station 4.

A single column of this temple had been exposed last year [Chapter 38.3], but it was not until the excavation of the northwestern corner of the pyramid was commenced at the close of the present season, that these additional façade elements were found.

The two heads and two tails of the pair of feathered-serpent columns, which had stood in the entrance of this earlier temple, all 4, slightly broken, were recovered, just where they had been built into the hearting of the later pyramid; and in this same rubble fill, arranged in the form of a low bin or rectangular enclosure, were found the sculptured blocks which had formed two jambs of the same doorway.

Three painted and sculptured columns belonging to the row behind the serpent columns and a section of the southern wall, 8 feet high, were found *in situ*, all brilliantly painted.

Never before has such vivid coloring been exposed at Chichén Itzá. This early temple must have had a fresh coat of paint shortly before it was destroyed in ancient times, and the rubble hearting of which these blocks formed a part has kept them from sunlight and weathering so that their colors, red, green, black, yellow, and blue, seem to be preserved almost at their original values.

One interesting feature noted was that the eyes of the human figures had been deliberately gouged out as though they had been made of some more precious material, which it was desired to save for use elsewhere. This is partially confirmed by the fact that one of the 92 human figures on the columns of the Temple of the Warriors still retains its eye made of an incrustation of mother-of-pearl with the pupil of obsidian or hematite, whereas all the other human figures in this temple had had their eyes gouged out. These blocks were removed to the church at the hacienda for safe-keeping and placed in a darkened room.

Scarcely less remarkable was the discovery of a magnificently sculptured and painted dais, 16 feet 6 inches [5 m] long, 13 feet 2 inches [4 m] deep, and 2 feet 10 inches [86 cm] high, built against the back wall of the Northwest Colonnade (Station 10) just south of the stairway leading to the Temple of the Warriors.

This dais is almost identical with the one found in

1924 against the back wall of the Northeast Colonnade [Chapter 38.1], except that the one found this year is in a perfect state of preservation, not a single sculptured element being missing. Without doubt it is one of the most remarkable productions of Maya art yet brought to light at Chichén Itzá.

The cornice or molding shows the same treatment as the corresponding element in the dais in the Northeast Colonnade: pairs of plumed rattlesnakes facing each other, from whose mouths issue human figures visible to the waistline, which in turn face tripod bowls filled with small round cakes of copal incense.

Jean Charlot, one of the staff artists, made a color copy of the figures in oil, original size, shortly after the dais was first uncovered and while the pigments still retained much of their original brilliancy. In describing the paintings, he says:

The most striking feature of this platform is the excellent state of preservation of its paintings. The floor of the altar is painted red like the floor of the temple.

The cornice presents a group of gods in human shape, holding arrows and atlats (throwing sticks). They are seen only to the waistline as they emerge from the open jaws of feathered serpents. They seem to receive the smoke of copal incense offered in painted ceremonial bowls. The snakes are alternately green, black and white with yellow bellies. The background is red and the border blue. The sloping sides of the platform are carved with processions of men, probably warriors and priests, marching from the back wall toward the front and from the sides to the center. These figures vary greatly in costume and attributes. Behind some of them stand rattle-snakes curved in an S shape, while others have headdresses made of blue feathered masks of the Long-nosed God, and carry long ceremonial sticks tipped with flowers.

The figures also have flowers on their heads, and their short dancing skirts, curved like petals, probably suggest the same motif. The background is filled with ornamental devices. The dominant colors are blue, red, yellow, green, black and white. This platform is one of the best-preserved examples of painting combined with sculpture yet found at Chichén Itzá.

In reporting the results of his study of the sculptured columns in the Temple of the Warriors, Mr. Charlot makes some interesting observations on the technique of Mayan artists:

The columns are made of a relatively soft white limestone, each column being composed of an arbitrary number of square drums, whose height varies from 20 cm to one meter. These

drums are joined by lime mortar, and the space between is filled with stucco, modeled to connect the sculptured designs on contiguous stones, some of it still being in place. The carving was done with a tool little harder than the stone itself, if one may judge by the irregularity of the curved lines and an evident concern to avoid deep carving and spheric modeling. The drums were put in place before carving, and the design was then sketched upon the flat surface of the stone and the silhouette of the figure was brought out by cutting in the background a centimeter or two. Inside lines were cut by diagonal incisions, and the lightest lines were made by scratching only. The apparent primitiveness of this technique, however, must not be charged to any incapacity on the part of the ancient craftsman, who had skill enough, when he chose to exercise it, to carve in full round the Atlantean figures of the altar and the beautiful seated figures of the façade.

This primitive character of the relief would seem to be due to the fact that the carving on the columns was considered only as a sort of skeleton to be entirely covered with painting. The suggestion of depth, correct drawing and the details were to be worked out with paint, so much so that, in the darker parts of the temple, the sculpture was limited to a few rough lines scratched on a surface covered with stucco.

The painter, who followed after the sculptor, worked with two kinds of colors; one opaque and sufficiently solid to be applied directly to the surface of the stone and sometimes used only as a background for finer colors; the other, applied *alfresco* on a preparation of white which showed through the transparent color, the same effect being obtained by this treatment columns, as in the case of the wall paintings. The line is elegant, tapering from broad to narrow by imperceptible nuances. This and the boldness of the curves shows that the brushes must have been of carefully chosen long hairs pointed when wet, as a Japanese water-color brush.

The colors used are the following: an opaque, dull red, near the Indian red, made from an indigenous wood, which is still used in wall-painting. This red forms all of the backgrounds, and, since it is one of the most permanent colors, still retains in practically all places its original brilliancy. There is a blue, which when opaque is like a kind of dark Prussian blue, and when transparent more nearly a cerulean blue. This color was used for all the borders around the pictures; it is the dominant note in the ensemble and is especially associated with sacrificial ceremonies. A green, a yellow and a black complete the palette. These colors were so much varied by mixing, how-

ever, that in practice the number of colors is unlimited.

The colors were not applied in flat tones, but were irregularly distributed, the brush strokes suggesting movement and depth. Black or red lines, drawn freely on colored background, indicate such minute details as the individual feathers or stones in a mosaic, the thongs and polychrome designs of sandals, finger-nails, hair and eyebrows. Different layers of color can be distinguished one from another; the latest layer being especially characterized by a preponderance of black and white.

The sculpture, in addition to painting, was enriched by incrustations of mother of pearl, obsidian, and very probably of colored beads, the places of which are now shown only by empty holes in the surface of the stones. In addition to diversity of interest, polychromy also added clarity, for each object was traditionally of a certain color, and this together with the outlining gave definition to and emphasized each object. Feathers were green or blue; jewels, when turquoise, are blue, but green, when malachite or jade. Yellow was used to indicate gold or copper. The greatest variety is to be noted in the colors of the skin, which run from a sort of grayish yellow to black, through all shades of red. Even bodies of pure blue or striped red and white can be found. Such differences would be hard to explain ethnologically and to understand them one must remember the war-paints and tattoos of which the early Spanish writers give full descriptions.

Continuing the policy established during the 1924 field season of reconstruction only within the bounds of virtual certainty, the work of reassembling the sculptured elements of the Temple of the Warriors was continued during the 1926 season.

In excavation the greatest care was taken to keep the individual sculptured stones as near as possible in the relative positions in which they were found, and this proved of invaluable assistance in placing the stones in their original places in the friezes, masks and panels.

The enormous task of fitting together and assembling the sculptured elements of these different bands, masks and panels was performed by several members of the staff during the last two seasons.

In 1925, Messrs. Morris, Ricketson and Ruppert devoted time to this difficult work, and this year Messrs. Ruppert and Thompson were thus very largely engaged. Mr. Ruppert spent practically all his time during the last half of the season fitting together the masks and serpent-bird panels in the Temple of the Warriors, and supervising their replacement in the walls, and Mr.

Thompson devoted fully half of his time to the bands on the northern and southern sides of the pyramid.

Karl Ruppert, assistant archaeologist, in discussing the details of this work reports in part as follows:

The sculptured elements at the Temple of the Warriors which it has been possible to replace may be divided into two groups: those coming from the pyramid and those from the temple proper which surmounts the pyramidal base.

Excavations during the 1925 season had revealed the pyramid as composed of four terraces made up of the following elements: 1. a battered wall 5 feet 6 inches [1.7 m] high, which rises with a gradient of from 65 degrees to 75 degrees from the horizontal, varying according to the side of the pyramid and the particular terrace; 2. above this a vertical cornice 6 inches [15.2 cm] in height and projecting from 6 to 7 inches [15.2–17.8 cm]; 3. 2 inches [8.1 cm] back from the upper margin of this cornice is set an elaborately sculptured band formed of two courses of stone, 2 feet 3 inches [69 cm] to 2 feet 6 inches [76 cm] in height, which in turn is surmounted by 4. a second vertical cornice also 6 inches [15.2 cm] length, the upper margin of which forms the level of the terrace top.

In the case of the three lower vertical bands (no. 2 above), portions of the sculptured elements were found *in situ*, which gave the clue for the reassemblage and replacement of the design. No portion of the fourth vertical band, however, was found *in situ*, but such is the scarcity of sculptured stones remaining after the three lower bands had been returned to their original positions, it hardly seems possible that it could have been sculptured like the corresponding element in the three lower terraces.

During the 1925 season the third band, with the exception of two stones which were not found, was replaced on the west side south of the stairway. As the Northwest Colonnade abuts the pyramid supporting the Temple of the Warriors on this side, the first and second vertical bands do not appear. After the replacement of the third band only three sculptured stones remained which could possibly have belonged to a fourth vertical band. This practically eliminates the possibility that the fourth vertical band, which was nowhere found *in situ*, could have been sculptured.

The lowest sculptured band on the south side of the pyramid measures 125 feet 4 inches [38.2 m] long and 2 feet 6 inches [76 cm] high. Its western end abuts against the east side of the north and south wall which forms the back of the Northwest Colonnade. The western 75 feet [22.9 m] of this band was found *in situ*, having

been covered by a colonnade south of it, which had been built against it. The remaining 50 feet 4 inches [15.3 m] to the east was fitted together and put back into place, and is composed of 91 stones.

The second band on the south side is 117 feet 3 inches [35.7 m] long and 2 feet 6 inches [76 cm] high. It is composed of 250 stones, 116 of which were *in situ*. Of the remaining 134 fallen stones, it was possible to recover and replace 132.

The third band is also 117 feet 3 inches [35.7 m] long and 2 feet 6 inches [76 cm] wide and was composed of 254 stones, of which but five are still lacking.

The same relative lengths hold for the bands on the north side of the pyramid. Here, however, only in the case of the lowest band at the west end were stones found *in situ*, from which point the band could be extended.

In the case of the first and second bands on the north side it was necessary to leave a break of 3 feet 10 inches [1.2 m] and 39 feet 8 inches [12.1 m], respectively, in order to show the remains of the east wall of an earlier pyramid which had been covered by the later pyramid.

The design of the sculptured elements is a repetition of alternating pairs of semi-reclining warriors and pairs of animals, or bird and animal figures. The figures of the warriors are placed feet to feet, their faces looking away from each other. In every case they carry long plumed spears, or staffs, which in the various bands show considerable stylistic differences. The relief is low, but very distinct. The warriors wear elaborate costumes which still show traces of blue, red and green paint. The warriors in the lowest band are more recumbent than those in the other two bands, and also the staffs are held at a greater angle. The distal end rises to the height of the warrior's head, while the other end is quite low. The feather ornaments on the staff swing low and away from the body. The *maxtli*, or Mayan breech clout, also curves sharply away from the body to accommodate itself to the reclining position of the figure.

In the first and second bands the plumes on the end of the staff divide, a single plume curving up and back toward the rear of the warrior's head, the other three turning downward. The ornaments, or scrolls, at the opposite end of the staff are long and slender and generally swing away from the figure. The *maxtli* is long and swings away from the warrior's body.

In the third band the warriors are more upright and the staff is held almost horizontal. The plumes at the end of the staff turn up in a single group of 3, 4 or 5, and curve toward the back of the warrior's head. A pendant grouping of plumes on the staff, which in the case of the

lower bands swings away from the warrior's body, here always hangs perpendicular.

The bird figure is that of an eagle. The animal figures are those of the jaguar, and a still unidentified short-tailed, thick-haired quadruped, called by the native laborers a bear, which it in no small degree resembles. The figures are squatting on their haunches and hold in their forepaws an object which they appear to be offering to the warriors, whom they face. In general, the animal and bird figures are found in pairs with their backs to each other. In no case has a pair of like animals or birds been found together. On the western side of the pyramid in the third and only sculptured band found there, one instance was noted where a jaguar and eagle face each other. Another variant was noted in the arrangement in the first band on the southern side, where two pairs of animal figures appear next each other. There seems to be no stylistic difference in the animal or bird figures of the different bands. Speech scrolls, circles and ornaments fill the background.

The bands have been carefully painted and replastered several times. The background is red; the warriors have head-dresses of green, red and blue; and dresses of green, yellow, red and blue. The eagles are red; and the tigers, yellow, brown and black.

On the western side of the pyramid, where the southern portion of the band that extends under the stairway is still *in situ*, one of the stones was actually found upside down. This clearly indicates that the stones were sculptured before being placed in the bands.

Lying spread out on the ground in the bush a short distance northwest of the pyramid is an elaborate sculptured band partially fitted together, as if this may have been the workshop for building operations going on at some other temple. Here the sculptured stones are laid out in order, seemingly as if the workmen were fitting them together at this point, preliminary to their being placed in the walls of some building under construction in the immediate vicinity.

The only examples of re-used stones found in the vertical bands were in the lowest bands on the northern and southern sides, where large roof cornice stones had been re-used.

The sculptured elements in the Temple of the Warriors proper, which were replaced this season, were all elements of the lower vertical zone of the façade and are located as described by Mr. Morris in [Chapter 38.4]. They may be divided into two groups: masks and serpent-bird panels.

The masks are grotesque faces, front view, built up of separately carved blocks, and they fill rectangular spaces. They average 6 feet 2 inches [1.9 m] wide by 3 feet 2 inches [96 cm] high.

Each mask is made up of 23 or 24 separate stones, exclusive of the band or fillet across the forehead.

It seems likely that the masks were arranged in groups of three, one above the other, as sufficient sculptured elements were found to make possible such a reconstruction. However, time permitted only the replacement of two masks in each vertical panel. In all, 13 masks were replaced this season. It is interesting to note that in the central mask-panels on the northern and southern sides of the temple, the curling nose elements are small and relatively insignificant as compared with those of the corner masks which are silhouetted against the sky as if this greater emphasis on the corner masks was intentional.

Only one example of a re-used stone in these masks was noted. It is the left eye of the lowest mask in the center of the southern side. This stone is also carved on the reverse side.

The masks were elaborately painted in red, green, yellow and blue. The lowest masks of the northern and southern sides still retain considerable paint. The mouth was painted red; the lips yellow or green; the ears, green, to represent jade; and the ear-plugs, red. The ornaments above and below the ears are red, blue or yellow; the eyes red, yellow or green, or combinations of any two of these three colors. The eyebrows are green or blue. The head band, which represents three or four ribbons, was painted blue, green, red and yellow. The masks show small individual differences and seem to follow a style developed between 980 and 1200 AD, that is, before the Toltec Conquest.

The other sculptured motif of the lower zone of the Temple of the Warriors represents the serpent-bird, which is a reciprocal concept of the feathered serpent. These serpent-bird panels have bird feet and bodies with great plumes rising to the top of the panel and gracefully sweeping to the sides, forming a complete arc and falling down the sides to the base of the panel. Projecting from the center of this balanced design of feathers is a serpent's head in full relief. The tongue of the serpent is bifurcated and hangs downward, being produced by two separate stones tenoned into the wall below the serpent head. The open jaws of the serpent hold a human head.

The serpent-bird panels average 6 feet 5 inches [2 m] in height and 6 feet [1.8 m] in width, and begin at a height of 1 foot 7 inches [48 cm] above the lower cornice. They show but slight variation in their individual treatment.

The corresponding serpent heads were found for all six panels, which were repaired, and three of the human heads. Casts in white cement of one of the original human heads

were made as substitutes for the three missing ones. In only one case were the two stones forming the bifurcated tongue found entire. The serpent-bird panels are composed of from 27 to 30 stones, exclusive of the two stones for the serpent jaws, the human head and the bifurcated tongue. The stones for the panels on the west (front) side were all found. This may be due to the fact that the very wide terrace on this side of the pyramid prevented them from falling down the talus and thus being broken or destroyed.

An interesting and curious fact in relation to the western mask on the southern side is that three of the sculptured stones belonging to it were found some 250 yards [228.6 m] northeast of the pyramid, where they had been piled with other sculptured and plain stones around the rim of a dead cenote.

The sculptured panels of the northern and southern sides retain the most paint. The background is red with red and green feathers. The body of the bird surrounding the head is green with red trimmings. Some traces of red paint were noted on the serpent jaws. The human heads show numbers of coats of plaster, each of which has a layer of paint, either red or yellow or a combination of the two.

This completes the decoration on the lower zone. The vertical central of the medial three member cornice was in the form of two serpents. Two heads to accompany the bodies of these serpents were the corners of the building, and two tails were found in the debris of the central portion both the northern and southern sides.

The character of the sculptural motif of the upper zone, that is, above the three member cornice, has not yet been worked out. Sculptured elements belonging to this motif were found on all but the western side. Lack of time prevented close examination of this material, so that nothing definite may yet be said concerning its nature. However, it is quite probable that with careful study it may be possible to assemble these elements in their original positions.

Notable results have been achieved by Mrs. Ann A. Morris, another of the staff artists, in reassembling the fragments of the mural paintings in the Temple of the Warriors. She has succeeded in fitting together most of the pieces, which came from Area 31,¹ some 57 in all, thus recovering the greater part of the original design. A coastal scene is represented here. Canoes, carrying two warriors each, are being paddled along the shore, upon which stands a village. The water abounds in fish of several kinds, as well as snails, crabs and lobsters. On land a number of people are engaged in various occupations: a woman is grinding corn or

washing, another watches a boiling pot, a man carries some burden on his back, another is fighting, others are walking between thatched houses or under trees; the whole constituting an intimate picture of life in some ancient coastal village.

Another equally remarkable scene is presented on an assemblage of six fragments from Area 24. Here the subject is a human sacrifice. The sacrificial victim lies upon a convex altar, made by a curl the body of a feathered serpent, his breast curving upward, and his arms and legs grasped by two attendant priests. A tall priest stands behind the altar with upraised knife ready to strike the fatal blow, which behind there rises in graceful curls the body of the feathered rattle-snake with opened mouth and darting bifurcated tongue, in whose honor, it may well be, this sacrifice is about to be consummated. The sacrifice takes place before a temple, some architectural details of which, doorway, cornice elements, etc., may be distinguished; a strikingly life-like presentation of what must have been an all too common sight at Chichén Itzá during the Toltec period.

In her report covering the work of restoring the original designs, Mrs. Morris gives interesting facts concerning the methods she employed. In speaking of the restoration of the village scene she writes:

The *modus operandi* in restoring this design was as follows: four representations were made of the area. First, each stone bearing painted plaster was reproduced in water color; second, an ink drawing on a scale of 1 to 5 was made of the outlines of the individual stones arranged as a whole; third, a restoration of the missing parts was then attempted in another ink drawing; and fourth, the preceding was painted, in accordance with the colors actually found in the first reproduction.

Justification of the restoration thus secured is based upon the following points. The parts restored are in no case derived entirely from the imagination; they are invariably exact representations of other similar elements found in adjacent areas. For example, the prows of the war canoes are all restored on the pattern of one clearly represented in the next area. The trees are completed in symmetrical fashion. A snail emerging from its shell was thus associated through the finding of another complete representation of such a figure, while the restored anatomical parts of humans and fishes are direct copies of others to be found in the same area.

The arrangement of the individual stones in the composition as a whole was effected in the following manner: First, painted reproductions were made on sections of paper of exactly the same sizes as the stones themselves, which

proved of invaluable aid in the final moving and adjustments to place.

Where the parts to be joined were clearly indicated on two adjacent stones, no difficulty was encountered, but, where arbitrary placement was necessary the following characteristics of the composition served as a general guide. The shore line indicated on a large scale the placing of the stones, since at this horizontal line the background changes color from red to blue. A second useful working principle was found to be the very constant habit of the ancient Maya mason of laying his wall up by tiers of even height. With the infinite variety in the size and shape of the stones encountered, the problem receives direct aid from this source. A slight increase in scale of the figure drawing from bottom to top was a third source of aid in the correct assemblage of the design elements. When all of these points were borne in mind and simultaneously adjusted, the correctness of the assemblage ceased very largely to be a matter of conjecture. Indeed, there were only two stones which were placed adjacent to unrestored gaps for which absolute proof of their original positions can not be given.

Regarding her restoration of the sacrificial scene she says:

The greatest gap in this restoration occurs where the face of the sacrificial priest should have been. The face which has been inserted in its place is the replica of the face of another priest from the same area. The correctness of the association of these six stones is evident from the fragmentary lines on the different stones which join with each other, the single obscure place being the decorated top of the temple; but even this is seen to tie in with a fragment of the same carved element found between the tooth and speech-scroll of the snake.

This scene depicts the body of a human victim stretched over a sacrificial altar. Usually these sacrificial altars are represented as convex blocks of stone, but in the present case the coil of a great serpent body serves this end, no doubt symbolically. The feathered serpent itself looms over the whole group in barbaric magnificence, the patron of the bloody rite about to be consummated.

Two priests painted black from head to foot, except for their hands, grip the ankles and wrists of the victim to be sacrificed. The officiating priest, also painted black, stands over the prostrate victim with upraised knife. This knife is identical in color and shape with one to be found in the collection of Señor Don Rafael de Regil of Mérida, Yucatán.

All three priests are clothed in blue garments. The sacrifice takes place on a low stone terrace in front of a temple with a sculptured cornice. The whole group becomes of even greater interest when one reads the descriptions of identical ceremonies described by the first Spanish invaders of Yucatán. Doubtless it will be possible to make other similar restorations of other areas from fragments found in the Temple of the Warriors, and thus, in part at least, to recover some small remnant of the beautiful and rich designs formerly painted upon its interior walls.

In connection with the copying of these mural paintings a correlative study of the early Spanish and Maya writers is being made, which has already given much corroborative data as to ancient Maya dress, weapons, and customs.

The sculptured and richly painted panels representing two human figures, which were carved upon the door jambs of the earlier temple buried in the northwest corner of the pyramid supporting the Temple of the Warriors, were copied in color as soon as they were uncovered, since experience has shown that, after exposure to the air, the pigments begin to fade immediately and lose their former brilliance.

THE CARACOL

Through the generosity of Mrs. Frederick Guest of New York it was possible to continue excavations at the Caracol (Station 5) during the current season. This structure is one of the only three round buildings known in the whole Maya area, and has the added interest of having been constructed primarily as an observatory [Chapter 38.6 this volume].

The work of repair was carried forward under the immediate direction of J.E.S. Thompson, assistant archaeologist, who began by removing the loose stone from the upper terrace and clearing the debris between the stairway and the front of the building in order that the masons might begin relaying the fallen parts. Mr. Thompson, in reporting the results accomplished, says:

Inside the outer corridor of the tower, excavation was carried round nearly to the south doorway. In the course of this work, the fact came to light that there is a step up in each of the four doorways from the outer corridor or into the inner one. Remains of paintings were noted on the inner wall of the outer corridor, and the plaster floor had been painted a rich Prussian blue.

Just under the lintel of the south doorway was found an interesting figurine of a jaguar, or

cat, with lolling tongue, made of pottery; although this had been broken by falling stones, most of the fragments were recovered and assembled. The figurine is hollow and is about a foot long and 6 inches [45.7 cm] high.

Excavations were continued to the north of the west doorway within the outer corridor as far round as the north doorway, where work was brought to a close for the season. This leaves the outer corridor about half excavated, that is, from the south doorway around past the west doorway to the north doorway; and the exterior wall the same.

In addition to the excavations described above, the double stairway leading to the upper terrace was put in a state of repair. This stairway, although in much better condition than the stairway of the lower terrace was nevertheless, in such poor condition that, left as it was, it would have speedily disintegrated, detracting greatly from the appearance of the building.

Flanking it are a few massive blocks, all that remain of what must once have been an impressive double serpent balustrade. It was hoped the missing elements of this balustrade might have slipped off and been buried in the debris on the flanks of the stairway; and it was therefore decided to clean these areas in an attempt to recover the missing pieces. None was recovered, however, although many other objects of interest were found. Each side of the stairway was excavated to the northwest and southwest corners, respectively, of the upper terrace.

The cut stone platform projecting between the two upper sections of this stairway was also cleared. Here formerly stood a dated stela and a large disk-shaped stone with a long tenon, both of which are now in the Historical and Archaeological Museum at Mérida. Buried in the floor of this platform stands a small round column, but it is apparent that it was merely part of the fill, as it is surrounded with the characteristic mixture of stone and mortar of which every Maya fill is made.

Through the discovery of a sculptured stone presenting a serpent's head with a band of hieroglyphs attached thereto, the problem of the puzzling sculptured elements found at the Caracol last year and this, with similar hieroglyphs on them, was partially solved. It was evident from the arrangement of the plain borders on the block found this season, that they had all been parts of a serpent with a hieroglyphic body, which had wandered in right-angle turns across the upper part of the tower. It is hoped that when the Caracol shall have been completely excavated, and all the parts of this design recovered, that it may be possible to rearrange this inscription in its original order.

THE GROUP OF THE INITIAL SERIES

Data of a somewhat surprising nature seems to have resulted from the excavations under G. C. Vaillant, assistant archaeologist, at the Group of the Initial Series (Station 13), in Old Chichén Itzá, which appears to be almost, if not entirely, a unit of Toltec origin.

A test trench sunk into the western side of the pyramid supporting the Temple of the Initial Series revealed an earlier temple, built into or covered by the later construction. This earlier temple-itself would appear to have been of Toltec origin, judging by its sloping exterior base, practically a diagnostic feature and, if so, it is to be doubted whether any of the structures of this group go back earlier than the Toltec Conquest.

Excavations at several points in the general terrace supporting the different structures of this group indicate clearly enough that the Temple of the Phalli is its oldest unit. What is not yet certain, however, is whether or not this oldest building precedes or antedates the Toltec Conquest, although the remaining structures are pretty surely all of Toltecan origin.

The Atlantean column, another diagnostic characteristic of the Toltec Period, is found more extensively at this group than at any other in the entire city, three of the four structures at Chichén Itzá, thus far found presenting this feature, occurring here.

At the beginning of the present year only two structures having the Atlantean column were known—the Temple of the Initial Series at this group and a small temple just south of the High Priest's Grave (Station 11). During the course of Mr. Vaillant's excavations at Station 13 a new temple at the southeastern edge of the group was found presenting this feature. The two heroic sized Atlantean columns, which divided its triple doorway, were composed of sections like those in the Temple of the Initial Series, which they very closely resemble in size, style and treatment. The several sections were scattered about on the ground, some sections being badly shattered. Extremely careful excavation, coupled with the immediate replacement of the different fragments recovered, made possible the practically complete repair of the shattered elements and the re-erection of these two handsome examples of the Atlantean column.

The other example of this feature was found in the Temple of the Little Heads, also at Station 13. In this case the two Atlantean columns (also made in sections) were not in the façade, but supported the double arched ceiling of the single chamber.

The long-missing second sections of the two Atlantean columns in the Temple of the Initial Series, which presented the part of the figures between the neck and the waistline, were found this season through the vigilance of the native mayordomo, Juan Olalde,

and restored to their original positions. These sections fit beautifully and very considerably enhance the dignity of the temple doorway, which without them had appeared squat and ineffectual. They were found at the base of the pyramid, one on the northern and the other on the southern side.

Extensive excavations south of the Temple of the Phalli brought to light a welter of walls, colonnades, courts, etc., most of them apparently of late construction, built without conformance to any well-defined plan of grouping. Before the final time relationships between these several structures can be worked out, further investigation and study will be necessary.

The trenches in this complex yielded a great number of have been classified and studied by Mr. Vaillant, as gave all the ceramic remains, fragmentary as well as entire, recovered during the past three seasons. In the detailed report of his studies of the ceramics of Vaillant says, in part:

The method of nomenclature here used is frankly tentative. The two most characteristic points about a vessel or potsherd are its color and provenience. Shape, though important, is difficult of precise definition in a fragment. The titles used below are calculated to describe the most striking point of the ware without being so bold as to confound a ware of similar hue with one of different composition. When possible, as in Plumbate Ware, general usage in nomenclature has been followed.

The type of pottery most commonly found is Decorated Slate Ware, which is built from a coarse, heavily tempered paste that takes a pink to a red shade under fire. Over a vessel the potter commonly ran a wash, a slate grey in color for the most part, but there are shades that vary from a fish-belly white to a creamy yellow. Sometimes the slip would be applied too thin, and the red of the base clay would be left pure, or possibly with a grey sweat, greasy to touch, upon it. The main forms are ollas with broad shoulders, tapering to a flat base, having handles vertical or horizontal, commonly disposed in pairs. Less often one finds a globular bottle form, usually with a flat base. Also this ware appears as large bowls or *cajetas*, with a wide mouth usually a little smaller than the greatest diameter which occurs at the bottom of the rim. Their bottoms are flat and they have handles. The decoration of this ware is simple and labor-saving. The handful of fibers, or of whatever the brush was made, makes a blot, in ollas near the junction of the shoulders to the neck, in *cajetas* at the edge of the lip, and the paint is allowed to run down the side subject to some rough guidance. Very occasionally in ollas, but never in *cajetas*, a design, like a series of SS laid horizontally, is run around the neck above

the vertical stripes. Ollas, naturally, are only decorated on the outside; cajetas, on the inside as well. On vessels which have the slip burned away by too much fire, the decorative paint remains in white streaks.

The second great ceramic group at Chichén Itzá has been called Porous Grey Ware. The basal paste is grey in color, ill-kneaded, without much tempering. For utilitarian needs small bottles and ollas were made, often with no slip, but sometimes having a thin wash of the same material run over them.

A much commoner variant of this ware, which well may have been used for cooking, in distinction to the employment of Decorated Slate Ware for storage or for eating, was Striated Porous Grey Ware, comprising small ollas without a slip, with thin walls shallowly furrowed by raking with some toothed instrument.

A third variant found some years ago in the Sacred Cenote by Mr. Edward H. Thompson, but rarely obtaining elsewhere, has strips of clay filleted on to small bottles, while finger-pinching their bands gives a ribbon-like effect.

A fourth variant of this group represents a transition between Porous Grey Ware and Decorated Slate, the paste being of the former and the slip and paint of the latter category. It is very rare.

Found almost without exception in the cenote are small bowls with round feet, perforated but not truly, hollow, or else with solid teats as supports. The vessels received no slip, but directly a ball of copal incense was molded and set in them, the whole was covered with a blue stucco. A variant of this practice is painting, in white, blue and black, such a pot after it has been fired. At times, but most infrequently, the feet may be modeled into the faces of men or animals. This practice extends to the red-lacquered Porous Gray Ware (Red Lacquer Ware), but due to the habit of leaving the feet unslipped in this style it is hard to detect.

A third group, distinct if not numerous, is Polished Red Ware. On a paste burning red, good in kneading, tempering and firing, a slip of the same clay is run and burnished. While the common form is the olla, tripod bowls, some what better made, obtain occasionally. One or two examples exist of deep, flat-bottom bowls. Somewhat commoner axe vases, more or less cylindrical, set on an annular foot. The usual decoration is a simple horizontal groove or series of grooves around the neck. Examples exist of complicated graving in the form of a braid or of gadroons over the body of the pot. Possible trade pieces are deeply carved fragments representing a combination between floral patterns and those of abstract design. Half

of a bowl exists with a band of carved flowers around the lip. Another suggestion that this carved ware may be an importation is that it does not exhibit the regularity of shade of the common brand.

Actually the finest ware, with the exception of Plumbate, is Polished Orange. Here we have a truly excellent paste, kneaded with cunning and tempered with sophistication. A slip, generally orange but occasionally burning red, presents a glossy surface. Decoration comprises painting simple rectilinear patterns in black on the exterior of vases, on bowls, or on flat bottom tripod bowls. In several instances, around the exterior of the wall of the pot, highly conventionalized birds are painted in deft free-hand. The forms are tear-shaped ollas set on cascabel feet, or bowls with low annular bases, or dishes with a flat floor and erect concave walls resting on legs like hollow truncated cones. One sometimes finds incision through a broad black stripe, or again incision direct into the paste. More rare is a white slip with incisions in broken-down glyph patterns; indeed such vessels have a very foreign look.

The ceramic art is not confined, obviously, to the mere fabrication of pottery vessels. At several points excavated by the Institution, spindle whorls of pottery came to light. At Station 13 many of these were graved with designs of birds with out-stretched wings, and this type also is found elsewhere. From Station 13 also came pottery pestles, with punched grinding surfaces and often effigy heads, for use probably with grating bowls. The material seems to be the same as the basal paste of Decorated Slate Ware. From the same locality appeared a carved seal for stamping cloth. A tray, or olla cover, and fragments of another came also from the same station. There occur tiny model pots, individually or in connection with a "late" incensario. Worked sherds, for potters' tools or for gaming, according to shape, are found in small numbers. From Station 5, the Caracol, we have an example of a couchant jaguar, some 7 inches [17.8 cm] in length. This object is the only known example of the figurine at Chichén Itzá and it was found in late debris. On the other hand, the figurine is a very common ceramic type among the Maya, and the Aztec, Toltec, and "Archaic" peoples of Mexico.

Chichén Itzá ceramics are not Mexican, nor, on the other hand, are they Mayan, but more Yucatecan from force of composition. In shapes, particularly in the art pottery, clear differences exist between Chichén Itzá wares and those from other Mayan sites. Also two wares occur, the polished orange and incised, white on red, which, although they are not Mayan and do not occur frequently enough to be called Chichén

Itzá, need to be anchored. Further investigation, particularly with reference to single occupation buildings, ought to produce more information on the chronological sequence of styles. The best procedure, now, is an external attack, based on a regional segregation of wares.

Four units at the Group of the Initial Series were repaired during the current year, as follows: 1. The gateway of the group with adjoining sections of the low parapet, which was built around the edge of the general terrace; 2. The Temple of the Initial Series, and the earlier temple covered by its substructure; 3. The Temple of the Little Heads; and, 4. The Temple of the Atlantean Columns.

The excavations at this station during 1926 may be said to have established two general points: First, that this group, practically in its entirety (with the single possible exception of the Temple of the Phalli, by no means certain) dates from the Toltec Period, 1191 to 1448 AD; and second, that even within this short period of time, two and a half centuries, considerable changes, alterations, additions, extensions, etc., had been made. So extensive indeed are these changes that building operations here would almost seem to have been continuous throughout the Toltec Period.

NOTES

1. The walls of the Temple of the Warriors both exterior and interior were divided into areas during excavation and to facilitate reassemblage and subsequent study all painted or sculptured fragments were marked with the number of the area in which they were found.

38.10.

EARL H. MORRIS

Report on the Excavation of the Temple of the Warriors and the Northwest Colonnade (Stations 4 and 10)

YB 25:282–286, 1926

During 1926 excavations at the northwest corner of the Court of the Columns, that is, the Temple of the Warriors, were centered upon the clearing of the Northwest Colonnade (Station 10). The latter structure is the long columned hall which flanks the entire western

side or front of the Temple of the Warriors' pyramid and continues both north and south there from. In 1925 this building was transected by a drift three inter-columnar spaces in width, driven for the purpose of laying bare the foot of the stairway leading to the portal of the Temple of the Warriors. In 1926 digging was begun at the right side of this cut and was carried southward until the limits of the building had been passed and two transverse rows of circular columns, constituting the north end of the very long edifice which forms the western range of the Court of the Thousand Columns, had been laid bare.

The north half of the Northwest Colonnade was excavated in two levels. First, considering the general surface of the mound as a base, the talus, triangular in cross-section and lying against the pyramid north of the stairway was removed. This digging yielded the faced stones which once comprised the third and fourth battered elements of the contiguous portion of the pyramid; the carved blocks of the sculptured band which was situated between the two; and the huge serpent's head originally tenoned in at the top of the northern balustrade of the temple stairway. In this area, just as excavation reached the undisintegrated hearting of the pyramid, at which point under ordinary circumstances it would have terminated, it was discovered that, encased within the rubble of the hearting, there exist the remains of what was once a magnificent serpent-columned temple, part of which had been torn down and the remainder buried during the construction of the pyramid destined to support the later Temple of the Warriors. This underlying temple will be briefly described on a subsequent page.

By the close of the field season the lower level north of the stairway had been cleared of debris. There remain only a few cubic yards of vegetable earth and fallen wall-stones covering the three steps, which lead from the major terrace to the platform upon which the building stands, to be removed before the excavation of the Northwest Colonnade will be completed.

As a preliminary to a description of the repair work, it may be stated that the field staff considers it advisable not to develop the eastern, or rear, face of the pyramid, leaving that exposure more or less as it was found as a control section for future investigators, and as an example of conditions previous to excavation.

The fallen elements of the south face of the great pyramid were replaced to the limit of positive knowledge of the original treatment; that is, up to and including the 6 inch [15.2 cm] vertical cornice surmounting the fourth, or uppermost, sloping element. The distance thence to the top of the pyramid is just enough to allow for the completion of the fourth multiple zone in the same style as the other three; or definitely expressed, to allow for a 26 to 28 inch [66–71 cm] vertical band

with an ultimate 6 inch [15.2 cm] vertical cornice. Certain it seems that the fourth zone was completed in major pattern like the ones beneath. However, a reassemblage of the sculptured stones from the south side permitted the replacement of three sculptured bands, which sections found in place prove to have been the lower three, and left no residue to represent a fourth. Hence, obviously, the latter was not sculptured. Moreover, specially shaped corner stones were found in sufficient number to replace all elements up to and including the cornice above the fourth battered element; but not one at any corner of the pyramid, to prove the form of the termination of the two upper members of the fourth multiple zone. While there can be little doubt that this zone deviated in pattern from the others, presumably having been finished a band of plain faced instead of sculptured stone, the proof of this point is inferential rather than concrete. Therefore, a restoration was not made.

When the repair of the north face of the pyramid had been practically three-fourths completed, the discovery of the previously mentioned buried temple imposed the necessity of deferring the remainder of this work until another season. Nor could the north half of the western face be replaced until this earlier structure has been explored to the extent that its condition and the discoveries to be made within it dictate. Nearly all of the southern half of the western face was repaired during 1925. However, there remained for treatment the south margin, of the temple stairway. As stated in the report for 1925 [Chapter 38.3 this volume], this stairway was approached through the three central portals of the Northwest Colonnade. It led upward through a well, formed by a modified vault of the colonnade, emerging from the roof, thereof at about two-thirds the height of the pyramid. Beginning at the floor of the lower hall the stair is bordered by balustrades, 45 inches [114.3 cm] in width, each graven in low relief with the rattles and first body whorls of a feathered serpent. The portions found *in situ* extended from the inner foot of the third row of columns, counting from the west, to the line of the outer face of the fourth row, at which point they were interrupted by the vertical faces of the wall closing the ends of the fourth, or, innermost, vault and the inner half of the third vault, these being the parts of the roof transected by the stair. Among the surface debris which slid down from above were found blocks bearing the same low relief carving of the serpent whorls, and far down upon the stair was a very large serpent's head, its rough tenon indicating that it had been set into masonry in a horizontal position. Obviously where the stairway emerged from the roof, the balustrades began again. The rattles being at the foot, necessarily the head must have been at the top of the balustrade. Precedent for the plac-

ing of the head in this position was provided by the small serpent's head found *in situ* in the north ramp overlying the steps, giving access to the Northwest Colonnade in front of the central third of the great stairway. This head is set into a vertical collar, the crest of the upper jaw coming flush with the brink of the terrace.

In order to fix the length of the upper section of balustrade it was necessary to determine the roof level of the Northwest Colonnade. A minimum height was indicated by that portion of the third sculptured band lying south of the stair. On the north and south sides of the pyramid, this same band had been plentifully painted. Not a vestige of paint, however, could be found upon any stone included in this band where it extended across the west face of the pyramid. Hence, it was evident that the carving had been hidden from view before color was applied elsewhere. The blocks forming the edges of the balustrade were laid out so that the carving conformed in pattern to the serpent curves in place at the bottom of the stairway. One margin proved to be continuous and was assumed to be complete. Considering the top of the third sculptured band of the pyramid to have been the roof level of the Northwest Colonnade and giving the collar surrounding the serpent's head the same relative proportions as the small one found in place, the diagonal line from the assumed roof plane to the lower edge of the collar, and the supposedly complete row of balustrade margins lacked but one inch [2.5 cm] of being the same length. Hence it was assumed that the original alignment had been determined, and the stones were reset to conform thereto.

The Northwest Colonnade demanded a relatively small amount of repair of which practically half was accomplished by the end of the season. Repair upon the Temple of the Warriors itself was under the immediate supervision of Karl Rupprecht.

Excavations have revealed the Northwest Colonnade to be a structure 148 feet [45.1 m] in length and 48 feet [14.6 m] in width, essentially conforming to the dominant pattern of the columned halls so plentifully found at Chichén Itzá. Such variations as it exhibits consist of the presence of, or omission of, certain features occasioned by its adjustment to contiguous structures. For instance, the south end wall and the anta which normally should have extended northward therefrom are missing, this because the Northwest Colonnade and the structure comprising the western range of the Group of the Thousand Columns, although built at different times, were not separated from each other by a partition wall. The absence of this southern anta makes the Northwest Colonnade asymmetrical, there being eight intercolumnar spaces north of the temple stairway and seven southward thereof. Thus the hall contains, including the two resting upon

the stairway, 63 columns. There are 16 columns in each of the three eastern tiers and 15 in the front or western one, the northern anta having served the function of the terminal member, of this row. These columns are rectangular, 8 feet 9 inches [2.7 m] in average height. Those of the forward row are 25 [63.5 cm] by 29.5 inches [74.9 cm] in cross-section and the others 20.5 [52.1 cm] by 27 inches [68.6 cm]. The average intercolumnar space is 8 feet 2 inches [2.5 m]. All except the two on the stairway axe sculptured in the customary fashion; all four sides of each bearing a warrior or priest standing upon a serpent-bird-human panel, and surmounted by a sundisk, from the nether side of which issues a crouching human form. All of the columns, as well as the entire interior of the building, have been painted in brilliant hues.

A bench 5 feet 6 inches [1.9 m] in width and 2 feet [61 cm] in height, with a 6 inch [15.2 cm] vertical cornice over jutting 2 inches [5.1 cm], is continuous along the back wall except for that portion blocked by the stairway. Resting upon the bench and leaning against the rear wall is an inclined element 2 feet in height, like the one described in the report for 1924, found in the Northeast Colonnade [Chapter 38.3 this volume].

Enclosing the first two columns in the inner row, south of the stairway there is a superlatively fine dais, 16 feet 5.5 inches [5 m] long, 13 feet 2 inches [4 m] wide and 2 feet 9.5 inches [85 cm] high. The battered basal zone is sculptured with a procession of richly adorned, human figures, and upon the 8 inch [20 cm], vertical cornice are graven the sinuous curves of plumed serpents. All of the sculpture had been overlaid with pigment, which, when first uncovered, retained almost its original brilliance. Life-size copies in oil were made very soon after excavation by Jean Charlot.

This dais was not included in the original plan of the hall as proved by the fact that the carving upon the columns which it encloses continues to the fact that the carving upon the columns which it encloses continues to the floor level of the chamber. Then, as an afterthought, a stairway 8 feet 7 inches [2.6 m] wide was built against the front of the dais. It was very poorly constructed, but had been plastered with many coats of white. At the time of its erection a white finish was applied to the floor upon the dais to the front of the building. In the line of the east and west axis of the dais to the front of the building. In the line of the east and west axis of the dais, 10 feet [3.1 m] forward of it, there was set up at the same time a block of stone of truncated-pyramidal form, 1 foot 4 inches [40.6 cm] long, 1 foot 2 inches [35.6 cm] wide, and 1 foot 3 inches [38.1 cm] high. This may well have been an altar in its true sense; that is, a place of sacrifice, the object over which victims were bent and their breasts drawn taut to offer less resistance to the sacrificial blade.

There is another dais in the north half of the hall, like the former, of secondary construction, but disappointing in comparison. It is vertically walled, 11 feet 6 inches [3.7 m] north and south, 9 feet 1 inch [2.8 m] wide, and 2 feet 6 inches [76.2 cm] high, enclosing not the first and second columns from the stairway, but instead the second and third. The basal zone was unsculptured and painted red. The 6 inch [41 cm] vertical cornice contains a few sculptured stones, evidently reused. These had been plastered over so that the carving was hidden.

The north, south and west façades of the Northwest Colonnade bore much sculpture. There were the inevitable grotesque masks; heteromorphic panels, or shields, representing the same figure found on the bases of all the columns; and certain other panels containing as a central element a human head with the beak of a bird. There were also tenoned into the frontal façade four human figures carved in the full round, seated Buddha fashion, each wearing a stone mask as a head-dress. One of the two recovered complete is, in the opinion of the writer, the finest piece of sculpture thus far found at Chichén Itzá. A full reassemblage of the sculptured elements could not be completed during the season of 1926.

A considerable portion of the sculptured material from the south half of the front wall had been removed long since, but subsequent to the fall of the building. This stone robbing extended even to a number of the blocks of the southern members of the front row of columns. Conical pits dug into the slope of the mound to permit their removal, and afterward filled by the gradual accumulation of vegetable mold, were plainly visible during the course of excavation.

The partly dismantled temple buried in the northwest corner of the pyramid of the Temple of the Warriors, once extended a considerable distance northward thereof, and possibly may have encroached upon the area now occupied by the Temple of the Tables. The entire north half was torn away, and the south half, both of the pyramid and surmounting temple, were encased within the larger and later pyramid. The floor level of the pre-existent temple was 17 feet 6 inches [5.3 m] below that of the Temple of the Warriors. A complete cross-section of the eastern face of the pyramid on which it stood was found during the repair of the north face of the pyramid supporting the Temple of the Warriors, but as yet this has not been laid bare sufficiently to permit its detailed description. The temple itself was a two-roomed sanctuary of the same general type as the Temple of the Tables. There was a row of four rectangular columns in the longitudinal, or north and south, axis of each chamber, and two round serpent columns formed the divisions of the westward-facing tripartite doorway. Judging from the

portions uncovered, most of the south half of the building, exclusive of the front wall, exists to the height of the columns. The three of the latter uncovered and some 8 feet of the south wall retain, the former, both their sculpture and painting, and the latter its painted decoration, in an excellent state of preservation. These elements were encased in earth to insure their protection until another field season will permit the thorough excavation and protective treatment of the buried structure.

The huge serpent's heads and tails from the portal had been rolled back into the frontal chamber in ancient times and used as elements of the masonry with which it was filled. Although somewhat broken, they retain their color in unusual brilliance, thus giving in full detail the color treatment of the serpent column. The sculptured pilasters from the door were also recovered from the fill.

The Temple of the Warriors and its included and adjacent structures offer a rich field for the determination of the chronological order in which they came into being. For instance, the round-columned hall forming the western range of the Group of the Thousand Columns once extended northward to, or almost to, the stairway, leading to the Temple of the Warriors, its floor level being traceable some two feet beneath that of the south half of the Northwest Colonnade. It now seems probable that the east-facing façade laid bare in the southwest corner of the pyramid in 1925 is the rear exposure of this building. Again, under the north half of the colonnade, there is a second floor level less than a foot [31 cm] beneath the one on which the columns stand, and others may be found at still greater depths. Thus it seems that the site of the Northwest Colonnade has been built upon at least three times. Counting the buried temple, and lastly the Temple of the Warriors itself, the total number of construction intervals amount to 5, to say nothing of the one and probably more stages of remodeling in evidence where the North Range of the Group of the Thousand Columns impinges upon the west end of the south side of the great pyramid.

The positive chronology of all these different periods of construction and their significance can not be stated at present. During the season reported upon, with a large force occupied in excavation and another in repair, there was not an opportunity for the detailed and careful work necessary for tracing out the sequence of walls and floor levels. This particular endeavor will constitute one of the principal aims of the 1927 field season. One fact of general significance, however, already seems to be indicated; namely, that the round column antedated the rectangular one, as evidenced by the presence of the ruin of a round-columned structure beneath the Northwest Colonnade, and the existence of

the buried temple with circular serpent columns beneath the Northwest Colonnade, and the existence of the buried temple with circular serpent columns beneath the Temple of the Warriors, whereas in the latter structure the homologous elements are rectangular.

38.11.

EARL H. MORRIS

Report on the Temple of the Warriors and the Northwest Colonnade (Stations 4 and 10)

YB 26:240–246, 1927

Excavation and repair work at the Temple of the Warriors and adjacent structures was carried on throughout the 1927 field season, and was practically completed by the end thereof. The Temple of the Warriors comprises three distinct elements, these being in order of relative importance: 1. The Temple of the Warriors itself, together with its pyramidal substructure; 2. The pre-existent Temple of the Chac Mool encased within this pyramid; and, 3. The Northwest Colonnade.

In the following discussion, this logical order of presentation will not be followed, but instead that indicated by the volume of work and the intricacy of the problems involved in the treatment of each of these several units.

The general features of the Northwest Colonnade were given in the *Year Book* for 1926 [Chapter 38.4]. During the current season the excavation of this structure and the repair work were completed. The latter involved the setting up of practically all of the columns in the north half of the colonnade. In the failure and collapse of this portion of the structure, the thrust was forward, and each column served like the half of a hinge, the base being the bolt upon which it turned. With synchronized movement the columns swung westward until with the final crash they lay fully extended upon the floor, or partially blocked up by heaps of masonry that came down before the fall of the main mass of the roof. With the exception of a few terminal blocks, these columns were replaceable in their entirety. The repair of the north anta, the north wall of the building, and the rear or east wall north of the Temple of the Warriors stairway, although involving the replacement of a great deal of masonry, entailed no difficult or complicated problems.

A series of pits and trenches sunk into the terrace supporting the Northwest Colonnade revealed three earlier floor levels. At a depth of 4 to 5 feet [1.2–1.5 m], closely overlying the original ground level, was a red-tinted polished lime floor which had been long exposed to the elements. Presumably this represented an early terrace level, possibly a portion of the major terrace upon which the Castillo, the Ball Court and the Group of the Thousand Columns stand. Overlying this level there is a 2.5 to 3 foot [76–91 cm] layer of large rough stones, dry laid, the interstices being cavities instead of being chinked with either earth or mortar. Above this open fill is a second red plastered lime floor which, when traced southward, proved to be a northward extension of the floor of the West Colonnade of the Group of the Thousand Columns.

This latter structure at one time continued the full length of the area now occupied by the Northwest Colonnade and then swung westward, its low frontal terrace making a right-angled turn in that direction a short distance south of the north anta of the later colonnade. At the southern end of the West Colonnade, there exists a westward pointing wing with a small pyramid at its end. This, together with the above-mentioned vestige of a possibly similar structure at the opposite original extremity of the West Colonnade, would seem to confirm the conclusion, indicated by the fact that the West Colonnade faces the Castillo, namely that the West Colonnade was planned and built with definite reference to the Castillo, some time before the plan of the Court of the Columns had been called into being.

Sunk into this second floor level directly beneath the southern member of the pair of columns in the Northwest Colonnade, which stand at the immediate foot of the stairway leading to the Temple of the Warriors, is a masonry lined pit, 4 feet 8 inches square [45 square cm] and 2 feet [61 cm] deep. The walls and floor showed the effects of long burning, and in the bottom was a layer of from 2 to 8 inches [5.1–20.3 cm] of fine white ash, evidently derived from thoroughly calcined bone. Apparently this pit is the homologue of the carnero of present day Yucatecan cemeteries in which disinterred bones are burned.

Under the south end of the Northwest Colonnade, above this second floor level, there was an uninterrupted fill containing some re-used round column drums and many wall and roof stones from dismantled structures. However, beginning at the north line of the sculptured dais just south of the Temple of the Warriors stairway and continuing westward to the frontal row of columns of the Northwest Colonnade, thence turning north and extending an indeterminable distance beyond the north end of the Northwest Colonnade, is the terrace which once supported a building

intermediate in age between the West and Northwest Colonnades. The floor levels of these two are only 4 to 8 inches [10.2–20.3 cm] apart. Three masonry steps led to this terrace across its southern end, and a similar stairway gave access to this level across a considerable portion of the front or western exposure; ramps bordered the ends of this stairway, beyond which, both north and south, the face of the terrace continued as a slightly battered red plastered wall.

The front of the terrace of the Northwest Colonnade was subjected to at least one modification. Its original boundary was a slightly battered wall 8 feet [2.4 m] forward, that is, westward of the building. The three-step stairway pertaining to this facing is very narrow, having only the width of the intercolumnar space lying directly in front of the center of the stairway leading to the Temple of the Warriors.

Later this terrace was widened 4 feet [1.2 m] and faced with a three-step stairway extending the full length of the colonnade, the one partially visible before excavations were begun.

In the repair work undertaken after the excavation of the Northwest Colonnade, masonry-lined trenches were provided to leave permanently visible all of the salient subfloor features above described.

The Temple of the Warriors demanded no further excavation, but considerable repair work was necessary before the building could be considered completed. This consisted of re-erecting the rear wall up to and including the lower cornice; realigning the slab flooring of the altar; replacing the elements of the three mask panels at the northeast corner; adding an upper mask panel to the tiers situated respectively at the other three corners, at the centers of the north and south façades, and at either side of the portal; and lastly, the replacement of the nether member of the medial cornice across the entire front except for the space above the doorway. As in previous years the replacement of all sculptured stones was under the supervision of Karl Rupprecht.

The north balustrade of the Temple of the Warriors stairway was raised to duplicate the southern one, described in the 1926 report. Also the facing of the northwest corner of the pyramid was carried up after the general plan followed last year in connection with the southwest corner. This portion offered greater complications, however, than those formerly dealt with, because of the Temple of the Chac Mool included within this angle. In order to leave this earlier building accessible, it was necessary to raise a vertical wall as the inner face of the pyramid shell, instead of building the successive elements against the hearting of the mound. The veneer of the pyramid on the three sides on which it was proposed to restore it, namely the south, west and north, is completed to the limit that positive knowledge

and existing conditions permit. The only gap left is at the center of the north side where a vertical section of the rind of the pyramid is absent. The upper part of this was not replaced, and the lower part was torn away to expose a complete cross-section of the substructure of the Temple of the Chac Mool, which will be described below.

As stated in the 1926 report [Chapter 38.4], definite knowledge as to the finish of the two uppermost members of the fourth multiple zone of the pyramid could not be obtained, hence no restoration was attempted. In order to protect the margin of the terrace from erosion, however, a backing of rough masonry was raised to the height of the missing members, but set back from the line thereof the thickness of the course of smooth stone with which inevitably it must have been faced. The only departure from this treatment was at the western end of the north face, where windows were left in this band to admit light to the enclosed Temple of the Chac Mool.

Many of the essential features of the Temple of the Chac Mool were given in the report for 1926.¹ The work of the present season reveals this temple to be an example of one of the two predominant types of column-supported structures found at Chichén Itzá. Other examples of this same type, which may be called Type 1, are the Temple of the Warriors, the Temple of the Tables and the principal temple on the east side of the Court of the Columns. The salient characteristics of Type 2 are exemplified by the Northeast, the Northwest, the North and West Colonnades of the Group of the Thousand Columns. The Atlantean figure altar is an accompaniment of the first type and the solidly filled, battered walled altar of the second.

The Temple of the Chac Mool was a two-chambered building, facing west 56 feet 10 inches [17.3 m] in length from north to south and 47 feet 2 inches [14.4 m] in width. Like the Temple of the Warriors it possessed a tri-partite portal, the divisions thereof being serpent columns, round, however, instead of rectangular in cross-section. The frontal hall, 50 feet 4 inches [15.3 m] long and 18 feet 7 inches [5.6 m] wide, had along its longitudinal axis a row of four sculptured columns. Directly back of the central doorway of the main portal, there was a doorway 6 feet 7.5 inches [2 m] wide and 8 feet 8 inches [2.6 m] high, with sculptured jambs and pilasters, piercing the partition wall and giving access to the inner sanctuary. This eastern or rear chamber was of practically the same size and general character as the western hall, except that it formerly had had an altar at the center of the back wall, and a bench along the north and south walls and the adjoining parts of the east wall, all of which had been removed, when this temple was filled in.

The exact dimensions of the substructure of the Temple of the Chac Mool are not ascertainable. However, a cross-section of its rear face was obtained. This exposure consists of four elements, no two of them being of the same height, nor even possessing common features. Thus the basal element is entirely plain; the second has a recessed panel at the bottom and a single vertical cornice near the top; the third a recessed upper panel and a two member cornice; and the fourth, no recessed panel, but a two-member cornice. The substructure rises from the same level as the pyramid supporting the Temple of the Warriors and has a height of 20 feet 8 inches [6.2 m]. The rear wall of the temple sets back only 3 feet 10 inches [1.1 m] from the margin of the substructures.

In clearing away for the erection of the Temple of the Warriors pyramid, approximately the northern third of the Temple of the Chac Mool and its substructure were entirely demolished, as well as the entire fronts of each. Thus the arrangement of the approach to the building has been entirely lost. There is a possibility that the terrace described as found beneath the floor of the Northwest Colonnade and above the floor of the West Colonnade had to do with the approach to the Temple of the Chac Mool, but thus far no conclusive proof has been obtained, either for or against such a hypothesis.

Evidently the pyramid supporting the Temple of the Warriors was not originally planned to extend to the height to which it was finally carried. This may be inferred from the fact that the portion of the Temple of the Chac Mool lying within the boundaries of the pyramid was demolished to a fairly uniform level from 7 to 8 feet [2.1–2.4 m] above the floor, walls and columns alike. Then the larger pyramid was built to this height, leveled off and coated with mortar, which was troweled to the semblance of a floor. Still later another 9 feet [2.7 m] of masonry was added to its height. Surely had this been the altitude originally contemplated by the builders they would not have wasted the considerable amount of labor necessary to dismantle the walls of the lower temple and to raise new masonry of equivalent bulk to take their place. This point may possibly explain why the fourth zone of the Temple of the Warriors pyramid was not embellished with a terminal sculptured band like those possessed by the lower three. Since 9 feet [2.7 m] is practically the height of each one of these four multiple zones, and since 9 feet [2.7 m] is also the height of the apparently added increment of the pyramid, it is not unreasonable to suppose that sculptured elements were carved for the originally contemplated three bands, but not for the fourth. Then later, when it was decided to add the fourth, it had to be finished with plain faced blocks, which, in the opinion of the writer, were painted with a duplication of the devices borne in relief by the lower zones.

Little can be said concerning the exterior finish of the Temple of the Chac Mool. The base of the wall has the characteristic Toltec batter, surmounted by the customary single member cornice. The stub of the vertical face extending thence upward, wherever examined, gave no evidence of sculpture. However, had there been sculpture, there is more than equal likelihood that it would have occurred between the medial and upper cornices. In the last yard of fill overlying the buried temple were found numerous elements of a magnificently carved panel representing a tree in full flower with brilliantly colored birds and insects hovering over the blossoms. This panel may have belonged to the buried temple, but perhaps with equal reason may be considered as having come from some other demolished building.

The outer chamber lay beneath the terrace in front of the Temple of the Warriors, hence its excavation offered no particular difficulties. First the pyramid hearting was removed down to the previously mentioned surfaced level to which the lower temple was dismantled. As soon as the truncated south and west walls were laid bare, new masonry was raised on top of them to the height of the terrace in front of the Temple of the Warriors. Then the remaining fill was removed, the stone therefrom being used in the building of the shell of the northwest corner of the pyramid. In this fill were found seven column blocks inferred to have come from the tops of the three remaining columns in this outer chamber. There were also encountered several sculptured jamb stones and numerous fragments of the broken jaws of the two huge serpent's heads found in the front of this chamber in 1926. The most impressive find of the season, however, was a magnificent Chac Mool figure (the eleventh of this type so far found at Chichén Itzá) which reclined on its side upon the floor near the southeast corner of the room. This masterpiece of Maya sculpture had been dragged in ancient times from the terrace in front of the temple, where previously it occupied a position similar to the one in front of the Temple of the Warriors. The figure is carved from a single block of limestone, of almost flinty hardness and exemplifies the handiwork of a master craftsman. The proportions lack the grotesqueness exhibited by most Chac Mool figures and follow very closely those of a normal human body. An inverted human head with flowing hair is pendant from either side of the waist. The head of the Chac Mool itself bears a broad helmet crested with a crouching animal figure, a composite feline and reptilian conception, exquisitely wrought.

The columns and walls of the outer hall fully rewarded the expectations which had been aroused by those portions of them temporarily uncovered in 1926. Two of the columns (10 feet 3 inches [3.1 m] in height)

retained their coloration to a degree not previously observed, and gave in minute detail the vestiture of the figures depicted thereon. The wall paintings were found to be in good condition and represent the curves of the body of a great reptilian monster, done in brilliant colors.

Excavation of the inner sanctuary involved more than ordinary difficulties. The entire north anta and the western 10 feet [3.1 m] of the north wall of the Temple of the Warriors had as their foundations the loosely laid rubble with which the sanctuary had been filled. Inasmuch as these massive walls, some 125 tons in weight, had been more or less riven by settling, the first step taken was to place a concrete foundation beneath them. This was done in sections. A transverse slot was dug beneath the wall and filled with concrete, pierced at proper intervals for the reception of longitudinal steel I-beams. Then a second slot was made and similarly filled some 3 feet [91 cm] further on, so that a block of the original foundation remained between the two. When this plan had been followed out along the entire length of the mass to be undermined, the rubble between the blocks was removed and 6 inch [15.2 cm] I-beams meshing at the corner were inserted in the slots, three beneath the north and three beneath the west wall. By casting in the spaces between the first series of blocks, a solid base nearly as strong as if poured in a single operation was provided.

Subsequently a trench was dug to lay bare the tops of the south and east walls of the earlier temple. These walls were carried up by new masonry built on top of them to the necessary height, each including a massive pier of concrete, well bonded into the adjacent masonry, beneath the respective points where the boundaries of the later temple crossed those of the earlier one. Thus two dependable supports were provided. Next a narrow cut was made from the north slope of the pyramid to lay bare the top of the ancient column situated beneath the corner of the Temple of the Warriors. It was expected that the blocks to complete this column to its original height would be found in the fill. Hence the concrete pillar cast on top of it was made 2 inches [5.1 cm] smaller on each side so that slabs bearing the relief might be taken from blocks, if such were found, and applied like the sides of a box around the cement core.

When this corner anchorage had thoroughly set, a pit was sunk and a column cast halfway between the east wall of the room and the original one above mentioned, then another between the southernmost original pillar and the south wall. Thus the free portion of the Temple of the Warriors wall was brought to rest on three concrete piers. After the fill of the chamber had been removed, a fourth support was cast on top of the completed south column. This work was

carried to completion with a settling of about 1/8 inch [0.4 cm] in the walls of the Temple of the Warriors, which took place when the excavation for the first elements of the horizontal I-beam was made.

A reinforced concrete roof was then cast above the Temple of the Chac Mool and covered with earth so that no trace of the roof or of the chambers beneath it appears either from within the Temple of the Warriors or from the terrace in front of it. A door to the concealed building was provided behind the shell of the pyramid supporting the Temple of the Warriors at the northeast corner of the inner sanctuary, and as previously stated windows for light and ventilation were left in the terminal member of the west end of the shell of the pyramid.

The six columns, to judge from the sculpture upon them, each lacked three blocks to raise them to their original height. Thus 18 blocks in all were needed. Seven were found in the front hall and 11 in the inner sanctuary. The selection of blocks for the respective columns was easily accomplished and five of them were completed with no difficulty. To finish the sixth, upon which a concrete pier had already been cast, it was necessary to saw slabs from all four sides of each of the three blocks. Although the limestone was very hard and full of flint nodules, this cutting was done and the slabs cemented to their concrete core without marring the appearance of the column when finished.

Measurements of the sculptured jamb stones and pilasters, for the most part found in 1926, proved these elements to have belonged to the doorway connecting the two chambers, hence these could be restored to their original positions.

The southern two columns in the inner sanctuary are the best preserved thus far found at Chichén Itzá. The colors brilliant almost beyond belief, give in intricate detail the form and ornamentation of the dress and accoutrements of the figures depicted.

The wall paintings, except on the south wall, were not as well preserved as had been expected. However, they could be copied readily enough and were found to be the same as those upon the walls of the outer chamber, that is, the body whorls of sun serpents, each represented with a formidable head and legs armed with claws.

Unfortunately the altar had been entirely removed, its position being indicated by vestiges of a panel with a blue ground as opposed to the red background of the rest of the temple, situated at the eastern terminus of the transverse aids of the building. No elements of this altar were found in the fill. It is probable, however, that the Atlantean figures and slabs were saved and incorporated in the altar of the Temple of the Warriors, some portions of which are obviously reused in their present positions.

The bench was also torn out, but before the temple ceased to be used, as proved by the fact that the red floor was extended to the walls and plainly patched where the bench had been.

The age sequence in the Temple of the Warriors complex as now postulated is: first, a terrace in existence before any of the buildings were erected; second, the West Colonnade of the Court of the Thousand Columns; third, the structure, the floor of which lies between the floors of the West and Northwest Colonnades; fourth, the Temple of the Chac Mool; fifth, the Temple of the Warriors; and sixth, the Northwest Colonnade. However, there still exists some uncertainty as to the time relation of the last two, both of which may have been planned and built contemporaneously.

NOTES

1. In the YB report for 1925 [Chapter 38.3] this earlier construction was called simply the “buried temple.”

38.12.
JEAN CHARLOT <i>Report on the Sculptures and Paintings in the North and Northwest Colonnades (Stations 8 and 10)</i>
YB 26:246–249, 1927

The sculptures and paintings copied by Jean Charlot with the assistance of Lowell Houser during the present season were as follows:

1. Drawings and color notes of the columns of the Northwest Colonnade.
2. Drawings and color notes of the column of the Temple of the Chac Mool.
3. Paintings of the wall frescoes in the same temple.
4. Painting of the sculptured and painted dais in the North Colonnade.
5. Painting of the painted capstone found at the junction of the North and Northwest Colonnades.

The Northwest Colonnade has 59 sculptured square columns and two sculptured jambs. Of this number five of the columns have more than half of their sculptured elements missing, and one of the two sculptured jambs is entirely gone. The remaining 54 columns and the single sculptured jamb present 221

carved faces, each face divided into three sections: a standing human figure and two decorative panels, one above, the other below. All these figures were copied in black and white, and color sketches were made where it was possible to identify coloring in the original.

The technique used in cutting and joining the stones of which the column are composed, the process of carving and stuccoing, as well as the composition and use of color are the same as explained in [Chapter 38.10], in connection with the description of the column in the Temple of the Warriors and need not be repeated here.

Although the arrangement of the subject matter on the plinth is also the same as on the columns in the Temple of the Warriors, namely an upper and lower square panel enclosing a theogonic representation, and a middle rectangular panel containing a single standing human figure, many differences are to be detected both in detail and in stylistic treatment. For example the peculiar old Maya convention of a human figure seen in full front portrayed with its feet in profile pointing outward is to be found here, whereas it is wanting entirely in the Temple of the Warriors where legs and feet are invariably seen in profile, the torso presenting a slight three-quarter foreshortening.

The type of figure described last year, a warrior in elaborate array holding offensive and defensive weapons, is also found in the Northwest Colonnade, but in addition there is a new type of human figure, the column of the central rows being carved with representations of unarmed men whose hands are tightly tied by ropes encircling their wrists. Since their costumes and ornaments are as elaborate and sophisticated as those of the other figures they probably represent prisoners of high rank-chiefs and noted warriors, while the figures of the first type on the adjacent columns would appear to be their conquerors.

The details of dress and ornamentation are most abundant and diversified. The head-dresses are heavily embellished with feathers or flowers, and some are shaped to represent the features of a god. Others are like the helmets of the Aztec Eagle-knights with animal heads (serpents, tigers, quetzals) the face of the warrior appearing through the widely opened jaws. Faces themselves are often concealed by masks resembling the death's head or the God, Tlaloc, or are partly hidden behind heavy ornaments. Breast-plates are in some cases in the shape of animals (serpents and tigers) or human faces. Costume accessories such as staffs, baskets, shields, arrows and atlatsls are also fully represented.

Faces present an endless variety of expressions and types, from very youthful long robed priests with feminine features and mild postures, to aged sorcerers of threatening men who hold large thick serpents in their hands.

In places where the coloring still retains its original brilliancy, delicately painted patterns still show on the shirt, sleeves and sandals, as well as war paintings all over the body, the latter usually consisting of stripes of contrasted tones.

Even in its present incomplete condition, and especially if taken into consideration with the frescoes of the Temple of the Warriors, the figures of this colonnade present a fairly adequate picture of the characteristics of the inhabitants of Chichén Itzá during the Toltec Period, and more particularly of their military and religious clothing and accessories. A comparison between the fashions in vogue at the time when the sculptures in the Temple of the Warriors were executed, and fashions as depicted on other earlier structures, as for example in the sculptures of the undoubtedly earlier Temple of the Chac Mool, buried in the pyramid supporting the Temple of the Warriors, and also the sculptures and frescoes of the Temple of the Jaguars shows clearly a development of taste in dressing, which eventually, with the aid of other stylistic criteria, will prove of invaluable aid in assigning approximate dates to otherwise undatable buildings and sculptures.

An example of this approximate dating by means of stylistic criteria is afforded by the presence of a turban-like knee-ornament found both in the Temple of the Jaguars and in the Temple of the Chac Mool, but entirely wanting in the Temple of the Warriors. This article of apparel must have been discarded after the erection of the Temples of the Jaguars and the Chac Mool, but before the erection of the Temple of the Warriors.

Another feature peculiar to the Northwest Colonnade is the use of hieroglyphs standing above about one-fourth of the figures represented. This perhaps offers a clue to the names of the individuals portrayed and strongly suggests that at least the most characteristic of the sculptures are actual portraits. Among these hieroglyphs occur a snake, the rattle of the rattlesnake, an owl, a human bearded head, a flying bird, a human hand grinding on a metate and a seated female figure.

Three different styles of carving can be distinguished in the Northwest Colonnade. The carvings in the northern third of the colonnade are the most poorly executed. In some cases the lines are merely scratched, more as if they had been made with a sharp stone than carved with a properly shaped tool. This is particularly true of the back rows and of the eastern (back) faces of the column, which the sun never reached. The sculptors counted mainly upon contrasted colors to give the effect of high relief in the general obscurity of the northern end of the colonnade. Mediocre as is this work, however, it is in accord nevertheless with the quality of the dais toward the northern end of the colonnade,

which is vastly inferior to the beautifully sculptured and painted dais toward the southern end, where the more important rites and ceremonies would appear to have taken place.

The warriors in this northern third are depicted in different postures, but details of dress and weapons are repeated throughout with little attempt at diversification.

The middle part of the Northwest Colonnade, where the prisoners are represented, is very rich in detail and shows on the part of the artist a sincerity in representing accessories and an effort at diversification which makes it difficult to believe that he was working purely imaginatively. Indeed it would seem, that if he did not have the model actually under his eye while carving, he, at least, used preliminary sketches made from nature. The drawing is more naive than skillful, and is anatomically faulty, though it expresses character with acute penetration.

The columns of the southern third of the colonnade, though less crowded with detail than those in the other two-thirds, are more remarkable, not only for the quality of the sculpture but also for the rendering of the subject. The working of the stone is careful, and in the best-preserved parts is carried to the point of very smooth polishing. There is less close observation of nature than is shown in the other parts of the colonnade, but the freer handling of natural elements leads to a greater dignity in style.

The ornamental scrolls which are used so profusely elsewhere to conceal certain defects of composition are employed here with more discretion. Columns 58 and 59, for instance, are beautiful examples of late Maya art at Chichén Itzá and, as attempts at strongly realistic characterization, they are as successful as are the best of the Old Empire sculptures in expressing a more general religious feeling.

The group of six columns from the Temple of the Chac Mool present 24 panels which are the direct ancestors of those already described. Their most surprising stylistic characteristic is their complete indifference to anatomical proportions. The proportion of the head to the complete body, for example, varies from 1/4 to 1/8, but, even in spite of such an obvious abnormality as this, strikingly decorative effects are achieved.

As has been pointed out above, the clothing of the figures on the column in the Temple of the Chac Mool more closely resembles the clothing of figures in older temples, as for example in the Temple of the Jaguars, than it does that of the figures in the Northwest Colonnade. These earlier reliefs are more careful, even if less skilful than the later ones. Heads especially are strongly individualistic and are portrayed with a sincerity which makes beautiful in features even the ugliest. The coloring is well preserved and the strips of painted stucco between the stones axe nearly intact.

The frescoes in the two chambers of the Temple of the Chac Mool are a quadruple representation of the same motif, a highly conventionalized snake. The body is suggested by two broad blue lines enclosing successive areas of brilliant flat colors: blue, red, green, yellow and white. From the body project triangular rays, perhaps a symbol of light, forming a continuous crest along the two sides. The head, with no attempt at realistic expression, presents an open mouth between the teeth of which emerges a long reptilian tongue in the shape of a decorative double scroll. The motion of a reptile is suggested by the sinuous curves of the body. From the bottom part of each curve issue clusters of waving flower-like appendages with blue stems and yellow petals. Both head-dress and tail are adorned with similar motifs. From under the head projects a sort of stumpy leg, dressed from shoulder to elbow in a multicolor sleeve, and ending in an eagle claw.

Originally there would seem to have been eight of these serpents, symmetrically distributed, four in each chamber, and the fragments still remaining permit a rather secure restoration of the arrangement of this motif. Over the missing altar against the back wall of the sanctuary was a more minutely painted panel, of which only a trace now remains. If one may hazard a guess from the small fragment left, this consisted of human figures drawn on a small scale, performing some ceremony. The lower part of the wall in both chambers was painted a plain black but the stucco was left unpainted behind a stone bench, now destroyed. When this stone bench was removed and before the filling up of this chamber some forgotten hand had sketched in charcoal upon the white plastered wall against which the bench had stood, apparently in an accidental way, the torso, arms and head of an Atlantean figure. Another sketch of the same subject was also scratched on the painting itself.

The dais or altar found in the North Colonnade is of the same type as the one in the Northwest Colonnade described last year [Chapter 38.10 this volume]. It presents on its three carved faces a procession of 32 human figures proceeding from the two sides toward a smoking offering, probably a bowl of burning copal in the middle of the front face. The relief, which has been given only one coat of stucco, is much more apparent than the relief in the other dais, where it has been flattened by the application of numerous coats of stucco, and it therefore has a greater decorative value. This entire sculpture was copied in color in the same scale as the original.

The painted capstone found between the North and Northwest Colonnades was also copied in colors by Mr. Charlot. It presents the body of a warrior, the head and head-dress missing, in full war regalia, and is drawn on a very small scale. The stencil-like paint-

ing is in yellow, green, blue and wine-purple, and is of great delicacy; it was applied directly to the carefully smoothed white stucco, which had been in turn laid on a dressed stone. Technically it is by far the finest piece of pre-Columbian mural painting which has yet been found and compares favorably with the best pages of the codices. The upper part, which probably had a single line of hieroglyphics giving the dedicatory date, as is usually the case in these painted capstones, is most unfortunately missing.

38.13.

KARL RUPPERT

Report on the Caracol (Station 5)

YB 26:249–252, 1927

The field work at Chichén Itzá had as its goal the completion of a photographic record of all exposed low-relief carving. Although the sculpture here is probably better known than that of any other site in Yucatán, many difficult subjects had never been photographed and some of the material was inadequately recorded. It was originally estimated that somewhat over 1,000 negatives would be required; during the three-month field season approximately 1,800 negatives were made. Part way through the season the project was enlarged to include photographs of Atlantean figures, wherever they could be found.

The work was greatly facilitated by the use of a small reflex camera in conjunction with 4 by 5 inch view camera, and the use of synchronized flash lighting on subjects which did not receive the proper oblique sunlight. The negatives were developed each evening as a constant check on quality and the proper functioning of the equipment.

It soon became evident that for such problems as the reconstruction of the design on columns from loose drums and the design of sculptured panels from photographs of loose stones, the camera-to-subject distance should be kept constant in order to render objects in relative proportion. The distance maintained for close-ups was 3.5 feet [1.1 m] except where the subject was too large to be so photographed. In such cases the distance was increased to 4 feet [1.2 m] for all the close-ups made in that structure. The column drums in the South Temple of the Great Ball Court are a case in point. The distance between the camera and a row of sculptured stones was approximately 12 feet [3.7 m], as determined by a Leitz range finder.

Cylindrical column drums, because of the curvature of the sculptured surfaces, were photographed by making eight exposures at regular intervals as each drum was rolled on the ground.

It was found that dry-brushing the raised parts of the sculpture brought out details that otherwise did not appear in photographs. All the exposed carving was so prepared prior to photographing.

Scaffolding was built at only one structure, the North Temple of the Great Ball Court. Wherever else additional height was needed for the camera, a two or a 3 m ladder proved adequate.

Minor excavations, to expose sculpture were carried on in 13 structures, namely, Structures 2B2, 2C3, 2C4, 2C10, 2D7, 2D9, 3D7, 3D8, 5B16, 5B18, 5B21, 5C7, and 6E1. After the negatives were developed and found to be satisfactory, the excavations were backfilled. Three panels of glyphs were found as a result of excavations in two structures. One panel is located across the lower part of the west jamb in Structure 5B18. Two panels were found on opposite sides of the upper most column drum of the south column at Structure 6E1.

Sherds were collected wherever they were encountered in digging, and have been turned over to R. E. Smith for further study.

38.14.

KARL RUPPERT

Report on the Temple of the Wall Panels (Station 14)

YB 26:252–256, 1927

The Temple of the Wall Panels is located about half-way between the southeast corner of the lower terrace of the Caracol and the Iglesia of the Monjas group. After three days of preliminary bushing and cleaning, excavation was started on this temple on February 28 and continued for five weeks. Repair work was begun on May 2 and continued for a period of 11 weeks.

The structure consists of a solid masonry pyramid surmounted by a temple, and lying directly west of and attached to the pyramid, and forming an integral part of the whole, is a colonnade. The edifice rests on a low terrace reached by two steps, which extends 9 feet 5 inches [2.9 m] on either side of the colonnade and 20 feet [6.2 m] in front.

The pyramid measures at the base 42 feet 9 inches [13 m] north and south and rises to a height of 17 feet [5.2 m]. The east and west measurement is reduced to 37 feet [11.3 m], due to the abutting colonnade on the western side. On the northern, and southern sides of the pyramid, where the colonnade abuts it, plain faced stones, which formed the outer facing of the pyramid, were found *in situ* to a height of 8 feet [2.4 m]. This faced outer surface of the pyramid rises with a gradient of 79 to 80 degrees from the horizontal.

The core of the pyramid is formed of great sections of rough-laid masonry; large rough unworked stones, some small chips and an occasional worked stone form the fill. This was built up, section or block at a time, each block defined from the ones next it by a smooth surface formed by troweling the preceding section. The temple surmounting the pyramid measures 28 feet 8 inches [8.7 m] north and south. As its eastern or back wall had fallen, no definite east and west over-all measurement could be made; however, a section of the northern wall of the inner room, 6 feet 9 inches [2 m] long, is still standing and may well represent its original length to the exterior northeast corner, since the west chamber is only 5 feet 8 inches [1.7 m] wide. In buildings of this period, the outer and inner chambers usually have approximately the same dimensions, so it would seem that the over-all inside east and west measurements of the temple may well have been 13.75 [4.2 m] or even 14 feet [4.3 m].

Little remains of the outside facing of the temple. On the west a battered zone rises 33 inches [83.8 cm] from the floor to a 7 inch [17.8 cm] battered cornice which projects 3 inches [7.6 cm]. The middle zone rises perpendicularly above this for a few feet to where the wall is broken. In the debris at the base of the pyramid on both the northern and southern sides were found sculptured stones that may well have fallen from panels on the outer walls of the upper temple. Other sculptured stones found in the talus, which undoubtedly came from the upper temple, are portions of a mask, found on both the northern and southern sides of the pyramid, but in neither case were more than five of the 23 or 24 stones, necessary to complete the design, found. The roof of the temple was finished with an encircling row of wedge-shaped sculptures, elements of the roof crest.

The outer chamber is entered by a triple doorway 22 feet [6.7 m] wide, formed by two round column, a foot and a half [46 cm] in diameter and standing to a height of 4 feet [1.2 m]. Two other drums found on the talus in front would increase the height of these columns to 5 feet 5 inches [1.6 m]. Should the two serpent tails, which were also found in the talus in front, belong on top of these columns the height of the doorway would be increased to 6 feet 6 inches [1.98 m].

Entrance to the inner chamber was through a single doorway 44 inches [111.8 cm] wide, the present height to which the jambs now rise being 6 feet [1.8 m]. The present highest section of the temple wall is at a point 40 inches [101.6 cm] south from the northeast corner of the outer chamber, where it reaches a height of 7 feet 2 inches [2.2 m].

The floor of the temple was formed of an average 5 inch [12 cm] layer of plaster above the rough core of the pyramid. This was smoothed and painted a reddish brown, except in the triple doorway, where flagstones had been used.

In the inner room a secondary bench had been built against the back wall, resting directly on the well-smoothed and painted floor. The bench abutted the north and south walls, its base being only 20 inches [50.8 cm] from the west wall. The side of the bench is formed of two courses of stone 26 inches [66 cm] high. Above this is a 6 inch [15.2 cm] vertical cornice which overhangs 3 inches [7.6 cm]. The bench had been plastered and painted the same color as the floor. The cornice was painted a light blue. The bench was traced only 11 feet 7 inches [3.5 m] south from the north wall and 10 feet 8 inches [3.3 m] north from the south wall. At these two points it was completely broken away.

In the narrow 20 inch [50.8 cm] space between the bench and the wall at the south end were found numerous bits of pottery and two cylindrical vases. These latter were similar in shape to those found in a cache at the Temple of the Warriors, but were smaller, being only 8.5 inches [21.6 cm] in height. In the southeast corner on the floor there was an improvised altar, formed of two stones; that against the south wall being semi-circular in shape with a diameter of 8 inches [20.3 cm] and 11.5 inches [29.2 cm] in thickness. To the north of this stone was another measuring 7 by 14 by 3 inches [17.8 x 35.6 x 7.6 cm]. To the east of these stones resting on 3 inches [7.6 cm] of ash were found the two vases above mentioned.

A beautifully carved stone with its sculptured face down was found, lying midway between the jambs of the inner doorway with its western edge 4 inches [10.2 cm] west of the east line of the doorway. This stone measures 26 inches by 27 inches by 6 inches [66 x 68.6 x 15.2 cm], and is a complete panel. The design depicts two warriors facing each other, carrying staffs and atlatsls, the whole framed by a border in a naturalistic meander design. Traces of plaster and red paint similar to that on the floor still adhere to the edges of the stone. The stone completely covered and projected 4 inches [10.2 cm] west of a shallow recess cut in the floor. This recess was roughly squared and excavated to the size of the stone, which may have been placed in its opening. In the center of the recess was a cist, filled with earth, stones and traces of ash, with an opening

20 inches [50.8 cm] in diameter and having a depth of 30 inches [76.2 cm]. The sides were heavily plastered with red stucco and flared out toward the base, where its diameter increased to 28 inches [71.1 cm].

West of the inner doorway and slightly to the south were encountered four faced wall stones partly embedded in the floor, so that their smoothed surfaces were 6 inches [15.2 cm] above it. They formed what may have been a crude altar as they showed traces of fire and were badly broken.

The colonnade forming, as it were, the lower chamber to the Temple of the Wall Panels, has, like the upper temple, its long axis north and south. Inside dimensions are 52 feet 9 inches [16.1 m] by 21 feet 8 inches [6.6 m].

The outer face of the colonnade wall is formed of a battered zone 33 inches [83 cm] in height and on which rests a 7 inch [17.8 cm] battered cornice, which overhangs 3 inches [7.6 cm]; a vertical middle zone 6 feet 3 inches [1.9 m] high rises above it. The medial three member cornice has a 7 inch [17.8 cm] battered lower and upper member separated by a 5 inch [12.7 cm] vertical middle member. Resting on this cornice rose a 34.5 inch [87.6 cm] upper vertical zone, terminated by another three member cornice similar to the medial cornice, with the exception that the upper member measures 19 inches [48.3 cm] in height.

Of great interest was the finding of sculptured stone elements from panels in both the north and south exterior walls of this colonnade. The southern panel measures 45 inches [114.3 cm] high and 6 feet 5 inches [2 m] long, while the northern one is of the same height but slightly narrower 5 feet 11 inches [1.8 m]. The northern panel was formed of 15 stones and the southern of 17, of which, however, one is still missing. Monkeys, jaguars, birds, flowers, trees and men are represented in the two scenes. In the center of the southern panel is shown a tripod incense burner with a man sitting on either side. Above this is a sun disk with a group of two men on either side. Along the bottom are seven monkeys, trees, birds and jaguars filling in the background.

The northern panel has a series of 12 monkeys along the bottom. In the center of the panel is a thatched house with two men before it. On either side are trees, birds and jaguars. The upper row is formed of eight men.

The colonnade is enclosed at the north, east and south by solid walls. The antae on the western side, or front, are each 8 feet 3.5 inches [2.5 m] long, necessitating only four columns in the outer row, whereas there are six in the two inner rows. The columns average 18 inches [45.7 cm] in diameter, and those of the two inner rows are 7 feet 3 inches [2.2 m] high, not including the rectangular capitals which add 10 inches [25.4 cm]. The columns of the outer row were 6 feet 5 inches [1.95 m] high, including the capitals.

A bench 52 inches [132.1 cm] in width and 23 inches [58.4 cm] high with a 6 inch [15.2 cm] vertical cornice over jutting 2 inches [5.1 cm] is continuous along the north, east and south walls, except for the portion along the east wall between the third intercolumnar space from either end. Here the bench has been enlarged so that it is 6 feet wide at the north and 6 feet 5 inches [1.95 m] wide at the south. This enlarged portion of the bench is 10 feet in length. The height was increased 6 inches [15.2 cm], the width of its cornice. The plaster of the lower bench rounds up on to that of the cornice of the upper bench. This enlarged portion of the bench is painted red with a blue cornice, as is the lower bench.

At the time of construction of the pyramid and colonnade, access to the temple was gained by a stairway leading from inside the colonnade, similar to the one at the Temple of the Warriors but on a smaller scale. The stairway is just east of the innermost row of columns. A well, or opening, 8 feet 6 inches [2.6 m] wide in the roof of the colonnade, formed by the omission of the half of the arch directly over the stairway, left an opening for the stairway, leading from the lower to the upper level. That this was clearly planned at the time of construction of the pyramid and colonnade is indicated by the building of two lateral eastward extensions of the east wall defining the width of this stairway. These lateral extensions are 8 feet 6 inches [2.6 m] apart and extend 6 feet 7 inches [2 m] into the pyramid fill where they have irregular terminations. The walls extend from the floor level to the spring of the arch. Special arch stones finished on the face and on one adjacent side were found in the area in front of this well. These are like the stones found *in situ* at the Temple of the Warriors, which formed the ends of the exposed arches, where the stairway passed down through the opening in the roof to the floor level of the colonnade.

In a later alteration of the colonnade this original stairway had been razed; the break in the east wall through which it had passed was walled up, and the eastern side of the arch built in over the well. Behind the fill that closed the arch and leveled the floor of the temple and roof of the colonnade, traces of six steps were noted at the top of the stairway. With the removal of this stairway in ancient times there was necessitated the construction of a new means of access to the upper structure, which was accomplished by remodeling and building a new stairway in front of the colonnade. In achieving this, the two middle columns of the outer row were encased in masonry forming two rectangular columns measuring 30 inches [76.2 cm], north and south, and with a width equaling the length of the capital, that is, 24 inches [61 cm], the south and north sides respectively of the capitals being flush with the south and north faces of the masonry column.

These masonry columns were then plastered on all four sides. Later a masonry wall was built between them, extended an average of 1 foot 8.5 inches [52.1 cm] to the north of the northern one and a like distance south of the southern one. This wall was 3 feet 9 inches [1.1 m] thick and enclosed these two columns on the south, west and north. In connection with this third phase of construction a mass of masonry was built 42.5 inches [107.9 cm] to the west of these columns. This mass was faced on the east to a height of 6.5 feet [1.9 m], equaling that of the wall enclosing the columns, and with it formed the two walls of an arched passageway 42.5 inches [107.9 cm] wide and 15 feet [4.6 m] long. The mass of masonry on the west of this passageway formed the base upon which was built the new stairway. Six of its steps were found *in situ* at the base. This stairway rose in front of the colonnade and led up on to its roof, which was the same level as the floor of the upper temple.

A still later unit of construction was the placing of masonry balustrades, 36 inches [91.4 cm] wide, against the plastered north and south sides of this second stairway, and the addition of masonry blocks of the same width against the masonry wall which enclosed the round columns. These additional sections made the total length of the arched passageway 21 feet 2 inches [6.5 m].

At the base of each balustrade had been placed serpent heads. They average 37 inches [94 cm] in length 21 inches [53.3 cm] high and 24 inches [61 cm] wide and are secondary in their use here. They were originally made to be placed at the base of round serpent columns, as the concavity at the back of each indicates. This is the first example of a round serpent column, where the head is not attached to, or better forms one piece with, the lowest drum.

It is within reason to suppose that these serpent heads may have belonged to the columns of the exterior doorway at the upper temple, since they are round, and furthermore two serpent tails were found in the talus in front of this temple. The serpent heads are well formed but simple in decoration, to such an extent that they show no feather treatment. The tails are equally plain, showing only the sculptured rattles. The upward projection of the tails, invariably found in other serpent column in the city, is here lacking. In clearing the platform terrace two copper artifacts were found: one a ring 0.75 inch [1.9 cm] in diameter and the other a copper point 1 5/8 inches [3.8 cm] long.

A depression in the floor measuring 5.5 feet [1.7 m] by 4 feet [1.2 m] by 14 inches [35 cm] in depth was noted 20 inches [50.8 cm] north of the balustrade of the second stairway. This recess was outlined with faced stones and filled with earth, ash, a tripod, vase of Plumbate Ware and two stone birds with stonedisk

pedestals. The birds are 7 inches [17.8 cm] high and 9 inches [22.9 cm] long. The pedestals have a diameter of inches and are 3 inches [7.6 cm] high.

A second depression was noted extending under the bench at the east side near the point where the earlier stairway rose from the colonnade floor. This recess was 15 inches [38.1 cm] deep and filled with black ash, earth, a few potsherds, shell beads and ornaments.

Excavations in the lower terrace, on which this group stands, revealed various earlier terraces and platforms. One directly underlies the pyramid and colonnade but is not oriented with it, nor does it bear any relation to the upper structure. This platform has two lateral projections at the western end, from which on the north side a series of five steps descends 4.5 feet [1.4 m] to a lower floor level, and on the south side four descending steps lead to a similar level. A series of three steps at the extreme northeast corner below the present terrace level also gives on to a well-defined flooring. Such remnants of earlier subfloor walls, stairs and platforms show clearly how this locality, as well as every other in the city where excavations have been conducted, are underlain by remains of still earlier structures.

This group clearly belongs to the Toltec Period, 1191 to 1448 AD, as evidenced by such features as the battered basal zone, colonnade, roof crests, serpent columns and the feathered serpent and sun disk motifs in the sculptured panels. It would seem that the round form of the serpent column might be earlier than the square form, since six of the nine pairs of serpent columns found at Chichén Itzá were round, and only one pair, that in the Temple of the Wall Panels, does not have the heads of the serpents attached to the lowest drums of the columns. The early form of its serpent columns the most primitive known, the relative simplicity of the structure and its lack of sophistication tend to place it fairly early in the Toltec Period.

38.15.

EARL H. MORRIS

*Report on the Excavation and Repair of
the Temple of the Warriors (Station 4)*

YB 27:293–297, 1928

During the field season of 1928, activities at the Temple of the Warriors consisted principally of explorations within the pyramid. Until after the end of the 1927

season, it was the plan to leave unreplaced a slot in the northern face of the pyramid for the purpose of revealing a portion of the substructure of the buried temple (Temple of the Chac Mool), and to provide an entrance to the latter structure. Eventually it was decided to close this slot, and to provide access to the under, temple from the terrace at the north side of the Temple of the Warriors.

In order to make this new entrance, it was necessary to remove a cube of ancient rubble extending 17.5 feet [5.3 m] eastward from the back wall of the buried temple and from the existing slope of the pyramid southward to the vertical line of the base of the wall of the Temple of the Warriors. This mass was removed in layers of from 3 to 5 feet [0.9–1.5 m] in thickness, depending upon the solidity of the rubble at the particular moment. After each such layer had been removed, the rubble directly beneath the wall of the Temple of the Warriors was picked clean of small stones and mortar and brought to a vertical face with chinking and masonry of cement. After this procedure had been followed to a depth of 17 feet 3 inches [5.3 m], or to the floor level of the buried temple, a 1.5 foot [46 cm] wall of lime-bonded masonry was built along the south side as an additional reinforcement beneath the foundation of the Temple of the Warriors. At the same time the east side of the pit was walled, the masonry resting on a flat arch buttressed against the shell of the pyramid and the end of the south pit wall.

A reinforced concrete girder was cast at the level of the top of the second sculptured band of the pyramid to support the shell thereof, thence upward. Upon this the shell was raised with vertical inner face, and a thickness at the base of 4 feet [1.2 m], to the floor level of the buried temple. Thence upward, for 8 feet 3 inches [2.4 m], was constructed a three-sided Maya vault open on the south, for the purpose of lessening the thickness of the shell and leaving visible more of the earlier substructure beneath this arch. The north side of the arch forming its inner face, the pyramid shell, was carried up to the height of the arch cap, then continued vertically upward to the full height of the pyramid. In the fourth vertical element were set three windows like those left last year in the same panel for giving light and ventilation to the buried temple.

The pit was roofed with concrete in the same way that the under temple had been covered in 1927. A stair well was left in this roof adjacent to the wall of the Temple of the Warriors, and extending eastward beyond the eastern side of the pit. Leading down through it and on across the pit to the rear terrace of the buried substructure, was built a reinforced concrete stairway.

While the upper half of the pyramid shell, the roof and stairway, were being built, the pit was continued

downward. The rubble was removed in levels of from 3 to 5 feet [0.9–1.5 m] in thickness, depending upon its solidity or relative looseness, and the debris carted out to the north beneath the previously mentioned concrete girder. After each level was dug away, the rubble beneath the upper walls was removed and replaced with cement-laid masonry. This process was repeated until the pit reached a depth of 34 feet 3 inches [10.4 m] below the summit of the substructure supporting the Temple of the Warriors, its floor being the first terrace of the buried substructure. Then a flat arch was cast from east to west to support the base of the second battered element of the pyramid, and this feature was replaced, as well as the second sculptured band, with the exception of a window left in the latter, 5 feet 7 inches [1.7 m] wide, to admit light to the bottom of the pit. Thus there remained a tunnel through the first battered element, to permit of the removal of debris from future excavations within the pyramid.

As the pit was being dug, at the south side, in the line of ancient construction units lying eastward of the third zone of the buried substructure, were found many painted stones torn out of some vertical face and used as common fill material. The majority of these were in a remarkable state of preservation and the painting was excellent, beyond any previously seen in the excavations at Chichén Itzá. Very soon it was possible to begin fitting the blocks together, and it became evident that they were parts of a long panel 32 to 33 inches [81.3–83.8 cm] in height. For some time there was much conjecture where the panel had belonged. Its detached elements occurred in association with many stones known to pertain to the buried temple but the decoration of the walls as known from portions *in situ* left no place thereon for such a panel. Finally Mrs. Morris established the fact that these elements were parts of two panels instead of one, and that they had been the facing of the two benches which had been torn out of the inner chamber of the buried temple. So great was the desirability of completing them, that a tunnel was driven at the level at which they occurred, 24 feet [7.3 m] eastward beyond the pit. It yielded a good many of the coveted stones.

When it had been carried beyond the point where they ceased to occur, the bore was filled with masonry and a second tunnel was driven northward of, and parallel to it. This yielded others of these blocks to contribute to a total of 71, of which 38 belong to the south bench and 33 to the north one. These cover about half of the total original area of the two benches. Enough of them could be fitted together to give a complete key to the subject and arrangement of the designs upon both benches. Files of richly garbed priests and warrior figures are represented; and as will be seen from the color reproductions, which will appear in the forthcoming

volume upon the Temple of the Warriors group these murals are magnificent almost beyond belief.

After the stair pit had been completed, a tunnel was driven southward along the second zone of the buried substructure of the buried temple. It was dug a few feet at a time, then walled and roofed. The facing of the substructure provided one side, and the other was made of cement masonry to the height of the second zone. The roof consists of a Maya vault, one leg resting upon the cement wall, the other upon the second terrace of the substructure of the buried temple.

While this first tunnel was being constructed, another was begun at the western end of the south side of the same substructure. The entry was made at the level of the terrace at the top of the second multiple zone of the pyramid of the Temple of the Warriors. It was driven southward about 10 feet [3.1 m], from the north face of the stair ramp to the end of the third multiple zone which had been included within the mass of the stairway support, then turned to the east a distance of 8 feet [2.4 m] and then to the north for 2 feet [0.6 m] to lay bare a portion of the outer face of the south wall of the buried temple.

At the floor level of the east and west portions of this tunnel was found the junction of that part of the back wall of the West Colonnade which had been included within the pyramid of the Temple of the Warriors, and the buried substructure of the Temple of the Chac Mool. To follow this junction downward, a pit was sunk, branching off to the south from the east and west portion of the tunnel. The roof was brought down at an angle until it rested upon the coping of the wall of the West Colonnade. Beneath that level the first pit was extended southward as a tunnel to a total distance of 16 feet [4.9 m] from the substructure of the buried temple. The rubble of the pyramid was loose and prone to cave. In consequence the digging of this tunnel was especially dangerous. Once the upper 5 feet [1.5 m] had been completed and roofed, the excavation was continued downward, and the east wall built as the digging progressed. Eventually the level of the first terrace of the buried substructure was reached. This feature, instead of terminating with the width which it bore on the east of the substructure, continued southward as a finely surfaced platform.

From the bottom of the pit a tunnel was started toward the east, following the second zone of the substructure. The bore was continued until it met the tunnel being driven along the eastern side at the southeast corner of the base of the substructure of the buried temple. Through this tunnel it is possible to walk along 107 feet [32.6 m] of the buried substructure, which, owing to its deep interment in the pyramid of the Temple of the Warriors, is in practically perfect condition. The face consists of four zones. The basal one is a

low platform with no embellishment. The second and third have cornices, the space beneath the cornices being divided vertically into alternating jutting and recessed panels. The fourth zone is provided with a cornice like the two beneath, but is without panels. The existing southeast corner is rounded instead of angular. Thus because of the rounded corner and the paneling of the two zones, this substructure bears an extremely close resemblance to the pyramid of the Castillo.

From the southeast corner of the substructure two tunnels were driven, each for a distance of 40 feet [12.2 m], one toward the southeast corner of the pyramid of the Temple of the Warriors, the other toward the southwest. This was for the purpose of determining whether or not there were other structures included in the mass of the pyramid. The tunnel toward the southeast gave an entirely negative result. The other revealed that the first terrace of the substructure of the buried temple continued southward as a platform for a distance of 23 feet 8 inches [7.2 m]. There was no indication of a building surmounting this platform.

A careful examination of the floor known to exist from 4 to 10 inches [10.2–25.4 cm] beneath the floor of the Northwest Colonnade established the position of the north wall and anta of the colonnade to which this lower floor pertained, as well as the stubs of two rows of square columns which extended from north to south. A checking of details and levels indicated that this colonnade had borne the same relation to the buried temple (The Temple of the Chac Mool) as the Northwest Colonnade bears to the Temple of the Warriors. A doorway led through the back wall to give access to the platform previously mentioned, situated at the south base of the substructure of the buried temple.

A search for offerings was made in all of the altars that have been covered in the vicinity of the Temple of the Warriors. Of the five altars of the solid type, deposits or the proof of their previous existence were found in the three which are known to be parts of the original plans of the building in which they occur. The two barren ones are of secondary construction. Beneath the Atlantean altar in the Temple of the Warriors no deposit was found. However, deposits true to type occurred under both the northwest and northeast corners of the building itself. As a rule, the imperishable components of the offerings are significant, rather than striking or beautiful. The standard features are sandstone disks, bits of jadeite and shell. However, under the spot once occupied by the Atlantean altar of the buried temple was found an offering of unexpected excellence. The container was a jar hollowed out of a limestone block, and fitted with a stone lid. In the jar lay a turquoise mosaic disk 8.75 inches [22.2 cm] in diameter. Upon the disk, were a jadeite ball, a face and

two beads of the same material, together with shell beads from a necklace, and the skeleton of a small bird.

The wooden backing of the disk had entirely decayed, but the film of gum by which the mosaic had been encrusted upon the wood held most of the pieces of turquoise in position, so that the design was preserved. The center of the plaque is a disk of sandstone of the same kind as that found in other offerings. Thus it is evident that this particular quality of sandstone possessed some extremely sacred quality.

Work on the Temple of the Warriors was brought to a close by June 10, marking the completion of the unit of exploration and repair begun early in February 1925. The various structures composing this architectural complex have been freed of debris to the intended limit, all walls laid bare have been repaired and protected to withstand the elements, and such fallen walls as could be replaced with absolute certainty, have been rebuilt to the extent that was considered desirable.

In a study of the Temple of the Warriors complex and definitely related structures, the chronological sequence of seven distinct construction intervals has been established. Fully half of the writer's time during the 1928 field season was spent toward the completion of a monograph upon the Temple of the Warriors.

38.16.

ANN AXTELL MORRIS

Report on the Mural Paintings and Painted Reliefs in the Temple of the Chac Mool

YB 27:297–300, 1928

It was planned at the beginning of the current season to complete the study of those isolated stones, bearing fresco paintings from the Temple of the Warriors, which it had not been possible last year to incorporate into large assembled areas. A number of these had already been copied but approximately 150 remained, which needed careful revision for the verification of costume and accessory details, as well as for color and techniques. In many cases an outline drawing was deemed sufficient record; in others a colored reproduction of the entire stone was considered necessary. When completed, this work included 43 color paintings and 32 outline drawings. The remainder of the stones were found to be of little importance; although

they bore traces of color, the designs were too fragmentary to permit their identification.

In addition to this work upon the mural paintings of the Temple of the Warriors, there remained the reproduction of two magnificently sculptured columns, rich with the almost perfect coloring of their original state. These had been discovered at the close of the 1927 season in the structure buried beneath the Temple of the Warriors, or, as it has been named from the beautiful Chac Mool figure found in its outer chamber, The Temple of the Chac Mool. Later excavations revealed relief after relief which equaled and even surpassed the beauty of this reclining figure, among others being the sculptured columns mentioned. These were copied in water color. In many places on these columns, the relief itself does not coincide with the sometimes carelessly made black outlines with which the painter finished his color work on the relief.

The designs on these columns, which are similar to those on the other columns from this temple, described last year, will be treated in detail by Mr. Charlott, who has made a comparative study of the relief sculpture in the entire composite structure.

Probably one of the greatest and certainly the most gratifying surprise, which the season's work brought to light, was the discovery of 71 painted stones which had been originally incorporated in the face of two benches on the north and south sides of the altar of the inner sanctuary. During the current season it was considered desirable to free the substructure of the Temple of the Chac Mool from its enclosing shell of masonry and it was the section adjacent to the eastern outer wall which produced, so unexpectedly these beautiful frescoes. When these stones began to appear sporadically, they excited great interest on account of their superb state of preservation, but for a time their provenience was a matter of conjecture. As the work progressed, however, it became evident that they had originally come from the faces of the two aforementioned benches.

These benches were L shaped, the longer axes being built against the north and south walls respectively of the inner chamber and the shorter axes against the north and south ends respectively of the east or back wall, each terminating 8 feet 1 inch [2.5 m] from the centrally placed altar. An unpainted white plastered surface remained where this bench had formerly abutted these walls in the south half of the room. The north wall and northern half of the east wall of the Temple of the Chac Mool had been torn completely away in the rebuilding operations coincident with the construction of the Temple of the Warriors, and the dimensions given for the north bench are based upon the assumption of a symmetrical ground-plan with reference to the east and west axis of the temple.

Calculations made from this unpainted silhouette, as it lay against the south wall and the southern half of the east wall, established the fact that the total length of the painted face of each bench had been 25 feet 4 inches [7.7 m] and its original height 3 feet 4 inches [1 m], the slightly jutting cornice being 7 inches [17.8 cm] in height. The total height of the assembled stones was within half an inch of the unpainted section on the south and east walls. The design on these benches was found to have been framed with broad blue bands, and splashings of blue paint were found at the point where the bench had formerly joined the black painted wall. The stones, from the lower edge of the benches were themselves splashed with red paint from the numerous repaintings of the red floor.

More conclusive proof of the former positions of these stones was derived from a study of the stylistic evidence. Two major groups were immediately noted: 1. Pieces executed in a polychrome technique with considerable nicety of detail; and 2. Pieces, broadly, and crudely treated, done almost exclusively in shades of red. These were found to be parts of the two separate benches, the former belonging to the bench on the right, or south side of the altar, the latter to the bench lying to the left, or north of the altar. The altar was the logical focus of interest in the sanctuary, and the human figures on these benches were found to be orientated so as to continuously face it.

The stones belonging to the south bench, 38 in number, fall into three groups. The human figures of one group when assembled were found to face to the left, and this section coincides with the 14 feet 6 inches [4.4 m] required for the face of the bench lying along the south wall. A second group with their figures facing in the opposite direction when fitted together, exactly fill the 4 feet 8 inches [1.5 m] of the face of the bench nearest the altar. It seems probable that this reverse facing of the figures of the second group was due to the desire to have them look toward the sanctuary and the front of the altar. A corner stone with incomplete figures facing each other confirmed this hypothesis. The third group, occupying the middle section of the bench, that is, that lying along the east or back wall of the sanctuary, had been executed by a different hand than the stones lying parallel to the adjacent section of the bench along the south wall, even though its figures faced in the same direction. This stylistic difference made possible a separation of the stones of these two groups, one from the other. Only slightly more than half of the stones were found, although careful search was made for the rest. Their re-use as fill material, mixed with plaster and rubble, had fortunately resulted in but slight damage to the surfaces.

The subject of the painting is a file of human figures seated upon benches covered with jaguar skins.

There are warriors panoplied with shields and spears, and priests offering bowls of incense in their extended hands. Sufficient of the design remains to establish the general details of dress and ornament for all the types of human figures represented.

The north bench, as previously stated, was more crudely painted and; in addition, its component stones had suffered rougher treatment in their re-use. Nevertheless, it was possible to identify enough to permit the reconstruction of the design of the entire panel. The human figures, in this case only warriors, are seated upon jaguar stools. The bench along the north wall shows these jaguar stools or seats standing full face to the spectator, head, forelegs and shoulders visible; the tails are drawn in, so that they may be seen between the animal's forelegs. The seated human figures are drawn in profile as are also the jaguars in the remaining two sections of the bench, that is, that lying against the east or back wall and that facing the altar.

Throughout the remainder of the Temple of the Chac Mool, the preliminary outlines are sketched with a flowing red line, but on this bench the outlines of the jaguars were only roughly indicated by scratching them in the wet plaster. These outlines perforce are angular and ugly and very fortunately were not followed in the slightest degree by the artist in his final work. In the upper part of the bench no preliminary outlines were used at all, the color being applied directly to the plaster in blocked-in masses, which were subsequently outlined with a heavy black line. This unusual technique has been found nowhere else in the city up to the present time.

Both benches show various departures from the usual fresco treatment, the most striking of which are a lavish use of masses of dark paint laid on a red ground, resulting in a rather unique lack of contrast, and the practice of covering the entire surface, preliminary to painting, with a glutinous yellow-white mixture before the subsequent colors were applied. This gives a marked opacity to these particular frescoes, in strong contrast to the clear water-color appearance of the frescoes in the Temple of the Warriors.

A study of dress and ornament has proved of great interest, but lack of space limits even a brief description of these details. The monograph on the Temple of the Warriors, now in course of preparation, will include a comparative study of the subject-matter of the frescoes, as well as detailed analyses of the colors employed, and other problems of technique which have arisen in the course of the work.

38.17.

JEAN CHARLOT

Report on the Sculptures of the Temple of the Warriors and the Temple of the Chac Mool

YB 27:300–302, 1928

As the investigation of no new architectural unit was carried out in 1928, the time of Mr. Charlot and of his assistant, Mr. Houser, was devoted to a completion of work already under way at the Temple of the Warriors and adjoining structures.

Drawings of the sculptures on the columns of the Temple of the Chac Mool, as well as a few left in the Temple of the Warriors, the dais of the North Colonnade and the dais of the Northwest Colonnade were completed this season. The designs on the columns in the Temple of the Chac Mool were described in [Chapter 38.12], but only a few had been drawn at that time.

This season the designs on these columns were copied in line drawings with color notes added in five flat tones, with a view to securing standardization of color reproduction in the lithographic plates. Thirteen drawings with the corresponding color notes were made which, with the 17 copied in water color by Mrs. Morris, make a complete record of the bas-reliefs that have survived in this temple.

The columns in the Temple of the Warriors had been copied, in 1926 in line drawing, independent color notes on transparent paper having been made at the same time. These color notes were transferred this season from the transparent sheets to the drawings themselves, after having been reduced to the five standardized tones adopted for lithographic reproduction.

Another important piece of work concluded during the present season was the painting of the front of the dais in the North Colonnade. The two shorter sides of this dais had been copied in oil in 1927. The front, measuring more than 16 feet in length, was copied this season, also in oil, natural size. The two shorter sides of the dais in the Northwest Colonnade had been copied in 1926. Owing to the extensive copying in the field, which has been going on since then, and the technical improvement resulting therefrom, it appeared advisable to retouch the copies of these two sides, painting directly from the corresponding originals.

In addition to the foregoing, Mr. Charlot made drawings as well as water colors of a number of disassociated sculptured units, the original provenience of which is unknown.

Two-color copies were made of the remnants of the beautiful panel composed of flowers and animals found in the fill of the pyramid of the Temple of the

Warriors. The sculpture is in rather high relief and presents unknown flowers on graceful sinuous stems ornamented with bud-like leaves. Different insects and birds feed upon them. Although much stylized, the butterflies are still recognizable as such, their wings transformed into two flowing panaches of quetzal-like feathers, the head, with its extended proboscis, retaining many of the original entomological characteristics. Among the birds which could be identified are the crested parrot and the hummingbird, the latter in its characteristic position of sucking the flower while on the wing.

The relief, vividly colored, is in strong contrast to the plain, white background. A few stones were found, which are doubtless parts of the same panel although they show no coloring, being done in black and white only. As this duochrome treatment was a preparatory process before color was applied, it is probably to be assumed that this panel, like many sections of the friezes on the pyramid of the Temple of the Warriors, had been completed all but its polychromy, and was then discarded because of some subsequent architectural modification.

The fragments of the serpent columns belonging to the Temple of the Chac Mool, uncovered in 1926, consist of parts of the two tails and the two heads. The better preserved tail was copied in colors, while a line-drawing was made of the other. Both present, in addition to the usual tail-rattles and feathers, panels consisting of three Atlantean figures each, the figures bearing representations of shells and turtles.

The more important of the two heads, that still having a section of its corresponding columnar shaft, was also copied in color. Its style is strikingly different from that of the similar heads in the Temple of the Warriors. Although the subject matter is the same in each case, the plumed serpent, the treatment, which in the earlier temple is more of an esthetic abstraction, tends in the later Temple of the Warriors to become fairly realistic. The different parts of the serpent's head are represented, but without interfering with, or modifying the primitive squareness, of the original block of stone. Here is an interesting stylistic link with some of the sculpture at San Juan Teotihuacán, especially the figure of an ocelot made of alabaster, and a heroic sized goddess in the National Museum at Mexico City.

On the serpent column from the Temple of the Chac Mool, the feathers are painted red; the fangs, of semi-spherical shape, are pink. The outline of the mouth, as well as the scrolls issuing from it, is yellow. The belly of the snake is yellow and the rattles are blue. A narrow horizontal band of blue and yellow encircles the body at about one-third of its height.

Three line-drawings were made of sections of the three friezes running around the pyramid of the Temple

of the Warriors, the examples chosen, illustrating the different elements (men holding ceremonial bars, animals and birds) found on each band. This last work brought out a new fact, showing the ingenuity with which the builders used their wide knowledge of perspective. While on the lowest frieze, which is at the level of a man's eyes standing at the base of the pyramid, the feet of the reclining figures rest directly on the cornice just below them, in the middle and top friezes there is a space left between the feet and the cornices below them. This was done so that, in the diagonal perspective resulting from looking up at these friezes, the feet of the figures would not be hidden by the cornices projecting below them, but appear to rest directly on them. So many and so diverse are the successive layers of paint on these elements, that exact color reproduction would only be misleading. It seems that in the case of the last coat at least, the human figure and its accessories were painted blue, except for the belt, which is green; the eagle is black; the jaguar, yellow; and the unidentified animal which has been called the "woolly" is treated with a hachure of black and white to represent fur. The background everywhere is red.

A copy was also made of the charcoal sketch of an Atlantean figure, found on the unpainted base of the south wall of the sanctuary of the Temple of the Chac Mool, where the bench had formerly stood. This figure is of especial interest, in that it may be the only example of a working drawing for a piece of stone sculpture before execution, which has come down to us. All the field notes necessary for the preparation of a report on the bas-reliefs of the Temple of the Warriors were made, and two-thirds of the text itself was completed before Mr. Charlott left Chichén Itzá. Also, about 200 line drawings were made, to be used in illustrating the text, in addition to the copy for the full-page illustrations and color plates.

38.18.

PAUL S. MARTIN

*Report on the Temple of the Two Lintels
(Station 7)*

YB 27:302–305, 1928

The repair of the Temple of the Two Lintels was completed on April 28. During the 1927 field season the

four exterior walls and the two interior partitions had been re-erected to the level of the lowest member of the medial cornice, that is to say, to a bout half their original height. During the current season, these were completed and the building roofed over.

When work was started on this building in the spring of 1927, it was evident that all the façade above the medial cornice had fallen, with the fortunate exception of a single section of the back wall, which stood to within two courses of the original height. This section served as a pattern for the reconstruction of the entire upper zone, since here, *in situ*, was a complete cross-section (lacking the two courses above mentioned) of the original façade-cornices, inter-cornice element and the decorated panels of the upper zone. There are two types of these decorated panels which alternate with each other clear around the building, the first consists of X-shaped stones, separately cut and fitted together like a mosaic, giving the appearance of lattice-work; the second is composed of four round columns, occupying the same space, both vertically as well as horizontally, as the lattice panels. Since no cut stones were found either in the front or rear, which differed from the elements of the two types of panels, already *in situ*, it seemed safe to assume that the fallen elements should be replaced in the same manner.

The story of the east and west façades is slightly different. The following sculptured elements came to light during the excavation of the two ends of this temple. 1. Five round columns, of the same size as those in the front and rear façades, but banded in the middle with a conventionalized knot, found at the back corners. 2. The several lateral elements of a corner mask found at the front corners. 3. 28 X-shaped stones.

Apparently the upper zones of the ends of the temple were composed of 1. These five special columns, contiguously placed; 2. A solid panel of 28 X-shaped stones, arranged in four horizontal rows of seven X-shaped elements each; and 3. The lateral elements of corner mask panels. From the rear of the temple, only one of these "knotted" columns was visible at each corner.

Justification for this reconstruction of the design is found, first, in the fact that all the sculptured elements exactly fill the space available for them; and, second, the old plaster marks still adhering to the cornice elements corroborate the above arrangement. For a long time, indeed, the positions of these columnar elements were uncertain, but the discovery of the corner stone of the cornice upon which they had formerly rested furnished irrefutable proof of their original arrangement, the ancient plaster marks coinciding to the millimeter with the number of columns actually found.¹

Complete repair of this temple has been possible only because practically all the original material was at hand. For example, only 11 X-shaped stones were missing out of an original total of 264.²

In rebuilding the arches, or corbelled vaults, no temporary forms to sustain them were necessary as in the construction of true arches.

Each vault stone was specially cut so that, when placed in position in the wall, its center of gravity lay well toward its butt so that it could not fall forward; and, to make each stone even more secure, a large rock was placed over the butt, holding it in place until the entire roof was built. A few of the beveled vault stones had to be replaced because some of the originals were too badly weathered and broken to be used again.

The temple proper rests on a platform decorated with sculptured designs; the front has a continuous lattice pattern composed of small separate X-shaped stones, terminating at each end with a mask panel. The platform at the rear consists of alternating panels of small round columns and a square scroll motive.³ For some unknown reason this beautiful platform had been covered at some later time in order to raise the whole terrace level upon which the temple stood. In so doing, the long curved noses of the corner masks were broken off and much of the delicate relief, including the animals behind the ear plugs, was covered with a stucco finish.

The lower zone, that is, the portion of the façade immediately above this beautiful base, is a vertical wall, 6 feet high; it is plain, except for three doorways on the north side.

Above the lower zone and set between the two outer members of the medial cornice, is a continuous course of dentated elements, set at an angle of 60°, the spaces between them being filled with triangular-shaped stones.

Resting on the topmost member of the medial cornice are the alternating panels of lattice and columns already mentioned. At the two front corners of the upper zone are mask panels of truly magnificent workmanship. They rank among the finest in the city. The upper zone is in turn surmounted by the conventional three-member cornice. The lowest member is battered, and is 9 inches [22.9 cm] high; the second is a vertical course 6 inches [15.2 cm] high, and the terminal member is a battered coping 18 inches [45.7 cm] high.

Formerly the platform and upper zone were painted red; the lower zone was undoubtedly plastered, but was not painted. The whole effect is one of dignified simplicity and striking beauty. This building is a gem of pure Maya architecture and shows no Toltec influence.

Although this temple has three doorways, at the close of the 1927 field season only two lintels had been

found, namely those corresponding to the two end doorways. It seemed almost certain, however, that the middle doorway must originally have had a stone lintel as well, and that it had either been removed in ancient times and re-used elsewhere (a very common practice), or that it had been made of wood, and had decayed. Therefore, last year, in order to replace the cornice above it, it was necessary to find a substitute for this missing lintel. A plain stone lintel of the proper size was removed from an old water trough at the hacienda, and was used over the middle doorway in place of the missing one.

This year a more thorough bushing of the area near the temple resulted in the recovery of three pieces of the missing lintel, which were found not more than 75 feet [22.9 m] from the front of the temple. These pieces had been refashioned into metates, or grinding stones, and composed about two-thirds of the original lintel. These grinding stones, the faces of which are carved with hieroglyphs, fit together, making it quite evident that they were parts of one and the same stone. Moreover, the measurements of the glyphs correspond exactly with those of the glyphs on the lintels over the other two doorways; finally the proximity of these pieces to their former position lends additional color to the conclusion that at one time they were parts of the lintel over the middle doorway. The discovery of the fragments of this lintel was gratifying, because it removes any doubt as to its former existence.

In addition to the discovery of the missing lintel, the more thorough bushing of the present season revealed the fact that all around the temple on the terrace itself were many small square structures, of which only the very crude foundation walls remain. Each structure measures about 10 feet square [0.09 sq m], and the foundations are composed of cut and uncut stones, both round and square. The walls of one structure abut those of the adjoining ones, forming a continuous series of small cell-like rooms. The ground-plan is not unlike the ground-plan of some of the structures in the Pueblo region of the southwestern United States.

Almost every one of these structures contains a grinding stone, or metate, either whole or broken. It was in two of these small cell-like rooms that the pieces of the hieroglyphic lintel were found. It is probable that the roofs of these buildings were of jacal, that is, palm thatch, and the sides of brush and mud.

The use of these structures is purely conjectural. They may have served as places for grinding corn; or again they may have been dwellings, although they are very small, and show no other evidence of domiciliary use, such as hearths, etc. There are from 50 to 75 of them.

At the edge of the southeast corner of the terrace is chultun, or cistern, for collecting and storing rain water.

This chultun and a nearby well were undoubtedly the sources of water for this temple and the people living in its immediate vicinity.

NOTES

1. Throughout the reconstruction of this temple the ancient plaster marks repeatedly served as guides to the former position of doubtful carved elements. They were invisible in reconstructing the corner masks, and may well be called archaeological "divining sticks."

2. The interest of the Maya Indian laborers in the reconstruction of this temple was shown by the fact that they volunteered to bring enough similar X-shaped stones, from the village of Pisté, three miles [4.8 km] distant, to make up this shortage.

3. This motive is identical with that found on the platform of the East Annex of the Monjas.

38.19.

KARL RUPPERT

*Report on the Outlying Sections of
Chichén Itzá*

YB 27:305–307, 1928

It has been felt for some time, that, in order properly to estimate the size of Chichén Itzá and to reach an appreciation of the position it held in the Maya world of the thirteenth, fourteenth and fifteenth centuries, it would be necessary to supplement the more intensive excavation work of the past four seasons with more extensive exploration of the outlying sections of the city. For this purpose a partial reconnaissance of this area was made this year. The regions explored include the territory east, southeast, south and southwest of the hacienda, for a distance of 3 to 4 km. Where it seemed advisable to trace ground-plans, minor excavations were undertaken.

During the course of the reconnaissance some 27 stations were examined, which may be classified roughly as follows: 1. Low mounds; 2. Isolated terraces, with or without superstructures; 3. Groups of terraces and structures; and, 4. Stone quarries.

Examples of the first group vary greatly in extent. Walls may always be traced, often defining well-planned and extensive structures. The walls, however, are very low and the small amount of debris together with the absence of beveled arch stones, leads to the assumption that structures of this group were of relatively small importance.

The second group includes most of the stations examined. In some cases no trace of a structure was noted on these terraces; others had a single square or rectangular mound in the center. One such mound or raised area had, at its base, a sacrificial altar like the one found by E. H. Morris at the Temple of the Warriors in 1926 [Chapter 38.10].

In some cases, covering extensive sections of these terraces, there are irregular, square and rectangular areas outlined, by a single course of stone. These may have been living quarters or work rooms, as many metates are found in connection with remains of this type.

Other terraces have one or more rather high mounds surmounted by a temple, or again these several types of structures may all be found on a single terrace. Sometimes isolated structures not on terraces are associated with these terrace groups.

One station, known locally as the "Group of the Chultun," is an excellent example of this kind. This name has been given to it, because of a single chultun here, which has a masonry drain 3 inches [7.6 cm] deep by 5 inches [12.7 cm] wide, extending from its orifice to a group of buildings on the same terrace behind it.

Besides terraces, platforms and colonnades, this group also has a type of building which is not unlike the Market Place at the Group of the Thousand Columns. This structure faces west and is composed of a colonnade, having its long axis north and south. A single opening in the east wall gives into a court some 60 feet square. A covered corridor had passed around all four sides of this court. The roof, which was flat, was supported by 20 round columns. In the middle of the east wall is a doorway leading into a small recessed chamber. During the reconnaissance, four such quadrangular structures were noted.

West of this quadrangular structure is what appears to be an unfinished ballcourt. The two walls are 50 feet apart and 80 feet long. The west wall is some 6 feet higher than the east wall. Because of this fact, and the absence of out stone, it seems that this ballcourt may have been under construction.

Southeast of the hacienda, a distance of half a kilometer, a second quadrangle was discovered. This is 50 feet square, and had its entrance on the north side and an opening on the east side leading into a small chamber. The north exterior doorway is 8 feet wide. Against each jamb there is a pilaster, 29 inches [73.7 cm] wide. The faces of both of these pilasters are sculptured with hieroglyphs arranged in three vertical rows of nine each, making a total of 54 glyphs for the two pilasters, each glyph block being 8.5 inches [21.6 cm] square.

When these pilasters were found, they were not complete. Search through the nearby bush, however, brought to light five of the missing pieces. The two blocks, which formed the ultimate course of each pi-

laster, were located 150 feet [45.7 m] to the north, having been re-used in the construction of the southeast corner of a small platform. The opening between these hieroglyphic pilasters had been blocked at some later time, and thus the entrance to this court closed.

A kilometer east of the hacienda, there is a group belonging to the third type, of more than usual importance, since it contains a circular building. This building rises from a platform some 20 feet [6.1 m] in height, which is located at the eastern edge of a large terrace. In the center of this terrace is a low mound, and at its western edge is an ancient roadway leading off in a westerly direction.

The circular building itself is indicated only by the enclosing walls which stand to the height of the lower cornice, just above the battered zone. It contains but a single chamber, and is 23 feet [7 m] in diameter inside. As no beveled arch stones were noted in the debris, it seems likely that the walls above the battered zone, as well as the roof, had been of wood and rubble.

Two clearly defined stone quarries (Group 4) were examined, one to the southwest of the hacienda and the second three kilometers west by north of the village of Pisté.

At the latter station, two large roughly worked blocks had been taken out and left some 20 feet [6.1 m] from the rock ledge from which they had been quarried. Both of these blocks were broken, which may account for the fact that they had been abandoned. Each block measures 9 feet 4 inches [2.8 m] in length, 4 feet 3 inches [1.3 m] in height, and 3 feet 10 inches [1.2 m] in width. No artifacts were noted in or around either of these quarries.

Even the incomplete results of the partial reconnaissance made during the current season indicate a much greater building activity than had at first been suspected, and fortifies the conclusion, already reached, that Chichén Itzá was the largest center of the New Maya Empire.

38.20.

KARL RUPPERT

Report on the Excavation and Repair of the Caracol (Station 5)

YB 28:303–310, 1929

Excavations at the Caracol group during the current season may be considered under three heads: I. The Caracol; II. The West Annex; III. The South Annex.

I. THE CARACOL

Excavation of the north, east, and south faces of the upper terrace was commenced on January 23, in order to permit the repair of these walls and to examine the sculptured and faced stones which had fallen not only from the upper terrace, but also from the Caracol proper above the 5-member cornice.

The following sculptures were recovered from the east side, two contiguous cornice elements presenting glyphs, which had been parts of a serpent with hieroglyphs carved on the body; other parts of this same serpent-cornice without glyphic treatment; elements from the mask-panel above the east doorway; a seated human figure in full round; and various decorative elements which may have formed parts of the panel of which the seated figure was the central element. The sculptured material, found on the north side was about the same as that on the east side.

Fifty-seven stone incense burners have been recovered from the Caracol. Some of these may have been used in connection with the tower itself as two were found relatively high in the debris on the upper terrace; but it is believed that the greater number were placed on the parapet of the upper terrace, as indicated by finding 10 of them spaced at regular intervals in the debris across the base of the terrace wall on the south side.

To ascertain the nature of the foundation supporting the great weight of the central core of the tower, a pit was dug in the inner corridor directly inside the south doorway. The foundation was found to be composed of large rough stones, well embedded in mortar to a depth of 13 feet 8 inches [4.2 m]; below this level the fill contained comparatively small amounts of mortar.

At a depth of 5 feet 2 inches [1.6 m] below the floor of the corridor several horizontal tunnels were noted, averaging 4 inches [10.2 cm] in width and 8 inches [20.3 cm] in height. They are very definitely indicated, although made of rough stone.

Thirteen feet 1 inch [4 m] below the floor and directly beneath the center of the core of the Caracol proper was a stone-lined and roughly circular cist, 12.5 inches [31.8 cm] in diameter and 19 inches [48.3 cm] in height. The cist was covered with stones and the floor was of untroweled lime mortar.

In the center of the floor of the cist a vertical shaft, 2.5 inches [6.4 cm] in diameter, extends to a depth of 27.5 inches [69.9 cm]. The upper 7 inches [17.8 cm] of this is roughly lined with mortar showing vertical striations which would tend to indicate that the shaft had been formed by laying wet mortar around a pole, and withdrawing it after the mortar had partially set. Four horizontal tunnels leading away from the sides of the

cist have the following bearings: N 24 degrees 30 minutes E, N 65 degrees 30 minutes W, S 37 degrees 5.18 minutes E, S 65 degrees 30 minutes W. They average 5 inches [12.7 cm] in width and 8 inches [20.3 cm] in height.

An olla had been placed in the hollow directly over the small opening in the floor. It is 9 inches [22.9 cm] in height, of dull red-brown ware with heavy brushed decoration. It was half filled with earth in which were mixed pieces of a sandstone disk similar to those found by E. H. Morris at the Temple of the Warriors [Chapter 38.15 this volume] and elsewhere. This disk had a diameter of 5 inches [12.7 cm]. There were also found seven pieces of hematite mosaic, a small stone button, one surface of which was painted red, and a squared shell ornament.

In the process of clearing the debris on the east side of the upper terrace, a circular substructure, the original upper terrace, was discovered. This rested directly on the lower terrace, and rose to a height of 11 feet [3.4 m], terminating with a 15 inch [38 cm] vertical cornice. The diameter of the newly discovered circular platform is approximately 53 feet [16.2 m], that is, 17 feet [5.2 m] greater than the Caracol tower.

Surrounding the circular platform, except for a section of about 40 feet [12.2 m] on the western periphery, is a bench 4 feet 3 inches [1.3 m] wide and three feet high finished with an 8 inch [20.3 cm] vertical cornice. As yet no stairway has been found leading to the summit of this circular platform. The openings or mouths of small horizontal tunnels were noted at various levels in the facing and at the base of the bench. In some cases these tunnels were blocked by the later fill material which had been built around the circular platform, and in other cases they had been prolonged by crudely built passages in the fill. These tunnels are not always straight, as for example, one on the west side makes two turns before it opens through the faced wall of the upper platform. Since the upper platform has not yet been completely excavated, the relationship between these openings and the tunnels encountered in the shaft sunk in the inner corridor of the building is as yet unknown.

A cache of skeletal material was encountered in front of the west doorway at the edge of the cornice of the original circular substructure. The material extended from 7 to 25 inches [63.5 cm] below the surface but not more than two feet west of the cornice. The first indication of this cache was the discovery of a nest of cranial fragments belonging to at least 13 different individuals; altogether, scattered throughout the fill, were found, complete or in part, sections of 18 different lower jaws. Even though this material was in very poor condition the area occupied by each skull was clearly indicated in the fill. They were placed in very closely

packed rows, three being found under the cornice. No attempt at orientation had been made and long bones were scattered indiscriminately throughout the area.

From the position of the material and the fact that stones were wedged in between bones as if purposely, there can be little question that these are secondary burials. Funeral furniture includes sherds of a rather plain incense burner and the lower jaw and two vertebrae of a deer.

As excavations were continued around the cornice toward the northwest, an olla, 14 inches [35.6 cm] in diameter and 15 inches [38.1 cm] in height, was uncovered 4 inches [10.2 cm] below the surface. It was half filled with ash under which were two excellent obsidian flakes, 4 and 4.5 inches [11.4 cm] in length, respectively.

A trench in the floor of the niche between the double stairway leading to the summit of the second terrace exposed a masonry platform measuring 84.5 inches [2.1 m] in length, 70.5 inches [1.8 m] in width, and 12 inches [30.5 cm] in height. Resting on this platform were two round columns. The top of the platform is 4 inches [10.2 cm] below the base of the sides of the steps and extends under them a distance of 17.5 inches [45 cm] on the south side and 11 inches [28 cm] on the north side. The back wall of the niche rests on top of this platform. The northern half of the platform, as well as the column resting on it, was painted black, while the southern half and the southern column were painted red.

Scattered throughout the dirt fill of the area between the stairways, to a depth of 16 inches [41 cm], were found fragments of human bone. There were two foci of concentration of this material—one along the southern side of the niche, 33 inches [84 cm] west of the platform, and the other 45 inches [1.2 m] west and on the east and west axis of the niche. The latter represents secondary or disturbed burials as sections of skulls and teeth were found scattered throughout the fill. Skeletal material recovered includes the following teeth and miscellaneous bones: 43 molars and premolars, 33 incisors, 24 canines, one lower jaw, one right and one left tibia, one humerus, one clavicle, two ulnas, one atlas, besides fragments of ribs, long bones and skulls. Burial objects include 90 jadeite beads, two pieces of obsidian and a few miscellaneous sherds and portions of shell.

During the season of 1927 two drains were found in the floor of the lower terrace [Chapter 38.13]. This season a third was found on the east side, 107.5 feet [32.8 m] north of the southeast corner of the terrace. Only a section of its south and west faces remains *in situ* due to the fall of the cornice above at this point.

Excavations along the parapet of the lower terrace, south of the main stairway, established that it

had been 44 inches [1.1 m] in width and at least 33 inches [0.8 m] in height. Four openings, somewhat regularly spaced, which pierce this section of the parapet at the level of the floor of the terrace, may have served as drains. They vary in height from 6 to 10 inches [15–25 cm] and in width from 8 to 12 inches [20–31 cm]. A small stairway built against this parapet will be described in connection with the West Annex.

The stairway leading to the top of the lower terrace was subjected to a number of alterations. In its final stage it consists of two sections. The four lower steps have 3 foot 3 inch [91 cm] treads and 10.5 inch [27 cm] risers. The three lower steps have a gradient of 78 degrees with the horizontal, and the fourth one of 65 degrees. This flight of four steps is 71 feet [21.6 m] long and gives on to a platform 21 feet [6.4 m] wide, which projects 8.5 feet [2.6 m] beyond the upper section of the stairway at both ends. However, with the subsequent construction of the West Annex, the southern foot and a half [46 cm] were covered by the platform of the Annex. The western face of this platform rises with a batter equal to that of the riser of the final step, while the north and south-faces are vertical.

The second section of the stairway begins to rise at a point 13.75 inches [34.9 cm] behind the front line of the platform. This portion of the stairway is 43 feet 10 inches [13.4 m] wide and its medial axis coincides approximately with the medial axis of the lower flight of steps. The risers average 9.8 inches [24 cm] high, and the treads, 13.75 inches [35 cm] wide. At either side were balustrades, 18 inches [46 cm] in width, each carved with a pair of intertwining serpents. The two heads and two tails belonging to the tops of the balustrades were recovered. The two tail stones were of highly specialized shape being carved so as to sit vertically, directly below the protruding heads, the tip of each tail extending beyond the outside edge of the balustrade.

An earlier period in the construction of the upper section of the stairway is shown by the painted lime-plaster floor of the platform, which extends under the balustrades to the facing walls of the stairway and also under the steps on the west side for a distance of 7 feet 9 inches [2.4 m]. This indicates that at one time the stairway was without balustrades and rose at a greater angle.

The lower section of the stairway, as well as the platform, rested on a well polished lime-plaster floor, painted red. A pit sunk into the platform at the south, and a tunnel driven in for a distance of 12 feet [3.7 m] under the stairway at the north, showed this same red floor continuing under the platform and stairway and curving up against the west face of the lower terrace and against the roughly plastered section of masonry protruding from the terrace, and extending under the

stairway. The significance of this section of masonry and the floor curving up against it can not be determined until after further excavation.

Abutting the first riser of the lower section of the stairway at a point 14.5 feet [4.4 m] south of its northern edge is a still lower step, which gives directly on to a paved stone roadway, 13 feet [3.96 m] wide. This extends in a northwesterly direction some 120 feet [36.6 m] to the south wing of a building called no. 6 on the Maudslay map of Chichén Itzá and described by him as "a tumbled heap of stones now about 4 feet [1.2 m] high, which may at one time have supported a roofed building."

Finally the south balustrade of this stairway, composed of a pair of intertwining serpents, has been restored to its original position so far as possible, although a few of the sculptured blocks are still missing.

When Mr. Reygadas, Director of Archaeology for the Ministry of Public Education, visited the Caracol on March 9, he expressed the wish that the 5-member cornice of the Caracol, as well as the arch of the outer corridor, might be entirely replaced except for the section on the east, where it had fallen en bloc without disintegrating, to within a few feet of the upper terrace floor. With this in view, work was started on the repair of the outer east wall, and continued until the 5-member cornice was entirely replaced except for this single section.

The exterior wall of the Caracol has been raised to a height of 46 inches [1.2 m] above the 5-member cornice, which involved replacement of the masks over the north and east doorways. The arch of the outer corridor has been repaired to an equal height on the inside. The fallen walls of the second terrace have been replaced and the parapet raised to the highest surely established level.

II. THE WEST ANNEX

The West Annex consists of a low platform built against the west side of the lower terrace of the Caracol, to the south of the stairway, surmounted by a small temple. The platform measures 51.8 feet [15.8 m] on the north, 46.5 feet [14.2 m] on the south, and 64.5 feet [19.7 m] on the west. The battered facing rises with a gradient of from 76 degrees to 80 degrees, to a height of 7.7 feet [2.4 m] where it terminates with an angular cornice, overhanging 3 inches [7.6 cm].

Two stairways give access to this platform. The principal one, on the west side, 24.7 feet [7.5 m] from the northwest corner has a width, including the balustrades, of 15.3 feet [4.7 m]. Each balustrade was 18 inches [46 cm] wide and carved in low relief to represent a serpent. The serpent heads, which had stood at the tops of the balustrades, were not found.

The other stairway is on the north side of the platform and measures 7 feet 10 inches [2.4 m] in width, including the two 15 inch [38 cm] balustrades. The outer facing of the western balustrade rises vertically from a point at the top of the battered face of the platform reached by the lower section of the Caracol stairway.

In the debris to the west of the platform and south of the main stairway were found six large, finely dressed stones, the original positions of which have not yet been determined. These stones are 28 inches [71 cm] in height, battered on one face and vertical on the other. These two faces, as well as the top, have been worked and plastered. A seventh stone similar to these was found on top of the platform, 4 feet [1.2 m] south and 2 feet [61 cm] west of the north *anta* of the temple proper. The finding of this one stone above the platform suggests that they pertain to the temple rather than to the platform. Placed side by side vertically as was undoubtedly their original position, they have a combined length of 7 feet 11 inches [2.4 m].

The temple measures 28 feet [8.5 m] east and west by 46.5 feet [14.2 m] north and south. It is so placed on the platform that a narrow passageway only 22 inches [56 cm] wide has been left between its back wall and the battered western face of the lower terrace of the Caracol.

A cross-section of the west wall of this temple reveals a vertical zone rising from the platform to a height of 7.5 feet [2.3 m]. Upon this rests a three member cornice, having battered lower and upper members, 9 inches [23 cm] high each, separated by a 6 inch [15 cm] vertical member. No portion of the wall above the first member of this cornice was found *in situ*; however, the height of the fallen upper part of the façade may be calculated with reasonable accuracy from data recovered in the course of excavation. It seems likely that above the three-member cornice here was a vertical 3 feet 6 inches [1.1 m] high, upon which rested another three member cornice similar to the first, with the exception that the top member is 18 inches [45 cm] in height. This gives a total height for this temple of 15.75 feet [4.8 m].

The upper vertical zone, with the exception of the east side which was plain, was decorated by a continuous band of simple U-shaped motifs 8 inches [20 cm] in height, incised on the wall-stones, and large decorative niches in the middle of each side. In each niche a seated human figure forms the principal motif. The figures in the north and south niches are seated cross-legged. Although these are not as finely executed as those found by E. H. Morris in 1926 in front of the Northwest Colonnade, they are in the same style. The figure from the north niche has a bird beak and a tubular nose plug.

The temple has two chambers; the outer one is a colonnaded hall having two rows of four columns each, which support the corbelled arch roof. It is 41 feet 6 inches [12.6 m] long by 14 feet wide [4.3 m], the long axis running north and south. The *anta* have an average length of 3 feet 5 inches [1 m]. The round columns average 19 inches [48 cm] in diameter and with their rectangular capitals, have a total height of 6.5 feet [2 m]. Three stones bearing the incised U-shaped motif were found *in situ* in the facing of the east wall.

Entrance to the inner chamber was gained through a doorway 4 feet [1.2 m] wide, the jambs of which were standing to their original height of 6.5 feet [2 m]. The inner chamber is 40 feet 9 inches [12.4 m] long by 7 feet [2.1 m] wide.

Directly in front of the doorway there is an altar 13 feet [4 m] long, 4 feet 10 inches [1.5 m] wide, and 2 feet 2.5 inches [67 cm] high including the 6 inch [15.2 cm] vertical cornice, which overhangs 3 inches [7.6 cm]. Faint traces of geometric designs in red, green, tan and black were noted on the cornice, while on the sides large yellow flowers were naturalistically portrayed. The top of the altar was painted a dull red, similar to that used as a background for the painting on the sides.

Three niches in the front or western face of the altar open at the floor level. They average 18 inches [45.7 cm] in width, 20.5 inches [52.1 cm] in height and 27.5 inches [69.8 cm] in depth; the under side of the cornice forming the tops. Each niche is formed of carefully laid wall stones which still retain traces of their original coat of bluish-gray plaster. Standing upright in each niche approximately 12 inches [31 cm] from the face of the opening is a dressed stone about 12 inches [31 cm] high. These stones are roughly rectangular and rounded at the top, and are almost identical in shape with a stone found in the inner corridor of the Caracol in 1927 [Chapter 38.13].

A cist 6 inches [15 cm] in diameter and 12 inches [31 cm] deep was found in the floor, 13.5 inches [34.3 cm] west of the altar and in line with the middle niche; a flat stone 9.5 [24.1 cm] by 11 inches [28 cm], buried half an inch [1.3 cm] beneath the well-polished lime-plaster floor, served as a cover.

Shortly after excavations were started in the inner chamber a highly unusual arrangement of dressed stones was uncovered. These formed a wall or step, one tier in height, 22 inches [55.9 cm] in width and 64 inches [1.6 m] in length. At each end of this wall, or steplike construction, there was a single rectangular block having a width equal to the wall and extending above it. To the west of this construction, at its base and abutting it, was a rectangular arrangement of vertical cornice stones having a total width of 29 inches [73.7 cm], and a length equal to that of the wall or step, itself. This construction was found some 52 inches

[1.3 m] above the altar, to which position it had settled when the arch of the inner chamber had fallen.

Subsequent excavation along the parapet surrounding the lower terrace of the Caracol revealed a small stairway directly east of this fallen steplike construction. As this small stairway has a width equal to that of this fallen construction just west of it, it seems probable that at one time both together formed a flight of steps which led from the top of the lower terrace of the Caracol upward to the roof of the West Annex. The roof of the latter must have been approximately 5 feet [1.5 m] above the top of this lower terrace.

Encased within the hearting of the platform of the West Annex was found an earlier platform which is intact except for its southwest corner. The present south face of the platform seems to be merely a western extension of the south face of this earlier platform, which measures 32 feet 5 inches [9.9 m] by 32 feet 3 inches [9.8 m] and is finished with a 9 inch [23 cm] vertical cornice.

Shortly before the close of the season the stairway of this earlier platform was discovered against the middle of the western side; it is 9 feet 3 inches [2.8 m] in width, including the plain balustrades. Due to lack of time, only the three upper steps were uncovered.

Repair of the West Annex has been completed. A section of the wall of the south platform has been left unfaced to allow for the removal of dirt, when excavation of the buried stairway is undertaken.

III. THE SOUTH ANNEX

The South Annex is the group of low-lying structures at the south base of the lower platform of the Caracol. This group was only partially excavated during the current season, sufficient, however, to disclose a complicated series of colonnaded halls and chambers. As yet the western limit of the group has not been established. The north wall of the section excavated was built against the batter of the lower platform of the Caracol. The eastern wall is 44 inches [1.12 m] west of the southeast corner of the same platform. The east face of the South Annex rises with a batter to a height of 38 inches [96.5 cm] on which rests an 8 inch [20.3 cm] battered cornice. This wall extends south a distance of 35 feet 7 inches [10.8 m], where it abuts the western base of an arched gateway, which is 13 feet 9 inches [4.2 m] long and 7 feet 2 inches [2.2 m] wide. The arch and wall stones had been painted red. The gateway and adjoining areas to the north and south are paved with flagstones.

West of the gateway there is a covered colonnade, supported by two rows of round columns, which extends across the south side of the partially excavated Annex. At a distance of 29 feet 8 inches [9 m] west of

the eastern limits of the colonnade, a doorway 6 feet 3 inches [1.9 m] in width opens into a chamber measuring 38 feet 4 inches [11.7 m] by 21 feet 10 inches [6.7 m]. The corbel arched roof was supported by four round columns. Against the north wall there is an altar approximately 6.6 feet square [0.6 sq m] and 2 feet 10 inches [0.9 m] high.

There are four doorways giving out of this chamber, two in the east and two in the west wall. Those in the east wall give into two other chambers. The southern one of these is 12 feet [3.7 m] by 20 feet 7 inches [6.3 m], and built against its east wall is an altar similar in size to that found in the large outer chamber. The north chamber is 21 feet 3 inches [6.5 m] by 20 feet 1 inch [6.1 m].

Returning to the two doorways in the west wall of the outer chamber, the southern one had been closed up in ancient times with masonry fill and the northern one gives on to an as yet unexcavated area.

Occasional sculptured stones were found built into the walls. The provenience of only one seems surely established. This is incised with the U-shaped motif, found on blocks from the façade of the West Annex.

Part of a door jamb with warriors sculptured on its three visible faces was also found on the surface, before excavations were begun. Two of these figures have the head of an animal as their head-dress, and carry shields made of wooden slats, in one case the grip for the hand being clearly represented.

SUMMARY

The chronological sequence of these several structures, so far as revealed, seems to indicate that the large lower platform of the Caracol formed the first unit. Extending in front of its western base was the red lime plaster floor upon which rested the platform reached by the lower section of the lower stairway. The various changes in the construction of this stairway must await further excavation before final elucidation.

Built directly on this red-painted floor, and to the south of the stairway, was the now buried platform of the original West Annex. Later this platform was enclosed within the present platform of the West Annex, which also covers the southern end of the platform of the lower stairway leading to the first terrace of the Caracol. On top of this first unit was built the circular substructure with its partially encircling bench, found this year, and the Caracol tower. Next, the western section of the upper platform was built. This terrace had an east and west depth of approximately 22 feet [6.7 m], the northern and southern extensions of the east wall abutting the circular substructure. Finally, this latter platform was enlarged so as entirely to enclose the circular platform.

There still exists some uncertainty as to the chronological position of the small platform or altar between the double stairway leading to the upper platform. This is surely earlier than the first, or western section of the upper rectangular platform, but it may not be earlier than the circular substructure.

38.21.

HARRY E. D. POLLOCK

Report on the Casa Redonda (Station 15)

YB 28:310–311, 1929

During the season of 1928, the reconnaissance work of Karl Ruppert resulted in the discovery of a circular building situated about 1 km east of the hacienda [Chapter 38.19]. With the Caracol as the center of major operations this year, it seemed advisable that some work should be carried on at this round building, in the hope of shedding further light upon structures of this character. As the building was small and appeared to be of no unusual architectural merit, it was planned that excavations should be carried on only to the extent of exposing major features of plan and construction. With this program in view, work was begun early in April and continued for three weeks, the time being divided practically equally between excavation and repair.

After felling the bush, but before any dirt was turned, the mound presented the following appearance: A pyramidal substructure, that might be either round or square, roughly 50 feet [15.2 m] in diameter, with traces of a stairway on its west side, surmounted by a circular superstructure approximately 25 feet [7.6 m] in diameter, with short stretches of cornice showing on the north and south sides, and a depression, indicating a doorway, at the west. The wall of the superstructure apparently stood to a height of 3 or 4 feet [0.9–1.2 m], and was battered; immediately above this was the cornice. Finally, the character and disposition of the debris suggested a flat roof of lime plaster supported by beams, rather than the usual corbelled arch type. No beveled roof stones were in sight.

Excavation presented no difficulties, and was accomplished by first clearing the interior of the building and subsequently laying bare the exterior wall as far as was thought necessary. Later, trenches were driven into the substructure along one side of the stairway, and a portion of the retaining wall of this was

exposed. During excavation a fair amount of corbelled arch stones and a few capstones were encountered, but, on the whole, not sufficient to justify the assumption that the building had originally carried a corbelled arch roof.

As mentioned above, the structure was not completely excavated, but the ground plan is approximately as follows: the substructure consists of a round platform 53 to 54 feet [16.2–16.5 m] in diameter at the base, and varying in height, from 11 to 13 feet [3.4–4 m], due to the fact that the ground level is lower at the rear of the building than in front. The structure faces west, where a stairway, flanked on either side by a low bench, gives access to the summit. The wall of the substructure is slightly battered. The building on this platform is also circular with an interior diameter of 23 feet [7 m] and an exterior diameter of 30 feet [9.1 m]. It is approximately concentric with the substructure, and, the base is battered to a height of three feet, with a cornice immediately above. The outer doorway is 10 feet [3.1 m] wide, having a low step 3 inches [7.6 cm] high across the front, which served as a sill, the interior floor being slightly above the level of the terrace floor outside.

Inside the building and facing the single exterior doorway, there is a wall running north and south, forming a chord across the interior. This chord subtends an arc of approximately 120 degrees with the outer doorway which is approximately in the middle of the subtended arc. The building is thus divided, so that one-third is occupied by the front chamber and two-thirds by the rear chamber.

A doorway at the middle of this partition gives access to the interior chamber, at the rear of which there is a low stone construction suggesting an altar, while, at the true center of the building, and thus also within the rear chamber, there is a small pit sunk into the floor. This pit, which measures 2 feet 8 inches [81.3 cm] across and 8 inches [20.3 cm] in depth, is duodecagonal in shape; has vertical sides made of stone, and the remains of plaster flooring at the bottom. Several pieces of obsidian and flint, a number of pot sherds and a layer of ash were found at the bottom.

Aside from this material, and an obsidian flake, found near the altar against the back wall, the building was unproductive of artifacts, although it yielded a fair number of pot sherds.

Repair was confined entirely to work of a preservative nature. Walls were strengthened and capped as they stood, a few cornice stones were replaced, and the door jambs were set up and straightened where necessary. In addition to this, a part of the north wall of the stairway was reset and capped, while two of the balustrade stones were realigned and set in mortar. The balustrade stones have probably not been returned

exactly to their original positions; further excavation of the stairway would have been necessary to determine this point definitely, but it appeared advisable to reset these stones for the present, to prevent further deterioration.

This building gives the impression that little craftsmanship went into its construction. The stone is for the most part poorly dressed, and much of it is evidently re-used material. The only sculpture found is on the balustrade stones, which are apparently re-used pieces of door jambs or pillars, and the relief is quite without meaning in its present position. The conclusion is reasonable, indeed inevitable, that this building is very late.

With the established astronomical significance of the Caracol in mind, a number of azimuths have been taken at the Casa Redonda in the hope of discovering a similar significance for this building. While some of the readings are suggestive, further observations and revision of data will be necessary before the definite astronomic function of the Casa Redonda may be regarded as proved.

38.22.

J. O. KILMARTIN

Report on Information Surveys at Chichén

YB 28:312–315, 1929

The plan and purpose of the information surveys at Chichén Itzá during the 1929 field season were to bring under more direct control and observation the area to the south of the central group of ruins, commonly known as Old Chichén; and to connect this area with the map of the central group surveyed by the writer in 1924.

In carrying out this survey the method used in mapping the various archaeological remains was the same as that adopted in 1924 on the survey of the central area of Chichén Itzá. The plane table was used to decided advantage and the control to support the map and hold it in position was obtained by triangulation from two measured bases in the plaza in front of the Castillo, and extended from these stations and others established on the most prominent ruins to the most distant corners of the map in each direction. Fourteen stations were established within the area mapped, the majority being flags fastened to the tops of trees.

It was necessary to wait until all surveys had been completed before attempting any triangulation on account of the density of the bush and the unknown, even approximate position of mounds, ruins or natural elevations which could be utilized as flag and observation stations. The region is devoid of conspicuous topographical features, being a rather flat limestone plain, scarcely more than a 100 feet above sea-level at its highest point in the center of the peninsula. Transit traverse for control was impractical, chiefly due to the difficulty in obtaining sufficiently trained native assistants for accurate work. Ten of the stations were occupied, while the remaining four were located by two or more angles from known stations. Even with the unsatisfactory procedure of establishing control after all sketching had been completed, the results obtained by magnetic needle for orientation, and tape and stadia for distance, are well within the limit of error demanded.

Observations on Polaris were taken and the magnetic declination determined as 6 degrees 40 minutes E. The secular variation over the 5-year period, 1924–29, amounted to 20 minutes of arc.

Positions along the center of the south edge of the map of the central area established in 1924 were used as starting points for the new work.

The general plan was to cover the territory on a grid base, lines being cut at intervals of 200 feet [61 m] in each direction, north, south, east and west, working in a circuit west, thence south, east and north, back to the point of beginning. The scale adopted, 200 feet [60.9 m] to one inch [2.5 cm] and contour interval of 5 feet [1.5 m], was the same as that used in the map of the central area, made in 1924. In order to make the survey it was necessary to cut lines through the bush to the extent of 30 miles [48.3 km].

The geodetic coordinate of the Castillo and the elevation of Dzitas, upon which the map is based, were very kindly furnished by Señor Ing. Don Pedro C. Sánchez, Director of Geographical and Climatological Studies of the Mexican Government, taken from Publication no. 8 of that bureau. A line of stadia levels was carried from Dzitas (C.F. 15. *Clavo de bronce*, 27.288 m; 80.504 feet) 20 km to the assumed datum plane at the western base of the Castillo at Chichén Itzá and to convert the elevations and contours, shown on the map to sea-level reference, 9.5 feet [2.9 m] should be added.

As a result of the survey 264 archaeological remains were definitely located and brought under observation. These may be classified according to their relative importance, and to some extent their use as well, as follows:

1. Temples having chambers of corbel arch construction in which ground plans could be worked out

from existing surface indications. Structures of this group are shown on the map by heavy black lines corresponding to their probable ground plans, and are drawn to scale, there being very little doubt as to their actual dimensions. In most cases these structures have columns, either round or square, and with very few exceptions are without sculpture.

Surprisingly satisfactory results in reconstructing the original ground-plans may often be obtained by noting the position and shape of certain stones.

Often in structures of this class the entire ground-plan may be worked out from such simple points as the position of a few cut stones in line, from stones which form right angles and from the presence of corbel arch stones, which are only found, when *in situ*, above the spring of the arch. Columns serve as the best guides in reconstructing ground-plans.

Large scale drawings of all groups in this class having columns were made and later reduced to the field scale of the base map.

2. In the second class of remains, the original structure has been so completely destroyed that it is quite impossible to reconstruct satisfactory ground-plans. A symbol denoting an elongated pyramids used to designate structures of this type on the map.
3. In the third class, which is the most numerous, are included such remains as platforms, altars, parapets and terraces. Single dashed lines are used to designate these remains. Such platforms and terraces were doubtless used by people of the humbler classes as foundations for their simple houses of poles and thatch, such as are, used today throughout Yucatán, especially in the smaller villages. There is not sufficient masonry debris on terraces of this class to indicate the former presence of stone buildings.
4. In this group are placed *chultunes* (cisterns), *sacbéob* (causeways), and stone walls, although the last are not designated on the map.

Five chultuns were located, all of which are in good condition, no new features being noted in their construction. One fairly long sacbé was followed from its beginning at the southwest corner of the Monjas to its terminus at the Temple of the Four Lintels. These two structures date from 1019 and 1014 AD, respectively, exactly five years difference in age. It is not straight, as had first been supposed, but follows a somewhat winding course, taking advantage of the topography in making easy grades and gentle curves.

Two other *sacbéob* (causeways) were followed from their points of beginning, but could not be continued to their termini, due to the fact that they were destroyed beyond possibility of identification. There were no structures in line or nearby at which these causeways might possibly have ended.

Only stone walls of considerable length and of apparently special significance have been shown on the map. No explanation can be offered at this time as

to the purpose of the hundreds of low stone walls which run apparently aimlessly from terrace to terrace, over mounds, across temples and out into flatlands, although they probably date for the most part from pre-conquest times.

It is now known that the Maya took advantage of every hill or elevation of any size on which to construct their houses and temples. Perhaps in addition to elevating their temples for ceremonial purposes, they desired to locate their dwellings away from the lowlands, which tended to gather and hold water during the rainy season and were correspondingly less healthful. The topography partly explains the concentration of construction in a general southwesterly and northeasterly axis.

The southeast portion of the area is practically devoid of constructional remains, although it contains one architectural unit of importance, the Group of the Hieroglyphic Jambes. There is no visible water supply for this group and should there be a well in the bottom of the dry cenote adjacent, it is now filled with debris.

As yet no astronomical rule has been discovered which governs the orientation of Maya structures. Observations on 20 buildings of Class I, on which definite construction lines could be determined, show that their longer axes (taken usually along the front façade) vary in azimuth from 187 degrees at the Monjas to 212 degrees 30' at the Temple of the Two Lintels, reading from the south centrally. Temples facing the east are few in number. Most of them face in a westerly direction; while a few face north; none has been found as yet facing south.

There is reason to believe that some astronomic phenomenon may have determined the orientation of Maya structures. In view of the relatively consistent orientation of so many different and widely distributed architectural units, it is hardly conceivable that the Maya were able to achieve such uniformity in orientation over such a large area without some definite rule to guide them.

The area covered by the information survey is slightly less than one square mile [2.6 sq km], being 5,200 feet [1.6 km] east and west by 4,800 feet [1.5 km] north and south.

In addition to the new survey, a revision was made of the major groups of the map of the central area, covering the progress made by the Institution during the first five years of its excavation program. This revision includes exact ground plans of the Temple of the Warriors, the Northeast Colonnade, the Temple of the Xtoloc Cenote, the Temple of the Interior Atlantean Columns, the House of the Corn Grinders, the Caracol and its Annexes, and the Temple of the Wall Panels. All of these revisions have been made on a large scale and then reduced to the scale of the large sheet. They

will appear on the new map, which will include all the data obtained both in the 1924 and 1929 surveys,

Solar observations, taken from the axis of the central doorway of the Temple of the Warriors to the southwest corner of the Temple of the Jaguars, showed the semi-diameter of the sun to bisect the horizon, the summit of the east wall of the Ball Court and the southwest corner of the Temple of the Jaguars at an azimuth of 108 degrees on April 12 at 6 hours, 21 minutes 40 seconds p.m., 90th Meridian time.

Observations on the planet Venus for heliacal setting through the west doorway of the outer corridor of the Caracol proved inconclusive, due to the smoke of burning cornfields which obscured the horizon and greatly reduced visibility. It seems probable that Venus may have set at an angle slightly north of West on or about April 18, since on June 3 the planet was observed as Morning Star at an angle of about 15 degrees north of east at two hours 45 minutes a.m.

38.23.

SYLVANUS G. MORLEY

Report of the Chichén Itzá Project

YB 30:104–108, 1931

Activities at Chichén Itzá during the 1931 field season were restricted to finishing repairs at the Caracol and Round House, to several minor excavations, to mapping and to preliminary architectural studies of the different buildings with a view to their more precise stylistic and temporal classification.

The staff, consisting of Dr. Morley in charge, Messrs. Karl Ruppert and H.E.D. Pollock, archaeologists; Mr. John S. Bolles, architect and surveyor; Mr. Gustav Strömsvik, engineer; Miss Kathryn Mackay, housekeeper and nurse; Miss Dorothy Jacobus, secretary and bookkeeper, reached Chichén Itzá early in January.

In addition to the work of the archaeological staff, investigations representing five cooperative projects were carried on at Chichén Itzá at different times during the year:

1. Dr. and Mrs. Morris Steggerda from the Institution's Department of Genetics at Cold Spring Harbor, Long Island, spent four months at Chichén Itzá in rechecking the earlier basal metabolism tests of Dr.

G. D. Williams (1927) and Dr. G. C. Shattuck (1929), in making intelligence tests, both of adults and children, in recording family histories and in securing a very complete series of anthropometric data.

2. Dr. Robert Redfield and his assistant Mr. Alfonso Villa in a cooperative ethnological project with the University of Chicago. Dr. Redfield divided his time between Mérida, where he resided, and the village of Chan Kom, southeast of Chichén Itzá, where Mr. Villa is schoolmaster. Consultations were held at Chichén Itzá from time to time on the progress of this investigation. Dr. Asael Hansen, another of Dr. Redfield's associates, went to Yucatán in August and remained there, until the end of the year.
3. Dr. Manuel J. Andrade in a cooperative linguistic project with the University of Chicago. Dr. Andrade spent the month of January at Corozal and San Antonio in British Honduras, studying the local Maya dialect; he returned to Chichén Itzá for the Chichén Itzá Conference, March 19–21, and accompanied Dr. Morley on the Yaxchilán Expedition as far as Monte Cristo in the State of Tabasco, where he left the Expedition to study the Indian dialects of that general region. He returned to Mérida before the end of April and to the United States early in May.
4. Dr. France V. Scholes in a cooperative historical project with the University of New Mexico was at Chichén Itzá for the Chichén Itzá Conference.
5. Dr. G. M. Saunders, Dr. F. H. Connell and Mr. B. L. Bennett on a continuation of the cooperative medical survey project with the Department of Tropical Medicine, School of Public Health, Harvard University. They visited Yucatán in July to study the distribution of malaria and amoebic dysentery during the rainy season.

A conference on general problems of Maya research under the chairmanship of Dr. Kidder was held at Chichén Itzá on March 19–21 attended by Dr. F. C. Cole, Dr. Robert Redfield and Dr. Manuel Andrade of the University of Chicago, Dr. France V. Scholes of the University of New Mexico, Mr. Juan Martínez of Mérida, Yucatán, Dr. Morris Steggerda of the Department of Genetics of the Carnegie Institution of Washington, and Dr. Kidder and Dr. Morley and Messrs. Ruppert, Pollock, Bolles, and Strömsvik of the Institution's Division of Historical Research. Reports were made on the ethnological investigations (Redfield), the linguistic studies (Andrade), the archive work (Scholes), native Maya manuscripts (Martínez), and on the archaeological and architectural investigations at Chichén Itzá (Morley, Ruppert, Pollock, Bolles, and Strömsvik).

In June, Señor F. Mugica was specially designated by Dr. J. M. Puig y Casauranc, the Minister of Public Education, to visit Chichén Itzá as the Institution's guest.

The repair of the Caracol under the direction of Mr. Ruppert was completed and during the last half of the year he has been engaged in preparing the final report on this important construction, excavation of which was begun in 1925 [Chapter 1.13].

Minor excavations were carried out at Chichén Itzá during the current field season, as follows: Mr. Ruppert, in digging east of the Red House, discovered that the back of the substructure of this building and the substructure of the colonnade just east of it had been the walls of a ballcourt, the sixth thus far found at Chichén Itzá. Although the rings through which the ball was thrown were not found, other diagnostic ballcourt characteristics were present: the parallel side walls (here with sloping inner faces); the three sculptured panels (at the ends and in the middle) at the bottom of the inner face of each of the two side walls; the two terminal lines of cut stone running across the floor of the court joining the inner corners of the two side walls, apparently defining with the side walls the limits of the court.

Mr. Ruppert also examined a new ballcourt 1 km east of the Group of the Thousand Columns, where the same sloping parallel side walls the terminal lines of cut stone connecting them, were also found.

Mr. Pollock at the end of the field season did further digging in the substructure of the Round House about 1 km east of the hacienda.

Finally, a building at Jalacal, some 4 km northeast of Chichén Itzá, was excavated. During the Spanish colonial period an hacienda had grown up around the cenote at Jalacal, the plantation house of which was built from cut stone taken from a small Maya site, which had also flourished around the cenote in earlier times. A hieroglyphic stone lintel, which in all probability had originally spanned a doorway in the principal temple at Jalacal, had been removed during the colonial period and had been built into the stone watering trough in front of the plantation house [Chapter 1.14], from which position it was removed to the Museum of Archaeology and History in Mérida several years ago.

Excavations were made in the mound from which the hieroglyphic lintel is supposed to have come, the most important fact established being that the temple dates from the pure Maya period, that is, it antedates the period of Mexican influence at Chichén Itzá.

During the current field season, the architectural remains at Chichén Itzá were restudied by the resident staff with a view to their more precise classification. The standing buildings were carefully studied by the staff and weekly meetings were held to discuss problems arising from these first-hand inspections and comparisons of the architectural remains.

The only surely dated object thus far found at the site is the so-called Initial Series lintel, which was dedi-

cated in 10.2.10.0.0 of the Maya Era, just before the close of the Great Period of the Old Empire. The Temple of the Initial Series, in which this lintel was reused as a wall stone [Chapter 1.14], is of much later date than 10.2.10.0.0, and since the lintel seems to have been designed for a much earlier construction the question of its original position naturally arises. Up to the present, however, no building referable to the Old Empire has been found at Chichén Itzá.

Calling this earliest and as yet unrepresented period, no. 1, let us proceed with the classification of the more important of the remaining structures (Table 38.23.1).

The architectural characteristics which serve to differentiate Period III, the so-called Period of Mexican Influence, from Period II, are clear, and unmistakable. They are: serpent columns, anthropomorphic and zoomorphic Atlantean columns, square and round columns (both plain and sculptured), colonnades, battered wall bases, roof crests, serpent balustrades, chac mool figures, Atlantean figures, Tlaloc incensarios.

Those few structures, which have been placed in a transitional group between Periods II and III, are doubtful only because they present features characteristic of both Periods II and III. Perhaps the best example of this doubtful group is the Caracol, which, in addition to a number of pure Maya features (Period II) has serpent balustrades, roof-crests and Tlaloc incensarios all characteristic of Period III. It will be noted in this connection, however, that all of these Period III elements are of such a nature, decorative rather than structural in function, that they may well have been added to a Period II building in Period III times, in order to bring the exterior of the earlier building into harmony with the style of architectural decoration used in Period III, that is, that they represent a Period III endeavor to modernize a Period II building.

Even buildings as essentially characteristic of Period II as the Red House and the Temple of the Four Lintels show definite remodeling in Period III, as if there had been an attempt, so to speak, to bring them up to date. Both on the roof of the former and directly in front of the latter, in which position it had clearly fallen from the roof, roof-crest elements were found. It is therefore unnecessary to assume that all Period II buildings were abandoned in Period III; almost certainly such was not the case.

As yet no structure surely referable to the hypothetical Period I, that is, the period of the Initial Series lintel, has been found, but it is not improbable that further study of the architectural remains may result in the identification of buildings belonging to this period. The ceramic studies now being carried on at Chichén Itzá by Mr. H. B. Roberts should shed much

Table 38.23.1. Temporal Placement of Buildings, Chichén Itzá.

Period II

House of the Deer
 Red House
 Akabtzip
 Monjas
 Iglesias
 Monjas, East Annex
 Temple of the Four Lintels
 Temple of the Three Lintels
 Temple of the Plain Lintels
 Temple at Jalacal
 Temple at Yulá

Transitional

Caracol
 Maudslay's House no. 6
 Temple below the Castillo
 House of the Phalli
 House of the Shells

Period III

Castillo
 Temple of the Warriors
 Temple of the Chac Mool
 Temple of the Tables
 North Colonnade
 West Colonnade
 East Colonnade
 Northeast Colonnade
 Northwest Colonnade
 East Temple
 Market and South Colonnade
 Six Ball Courts
 Temple of the Jaguars
 Terrace of the Cones
 Terrace of the Eagles
 Tzompantli
 High Priest's Grave
 House of the Corn Grinders
 Temple of the Interior Atlantean Columns
 Temple of the Wall Panels
 Temple of the Initial Series
 Temple of the Little Heads
 Temple of the Owl
 Temple of the Interior Atlantean Columns, no. 2
 Castillo of Old Chichén Itzá
 Temple of the Jaguar Atlantean Columns

Note: There are many other structures in the southwestern, northwestern and northern (San Francisco) sections of the city, most, if not all, of which date from Period III.

light on the location of the first Old Empire occupation of this site.

The preliminary classification of the architectural remains at Chichén Itzá, undertaken during the current field season, has already indicated promising lines for further investigation, especially in connection with the ceramic sequence, and it is planned to continue these studies during the next field season.

38.24.

KARL RUPPERT
The Caracol

YB 30:108–109, 1931

Chichén Itzá, as one of the large centers of the Maya New Empire, readily lends itself to an intensive program for archaeological investigation. Dating from the close of the Old Empire and showing within its precincts extensive influences of the late Nahua incursion, its remains must of necessity offer a productive field for the archaeologist. An analysis of the mounds, terraces, buildings, sculptures, and artifacts is the problem presented.

First and foremost in attacking the problem, a type structure of each period should be examined and studied. As yet no construction has been found dating from the Early Period of the city's history, the single dated object therefrom being the door lintel which was reused in the Temple of the Initial Series. From the Middle Period, 1000 to 1200 AD, such structures as the Temple of the Three Lintels, the Akabtzip, Monjas, and Casa Colorada are representative types. The late Period, that of the Nahua, is exemplified by the Castillo, Temple of the Warriors, Ball Court and the Group of the Thousand Columns.

If a type structure for each period is to be studied, so also must an effort be made for the preservation of such type structures. Thus there has developed an aspect of the work which in some cases is more time consuming than the excavation itself.

Of the Chichén Itzá Middle Period, the several structures above enumerated were found in relatively good condition and could be studied without excavation. Hence, first attention was directed to the Temple of the Warriors, a representative of the Late or Nahua Period. The investigation and repair of this building, which were accomplished during four field seasons under the supervision of Mr. Morris, have thrown much new light on the last phase of the Nahua Period.

Between the close of the Middle Period and the springing of the Nahua style into full bloom, there may be expected to have been a time of transition, study of which is obviously most desirable for comparative purposes.

The Caracol, the second structure that has engaged the attention of the Chichén Itzá project, gave promise of representing such a transition. Its location in a quarter of the city in which all the other important structures are of the Middle Period has been an added incentive for its investigation. The building is also of unusual interest in that it represents by far the finest

and best-preserved of the comparatively few round structures in the Maya area. Furthermore, the deep windows in the upper part of the tower which have orientations of west, southwest and south, have long led to the supposition that this was an astronomical observatory.

In 1925, Mr. Ricketson undertook the very imperative repair of the three remaining windows and the strengthening of a section of the southeast outer wall and arch which was in a state near collapse. During the 1926 field season, Mr. J. Eric Thompson was in charge of the work of repairing stairway, clearing a section of the upper terrace and starting the laborious task of replacing the 5-member cornice of the tower, the only such cornice known in the Maya area.

Subsequent years, with the exception of 1928, were devoted to the complete excavation and repair of the structure. From a great mass of fallen stone with only a portion of the tower jutting skyward, there has now emerged a large rectangular terrace supporting a second, each with its broad stairways flanked by balustrades of intertwined serpents. Surmounting the upper terrace is the round tower with its two concentric rooms and the circular stairway built into the great mass of masonry which forms the central core. The stairway leads to a small chamber in the top of the tower from which open the horizontal shafts or windows which are thought to have served for observing astronomical phenomena.

Excavations have shown that time after time the plans were changed during the course of construction of the Caracol complex. The stairway of the lower platform was enlarged and serpent balustrades added. Two platforms, one within the other, and the later one surmounted by a colonnaded temple were built to the south of the lower stairway and against the lower platform. Originally rising from the main platform was a large circular structure of solid masonry. Barely completed, it was encased within second circular structure, the western half of which was in turn concealed by a rectangular platform carrying a broad stairway. This final addition was then extended eastward to form the great rectangular terrace from which rose the Caracol.

The Caracol, a complex so extremely specialized in form and the only one of its type at Chichén Itzá, except for the Casa Redonda, a very crude round building recently discovered a kilometer to the east, must of necessity have played an important part in the life of the city. As one of the larger structures and occupying an important position in a precinct containing a majority of buildings of the Middle Period, its development and architecture are significant. The story read in the excavations is one of indecision, change and quick building sequence. The unspecialized arch stones, sculptured hieroglyphs, stone lintels and sub-

structure with rough stone facing are indicative of the Middle Period. The elaborate stone roof ornaments and stone incensarios belonging to the Nahua Period may well have been added to bring an early structure into conformity with a later style.

Much work yet remains to be done before the problems raised by the Caracol can finally be settled. For a better determination of the period to which the structure belongs, a series of trenches between it and the Monjas; Akabtzip and Casa Colorada should prove helpful. A detailed study of sculptured material, especially of the mask decorations should be undertaken. Relationships between the Monjas or other definitely known early structures and between the Caracol and later structures may well be developed.

To date, the Caracol and the Casa Redonda, both at Chichén Itzá, are the only round buildings in the Maya area that have been excavated. An examination of similar structures which exists at Mayapán, Paal Mul, Orthindzonot and Muyil should be undertaken. Analytical comparison should lead to better understanding of their position in the architectural history of Yucatán, and perhaps shed further light on the function of the Caracol.

38.25.

ALFRED V. KIDDER

Chichén Itzá

YB 31:92–95, 1932

The work at Chichén Itzá, under direction of Dr. Morley, consisted of the excavation by Mr. Karl Ruppert of the Mercado, one of the largest Nahua-period buildings in the city; and the study by Mr. John S. Bolles of a highly important Maya Period structure, the Monjas.

The Mercado (English, market-place); the name is a local one which probably has no significance, (the structure having doubtless been erected for purely ceremonial purposes) forms the southern element of the great quadrangle known as the Court of the Thousand Columns, a plaza-like area of some 6.5 acres [0.03 sq km] surrounded by colonnades and temples, the largest of which, the Temple of the Warriors, was excavated and repaired during the years 1925 to 1928 inclusive Chapters 38.3, 38.4, 38.10, 38.11, 38.15, and 38.17; Morris, Charlott, and Morris 1931).

The Mercado proved, upon investigation, to have consisted of a single vaulted chamber no less than 250

feet [76 m] in length, fronting upon the open expanse of the Court of the Columns, and communicating, by a doorway in the middle of its back wall, with a cloistered enclosure of rectangular form. Several ruined buildings, apparently very similar in plan and, therefore, presumably alike in function, have been identified by Mr. Ruppert in other parts of Chichén Itzá, but the Mercado, like most of the structures in the northern group, is conceived on a much more grandiose scale than the other examples of its type. The single vault, for example, is nearly 15 feet [4.6 m] wide, the broadest span yet recorded from the Maya area; its cap-stones are unprecedentedly large and heavy; the 37 alternating round and square stone columns which supported it on the front, and rendered it, in effect, a vast portico, are impressively massive. The architect of the Mercado was, it would seem, a man of bold ideas and much technical daring. But his creation held the weaknesses common to all Maya buildings; in particular it suffered from over-reliance upon inter-columnar beams of wood to carry the colossal load of the superstructure; and there is evidence that it crashed into ruin even before the abandonment of the city. Its fall, however, had covered in perfect preservation an altar, on which was sculptured in relief, and brilliantly painted, a procession of elaborately costumed captives, roped hand-to-hand, marching from either side toward a central enthroned figure.

The rear court is 130 feet square [12.1 square m]. It was surrounded by a cloister of slender, round columns 15 feet [4.6 m] high, which bore a flat, probably thatched, roof.

Excavation of the Mercado brought the usual grist of problems. Such an undertaking involves two sets of objectives: archaeological and preservational. For the purposes of archaeology one seeks to derive every possible scrap of information regarding any given building: its ground plan and elevation, its decoration, the technical details of its architecture; one must attempt to learn its temporal relation to other buildings, to understand its function; and during the work one must gather all the collateral evidence that may be present in the form of pottery, implements, paintings, sculpture and whatnot which bear upon the material and esthetic development of the ancient people. To collect the above data requires the most careful digging and the most intelligent and meticulous recording. These processes may perfectly well be carried out with no concern for the ultimate preservation of the structure itself. But the observations of the original investigator may be faulty; or he may overlook points of one sort or another which subsequent study prove to be of importance. Hence it is imperative that he leave the building in such condition that re-examination, by himself or others, is feasible. In some cases he can cover up what

he has cleared, thereby saving it from further disintegration. Often this is the best method. But at a site as outstanding as is Chichén Itzá, visited by many archaeologists and great numbers of laymen, it becomes essential to leave all major structures visible, understandable and sightly.

The preservation of an excavated Maya temple is a difficult matter. One must hold in their original position all elements found standing. To do this often requires extensive repair of weakened supports. Then there is the problem of how much that is fallen should be replaced. As a rule there are many parts of a building that lie, stone for stone, as they collapsed. There can be no shred of doubt regarding their former position. Should they be put back? There is always a strong temptation to do so, not only to render the structure more easily comprehensible, and because the scattered elements, if left on the ground, are exposed to all sorts of hazards; but also because one feels a duty, well expressed by Dr. Breasted during his recent visit to Chichén Itzá, to "fulfill one's obligation to the memory of the ancient architect." But restoration, once begun, is hard to stop; one move leads to another, with danger of error, with risk of destroying the psychological effect of a realization of time and change, inherent in a ruined building. To say nothing of the expense.

At Chichén Itzá, Dr. Morley and his staff have very wisely governed themselves by circumstances. They have applied different methods to different units. Some temples, as the Xtoloc, have been held exactly as cleared; others, like the Warriors, have been rebuilt as far as there was absolute evidence for every step; one small one, the Temple of the Three Lintels, of which practically every stone was recovered, they restored completely. The Mercado might perfectly well have been put back almost block for block. Enough remained standing, however, to make it readily comprehensible. Decision was therefore made to hold it as nearly as possible in the condition in which it was found; certain columns of the portico were straightened; those in the cloister had fallen, so half of them were re-erected, the remainder cleared and left lying, drum by drum, as they had crashed; the main wall was strengthened and stairways, skewed and warped by tree-roots, were aligned and solidified.

The other major undertaking at Chichén Itzá during the 1932 season was the study, by Mr. John S. Bolles, of the Monjas, the largest and most complex of the few purely Maya temples erected at the site before the coming of Mexican influence stimulated the great building "boom" of later times. The Monjas, like the Mercado, bears a modern name, meaning in English "Nunnery," because of its many cell-like chambers. The use, however, to which it and many similar buildings, throughout the Maya area were put, remains problematical.

This particular exemplification of the "Nunnery" or, as it is sometimes called, the "Palace" type is archaeologically most important because it gives evidence of manifold remodelings and enlargements, no less than five distinct periods of architectural modification being evident, even on superficial examination.

The architectural problems of the Monjas can not be made clear without many diagrams and sections. Many points, indeed, are not yet understood. It suffices, therefore, to say that, over and about an originally small building, there were erected a series of later ones, each larger than its predecessor; and that during the whole long process of growth there were tearings down, alterations, additions against and upon and around, the result of which is a veritable puzzle in massive masonry. But its very complexity gives the Monjas its significance, for it offers a most perfect case of architectural stratification, providing opportunity to recover irrefutable data upon the sequence of building processes and the devices of ornamentation.

Mr. Bolles naturally attacked the Monjas with due caution. He began his work by digging about the substructure of the latest increment in order to learn its relation to the many small ruins which lie close about it. This resulted, as seems always to be the case in Maya excavation, in the uncovering of a perfect mare's-nest of platforms and razed buildings, including the remains of a very large Nahua ball-court and of a whole series of late temples. Into the substructure of the Monjas two tunnels were driven, following the walls of an annex which disappears within it and whose relation to the main mass has not been understood. This mining operation served to trace the annex toward its original abutment against an inner substructure and to explain certain essential features of the growth of the whole complex. But the investigation has only just begun and, as is again always the case in Maya excavation, the problem at this stage has become far more involved than it seemed before work was started.

The question of the ultimate state in which the building is to be left is, however, a perfectly simple one. The Monjas is in relatively perfect condition, stands free of debris, its principal features are comprehensible without any restoration. Furthermore, it is a very beautiful ruin. Therefore it is obvious that it should be held in exactly the same condition in which it appears today. This is, as has been said, a simple matter, in principle. In practice it is far from easy, for it is much harder to solidify and keep from further disintegration a warped wall or the tottering blocks of a partly wrecked stairway, than it is to take them down and relay them. Such, nevertheless, must and will be done. The work of preservation was inaugurated this year by a difficult piece of emergency strengthening made necessary by two great caverns in the western part of

the substructure, which seriously endangered the whole Monjas. These, with greatly appreciated financial cooperation on the part of the Mexican Government, were solidly filled, passages being left open to permit observation of buried structures and to serve as points of departure for new exploratory tunnels.

Other activities at Chichén Itzá were the partial clearing by Mr. Ruppert of an interesting group of small temples discovered by him in the dense bush to the east of the Court of the Columns; and the commencement, by Mr. Strömsvik, of a highly promising comparative and analytical study of serpent columns. Dr. Hermann Beyer, whose services were most generously lent by the Department of Middle American Research of Tulane University, through courtesy of its Director, Mr. Frans Blom, spent several weeks at Chichén Itzá in a meticulously thorough examination of all the hieroglyphic material in the city. To three volunteer workers the Institution is indebted for extremely valuable services. Mr. John P. O'Neill surveyed the area in the north-western quarter of the city necessary for completion of the topographic map of Chichén Itzá; he also mapped the Mercado and began detailed drawings of the mask-decorations of the Monjas. Mr. J. H. Denison, Jr., made rubbings of many inscriptions, developing a new and very satisfactory method for the recording of glyphs. Mr. W. L. Lincoln, who was at Chichén Itzá during the entire season, surveyed, made the color record of the painted altar in the Mercado, mapped the ruins of Yaxuná, and conducted an expedition to Yaxhá in the Department of the Petén, Guatemala, where he prepared a map of the site for Dr. Morley's forthcoming monograph on the inscriptions of Petén. Dr. Morley, in addition to his duties as Director of the Chichén Itzá Project, brought the above-mentioned monograph, the product of 20 years of exploration and study, to a stage verging on completion.

Throughout the season the staff were kept in touch, through the courtesy of Sr. Eduardo Martínez Cantón, with his very important and spectacular finds in the excavations of the Mexican Government at the Castillo.

38.26.

ALFRED V. KIDDER
Archaeological Research

YB 32:83, 1933

The work at Chichén Itzá, under direction of Dr. Morley, consisted of excavations by Mr. John S. Bolles at the

Monjas; repair of the Temple of the Phalli by Mr. Gustav Strömsvik; and continuation of Mr. H. B. Roberts' ceramic studies. Mr. John O'Neill and Mr. Strömsvik also remapped the nearby ruins of Yaxuná; and Sr. Alfonso Villa made the first traverse of the ancient highway which connects the cities of Yaxuná and Cobá. The Institution's station at Chichén Itzá served, as usual, as headquarters for collaborating investigators and as base for the Campeche expedition.

38.27.

JOHN S. BOLLES

Excavations at the Monjas

YB 32:84–86, 1933

The Casa de las Monjas (House of the Nuns), so called because of its cell-like chambers, is one of the best-preserved structures at Chichén; archaeologically it is probably the most important building in the city. Hence its investigation, begun in 1932 and carried to virtual completion during the current year, demanded very thorough planning and most careful execution, in order that the search for scientific information should not lead to loss of esthetic values. This was a particularly difficult task, because the Monjas owes its significance to the fact that it underwent many rebuildings and almost countless alterations: removal or covering up of earlier elements, addition of wings, changes in plan, elevation and decoration; all of which have resulted in producing a veritable puzzle in massive yet treacherously insecure masonry. It was naturally desired to recover as much information as possible regarding the nature and sequence of the various structural increments; but some of these had been so nearly obliterated that there remained only the slightest traces of their former presence, and others were deeply buried under later construction. To have begun at the outside and to have studied and removed the increments one by one would, of course, have been a relatively simple procedure. The Monjas, however, is among the finest of Maya temples. It was therefore imperative that excavation should not mar in any way the great beauty of its present semi-ruined condition. Furthermore, our knowledge of Maya architecture is not yet sufficiently complete to guarantee that we will not overlook phenomena of importance to future students. So no part of the building could safely be removed; and Mr. Bolles

and his associates, were accordingly forced to exercise the greatest ingenuity in trenching, pitting and tunneling. How well their work was done can only become apparent when it is fully published. The Monjas, as they have left it, gives no indication that it has been so deeply and so thoroughly probed.

Such a report as this does not permit the inclusion of the many drawings and photographs necessary to make clear even the general structural history of the building; to say nothing of its many highly significant details. A brief summary of the work must therefore suffice.

The investigation had two phases: excavation and study of the building complex, and its repair and consolidation. Replacement of fallen parts was undertaken only where necessary for the preservation of standing elements and then only when there was definite evidence to justify such procedure. There were times when repairs had to wait until certain excavations were completed; excavations were often delayed for repairs.

Search was made for evidence bearing on the nature, extent and interrelation of the terraces underlying and surrounding the building proper. This required a great number of relatively shallow trenches and pits, all of which were ultimately refilled. They resulted in defining the limits of certain terraces; others, largely or wholly removed during alterations to the complex, could only partially be run out. It was a very difficult matter to hold the exterior trenching within bounds, as there was constant temptation to follow interesting and possibly important leads, which, however, were certain to involve the excavators in problems of other nearby buildings not immediately pertinent to study of the Monjas.

All Maya temples were erected upon basal platforms. The site of the Monjas bore several successive temples, each one larger and higher set than its predecessor. Hence there now exists a series of basal platforms, one within the other, some of which can be examined at places where they have been exposed by the caving of later masonry. To secure information as to others and to study the buried faces of all, it was necessary to tunnel, both vertically and horizontally, through many meters of loosely piled rock fill, a costly and often dangerous procedure. Data, however, were recovered upon the size and method of construction of the platforms; it was also determined that none of the earlier temples is still extant.

Concurrently with the architectural study of the latest building with its annexes and wings, there was carried forward the work of repair and repointing. From their footings to their crowning friezes of stone-mosaic masks the platforms were carefully gone over, and every room of the building was checked from floor to

vault peak and roof. The broken west end was given a new facing of rough stone, as nearly as possible like the old end that was continuing to break away in great sections. This type of work will delay for years the collapse of the Monjas. The Iglesia and the Southeast Annex were also given the same thorough going over. Throughout the work, every effort was made to preserve the charm of the Monjas as a ruined Maya edifice and to hold intact all the work of the original builders. Floor levels and wall lines were carefully saved, for no matter how careful the excavation or how minute the observations, something is bound to be overlooked or something destroyed that may later be of infinite value as more is known of the Maya and their construction methods.

The great two-flight stairway, which gives access to the upper buildings, was found to be in exceedingly bad condition. Removal of debris west of the lower flight showed that insecure footings had led to the development of a crack so serious as to threaten collapse of the entire west face of the stairway. This necessitated very extensive repair, including the introduction of sound new footings and the binding of the crack by means of concealed iron rails with bent-down ends. The undertaking was a hazardous one, as hundreds of tons of stone were in imminent danger of falling. A section of the stairs did, indeed, give way, painfully injuring Mr. Bolles and narrowly missing killing him. Photographs taken before the repair began permitted exact replacement of the steps that had come down. The second-story stairs were also jeopardized by the weakened condition of the supporting platform and had to be removed and rebuilt along with the dangerous section of platform. Again, photographs were used to insure accurate resetting of all stones in their former positions.

One of the most important aspects of the investigation was the making by Mr. R. T. Smith, of measured drawings of the many masks which embellish the Monjas. These masks, huge and grotesque conventionalized faces, are, in essence, mosaics of cut-stone, the dozens of individual pieces tenoned into a masonry backing. Such mask formed one of the principal decorative elements of Maya architecture. They varied both locally and chronologically and so constitute a potentially most useful criterion for the classification of buildings. Mr. Smith's drawings set a standard of accuracy heretofore unattained. Their analysis will form the basis for the careful comparative study of masks which will eventually have to be made.

Mr. F. P. Parris, of the University of Pennsylvania Piedras Negras Expedition, joined Mr. Bolles toward the close of the season. His drawings of the seven carved panels of the ballcourt south of the Monjas show every detail of design and every variation of curve.

No more accurate rendition of low-relief sculpture could be made.

38.28.

GUSTAV STRÖMSVIK

Temple of the Phalli

YB 32:86, 1933

In 1926 investigations were made by G. C. Vaillant and J.E.S. Thompson at the Group of the Initial Series in "Old Chichén." The Temple of the Initial Series, the Temple of the Little Heads and the Temple of the Atlantean Columns were completely excavated [Chapter 38.9]. Exploratory work was also done at the nearby Temple of the Phalli, which indicated that a thorough examination of that building and its many annexes would constitute a project too large to be undertaken at that time. During the years between 1926 and 1933 it was hoped to reopen operations at this very important temple. But as it is now evident that renewal of activity in Old Chichén must still further be postponed, it was decided to fill the old excavations and to carry out certain repairs which would guarantee the structure against deterioration. These tasks were accomplished during the past field season. The complex of courts and colonnades was cleared of unworked stone, sculptured elements were assembled, columns were re-created, and walls were repaired and capped. The capping of walls unprotected by roofs is accomplished in the following manner: All faced wallstones, which threaten to lose their hold, are numbered and taken down. Then the root-riven mortar of the wall's core is worked out until solid ancient masonry is exposed. The core is built anew with fresh materials and the original veneer of faced stones is replaced, each block going back to its exact former position. Finally, a capping of spalls and mortar is laid along the wall top. This is made high in the center to facilitate drainage and to prevent lodgment of earth in which vegetation might gain a footing with consequent damage by the wedging action of roots.

The roofed chambers of the Temple of the Phalli were cleared of debris, walls were strengthened where necessary; and new wooden lintels, replacing ancient lintels now rotted away, were introduced over certain doorways and reinforced by hidden steel rails. The roof of the building also received such attention as

was necessary to prevent leakage with consequent damage to the cores of the walls. This important and interesting structure is now in such condition that, if it be kept clear of bushes and trees, it will stand for many years.

38.29.

SYLVANUS G. MORLEY, KARL RUPPERT, AND JOHN S. BOLLES
Chichén Itzá

YB 33:89–90, 1934

The excavations at Chichén Itzá during the 10 years covered by the first permit granted to Carnegie Institution by the government of Mexico have resulted in accumulation of a great amount of information as to the architecture and ceramics of that site. As always, the process of gathering and recording facts has gone faster than that of digesting and publishing them. Hence it seemed best to undertake no new excavation projects in 1934, nor to plan any large-scale undertakings for the immediate future. This policy has been adopted because time is required to prepare reports on work already done. But of even greater importance is the need for a pause in local research to permit investigation of problems raised at Chichén, whose solution requires evidence from other sites. These problems will be discussed after the work of the current year has been noted.

The first aim, of the Mexican government and of Carnegie Institution in the work they have been carrying on at Chichén Itzá has been, by excavation of buried structures and by study of those still standing, to learn as much as possible regarding the history of the city and as to Maya architectural practice. Concurrent objectives have been: strengthening and repair, to keep the temples from further disintegration; and, when it could be done with assurance of accuracy, replacement of fallen elements for the purpose of rendering the buildings more easily understandable to the many persons who visit this outstanding and most readily accessible of New Empire centers.

The Mexican government has devoted its efforts to the Great Castillo-Ball Court Group, the culminating achievement of the Nahua period. Carnegie Institution has occupied itself with three sequent phases of

Chichén architecture: Late Nahua (Temple of the Warriors, Mercado, and various lesser structures); Early Nahua (Caracol); and Pure Maya (Temple of Three Lintels, Monjas).

38.30.

KARL RUPPERT
Mercado

YB 33:90, 1934

During the season of 1934 a small amount of excavation and repair was done at the Mercado [Chapter 38.25], which now requires very little further work. In center of the cloistered rear court, there came to light what seems to be a dedicatory cache of carved jades and other cult objects, ensconced in a buried block of masonry.

38.31.

JOHN S. BOLLES
Monjas

YB 33:90–91, 1934

The major archaeological activity at Chichén was completion of the intensive study of the Monjas, the most interesting architecturally and perhaps the most significant historically of all the buildings at Chichén Itzá. Mr. J. S. Bolles, who has been in charge of this work since its inception in 1932 was, as in 1933, assisted by Mr. T. R. Smith.

The first element of the structure was erected in the very early days of the city, while pure Maya architecture was in full vogue. While this style still remained unadulterated, it grew by successive additions to great size. Through the Nahua period it continued in use; and it was not abandoned until temple-building ceased at Chichén at, or very shortly before, the Spanish Conquest. Its final increments, indeed, are probably among the latest of all aboriginal constructions in the penin-

sula. The Monjas evidently fulfilled some function vital to the ceremonial life of the city, for it was added to or altered during every period. That such a long span of time is represented in the elements of a single building complex renders the Monjas a veritable mine of information as to successive types of architecture; and its wealth of varying structural features and of ornamental detail makes possible its relation both to classic Maya temples and to those of the later eras.

The Monjas has been briefly described in earlier reports [Chapters 38.25 and 38.27]; and it will be treated at length in Mr. Bolles' forthcoming publication. The activities of the past year consisted in finishing the repairs, in order that the building might be left in the best possible condition to resist further deterioration; in checking doubtful points as to the relation to each other of various structural increments; and in preparation of notes, plans and elevations for in the final report. This monograph should be of unusual interest, not only because of the great archaeological importance of the Monjas, but also because the excavations have been from their inception in the hands of men specially trained in architecture. In Europe and the Near East, the investigation of monumental architectural remains has habitually been entrusted to architects; but the present undertaking is one of the first in America to be so handled.

38.32.

SYLVANUS G. MORLEY

Chichén Itzá

YB 35:120–122, 1936

Dr. Morley was in Yucatán from September 1935 to August 1936, engaged in completion of his monograph upon the inscriptions of Petén. He also devoted much time to forwarding the work of the various collateral investigations based upon Chichén: the Campeche-Quintana Roo Expedition, the Ceramic-Architectural Survey, the ethnological survey, the anthropometric and other studies of Dr. Steggerda, and the documentary research of Messrs. Roys and Rubio Mañé. Likewise using Chichén as headquarters were an ornithological party from the University of Michigan (Dr. van Tyne and Dr. Trautman) and a biological party from Duke University (Dr. Pearse and Dr. Hall).

Dr. Morley was at Sotutá and Yaxcaba for a week in the middle of December 1935 in connection with his genealogical investigation of the former ruling houses of the Yucatán peninsula. Sotutá was the seat of the Cocóm, the ancient lords of Mayapán, during the Spanish colonial period and additional data concerning Cocóm family history were sought there he visited X-Cacal for a week at the beginning of March, on the occasion of the festival to the Virgin of the Conception, one of the two most important events of the ceremonial year among the X-Cacal Maya. Dr. Morley's party was handsomely entertained, and in addition to strengthening the bonds of friendship already established between these semi-independent Indians and the Institution's representatives in Yucatán (upon which Mr. Villa's continued residence among this remote and highly suspicious group entirely depends), Mrs. Morley secured an exceptionally fine series of photographs of representative types of men, women and children and of the ceremonies witnessed.

J. Ignacio Rubio Mañé continued his documentary investigation under the direction of Dr. Morley and Mr. Scholes. He made occasional trips to outlying towns and villages to examine church records in connection with a study of the Xiu, Cocóm, and Pech families. The larger part of his time was spent in Mérida, where he searched ecclesiastical, governmental and private archives for information concerning the growth of the church properties, and upon the development of the haciendas and their relation, if any, to the earlier encomiendas.

Mr. Rubio Mañé succeeded in relocating the so-called Códice Pérez, which contains copies of earlier Maya manuscripts made by the eminent Yucatecan antiquarian, Don Pío Pérez, about the middle of the last century, and which heretofore has been known only through the Karl Berendt copy of 1866, in the Museum of the University of Pennsylvania, and a later copy by Ermilo Solís Alcalá of Mérida about a decade ago, both containing a number of errors. Perhaps the chief importance of the Códice Pérez lies in the fact that it contains the only known copy of the Book of Chilam Balam of Maní, the original of which is now lost or more probably was destroyed in the War of the Castes in 1846–47. This latter, in turn, contains one of the only five chronicles of pre-Columbian Maya history that have come down to us. Permission to photograph and publish this exceedingly valuable manuscript was secured from the owner. The photographic reproduction is now being studied by Ralph Roys who will eventually undertake the preparation of an annotated translation.

Another manuscript photographed for Mr. Roys this year was loaned to Alfonso Villa at Tusik by one of the X-Cacal Maya. This consists of two parts; a legend

of a hunter and a deer; and, more important, a series of questions put to candidates for chieftainship. It is similar to the questionnaire given in the Book of Chilam Balam of Chumayel, already translated by Roys. Although the X-Cacal copy of this text was made at Santa Cruz Bravo only 61 years ago (1875) a colophon indicates that the original from which it was copied was reduced to writing in 1628.

Karl Ruppert reached Chichén Itzá on January 21. He spent the months of February and March in writing a report on his excavations of previous years at the Mercado. In April Mr. Ruppert, assisted by Mr. P. N. Fontaine as consulting architect, commenced the excavation of the small structure just east of the large temple on the east side of the court of the Thousand Columns. The building is of unusual ground plan, being composed of a portico with columns along the front or outer side, a smaller chamber behind, and a still smaller niche at the back where a secondary fireplace was found. The only similar construction, known at Chichén Itzá, is one just south of the Caracol which was excavated by Ruppert in 1929. Interior arrangements of both, buildings strongly suggest that they served as vapor baths, special buildings for which purpose, the *temezcalli*, are known to have been used by culturally not dissimilar peoples of the highlands of central Mexico in the early sixteenth century, and which indeed still survive in the latter region. The excavation and repair of this building were made possible by the generosity of the Misses Amelia E. and Martha White of Cocoanut Grove, Florida.

38.33.

SYLVANUS G. MORLEY

Chichén Itzá

YB 36:139–141, 1937

Mr. Karl Ruppert spent six months at Chichén Itzá gathering data for an evaluation of Nahua influence upon the architecture of that city, and for a report on such structures as have, wholly or in part, been excavated and for which there is no published record. A survey and analysis of the Nahua structures presupposes a knowledge of the Maya buildings at the site. This survey is to be purely local and such facts as may be determined will apply only to Chichén Itzá and here, of course, will be true only as far as present excavations have been conducted and surface examina-

tions extended. Certain architectural features such as serpent columns have come to be identified as definitely Nahua; thus buildings in which these are utilized in key constructions must be considered as of the late period. Late concepts appear in early structures only where they have been added as roof ornaments or other superficial decorations, never as fundamental elements of construction.

The survey has included the examination of eight ballcourts. Seven, in which stone rings have not been found, have benches one-third or less the length of the largest court. All are apparently of the late period and show great differences in slope of face and top of bench. The main walls, however, seem to rise vertically. Because of the extreme variation of the courts it is evident that the game could not have been standardized; and the possibility of its having been played in the single enormously large court, may, in Mr. Ruppert's opinion, perhaps even be questioned.

The plans of structures in the two periods show little in common. The two-chambered temple resting on a lofty pyramid and now encased within the Castillo is, if correctly interpreted, the only example of such a structure in Maya times. Buildings of the palace type are not associated with the Nahua. The shrine room, which is not represented here in the Maya period but is found in their cities to the south, was developed and elaborated by the late people of Chichén Itzá. Arrangements of colonnades of one to four vaults in depth, colonnades and temples, and cloisters appear that do not have counterparts in early structures.

Carved stone was the medium used for building ornamentation during both periods, and practically all motifs are carried from early to late times façades in both periods, except for two- and three-member moldings, may be plain. If ornamented, those of the Maya showed a tendency toward over-all decoration, while the Nahua more consistently simplified the treatment by the use of alternate plain and sculptured panels. Realistic bas-relief was not attempted by the Maya.

Differences are noted in the manner of cutting, dressing, and laying stones, and in late times stones of the vault were highly specialized. The floor level of the inner chamber is placed a step up from that of the outer chamber—a common Maya feature which is not seen in unquestioned Nahua structures. Numerous minor but evidently nonetheless significant differences in construction, developed or brought in by the Nahua, become apparent as the material is analyzed.

Dr. Morris Steggerda, accompanied by Dr. T. J. Hill, of the Institute of Pathology of Western Reserve University, reached Chichén Itzá early in February, the former remaining for two months, the latter for a month. Dr. Steggerda continued his study of the local Maya, whose anthropometry, ethnology, sociology,

psychology, genetics, and economic life he has been investigating for the past six years. Dr. Hill examined the dentition and saliva of the Maya, taking specimens of the latter for further study in the United States.

Mr. Ralph Roys made his headquarters at Chichén Itzá from the middle of February to the end of March. He identified a number of points on the frontier between the ancient provinces of the Cupules and the Cocoms, mentioned in the Ebtún Papers of which his annotated translation is being prepared for press.

Dr. S. A. Barrett, Director of the Public Museum of Milwaukee, accompanied by Mr. George Peter, of the museum staff, spent the month of April at Chichén Itzá collecting data, photographs, paintings, drawings, and descriptions for the construction of six groups at the museum illustrating various phases of ancient life at Chichén Itzá.

Dr. Josselyn Van Tyne, of the Museums of the University of Michigan, was at Chichén Itzá during July and August collecting birds. Last year he made a similar collection during the dry season (March and April) and with the specimens secured this year it is possible to describe the avifauna of the region throughout the year.

On the return trip from Copán to Chichén Itzá early in March, Dr. Morley visited the canal just north of Puerto Barrios, Guatemala, where the Leyden Plate was found about three-quarters of a century ago, and also flew over the ruins of Yaxhá, Uaxactún, Tikal, and Tayasal, landing at Flores, capital of the Department of Petén. He remained at Chichén until August, dividing his time between administrative work and reading proof of his monograph upon the inscriptions of the Department of Petén, Guatemala.

38.34.

SYLVANUS G. MORLEY

Chichén Itzá

YB 37:141–143, 1937

The Chichén Itzá Project of the Carnegie Institution of Washington began its fifteenth year in January. Dr. and Mrs. Morley reached Yucatán by way of Mexico City on December 28, and Messrs. E. T. P. Kennedy, R. T. Patton, J. H. Denison, Jr., and W. E. Shepherd (the last two, members of the Fifth Campeche Expedition) on

January 6. Mr. Karl Ruppert, Director of the Fifth Campeche Expedition, reached Yucatán by way of Mexico City at the end of January and the expedition left Mérida for central Campeche at the end of February, returning therefrom early in April.

Dr. Morley devoted the first six months of the year to correcting proof on his coming monograph on *The Inscriptions of Petén*. The galley proof was completed and the first two volumes of page proof before he sailed for Europe on June 28 by way of Veracruz to attend the sessions of the Second International Congress of the Anthropological and Ethnological Sciences held at Copenhagen, Denmark, from August 1 to 6. In addition to representing the Institution at this congress he was also a member of the United States Government delegation thereto. He presented two papers: "A Review of 25 years' research in the Maya area of Middle America by the Carnegie Institution of Washington, 1914–38" and "The Rise and fall of the Maya Old Empire as established by the hieroglyphic inscriptions."

The most important activity under the Chichén Itzá Project during the current year, except the Fifth Campeche Expedition described elsewhere, was the survey of the ruins of Mayapán in northern central Yucatán, made by Mr. R. T. Patton, the expenses of which were defrayed partly by Mr. Patton himself, Mr. Percy Jackson, and Colonel F. Marion Barker, and partly by the Institution.

This survey was undertaken because the archaeological importance of Mayapán as indicated by the brief descriptions of Stephens, Brasseur de Bourbourg, and later visitors, including several of the Institution's staff, appeared to be far less than its political pre-eminence in the thirteenth, fourteenth, and fifteenth centuries, as established by the Spanish and native chroniclers, would have demanded. The early authorities describe the site as walled, but although Stephens saw a section of the wall, nothing was known of its extent.

The Institution's survey establishes that the wall surrounding Mayapán is 5.5 miles [8.9 km] in circuit, enclosing a rough oval about two square miles [5.2 sq km] in area. The wall is made of dry-laid, irregular blocks of limestone, not dressed, with a very slight batter on both sides. The wall varies from 9 to 12 feet [2.7–3.7 m] in thickness at the base and from 6 to 7 feet [1.8–2.1 m] in height outside. There was formerly a low parapet along the outer edge of the wall, though in most places, this has now fallen. There are several stairways on the inside leading to the top.

Nine entrances, irregularly distributed and ranging in width from 3 to 6 feet [0.9–1.8 m], give access to the walled area. This number was of considerable importance being that of the gods of the nine underworlds of Maya mythology, each one of which may have presided over one of the nine gates of the site.

The principal pyramids and mounds as well as the stelae are concentrated near the center of the walled oval area. This central section was divided into squares of 200 m on a side and surveyed, all constructions being exactly located. The principal axes of the central area were projected until they intersected the wall, and the central area tied thereto in four places. Finally, the 5.5 mile [8.9 km] circuit of the wall was surveyed by means of lines of sight just inside cut through the thick bush.

The constructions consist of pyramids, platforms, colonnades with drum columns, corbel-arched buildings, and four round towers, possibly astronomical, only one of which had been previously reported. There is little dressed masonry, surfacing for the most part having been effected by stuccoing. The architecture is far inferior to that of the other great cities of northern Yucatán, Chichén Itzá, Uxmal, and those of the Puuc and Chenes regions. It more closely resembles that of the relatively late site of Tulum on the east coast of Yucatán; the latter is also the only other walled site known in the Maya area. These several points indicate that Mayapán rose to political pre-eminence at a relatively late period in Yucatán history, probably not until the twelfth or thirteenth century.

Nineteen cenotes were found within the walled area, for all of which, except two, native Maya names were obtained.

Eleven stelae were located, nine sculptured and two dressed but plain. At the time Mayapán flourished Initial Series dating had been replaced throughout the Maya area by Period Ending dating, a method which, although not nearly so accurate as the Initial Series, served nevertheless to distinguish one katun or 20-year period from another within a period of two and a half centuries. Three Period Ending dates were deciphered by the writer on Mayapán monuments: Stela 1, Katun 10 Ahau, 1185 AD, probably 10.18.0.0.0 10 Ahau 3 Tzec; Stela 5, Katun 4 Ahau, 1244 AD, probably 11.1.0.0.0 4 Ahau 8 Mol; Stela 6, Katun 13 Ahau, 1283 AD, probably 11.3.0.0.0 13 Ahau 13 Pax.

The results of this survey indicate that although Mayapán reached a position of first importance only at the close of Maya history when architectural decadence was well under way, its size satisfactorily agrees with the political pre-eminence ascribed to it by both the native and the Spanish chroniclers.

An epigraphic discovery of importance made by Mr. Alfonso Villa R. on a trip to the highlands of Chiapas, Mexico, in connection with the Ethnological and Sociological Survey should be mentioned here. He reports for the first time a monument from Tila, to which the designation Stela C has been given. This records both as an Initial Series and as a Period Ending the date 9.13.0.0.0, 8 Ahau 8 Uo in bar and dot numerals.

Dr. Morris Steggerda of the Department of Genetics was at Chichén Itzá for the eighth season in connection with his anthropometric, ethnological, and sociological studies. His experimental milpa is now entering its fifth year, and this protracted investigation of corn cultivation as practiced by the modern Maya is proving one of the most fundamental studies made by the Institution in the Maya field.

As usual the Institution's headquarters at Chichén Itzá were again utilized by investigators of other organizations. M. André Remondet, winner of the Grand Prix de Rome in 1937, having elected Maya architecture as his field for special study, spent three months at Chichén Itzá in the winter and early spring making measured drawings, ground plans, and elevations of some of the more important buildings: the Castillo, the Mercado, the Vapor Bath, and the Temple of the Three Lintels. These drawings together with wash drawing of the last were exhibited in the French Academy at Rome, during May.

During June Dr. and Mrs. C. L. Lundell of the Herbarium of the University of Michigan were at Chichén Itzá collecting botanical specimens in connection with the former's study of the botany of the Yucatán peninsula. In July they spent three weeks collecting at Cobá in northeastern Yucatán, using the Institution's camp equipment from Chichén Itzá and taking with them as assistants several Maya from the neighboring village of Pisté, who have been working for the Institution in Yucatán during the past 15 field seasons. The month of August was devoted to collecting in the northwestern part of Yucatán near Mérida and the ecologically important northwest coast region.

38.35.

ALFRED V. KIDDER

Contract With Government of Mexico

YB 38:243-244, 1939

At the close of the field season Dr. Kidder joined Dr. Morley in Mexico City to arrange with Dr. Alfonso Caso, Director of the National Institute of Anthropology and History, and Lic. Gonzalo Vásquez Vela, Secretary of Public Education, for a 5-year renewal of the Institution's permit for research in Mexico, the former permit, which expired in 1937, having been extended for the single year 1938. This temporary extension was

requested by the Institution in order to allow time for study of the whole Division program and, in particular, for consideration of the future status of Chichén Itzá.

Since 1924 the Division's Mexican activities have centered about Chichén Itzá. The Chichén hacienda served as headquarters for the ethnological work of Dr. Redfield's group, the medical research of Dr. Shattuck, the studies in physical anthropology, agronomy, and human geography of Dr. Steggerda, and for many other workers in history, linguistics, botany, and zoology. The many exploring expeditions in Yucatán and in the country to the south were based upon and equipped from Chichén. The large scale excavations mentioned earlier in this report went forward there from 1924 to 1935. The activities fostered by Dr. Morley at Chichén Itzá were directly responsible, indeed, for the conception and the later development of the broad program of Maya research now being carried on by the Division.

In the early thirties, however, it became evident that when the excavations then under way had been brought to a conclusion, we should know as much regarding the local antiquities as was, for the time at least, necessary; and that it would be desirable to halt operations at Chichén Itzá and follow into other parts of the peninsula various promising archaeological leads which had opened up. For this reason no major digging was done at Chichén Itzá after 1933, and the next three years were devoted to study of the structures that had been cleared. The last actual excavation was done in 1936, and since that time, although the hacienda has continued as headquarters for Dr. Morley and as a base for other workers, Chichén Itzá has been of decreasing importance as a research center.

The rent and upkeep of the hacienda have been expensive and, since the opening of a motor road from Mérida, there has been an increasingly serious drain upon Dr. Morley's time and energies for the entertainment of visitors. To discuss with Dr. Morley these problems and related matters bearing upon future work in Yucatán, President Bush and the Chairman visited Chichén Itzá in February. It was then decided to give up the hacienda and establish a less costly and more central station in Mérida. At the same time there were drafted proposals for the new contract which should be requested from the Mexican Government.

In May, these proposals were laid by Dr. Morley and the Chairman before Dr. Caso and the Secretary of Public Education, and a 5-year contract was granted under which the Division is permitted to operate under most favorable conditions, but its obligated expenditure for field work is reduced from \$20,000 to \$6,000 per annum. This reduction was desired for several reasons: first, because of the general financial stringency; second, because, the results of the Chichén Itzá exca-

vations being still not fully published, no new major projects can be undertaken for several years; and, third, because the work for the immediate future is planned to consist, for the most part, of relatively inexpensive, but highly important, reconnaissance surveys.

38.36.

SYLVANUS G. MORLEY AND
GEORGE BRAINERD
Yucatán

YB 40:295-297, 1941

Dr. Morley remained in Yucatán throughout the year, engaged in completing the manuscript of his history of the Xiu family, founders of the city of Uxmal. In February he spent a fortnight at Uxmal with the following objectives: 1. The assembling of the broken and, in some cases, fragmentary stelae on the stela platform about 150 m west of the northwest corner of the Monjas Quadrangle; 2. Further excavations in the Ball Court for the purpose of locating still missing fragments of the two rings, each of which has a hieroglyphic inscription on its two sides; 3. The assembling and repair of the several hieroglyphic panels which formerly faced the three platforms in the so-called Cemetery.

The stela platform was discovered by Mr. Frans Blom, of the Middle American Research Institute of Tulane University of Louisiana, in 1932 during an expedition undertaken by that institution to obtain data for the reproduction of the North Range of the Monjas Quadrangle at Uxmal for the Century of Progress in Chicago the following year.

Sixteen stelae, all broken, were found on the platform. Their several fragments were fitted together and arranged for photographing; all, but one, were found to be sculptured. Of these, 14 are carved on the front only, and the remaining monument, of which only two pieces were recovered, is sculptured on all four faces. The stelae vary in height, including the plain butts from 1 to 5 m, and formerly stood in three or four rows across the back (north) side of the platform, all facing south. The stela platform is about 20 m square and, from 1 to 2 m high, depending on the inequalities of the terrain. Along its east-side is a lower terrace about 5 m long, though the platform would seem to have fronted south; since the stelae all faced in that direc-

tion. Thirty-eight monolithic columns or truncated cones were also found varying in height from 30 cm to 1.6 m, and three miscellaneous sculptured stones. The inscription on one of the stelae surely begins with the day 12 Ahau; if this day corresponds to a katun ending, the most plausible assumption, the two most likely Long Count positions are: 10.17.0.0.0, 12 Ahau 3 Yax (1165 AD), and 11.10.0.0.0, 12 Ahau, 3 Cumhu (1421 AD), the former being much more probable on historic grounds.

The investigation at the Ball Court was undertaken in the hope of finding additional fragments of the inscription on the rings which had been tenoned into the walls on the two sides of the court. This inscription is exceedingly important, as shown by Dr. Morley in 1918 [Chapter 1.6], since it may well record the day on which the Maya officially adopted their significant calendar change of shifting the positions of the days in their month one day forward. Excavations were carried out to a distance of 3 m on each side below the former position of each ring, and to the original floor level of the court. Three additional fragments of the east ring and five of the west ring were recovered.

Six fragments of the east ring have been found: 1. The part still tenoned into the wall; 2. A fitting section found by Dr. Morley in 1918; 3. A section found by the caretaker at Uxmal sometime between 1918 and 1923; 4. A section which fits no. 3, found by Dr. Morley during the current season; 5. and 6. Two small flakes also found by Dr. Morley this year, which fit none of the other pieces.

Six fragments of the west ring have also come to light: 1. The part still tenoned into the wall; 2. and 3. Sections found this year which not only fit together but also the section still *in situ*; 4. and 5. Sections also found during the current field season which, though fitting each other, do not fit any other sections of the west ring; 6. A small corner which fits nowhere, also found this year.

Of the epigraphic material presented by the new fragments, the most important is the repetition of the day 12 Ahau, preceded by the Winged Cauac variant of the tun sign. This decipherment is certain and tends to corroborate the probable occurrence of the same day on another section of the east ring, where it follows with a Tun 17 or a Tun 18, also represented by the Winged Cauac variant of the tun sign.

The hieroglyphic panels on the facings of the three low platforms at the Cemetery were in danger of becoming lost. Small flakes of these had been broken off by the action of milpa fires and lay scattered about. These were cemented back into place and a rough attempt was made to assemble the blocks of the three platforms in their original position. Further work should be undertaken here in order to prevent the loss of this important hieroglyphic inscription.

In addition to the foregoing work, the whole south side of the Cemetery was cleared of bush and there was exposed the original architectural scheme of this misnamed group, a court surrounded by buildings on three sides and a high pyramid and temple on the north side, the enclosure being entered by an arcade passing through the middle of the building on the south side.

Dr. George Brainerd, who was at Chichén Itzá during the past field season (1940), stayed in Yucatán during the summer, fall, and early winter, returning to the United States in February of this year. He devoted all his time to a study of the ceramic material recovered by the Institution during the 17 years of the Chichén Itzá Project.

Mr. Joseph Lindon Smith was with Dr. Morley at Chenkú near Mérida for three months. He accompanied Dr. Morley to Uxmal and made a number of oil paintings there. He also spent 10 days at Chichén Itzá working on another canvas, and the rest of the time copying sculptures in the Museum of Archaeology and History at Mérida.

Mr. Smith returned to the United States early in April, and Dr. Morley sailed from Progreso to New Orleans April 12.

38.37.

KARL RUPPERT

Investigations at Chichén Itzá

YB 45:205–206, 1946

During the Division's activity at Chichén Itzá (1925–37), numerous structures lying outside the area occupied by the principal groups were examined by Mr. Ruppert when opportunity offered. In reviewing the notes on these and on other buildings, excavated but as yet unpublished, he found it necessary to re-examine some of them and desirable to study the great number of others shown on the map of the Chichén area surveyed by the Institution in 1924, 1929, and 1932.

Mr. Ruppert left New Orleans February 5, 1946, for Mérida, Yucatán. A trip was made to the city of Campeche to examine the collections and to photograph stelae in the local museum. Sr. Raul Pavón Abreú, Director of the museum, was of much help in this activity and also made it possible for Mr. Ruppert to visit

the ruins of Edzná in his company and that of the governor of the state, Lic. Lavalle Urbina. Sr. Pavón has successfully accomplished the excavation of the principal temple at Edzná and deserves unqualified praise for the excellent organization of the Campeche Museum.

Returning to Mérida, Mr. Ruppert visited Uxmal and then proceeded to Chichén, where he remained until April 8. During his stay he was the guest of Sr. Fernando Barbachano, head of the Mayaland Tours. Sr. Barbachano's invitation was extended in furtherance of the Institution's archaeological activities, a courtesy most deeply appreciated.

Seven weeks were spent at Chichén Itzá, and over 130 structures were studied, measured, and photographed. Only minor excavations were possible in the time available and under the agreement with the Mexican government.

There does not seem to have been an organized plan or arrangement of structures for the area as a whole. Buildings face in all directions, the most common being west; seldom does one face south. Connecting some of the groups are ancient ceremonial roadways or *sacbé*s. One, Sacbé no. 7, extends from the Monjas to the Temple of the Four Lintels, tying together the northern and southern parts of the city. On either side of this roadway, but not directly connected with it, are small assemblages of structures. Throughout the area are isolated terraces and platforms supporting buildings that appear to have been independent units.

Platforms vary greatly in size and shape and have from one to four stairways. Some do not support buildings, others support one or more. The former are classed as shrines or dance platforms and are often located in front of a temple-type structure. When a platform supports a single building it rarely has more than one stairway.

Pyramidal substructures are always covered with debris fallen from above. Infrequently is any of the facing exposed.

Occasionally, part of the base of the stairway may still be made out, and seldom is there more than one stairway; the Castillo and the High Priest's Grave are exceptions. Superstructures are found in varying states of ruin. Some are now little more than rubble heaps which give no clue to their former nature.

Colonnades have a general distribution. No new ballcourts were encountered. The six courts in the area are confined to a rather small section around the principal groups.

Hitherto, serpent columns have been found associated with only eight buildings. A ninth was added this season. It is a small two-chambered structure (3E-5) apparently resting directly on the great northern

platform that supports the Castillo, Temple of the Warriors, and other buildings. One of the columns was partly excavated. The serpent head was not found. It was not an integral part of the first drum as, with one other exception, is the case when the column is round. The upward projection of the tail, not recovered, was a separate stone.

Five additional structures of the gallery patio complex type, best represented by the Mercado but not noted in the report on that building (Ruppert 1943:224), were recognized this season. One may not have had a gallery, three have shrine rooms, one has no columns in the patio, and one has a patio with vaulted chambers on two sides. This latter feature is of considerable importance, and it is regretted that the structure was in such collapse that it was impossible to obtain an accurate ground plan. Vault stones were not noted in the gallery of two of the structures. This is a highly specialized type of building, which, however, shows considerable variation in the 11 examples now known at Chichén Itzá.

Mr. Ruppert flew to Mexico City April 10. A trip was made to the ruins of Tula in the state of Hidalgo. This site has a number of affinities to Chichén Itzá. Of special interest is a structure somewhat similar to those of the gallery-patio complex type. April 25 was spent at Tajín, Veracruz. Owing to an early rainy season, excavations by the Mexican government had been suspended. Mr. Ruppert returned to the United States May 5.

38.38.

KARL RUPPERT, EDWIN M. SHOOK,
A. LEDYARD SMITH, AND

ROBERT E. SMITH

*Chichén Itzá, Dzibiac, and Balam Canche,
Yucatán*

YB 53:286–28, 1954

Ruppert and A. L. Smith spent 11 days at the ruins of Chichén Itzá for the purpose of exploring the site for house types. They found the task difficult because of the thickness of the vegetation and the poor condition of the structures. A large part of the mapped area was covered, as well as some terrain slightly off the map,

and 43 houses were found in good enough condition to yield plans. These were found on low, flat ground and on large platforms, many of which border the *sacbé*s, in Squares 5B, 6B, 7B, 3C, 4C, 5C, 4D, 5D, and 4E, and off the map east of 4E. During this search for house types two unreported *mercado*-type structures were discovered.

The house types, although in some cases slightly different, are closely similar to those found at the Puuc sites of Uxmal, Kabah, and Sayil, and are unlike those at Mayapán. Of the 43 houses investigated were tested for pottery. Four had Toltec-Chichén Period pottery above floor including large effigy censers similar to those found at Mayapán, numerous Slipped Red Ware jar sherds, many from one vessel which were not the same as Mayapán Red, and a few Black on Cream sherds. The rest of the pottery from house types, including some from below floors, belonged to Toltec-Chichén Period. This suggests a late re-use of certain houses.

Shook and R. E. Smith made a ceramic survey of Chichén Itzá from March 14 to April 8, during which time a day was devoted to excavations at each of two nearby sites, Dzibiac and Balam Canche. Our objective in making a study of Chichén Itzá pottery was to check the range of the site's occupation in the light of established ceramic chronology at Mayapán. In particular, we hoped to encounter refuse deposits of long duration or in association with the well known Maya and Toltec styles of architecture in Chichén Itzá. Another objective we believed to be of prime importance for Yucatán and Mesoamerican prehistory was a knowledge of the full range and context of ceramics pertaining to the epoch of Toltec influence in Chichén Itzá.

We began the study by making a surface reconnaissance covering the major portion of the area shown on the map of Chichén Itzá. It was observed that the map shows the larger structures of the site but fails to include the majority of the lesser mounds. In some groups the latter outnumber the more impressive buildings. Many of the unmapped mounds are ancient houses. They often occur on the same terrace in close association with the larger and frequently vaulted, structures; others may be on extensive stone-filled platforms with no large accompanying units. The map shows the platforms, though rarely the low mounds upon them. Large sections of terrain were almost barren of surface pottery or other indications of a concentrated population in ancient times. These conditions prevailed especially in the south-central and southeastern sectors, and in the area lying north and northeast of the great terrace or platform supporting the Castillo, Great Ball Court, Court of the Thousand Columns, and other structures. The preliminary re-

connaissance served to identify these zones as unfavorable for the location of deep refuse deposits and to suggest that the best opportunities lay in the immediate vicinity of terraces or platforms on which large vaulted buildings were concentrated. Invariably, the deepest middens were found off the edges of these terraces. The contents of the middens, discussed below, we believe suggests that they were an accumulation in part of household refuse, in part of ceremonial material. That many people lived in close proximity to the large civic and religious buildings seems certain from the evidence.

We made 19 ceramic cuts at Chichén Itzá. The locations of these include the principal groups of the site from its southwest to its northern limits. The procedure, after finding by surface observation a location which appeared favorable for pottery dumps, was to dig a test pit or trench from the surface to bedrock, removing arbitrary levels of 25 cm unless floors or other divisions were encountered. Some of the tests proved unproductive; others cut through stratified refuse. In the latter instance we often enlarged the area excavated to obtain an adequate sample of material.

The pottery from only nine cuts has thus far been recorded and subjected to preliminary analysis. The results are most instructive, in spite of the fact that four of these cuts were ceramically unproductive, lacking stratigraphy and sufficient sherds to do more than date the platform or construction penetrated. Cut 2 was a good example of a productive cut. There were three strata and a floor sealing off the two lower levels. The latter contained nothing later than Puuc types, whereas the above-floor level yielded mostly Toltec-Chichén types and a few Puuc specimens. Cut 8, with three arbitrary strata, showed a slight change from bottom to top, but all the pottery was within the Toltec-Chichén Period. This same ceramic pattern was found in the four strata of Cut 14, where Fine Orange X formed less than one percent in the two upper strata as compared with 5.3 and 4.9 percent, respectively, in Strata 4 and 5 of Cut 17, unquestionably the most important cut for establishing Toltec-Chichén ceramic types. These types were present in all six strata of this deep midden. Puuc specimens associated with the three lowest levels were lacking in the upper levels; Chichén Medium Slate Ware became more abundant as the surface was approached. Cut 13 was the only one which appeared to harbor post-Toltec-Chichén ceramic types, including unslipped lightly striated jars and Black on Cream vessels similar to those found in the lower levels of the principal period of occupation at Mayapán. These types occurred both below (21 percent) and above (48 percent) a well preserved floor. The only other types recognized in this cut were of the Toltec-Chichén Period.

The principal ceramic types of the Toltec-Chichén Period as found in Cut 17 comprised: unslipped jars often with pattern-striated bodies and bolster rims; censers, hourglass type sometimes embellished with buttons or spikes set in a painted blue background, jar-shaped with three hollow bulbous feet, or ladle type, a few of which may have been painted red with a blue lip border; Chichén Medium Slate vessels (jars, bowls, usually without feet save for grater type; restricted-orifice bowls with bolster rim, and rarely bolster-rim basins), which had a light translucent cream slip showing the brick-red paste underneath; Chichén Red vessels (jars, round-sided bowls with flat or impressed disk base and occasionally with black design; flaring-sided bowls with everted rim and sometimes gouged and incised through a cream band; and rarely cylindrical vases), which were somewhat mottled but otherwise smooth and waxy to the touch and quite like the Puuc Red types; Fine Orange X, and a polychrome Fine-Orange like that from Isla de Sacrificios, Veracruz; hard yellow ware with black trickle (jars, restricted-orifice bowls with bolster rim, and flaring-sided bowls); and a very few Tohil Plumbate vessels.

The primary facts gleaned from our work are: 1. There is no pottery at this site earlier than the Puuc Period, save for a collection of Formative types from a single cut east of Structure 3C-6; 2. There is no pottery later than the Toltec-Chichén Period but for a small quantity of Black on Cream (Brainerd's coarse slate) sherds from Cut 13, a pit just south of the Mercado; 3. The content of the Toltec-Chichén ceramic phase is established by means of Strata 4 and 5 of Cut 17, where the greatest concentration of Fine Orange X was found.

The reason for finding almost no material later than the Toltec-Chichén Period in the 19 cuts is presumably that the permanent occupation of Chichén Itzá terminated at or near the end of that period. The few Black on Cream Ware sherds, usually thought to belong to a later period, may have been precursors of, and thus slightly earlier than, the similar, early Mayapán Period type. The explanation for the late sherds found above the floors of certain house-type constructions is probably that people were re-using the houses in late times. These people may have been pilgrims who each year occupied the better preserved houses during their visits, leaving behind some broken utilitarian pottery as well as censers. That people returned to an abandoned and ruined Chichén Itzá to worship is made clear by E. H. Morris (1931:179–180) in describing the pottery, mostly of the large effigy-censer variety but including some red ware tripod plates found “in vegetable mold just beneath the surface, most plentiful in front of the doorways and strewn down the stairs.” He also describes pottery,

found on the floors of buildings, which closely resembles what has been listed above under Toltec-Chichén types. These wares were “in use while the buildings were still standing.” The findings resulting from the 19 cuts made by Shook and Smith entirely agree with conditions described by Morris.

The ruins of Dzibiac were visited briefly. They are situated about 10 km west of Chichén Itzá, around a beautiful cenote bearing the same name. We noted several platforms with fallen structures on them and two buildings with standing or partly standing vaulted rooms. The larger of the two lies about 50 m southwest, the small some 200 m north, of the cenote. Each has remains of vaulted chambers around two or more sides of a thick masonry core, resembling in this respect many of the palace-type structures of the Puuc region. At Dzibiac the masonry of the room walls consists of roughly cut blocks laid in regular courses with a considerable number of spalls between stones. The undressed blocks are well tenoned into the hearting in contrast to the shallowly tenoned veneer stones of Puuc and Toltec-Chichén architecture.

The vault masonry is strikingly different from that used in the walls. The vault stones have semi-specialized, long tenons and are excellently cut and dressed on the exposed faces. They are laid evenly, producing a rather true plane from the offset at the vault spring to another offset just under the capstone. The structure nearest the cenote has a series of small subterranean vaulted chambers honeycombing the central block of masonry. Their size and position suggest that they served as burial chambers, but the local people have a more colorful interpretation. They believe the tiny vaults were the home of elves, the little people, and refer to the ruins by the name *alux*, or dwarf.

We observed no carved stone elements of architectural ornamentation or doorway columns at Dzibiac. The masonry and style of architecture conform most closely to the pre-Toltec buildings in nearby Chichén Itzá. The pottery from a trench dug off the west terrace of the building with the burial chambers belongs to the Puuc, or Late Classic, Period.

Shook made a preliminary exploration of the site and cave of Balam Canche, and later returned with R. E. Smith for a more thorough investigation. The ruins surrounding the mouth of the cave have not been reported previously, although the cave has long been known. The site lies 4–5 km east of Chichén Itzá and is readily accessible from the recently paved Mérida Valladolid highway. The ruins, only 300 m north of the highway at Kilometer 124.5, served as a stone quarry during the road building operations. Much of the site was destroyed by this work. Left were remnants of a masonry wall enclosing the cave entrance, a mound, and two vaulted buildings and several low

house foundations on what originally had been an extensive platform. The last enclosed the eastern half of a plaza in the center of which is located the cave entrance. The vaulted structures had walls of roughly cut, undressed blocks; doorway jambs of carefully cut and dressed, full-width stones; plain stone lintels; and semi-specialized, well cut and dressed vault stones. None of the building stone observed bore carving. Architecturally, the two vaulted structures in Balam Canche are similar to those at Dzibiac. A surface collection of pottery and material from a ceramic trench through the platform east of the cave indicate a long period of occupation. The building activities, however, took place during the Puuc or Late Classic Period.

The natural cave with its several water sources has been investigated by A. S. Pearse (1938) and others principally interested in the fauna of Yucatán caves. From time to time selected samples of pottery were collected from the cave floor. These sherds, studied by Vaillant, Roberts, and Brainerd, led to the establishment of a ceramic type which Brainerd calls Incised or Flaky Dichrome and places stylistically in the begin-

ning stage of the Early Classic Period. We made three excavations in the cave floor by the water pools nearest the entrance and collected a large sample of pottery from the surface of the floor throughout the cave. A small stone sculpture depicting a human figure in kneeling position also came from here.

The pottery within the cave, like that recovered from the ruins, showed a long range of occupation. Most abundant on the surface of the cave floor was Puuc Medium Paste Slate Ware of the Late Classic Period, and there were a few sherds of the Toltec-Chichén, Mayapán, and Postconquest Periods. In two excavations, only Preclassic and Early Classic types were found. The oldest material consisted principally of lustrously polished, red-slipped jars. These do not bear handles of any kind, nor do the Incised Dichrome jars which directly overlie the Preclassic Red and Orange monochromes. Several sherds cannot be distinguished macroscopically from the Pattern Burnished Ware which Brainerd discovered in the Maní cenote and considers to be the most ancient pottery so far recognized in Yucatán.

39.0. EK BALAM

The core of the site extends over an area of approximately 6 sq km, and is surrounded by two walls. Structure 1 is 150 m long, and the largest construction at the site. Recent excavations by Tulane University have revealed a well-preserved stucco façade and a flight of steps inscribed with hieroglyphs. Most buildings date from the Late Classic period, although other finds at Ek Balam suggests a Preclassic occupation. Désiré Charnay visited the ruins at Ek Balam in 1886 on his last trip to Yucatán. Sylvanus Morley and Jean Charlot visited Ek Balam in the late 1920s and published a brief description of the site, which they believed to be late Postclassic. In the early 1980 Ian Graham examined the carved monuments at the site and, beginning in 1985, William M. Ringle and George J. Bey spent several seasons at Ek Balam. Work included mapping of the site core, and peripheral sites. Ceramic collections were taken and analyzed and some of the standing architecture was cleared.

39.1.

SYLVANUS G. MORLEY

Report on the Ek Balam Expedition

YB 27:317–318, 1928

On June 4, Dr. Morley and Mr. Charlot left Chichén Itzá for Valladolid, and thence north 15 miles [24.1 km] to the ruins of Ek Balam. This site had been previously visited and described by the French explorer, [Désiré] Charnay (1886), but a recent report of a hieroglyphic inscription there initiated the advisability of further exploration.

Ek Balam must have been a center of some importance from the size and extent of the remains, although comparatively late. The buildings are low and built of crudely dressed masonry. Carved or even cut stones are almost entirely wanting, and the walls seem to have been finished, for the most part, with stucco as at Tulúm. The very low height of the corbelled arch, in the single intact chamber seen, strongly recalls the similar low arched chambers of buildings along the East Coast, which are certainly of late origin, having been occupied down to the time of the Spanish Conquest. On architectural and stylistic grounds, it is more than probable that Ek Balam was a contemporary of Tulúm and the other East Coast sites, and that it too

was occupied until the early part of the sixteenth century.

One of the highest pyramids had a human figure made of stone and stucco on one side of a doorway leading to a chamber near the top. This was a very grotesque, crudely executed and without esthetic merit.

A large altar 7 feet [2.1 m] long, 7 feet [2.1 m] wide and 7 feet [2.1 m] high, carved from a single block of stone, was found standing by the out-cropping of the native limestone from which it had been quarried. Its entire top had been hollowed out to the depth of 5 or 6 inches [12.7–15.2 cm], leaving a rim 4 inches [10.2 cm] in thickness. The front is carved with a grotesque hu-

man face having large circles around its eyes, suggesting the Tlaloc head; the back and sides are plain, though dressed.

A single carved stela was found in a similar position, that is, lying on the ground by a similar out-cropping of the limestone. This had a rounded top and a small simplified serpent with a plumed head-dress on the front. There were no glyphs on this monument and the back and sides are plain, though dressed.

Ekbalam was obviously a late provincial center, and its architecture and sculpture are such as might be expected in a Maya site of this late degenerate period in the northeastern corner of Yucatán.

40.0. MAYAPÁN

Between 1951 and 1955 the CIW conducted extensive excavations at Mayapán. The site was selected for intensive research and excavation to study the late prehistoric Maya in Yucatán as described in the native literature. According to the historical narratives, Mayapán was the political capital of the Maya in the Yucatán peninsula from about the late 1220s until the 1440s. In 1221 the Maya revolted against the Maya-Toltec lords at Chichén Itzá. After a short civil war the lords of various cities restored a central government to Yucatán, and constructed a primate settlement near the town of Telchaquillo. The chief of the Cocom, an ancient lineage that had taken part in the revolt against Chichén Itzá, was selected as king, and other noble lineages and regional lords were invited to provide people to serve in the government at Mayapán. This arrangement lasted for over 200 years. In 1441 Ah Xupan of the powerful Xiu lineage organized an insurrection against the Cocom rulers. At the end of this most of the Cocom family were killed, Mayapán was sacked, burned, and abandoned, and Yucatán fell apart into warring city states. It was thought that field archaeology might help in the solving of problems and contradic-

tions created by the literature. Another reason was to investigate the relation of the late historical disturbances to the military and cultural aggression from the Mexican highlands. The CIW project at Mayapán included their most ambitious settlement mapping effort. A. L. Smith characterizes the site as a Late Postclassic period (ca. 1260—1460 AD) urban concentration of 4,000 structures, including 2,100 dwelling units. The whole is encircled by a defensive wall which embraces 4.2 sq km. A group of temples and palaces lie in the center of the enclosure, and the dwelling units are scattered at random throughout the periphery. Mayapán is estimated to have housed some 11,000 to 15,000 people.

40.1.

MORRIS R. JONES

Survey and Base Map at Mayapán

YB 49:194–197, 1950

In accordance with arrangements made by the Institution and the U. S. Geological Survey, Mr. Morris R. Jones reported to Washington, November 1, 1949, where papers, instruments, and instructions necessary for his entrance into Yucatán and his work in the ruins of Mayapán were procured. Proceeding by way of New Orleans, Jones was met in Mérida November 4 by Mr. Shook and Mr. Strömsvik of the staff of the Division. Over the ensuing week and a half Shook and Strömsvik assisted Jones in acquiring supplies and equipment, hiring native labor, and coming acquainted with the ruins.

It was decided that Telchaquillo, a small village 2 km north of Mayapán, would be the best base of operations, and quarters there were occupied November 10. Telchaquillo is accessible from Mérida by road, and throughout the season it did in fact prove to be a good location, mainly because of its proximity to the ruins and the fact the native labor supply in the village was both adequate and of good quality, the natives being interested in, and sympathetic with the project as work progressed.

Reconnaissance and survey at Mayapán during the 1938 season by Mr. R. T. Patton [Chapter 1.27] proved valuable in planning this season's operations. Several facts were known, about the site. The ancient city is surrounded by a wall, roughly oval, extending approximately 3,200 m east-west 2,000 m north-south, the area outlined being 4.2 sq km. Ancient gateways are to be found at intervals along the wall. A large pyramid, similar to the Castillo at Chichén Itzá but smaller, many closely spaced colonnades, small pyramids, and three round towers form a main group a little west of the center of the walled area. Another, rather small ceremonial center is just inside the eastern limit of the area.

The wall presented a distinct advantage in the making of the map because it forms a definite boundary, and during the course of the work exploration and mapping were limited to about 75 m outside the wall. Ruins were found within this outer fringe, and it is known that more are beyond it, but they are sparse and hardly worth the effort of mapping when so much lies within the primary area.

A scale of 1:2,500 had been decided on; the contour interval selected, was one meter. As there is no vertical control in the immediate area, an elevation of 25 m above

sea level was assumed for point 0, so that all elevations and contours are based on this datum. It may be possible at a later date to connect the datum with a closed vertical control line of the Mexican Government.

Actual work was begun November 12 with the selection of a point of origin as close to the center of the city as could be determined from information available. This point, a triangle cut in bedrock, is located along the trail which connects Rancho San Joaquín with the main road running south out of Telchaquillo. It is 31 m northeast along the trail from the gateway into the ranch. In beginning the survey, point 0 was occupied with transit and Polaris observations taken at night in order to determine true north. As an azimuth mark, a cross was cut in the top of the southernmost pillar of the gateway into Rancho San Joaquín. The south azimuth from point 0 to the mark was computed to be 28 degrees 54' 24", and the approximate magnetic declination for the area is 6 degrees 30' east.

With the true cardinal directions determined, a plane-grid system was laid out over the area, the net, when completed, giving squares 500 m on a side with 100 m stations established along all lines. Each 500 m station was marked by a triangle chiseled in bedrock where possible or by a large hub where the point fell on soil. Hundred-meter stations were marked with hubs surrounded by piles of stone.

All lines had to be cut, of course, and, four men were kept ahead of the instrument party clearing a path through the dense growth. Native workmen were trained to plumb chain and to set stations exactly on line, work which they learned quickly and performed accurately. Grid lines were carried until the wall was encountered, where they were discontinued after explorations just beyond. While this work was being done, two men were employed cleaning brush from the wall to provide easier passage when the time came to do plane-table mapping along it. Establishment of the plane-grid network, which includes about 20 km of line, was completed December 31, the density of the bush slowing the rate of progress.

A system of numbering stations was established, and the squares formed by the projection lines were given letters. It was thought that these 500 m squares would provide convenient units for separate archaeological investigation should such prove desirable, and an attempt was made to locate the grid lines so as to include the Main Group within one square. The cutting of these lines afforded a clue to the density of remains within the wall, and the first part of the survey showed that there are many more ruins at Mayapán than had hitherto been supposed.

Plane-table topography and culture were mapped by working first along already cleared projection lines.

An area of approximately 50 m on either side of the line was included. After a square had been surrounded, the interior was mapped by cutting four lines southward from the four 100 m stations along the north edge of the square. By covering the area 50 m on either side of each interior line, the square was completely explored. Each square was treated similarly. Approximately 65 percent of the city was mapped this season, including the Main Group and the small ceremonial group to the east.

As the season's operations drew to an end, a transit station was established atop the main pyramid in order to triangulate on three known positions which are part of a third-order closed triangulation net of the Mexican Government. The geodetic co-ordinates of the main pyramid were determined by this method to be latitude 20 degrees 37' 47.88" N, longitude 89 degrees 27' 41.40" West.

Two facts concerning Mayapán serve to verify old records which describe it as a populous city. In the first place, the density of remains found within the wall is high. A rough estimate would set the number at 3,500 individual ruins, which still can be detected, plus many terraces, all within an area of about 1.6 square miles [4.1 sq km]. Many more, of course, have been erased by the constant stone-robbing that has gone on since the beginning of the Spanish occupation. Rancho San Joaquin, within the walled area, and Hacienda Xanchakan, 4 km to the west, were constructed wholly or partially of stone from the ruins.

The other fact testifying to the former population density of Mayapán is the number of cenotes found within the wall. During this season seven cenotes were noted: four leave the water table exposed, and three give evidence that water was once obtained from them. It is known from Patton's survey that more cenotes will be encountered as the map is completed. Several others are known within a 5 km radius of Mayapán; for example the one at Telchaquillo, from which water is still taken and around which ruins are to be found.

Only a small percentage of the remains, those in the Main Group for the most part, appear to have been ceremonial structures or the like. Most of the ruins are small, averaging 10 by 5 m, and having a typical floor plan. It seems logical to assume that these small ruins were dwellings. More often than not, two or three are so situated as to form an obvious unit, the remains being close together and on the same terrace. Metates are consistently to be found on the smaller, or smallest, ruin of the group, and in many cases an altar is a definite part of the unit. It was noted that some of these units are made up of ruins slightly larger, better terraced, and in more choice topographical locations than the average. In a few cases drum columns supplement what seems to have been the standard floor plan.

Some 300 m east of the main pyramid are located three relatively large and interesting building units, each quadrangular, two having vaulted passages connecting their inner courts with the outside. These structures appear to be of the so-called palace type. A *sacbé*, or paved way, connects the westernmost "palace" with another relatively large ruin 300 m to the southwest.

In summary, the remains found at Mayapán are numerous but the architecture appears to be far inferior to that of the other great cities of northern Yucatán. As has been mentioned, the individual ruins are in an extreme state of disrepair.

At the end of field work a week was spent in Mérida to complete office work on the map sheets. Mr. Jones left Yucatán June 17 and reached Washington June 19, 1950.

Although thanks are due to many persons who assisted in this work, they should be extended particularly to the U. S. Geological Survey for its fine cooperation and the numerous facilities it has provided.

40.2.

MORRIS R. JONES

Survey and Base Map at Mayapán, Yucatán

YB 50:229-230, 1951

In accordance with arrangements made by the Institution and the U. S. Geological Survey, Jones returned to Yucatán on November 2, 1950, and, after reoccupying quarters at Telchaquillo, resumed work on November 6. He was able to engage the same group of native workers who had served him the year before, so that no time was lost in readjustment.

During the previous season, a grid network was surveyed over the ruin area and lines were cut through the dense underbrush over this grid. Topography and culture were mapped by plane table methods, as described [Chapter 40.1]. At the beginning of the second season, the still unmapped portion, approximately 35 percent of the entire area, included the city's eastern and, southern limits. It should be remembered that the ancient wall which forms the map boundary is irregularly oval in shape.

The density of ruins in the eastern area was found to be low. Of note, however, is an interesting group close to Cenote Itzmal Chen. It includes four structures

so situated as to form a quadrangle, all built on the same terrace, and with a small round building at the quadrangle's center. The northern structure of this group is the tallest and most massive. An ancient gateway was found at the wall's northeastern-most point, another where the wall passes near Itzmal Chen, and a third at the wall's southeastern extreme.

Work in the southern part of Mayapán proved fruitful because house mounds were found to be numerous. Ruins are especially dense along the wall's southwestern extreme, and cenotes are numerous in that area. Of particular note was a house group on which two carved stone plaques were found. At this same group is a monolithic altar about 1 m in height. Another house construction could be seen to have been built over an earlier, and subsequently filled, vaulted room. Along the wall's southern arc are one major gateway and two minor passageways.

The wall's entire perimeter reveals six main ancient gateways and four minor ancient passages. The wall has been broken through at several places for the passage of modern trails, and it is difficult to determine whether or not these modern breaches were minor ancient passages which have merely been widened. It is believed, however, that fresh breaks were made for most of the post-occupation trails, since one such trail passes through an ancient gateway and the original dimensions of this opening are still more or less clearly defined. Present-day inhabitants of the Mayapán area know of no names for the ancient gateways.

An over-all count of cenotes within the walled area and 100 m outside it reveals 15 which are known to have water in them today. Seven more cenote-like caverns were found to be dry, though sherds found close to some of them indicate they once were sources of water.

At the beginning of, mapping operations, an elevation of 25 m above sea level was assumed for the survey's centrally located point of origin, and all contours and map elevations are relative to this. In order to determine the error between the assumed elevation and the true position of the point of origin, a line of levels was run from known elevation at Hacienda Xcanchakan to the ruin area. Elevations as shown on the Mayapán map were found to be about 8 m higher than their true vertical position. This, error is of little consequence since all elevations on the map are relative to one another.

Mapping operations were completed early in February, and Jones left Yucatán, on the eighth of that month, proceeding Washington, where all materials were turned over to the Institution.

40.3.

KARL RUPPERT AND
A. LEDYARD SMITH
Mayapán, Yucatán

YB 50:230–232, 1951

The 1951 field season at Mayapán, Yucatán, under the supervision of Ruppert and A. L. Smith began March 3 and continued through May 17. Headquarters were established in Telchaquillo, 2 km north of ruins.

Previous work carried on at the site by Carnegie Institution includes Patton's map of the wall made in 1938 [Chapter 1.27] and Brainerd's and Andrews' reports on ceramics and architecture in 1942 [Chapter 36.3]. The excellent map of Mayapán by Morris R. Jones, completed in February 1951, served as a key to, and was of invaluable aid in, the past season's work.

Owing to the great number of structures at Mayapán, some 3,600, it seemed advisable to undertake no excavations during the first field season, but to limit the work to surface examination of as many structures as possible. At the same time likely places for future excavation were to be noted. The map had been divided by Jones into 500 m squares, each designated by a letter. To facilitate identification of individual structures, they were given the letter of the square in which they occur, plus a number. When in groups, the structures carry the same number but are differentiated by the addition of a lowercase letter. The data for each structure, in most cases including scale drawings, were recorded on a 5 by 8 inch card. Approximately one-third of the site, Squares A-E and J-N, with a total of 1,143 structures, was examined and recorded.

The area investigated is mostly limestone outcrop with little soil, supporting low, scrubby growth. The contour of the land is very irregular but does not vary more than a few meters except where it is broken by low hillocks. These latter, by far the most desirable locations, were often leveled on top and built up to support a group of buildings. Groups in general, whether on a hillock or not, are formed by two or three structures on a single terrace.

The structures examined fall into several categories: simple low platforms, dwelling-type structures, other buildings, altars, pyramidal structures, causeways, and walls.

The simple low platforms vary in size from 3 m by 5 m to 6 m by 10 m, and average 30 cm in height. They are faced with roughly worked stones.

Dwelling-type structures, usually supported by low platforms, vary greatly in details such as arrange-

ment and number of benches, walls, and passageways. These variations are undoubtedly due to the size and circumstances of the family and the personal whim of the builder. There is a great deal of evidence that original structures were added to, possibly because of increases in the family. In spite of the numerous variations, this type of structure usually consists of one room with one or more benches, or a front and back room. In the latter case the front room has at least one bench, more commonly two with a passageway between leading into the back room; occasionally three benches occur with passageways between them. Back rooms are consistently narrower than front rooms. There is little indication that the fronts of the houses were closed. The back room often had a doorway at one end. Small altars are occasionally found in the inner room, built against the center of the back wall. In general they consist of low platforms outlined with stones. Lack of any debris on the floor or benches suggests that these structures carried thatch roofs. The walls are of one course in height and never rise above 60 cm. As there is no evidence remaining to indicate that the walls rose higher, the upper part must have been constructed of perishable materials. The masonry is of roughly worked stone. Jamb stones, often better worked, may rise above the wall. Plaster, although no doubt extensively used, was found only in rare instances. Unfortunately the land has for many years been burned over for milpas, and this has caused much destruction. In general these dwellings follow closely Landa's description of house construction in Yucatán (Tozzer 1941:85–87).

The third category includes a type of structure that may also have been used for dwelling purposes, probably by the wealthier or more important residents of Mayapán. It is similar in plan to the structures described above, but is built of nicely cut and coursed masonry. These structures may have two or four columns formed of a number of stone drums, or masonry piers, across the front. Because of the amount of debris it is impossible to tell the number of benches in the front or back rooms without excavation. A very few structures of this type have been found to date.

Altars occur most frequently in front of the larger structures, especially when the latter form part of a group. They are small, rectangular masonry platforms rising an average of 20 cm. In some instances they support a low wall or a single upright stone.

A truncated pyramid rising 4 m on the south side was found in Square E. It is the only structure of this type encountered in the area investigated. Although in ruin and covered with debris, stairways flanked by balustrades were visible projecting from three sides. Two terraces high, the pyramid supports the remains of a superstructure.

A causeway with one end north of the pyramidal structure extends approximately, 100 m northwest. Averaging 2 m in width and barely rising above the ground level, it is bordered in most places by stones varying greatly in size.

An interesting feature is the frequent occurrence of alignments of stones or walls surrounding individual structures or groups. These walls, made of large stones set on end and placed a few centimeters apart, probably delimited land ownership. In some cases lanes are formed by the parallel walls of neighboring properties.

The portion of the main city wall examined was for the most part in a very poor state of preservation. Made of large rough stones, it does not rise over 2 m at any point. In some places there remain traces of a banquette and parapet. There is a gateway through the wall in Square B and another in Square D.

Structures outside the wall are infrequent. Those examined do not vary in plan and construction from those within the city proper.

An earlier period at Mayapán is suggested by the frequent occurrence of used stones. Some of these stones are carved elements of Puuc period decoration, others are nicely dressed wall stones which have been incorporated in masonry of a far inferior quality. Metates of the grooved type were found in great quantities and were often put to secondary use in masonry construction.

During the season's work it became evident that in order to have a clear picture of certain types of structure, some excavation would be necessary. With this in mind various buildings were recorded as being the most likely, to give the desired information. At the same time places that looked as if they might contain caches or burials were noted. These are in benches and built-up terraces where depressions, probably caused by a collapsed vault or crypt, were observed. In one instance the capstones and upper part of a vault were showing below the top of a bench, and it is hoped that other examples of superposition will become apparent as the work progresses.

40.4.

EDWIN M. SHOOK AND
TATIANA PROSKOURIAKOFF
Yucatán

YB 50:236–240, 1951

Shook arrived in Mérida from Guatemala on February 6, 1951, and returned to Guatemala May 31. Most of his time in Yucatán was devoted to the organization of the Mérida office as a base of operations with a ceramics laboratory and storage facilities for archaeological material. In this task R. H. Thompson and Mrs. Thompson co-operated throughout the season, as did Proskouriakoff during the two months of her stay in Yucatán.

A great mass of archaeological material, packed in about 500 wooden boxes, had been in storage for a number of years at Hacienda Chenkú on the outskirts of Mérida. This material consisted principally of pottery fragments recovered from the excavations by Carnegie Institution throughout the peninsula of Yucatán. Also, there were artifacts of stone, shell, bone, and pottery, human skeletal material, and miscellaneous stone sculpture. It had previously been arranged with the National Institute of Anthropology and History that all suitable specimens should be delivered to the museum in Mérida during the past season. It was also planned that the large collection of fragmentary ceramic material be divided into representative study lots for future deposition in various museums in Mexico, Central America, and the United States. With these objectives in mind, the entire collection was moved from storage to the new Mérida quarters, while still in boxes segregated by site, structure, or trench within a site, and when possible by stratigraphic level. The contents of each box or container then were culled, cleaned, and placed in specially designed shallow trays. Sherds too small or weathered for determination of ware, shape, or decoration, and those the provenience of which was uncertain, were discarded, as were many larger body and rim sherds of wares and forms abundantly resented in the collection. By the season's end the ceramic material had been arranged in cases, readily accessible for study, comparison, and division into type collections.

The artifacts, sculpture, and all whole or restorable pottery vessels were catalogued, drawn, or photographed, and delivered in May 1951 to the Mérida Museum. Human skeletal material was carefully packed, labeled as to provenience and turned over to the local office of the National Institute of Anthropol-

ogy and History for shipment to the National Museum in Mexico City.

As time permitted, brief visits were made to a number of archaeological sites that provide comparative and background material for the Department's studies in Yucatán. Museum as well as private collections were photographed and recorded. R. H. Thompson and Shook obtained pottery samples from the few remnants of the ancient site of Tihoo, over which the modern city of Mérida is built. Demolition of the great Maya structure, which the Spaniards used partly as a foundation and partly as a quarry in constructing a Franciscan monastery, has accelerated during recent years to provide space for Mérida's market area. From the rubble of the monastery and Maya structure was salvaged modern, Spanish colonial, and preconquest pottery. The last consisted principally of Late Classic period slate wares typical of material from Puuc sites, and a few sherds assignable to the period of Toltec influence in Chichén Itzá. The debris also contained several well cut and dressed stone disks apparently from architectural columns. This type of column was used most frequently during the Early Postclassic or Toltec period in Yucatán. No evidence of occupation after this period until Spanish colonial times was noted.

Thompson and Shook visited ruins at Candel, Ucu, and Hunucmá along the Mérida-Sisal highway, and located or obtained information of others west and northwest of Mérida. Those visited have suffered damage to a greater or less degree because they were a convenient source of stone for constructing churches, houses, or fences in the respective towns, or for the highway. Surface sherd lots were collected at Candel, at Ucu, from a low mound being cut away in Hunucmá, and from a site which had been destroyed on the south edge of the highway about 1 km east of Hunucmá.

Southeast of Mérida, Thompson and Shook investigated three sites, San Antonio, Tehuizt, and Tepich. The first proved to be a small site dating from the Late Classic or the Toltec Chichén Itzá period. Among the debris of vaulted buildings were well cut and dressed wall and vault stones and round, full-height doorway columns. San Antonio is located 1 km northwest of Hacienda San Antonio Tehuizt on the north edge of the Mérida-Acanceh highway. Southeast of the same hacienda are the ruins of Tehuizt, a major archaeological site extending at least 1 km north-south, mostly between the highway and railroad line from Mérida to Acanceh. The site is dominated by a huge, steep pyramid approximately 18 m in height. Several closed, rectangular court groups lie on the flat and barren limestone plain north and northwest of the pyramid. Common at Tehuizt are terraces retained by large rough limestone boulders, house platforms, and apparently vaulted, multiple-room, palace-type structures on low

platforms. The latter had moderately well cut lintels and full-width doorway jambs, but nowhere at the site were noted cut and dressed wall or vault stones. Wall masonry is of large rough blocks laid in irregular courses with much spalling.

Tehuitz and Tepich, a somewhat smaller site on the southeast edge of Hacienda Tepich, are similar in masonry and arrangement. Both apparently had their greatest period of activity before the Late Classic period. Other sites east and southeast of Mérida were located but not investigated.

Mr. Lawrence Roys spent about two months in Yucatán mapping, photographing, and recording several unreported sites and others not adequately described in the literature. One such site, Aké, was visited twice during the field season by Roys and Shook. They were accompanied on the second trip by Proskouriakoff. Historical sources state that in preconquest times the cities of Tihoo (Mérida) and Izamal were connected by a paved road. Remains of the Maya road or *sacbé* were discovered and followed 2 km eastward from Aké in the direction of Izamal. Subsequently Pollock, Shook, and Proskouriakoff traced what is believed to be the same *sacbé* some 6 or 8 km westward from Izamal going in a direct line toward Aké. The road measured 12 m in width and consisted of a dry rock fill between parallel retaining walls of large, roughly cut limestone blocks. This foundation was topped with crushed gravel and smoothly surfaced with lime concrete. That the Maya were competent engineers was evident from the camber given to the road's surface for rapid drainage.

Aké and Izamal are major archaeological sites showing similarity in the orderly assemblage of huge religious and civic structures around rectangular courts, and in masonry and architectural style. Both sites are characterized by masonry of enormous cut blocks with lime mortar between blocks and surfacing of lime plaster. Stucco, decoration often embellished the substructure terrace walls, further obscuring the block masonry. Both Aké and Izamal seem to have completed their major architectural activities before the spread of the Puuc style in the Late Classic period. Puuc type construction, however, was found in several instances to overlie typical block masonry at Aké.

Proskouriakoff spent three days at Chichén Itzá, making a cursory survey of the sculpture which still remains to be photographed. Chichén Itzá sculpture, being the largest body of representative art in the region is a valuable source of background material for the interpretation of late Yucatán history. In many cases, field conditions present difficulties in photography, but it is hoped that a practical plan of obtaining a complete and adequate record can be worked out for a future season.

Proskouriakoff and Shook, on a brief reconnaissance trip to Campeche, investigated two sites along the recently constructed highway between Hopelchen and Campeche. Both sites, Tohcok and Kayal, 4 and 40 km west of Hopelchen, respectively, had served as stone quarries for road construction. Part of a vaulted building remained standing at Tohcok on the north edge of the highway. Photographs, plans, and sections of what remained of the structure, and drawings of the exposed portions of two painted doorway jambs were obtained. The Painted Jambs building, a two-storied structure, originally consisted of lower level of several rooms on each side of a broad stairway leading to an upper range of rooms. Additions from time to time, some apparently to enlarge the second story, required the filling and blocking of the rooms and doorways of the lower level. Eventually the renovations completely scaled and buried the early part of the structure, thus preserving it until recent exposure by road builders. One complete vaulted room remains of the lower story south of the stairway. This room has a doorway in the east and another in the west wall. Each jamb of the latter doorway had been surfaced in ancient times, with fine, hard, creamy-white lime plaster on which was painted in black an elaborately costumed figure framed by a rectangular band of hieroglyphs. The same room has a painted capstone.

The type of masonry and architectural details of the Painted Jambs building and other structures at Tohcok belong to the Late Classic period. The architecture is of neither the distinctive Chenes nor the Puuc style; it appears rather to be a blend of the two. This strongly suggests that Tohcok is a border site between the Puuc and Chenes areas, and that these architectural traditions flourished contemporaneously.

The Kayal site is situated on a low ridge about 500 m south of the highway and village of Kayal. The road builders have left little more than featureless piles of rubble, except for one hieroglyphic stone and one vaulted room of a type found more frequently in the area west of the Puuc region. This type, which may be Early Puuc, is characterized by the use of veneer masonry for walls and upper façades, while retaining slab masonry vaults. Despite the destruction of Kayal, it was possible to trace down and obtain photographs of a considerable number of sculptures from the site. Some were built into the Kayal church, others were in the Campeche Museum, and a number were found in private collections in Mérida.

Two days were spent recording sculpture ceramics, and artifacts in the Campeche Museum. The museum collection includes material from all parts of the state of Campeche. There is an excellent study lot of pottery and artifacts from excavations in Jaina.

South of Campeche, on the Champotón road, surface collections of pottery were made at two previously unreported sites, Queja, 1.5 km north of Seyba Playa, and La Joya, approximately 8 km north of Champotón. Neither site provided evidence of the use of cut stonemasonry or vaults. The sites apparently were occupied in widely separated periods. The pottery indicates that La Joya may be a Preclassic site, whereas Queja appears to be Late Classic or Early Postclassic.

Champotón, identified as the home of the Itzá, and the scene of the earliest armed encounters between Spanish conquerors and natives of the Yucatán peninsula, lies at the mouth of a small river emptying into the Gulf. Native tradition relates that Kukulcan, on his departure from Mayapán, stopped there and that a temple in the sea was erected in his memory. The temple referred to is undoubtedly a small construction still to be seen opposite the mouth of the river on a tiny island almost submerged by water. Two or three well cut blocks of stone remain *in situ*, but most of the foundation is in large amorphous masses of fill, solidified by lime and broken and scattered by the action of the sea. No traces of ancient construction were observed in the town itself, but Shook photographed in a private collection a large sculpture of stone and stucco, representing a reptilian grotesque on the order of those on Altars G and O at Copán, though carved in less elegant style.

The island of Jaina, 36 km north of Campeche, was next visited. Previous explorations by Carnegie Institution [Chapter 1.10] resulting in the discovery of three stelae, one bearing the Initial Series date 9.11.0.0.0, and more recent work by the Mexican Government had shown Jaina to be of considerable importance in the interpretation of Yucatán history. Special attention has been given the site by professional looters in search of the exquisitely modeled clay figurines for which Jaina is now famous. Much of the island's surface is pocked with holes left by the treasure seekers. These cuts into mounds and through plaza levels provided information on construction and subplaza conditions, as well as a large sherd sample.

The site occupies a slightly elevated east-west ridge which is the most habitable part of the small, swampy, low-lying island. Only a narrow estuary separates it from the also swampy, low-lying mainland. From the sea the island would be indistinguishable from the mainland if it were not conspicuously marked by the archaeological mounds. Several large pyramidal structures face east across a series of courts with lesser units to a high pyramidal mound about 200 m distant. The size of the ancient structures, the sculptured stelae, the number of human burials, and the richness of their furniture point to the importance of Jaina and suggest a relatively large aboriginal population. Yet neither

the island nor the immediately adjacent mainland seems to provide sufficient land suitable for agriculture to support more than a few families. Drinking water probably was available from the same freshwater well which now serves the casual fishermen who make temporary stops at Jaina.

Our knowledge of the environment of this region is superficial, and what facts we possess concerning the ruins and their location can be interpreted in several ways. It would appear, however, that the ancient economy must have been based on fishing, the production of salt, the supplying of sea shells, trade in these products, and commerce in general. Agricultural products, pottery, metates, flint, obsidian, etc. would have been brought wholly or in part from outside sources. The famous Jaina pottery figurines most likely were never manufactured in Jaina, but came by trade from some region such as Tabasco. It is important to note that most Jaina figurines are found in graves. A careful search through the back dirt of earlier excavations and over the surface of the site failed to turn up even a fragment of a figurine. The ceramic material known from Jaina places its major occupation in the Late Classic period. Some activity on the island, may have continued into the Early Postclassic period.

40.5.

A. LEDYARD SMITH AND

KARL RUPPERT

Mayapán, Yucatán

YB 51:243–244, 1952

During the 1952 field season, January 17 to May 1, A. L. Smith and Ruppert continued their surface examination of the ruins of Mayapán [Chapter 40.5]. Squares F, G, H, I, O, P, and R were covered this year [Chapter 40.2]. All structures outside the wall within the limits of the map, in squares so far completed, were examined numbered. In the course of the season's work 1,165 buildings were recorded. These, with the 1,143 examined in 1951, leave approximately one-third of the site yet to be investigated.

Every structure seen was given a number, but only those which are of the dwelling type or those associated with such groups were drawn to scale. The structures examined fall into the general categories established, during the 1951 season. Some variations were found,

but no new types. The recurrence of types recorded during the first season, however, their association with one another in groups, and the distribution of these types in various parts of the city are beginning to show a definite pattern. This pattern will undoubtedly become clearer when the survey is completed and a definitive study has been made.

The location of metates, when associated with structures, was recorded. These utensils usually occur on platforms or terraces and are often re-used in construction. The occurrence of carved-stones and Puuc-type building stones was also noted. The latter are found in some quantity re-used in many of the buildings, their presence predominating in the more elaborate structures.

Though the major part of the season was devoted to the examination of the structures mentioned above, several weeks were spent excavating below the floors and benches of house platforms and associated terraces. Bishop Landa, in his *Relación de las cosas de Yucatán*, mentions that the dead were buried in their houses or at the back of them (Tozzer 1941:130). With this in mind, several types of construction were selected for excavation: long, low platforms and houses with two and three benches. Twenty-two pits were sunk in benches, passage ways, back rooms, and terraces in front of buildings. Masonry-lined cists were found under five benches and two platforms. These varied greatly in construction, from a nicely plastered rectangular chamber with corbelled vault to rough, unplastered compartments filled with rubble. Three of these cists had jambs in one end, indicating an entrance below floor level.

In all cases the cists were built at same time as the structure in which they were contained, apparently in preparation for the interment of the occupants of the house. Only in three of them, however, were human remains present. Little grave furniture was recovered with the burials. In one tomb, where there were two skeletons, two pottery figurines, male and female, were found. These were possibly the idols of the individuals buried, in accordance with a custom mentioned by Landa (Tozzer 1941:130).

Until more excavation has been carried on in house platforms, very little can be said about burial customs of common people at Mayapán.

In all instances the latest-type pottery recovered from any dig was of the Mayapán period. It is interesting to note, however, that in one case (Structure J-49-a) Puuc type of pottery predominated.

A rewarding find was a midden under the east bench of Structure J-50-a. From the pit below this bench a quantity of artifacts was recovered in addition to a large sherd collection. Among the artifacts were worked shell and bone (the latter in the form of awls

and needles), obsidian blades, human teeth perforated for suspension, flint implements, a stone metate leg, a miscellaneous animal and bird bones.

40.6.

WILLIAM R. BULLARD

Boundary Walls of Mayapán

YB 51:244–247, 1952

Work of the previous season at Mayapán disclosed the existence of numerous field stone walls running everywhere among the ruins [Chapter 40.2]. Whereas some walls were obviously of post-conquest construction, others were quite clearly contemporary with the occupation of the site. Because many of the latter appeared to surround house structures, it was thought they might delimit property boundaries. During the season of 1952, all the walls in certain representative portions of the site were followed out and plotted on the map. It was hoped that such a study might reveal with certainty the function of the walls and cast light upon land tenure, city organization, and similar problems. Although stone boundary fences around the houses are a regular feature of modern Yucatán villages, they have not previously been reported from a preconquest Maya site.

The walls were completely plotted in roughly one square kilometer of the site, comprising Squares D and K in the north central part and Squares Z, AA, BB, DD, and EE in the southwestern part (Jones 1951). In addition, other areas of Mayapán were reconnoitered in order to estimate the value of additional work.

The entire site is covered by what seems a maze of stone walls, ranging in age from the occupation of the city to the present day. For many years Mayapán was the site of a Spanish cattle ranch, and stone corrals and enclosures were built throughout the central part of the ruins. Moreover, probably ever since the conquest there has been milpa cultivation within Mayapán, as there is today. Finding plentiful stone at hand in the ruined buildings and walls, the Maya farmers often erect stone fences around their fields, not hesitating to repair and re-use older walls when convenient. Centuries of such destruction and rebuilding have confused to a large extent the ancient wall patterns. Relatively few ancient walls are complete, and in many instances only a few sections could be followed. Event

fragmentary walls could usually be related to house structures, but the complete pattern over a large area was all too often obscured. In this respect, the walls plotted in Squares AA and BB proved most satisfactory, since disturbance in those sections has been relatively slight.

Another perplexing problem was that of distinguishing ancient from post-conquest walls. Technologically there are few reliable criteria that can be applied to tell a post-conquest wall from a re-used and rebuilt ancient wall, or an ancient wall from an old and much damaged post-conquest wall. Thus, although many, indeed the majority, could be identified without difficulty, many others had to be marked as questionable. All walls, both ancient and modern, were plotted, by use of different symbols, in the hope that the pattern followed by a questionable wall would give a clue to its origin.

In construction, the ancient walls are essentially alignments of uncut stones set on edge, either touching or placed a few centimeters apart. The average height is 50–70 cm, but some walls are composed of large slabs up to 1.5 m high. In areas free of post-conquest disturbance, the walls often have smaller stones lying near their base, suggesting that the spaces between the slabs were chinked and filled, but the debris was never enough to warrant the belief that the walls rose substantially higher than the stones now standing.

In nearly all instances the walls partly or completely surround individual dwelling-type houses or house groups. Only rarely is more than one house group surrounded by the same wall. Apparently, almost every domestic structure had a boundary wall. In contrast, temples and public buildings such as colonnades do not seem to have been surrounded by these walls, although further checking is needed to confirm this point. The walls ordinarily enclose only enough space for a small yard around the structures. There are numerous variations, but most enclosures are of fairly simple plan, consisting of a rough circle, or rectangle with rounded corners. The houses may be completely encircled or the walls may abut against a house or terrace corner so that they are only partly enclosed. In the more densely settled districts, where space is limited, the enclosures tend to become more irregular, and two neighboring house groups may share a common wall.

Gateways, consisting of a gap about a meter wide between two large stones, were found only rarely. The location of many has undoubtedly been obscured by the collapse of wall stones or by post-conquest rebuilding. Some enclosures, however, could be entered through larger gaps often formed by the overlap of the two ends of the encircling wall. In a few instances the

enclosure may have been reached by passing through the house itself.

There seems little doubt that the walls mark property boundaries around the houses. Evidently each household or group of families had its own fenced yard. This does not, however, necessarily imply that there was private ownership of land in the modern sense. It is quite possible that property was held only by permission of higher authority. Many yards are sufficiently large and on suitable terrain for the raising of fruit trees and small gardens; others include only the tops of the rocky hillocks which were the preferred house sites but which seem unsuited for horticulture.

Nothing was found in the areas plotted resembling a formal arrangement of streets. Passage through the city was evidently accomplished by winding through the gaps and spaces between neighboring boundary walls. Sometimes, particularly where houses are close together, the parallel walls of adjacent enclosures form short, often meandering lanes average about 2 m in width. In one densely settled region in Square AA a particularly complex system of lanes was discovered.

Cenotes are commonly in the areas between house boundary walls and thus accessible to the general populace, as might be expected.

An interesting feature is the small stone circles, averaging 3–5 m in diameter, which are occasionally found near house groups. Some are almost perfectly circular; others are more oval. There is often no gap which might have served as an entrance.

On completion of the detailed examination of the walls in the squares listed above a reconnaissance was made through other areas of Mayapán. In the eastern part of the site several long lanes were found which, unlike the lanes described above, seem to run independently of boundary walls. The most interesting are in the northern part of Square I, where four lanes converge on a small natural depression with three or four steps leading into it, possibly a blocked cenote entrance. Two of the four lanes are part of a series which could be followed in an almost straight line for nearly 400 m through an area in which houses are rather sparse. Additional work will be necessary to clarify the function of these lanes and their position in the over-all settlement pattern.

As has been mentioned, post-conquest disturbance in the areas investigated has been considerable. Although much knowledge concerning the boundary walls has been gained, present information is not clear enough to answer conclusively such specific questions as those regarding the correlation of size of property with size and elaborateness of the house groups, or the relation of the boundary walls with natural fea-

tures such as depressions which could have been used for growing fruit trees. Disturbance seems, in general, to be somewhat less in the eastern part of Mayapán, and it seems certain that further work there will produce much additional knowledge.

40.7.

EDWIN M. SHOOK

The Great Wall and Other Features of Mayapán

YB 51:247–251, 1952

Shook arrived in Mérida from Guatemala on January 13 and returned to Guatemala on May 18, 1952. The major portion of his time in Yucatán was devoted to researches at Mayapán. These included a detailed investigation of the great wall surrounding the ancient city, the partial excavation of two temples, a brief reconnaissance of the cenotes within the walled enclosure and several outside the wall, and study of Mayapán pottery in collaboration with R. E. Smith.

The great wall of Mayapán, first explored by Ralph T. Patton in 1938 [Chapter 1.27] and later by Morris R. Jones [Chapters 40.1, 40.2] now appears as a ribbon of stone rubble meandering over nine linear kilometers through the low, dry, and exceedingly thorny Yucatán bush. In plan it forms a huge, irregular oval with the sharp end pointing slightly north of east. The wall consists of an outer, higher, primary wall and a lower one built against the inner face. This formed a single wall, very thick at the base and stepped at the top, the lower step being a bench, the higher step a parapet.

This wall, representing a vast expenditure of human labor, was built of rough limestone blocks quarried from the outcrops of bedrock nearest the vicinity of construction. The stone was utilized as it came from the quarry, without further shaping or dressing, and laid without mortar. Parallel lines of large stones, placed either horizontally or vertically, formed the wall's facing and retained the core of dry rubble. Presumably the top of the wall, both the parapet and the bench, was capped with a layer of lime cement, though no evidence of this could be obtained, as no part of the wall's entire length was preserved to its original height. Disturbance by tree roots during the centuries has reduced most of the wall to a low line of stone rubble. A

few parts still stand to an average height of 1.5 m; an occasional section where the wall crosses a low area reaches 2 m.

A total of seven major and five minor passages were discovered at intervals in the great wall, and others may have existed formerly. The uncertainty regarding the original number is due to the breaching of the wall in post-conquest times for roads and trails crossing the site. These openings vary in width, and it is possible that some of them obliterated ancient minor passages. One major and one minor gate of the 12 identified had been blocked with masonry during the occupation of Mayapán. This presumably left the remaining six major and four minor gates in use simultaneously. During the field season all these were examined, though only four major gates and one minor one were excavated intensively.

The minor gates are straight, narrow passages about 1 m wide, their floors surfaced with lime cement. The major ones are distinguished from these by a considerable thickening of the great wall on each side of the gateway and by a more elaborate plan. This consists of an entrance about 2 m wide through the wall's outer part, leading to an amplified rectangular space suggesting a portico but still set within the wall. The portico may have one or two columns placed in line with the inside edge of the wall. The placement of these columns suggests that they may have supported timbers for thatch, if the gateway was roofed. The excavation of the lime concrete floors of the porticoes disclosed no debris from masonry vaults or beam and mortar roofs.

Careful search was made in a large area around the gates and within the passageways for indication of ceremonial activities, guardhouses, arsenals, or warfare. No evidence was found of ceremonial pottery dumps, of guard- or storehouses, or of battles at or in the immediate vicinity of the gates. The pottery and artifacts recovered were exceedingly meager in quantity and widely scattered. On the floor within Gate T, at the southeast extremity of Mayapán, however, were discovered several fragments of a thin gold object and a pellet rattle from a copper bell.

Near the same Gate T and just within the great wall of Mayapán are two structures on the southern side of a large cenote, X-Coton. Both these structures were briefly investigated. The western one consists of a terraced, rectangular substructure about 3 m high with a stairway on the north side leading from the plaza level to a single-room temple above. The latter has thin, low masonry walls, which when built probably stood no more than 50 cm high. The temple walls above this may have been of upright wood poles supporting a thatch roof. In the center of the temple room was a roughly circular shaft extending downward

about 1.5 m into the dry rock fill of the substructure. The shaft had been opened in modern times and its contents disturbed and partially removed. We were able to determine from the residue in the shaft that it had been used as a repository for the ashes and charred bones of cremated adults, children, and animals. Mixed with the ashes and bone were fragments of pottery vessels, incensarios, obsidian flake-blades, and flint chips. Some of the pottery vessels once may have contained the cremated remains; but as all were found broken, it is uncertain whether the breaking had been done by the modern looters or by the Mayapán people at the time of burial.

The second structure located just southeast of Cenote X-Coton and nearer Gate T, was investigated more thoroughly. Here sufficient excavations were carried out to remove the accumulated surface debris from the frontal stairways, the summit terrace, and the temples, and to obtain an accurate plan, section, and elevation of the unit and some evidence of its function. This structure consists of a long, low, rectangular platform supporting twin temples. The temples face northwest, and each has its individual stairway with balustrade leading from the general plaza level to the summit of the common substructure. The twin temples differ only in a few details. Each has a single room with an altar against the center of the back wall. Also, each has low, relatively thin masonry walls built of a few large uncut blocks, many roughly shaped blocks and slabs, and some well cut, faced, and carefully dressed stones. These oddly assorted stones were piled up, rather haphazardly, though apparently bedded in a small amount of mud mortar or mud mixed with lime or limestone gravel. This type of masonry appears to be that used in Mayapán most frequently for walls of buildings and facing of substructures, and may be termed "Mayapán block and slab" masonry. The sporadic occurrence of quite obviously reused, well finished stones among the rougher ones has chronological and cultural implications. These stones are readily distinguished from the others by their form and surface finish. They included wall, vault, and plain or decorated cornice stones, and their original use had been in vaulted buildings whose walls were faced with veneer stones belonging to the Puuc style of Late Classic Maya architecture. Remains in this style point to an older period of occupation at Mayapán, long antedating, we believe, the establishment here of a large, important political center. The people responsible for the later city had lost either the knowledge of architecture possessed by their predecessors, or the desire or the economic ability to equal the quality of the older civic and religious buildings.

It was certain from the shallowness of debris covering their floors that neither of the twin temples had

been vaulted. The northeast temple, the larger of the two, contained extremely little debris and probably had been roofed with thatch. Also, because of the wide breadth between jambs, two equally spaced wooden posts must have served as doorway columns.

The smaller, southwest temple may have had a beam and mortar roof. Its floor was buried beneath about 50 cm of fallen masonry, including what appeared to be roof material. This temple had undergone at least five alterations, each marked by the addition of a new lime concrete floor and minor revisions of the masonry altar against the back wall. All these floors and the successive altars, normally white, were severely burned to a grayish black. The frequent renovations of the temple's interior were required possibly by numerous ceremonial fires which smoked the walls and heavily stained the floors. Many fragments of pottery incense burners were found on the surface of the top floor and on the frontal terrace outside. Quantities of the same material also lay on the floor of the northeast temple, on the stairways, and along the base of the substructure, but only on the floors of the southwest temple was there evidence of burning. Over 50 percent of all pottery recovered from the excavation of these twin temples consisted of fragments of incensarios.

A miniature shrine with a narrow doorway was uncovered, centrally placed, at the base of the northeast stairway. Its thin, low stone walls were constructed partly on the plaza floor and partly overlapping the lower steps. No comparable shrine was found associated with the southwest stairway. Instead, in front and on the plaza level, there were three masonry altars placed on the central axis of the temple. The altar farthest from the stairway was the largest of the three. Though considerably damaged in its exposed position, it appeared to be about 4 m square and 50 cm high. Against the altar's edge, facing the temple, a plain, crudely cut stela still stands in its original position. The middle altar, also square and of about the same height, measured 2 m on a side. The one closest to the temple stairway was originally a single circular stone, plastered over and painted bluish green. This altar underwent several remodelings and in its final stage was square. The evidence of much ceremonial activity in the southwest temple, plus the alignment of three altars and a stela in front of its stairway, suggests that this was the more important of the twin temples.

Some attention was given to the cenotes within and immediately outside the walled area of Mayapán. Altogether, 22 cenotes were studied briefly for the purpose of determining which the Maya had used for water supply and which had associated constructions or contained evidence of ceremonial rites. During this investigation it was learned local informants that each

year, generally in the month of August, the people Telchaquillo hold a rain ceremony at Cenote Itzmal Ch'en, the most easterly one inside the Mayapán wall. Here, 3 km from their homes, secluded beneath several fine shade trees overlooking the beautiful cenote and surrounded by ruined temples and houses of their forefathers, the living Maya still call on their gods of the forest, the winds, the milpas, and especially the rain to aid the young corn to grow strong and produce abundantly. All females and children are excluded from this solemn affair. Each man contributes an equitable share of the money, alcoholic beverages, candles, turkeys, chickens, corn, and other items demanded by the professional shaman, who is hired from the town of Tecoh to conduct the ceremony. The ritual begins at sunrise on the appointed day and continues without interruption until the afternoon of the second day. During this long period no one is permitted to sleep. There is no music or dancing. Everyone present must perform the tasks allotted him by the shaman. Water has to be drawn from the cenote, wood gathered for the many fires, pits dug and stones collected for a special method of baking, food and drink prepared, and so on. The shaman sacrifices the turkeys and chickens, and ceremoniously cuts the fowl into small pieces on a flat-topped, rectangular stone. Some of the food is cooked in pots resting on three stones over an open fire. Other foods are baked; this is done by placing the food on banana leaves laid over preheated stones inside a pit, covered with more leaves, then earth, and allowed to bake for several hours. According to one informant, before the food is eaten it, is blessed by the shaman, who tosses bits of it into the cenote as an offering to the gods. Much drinking accompanies the entire affair.

This ceremony, called *Cha chac*, is directed expressly toward the rain gods to assure that rains will come at the required time to benefit the young, growing corn. The informants stated that it is not just a local custom, but all the neighboring towns and villages practice the ritual. Each community has its own particular place in the forest near their village where the ceremony is held. Only the people of Telchaquillo use the site by Cenote Itzmal Ch'en.

Pottery and artifacts were recovered in varying amounts from all excavations in Mayapán. Discussion of the ceramic material is presented by R. E. Smith, and of the artifacts by Proskouriakoff. Very little pottery trade material came to light during the past season. A type of Fine Orange was the only imported ware that consistently appeared in most of the excavations, though in very small amounts. More widespread trade was evident from the artifacts of stone, shell, and metal. The first included jade, obsidian, and greenstone; the last, gold and copper.

During Shepard's stay in Yucatán two short journeys were made with her to study present-day methods of making pottery. The first trip was to the village of Mama, 18 km south of Mayapán; the second to Maxcanú, a town southwest of Mérida on the railroad to Campeche. At both places samples of the raw materials were obtained and the techniques employed by the potters were observed, with the thought in mind that the clays, tempers, and methods still in use might be similar to those found in the preconquest pottery of Mayapán. The Maxcanú potters stated that their tempering material was quarried locally, but clay had to be brought in by trade from a source near Becal and Tepakan. The potters from the latter towns obtained tempering material from Maxcanú.

Another of the Department's research objectives in Yucatán is the study of archaeological sites occupied at the same time as Mayapán. Historical sources indicate that most of the contemporary towns in northern Yucatán were subject to the political authority of Mayapán. How closely the remains of such towns conform to those of the capital is not known. Certain features such as house plans and grouping, types and architectural style of public buildings, styles of sculpture, pottery, and other artifacts may often be observed without excavation. These data serve to indicate with some degree of accuracy the conformity or nonconformity with the type site.

Reports of ruins obtained verbally from the local inhabitants were investigated whenever possible. Those in the environs of Mayapán received more attention during the past season than sites elsewhere in of Telchaquillo, the peninsula. The ruin over which the modern town is built, are 2 km north of Mayapán. Some of the house mounds scattered around Telchaquillo have plans similar to those of Mayapán, but other house mounds and the larger ceremonial structures appear to predate those of the type site. Just 2 km due south of Mayapán a minor group of ruins surrounds Cenote Mateyac, and these belong to the Mayapán Period. At Cenote Itzimkan, 6 km to the northwest, there is another site, the architecture and pottery of which indicate occupation, perhaps continuously, from the Classic through the Mayapán Period.

Mr. Lawrence Roys and Shook returned to the ruins of Aké [Chapter 1.40] and spent three days in further study of this important site. The combined results of their investigations will be published in a forthcoming report. An outstanding discovery pertaining to this site and to Izamal was made by Sr. Victor Segovia, of Mérida. Acting on our suggestion, he undertook the difficult task of following the ancient roadway, or *sacbé*, from Aké to Izamal, a distance of approximately 32 km. He thus confirmed the previous surmise that the great road connected these sites. Along the way Segovia

noted two previously unreported ruins, Xemná, and Sitpach. Xemná, a site of 20 or more mounds, 7 km east of Aké, was connected with the ancient highway by a branch sacbé 9 m wide, even though the ruins lay only 150 m to the north. Farther east, on Hacienda Muycuyche, was the minor site of Sitpach, consisting of a few scattered mounds along the south edge of the sacbé.

40.8.

ROBERT E. SMITH

Pottery of Mayapán

YB 51:251–256, 1952

During the first month of the 1952 field season, R. E. Smith completed the selection of Yucatán sherd collections to be sent to various institutions in Mexico, Guatemala, and the United States [Chapter 1.40]. These collections include wares and types classified on the basis of descriptions by Dr. George W. Brainerd and R. H. Thompson. They contain material from Acanh, Chichén Itzá, Cobá, Dzibilchaltún, Holactún, Kabah, Labná, Maní, Mayapán, Oxkintok, Sayil, Uxmal, and Yaxuná.

The greater part of the season was spent in investigating Cenote X-Coton, in the southeast corner of Square T at Mayapán [Chapter 40.2]. This location was selected because of the apparent importance of the cenote in prehistoric times. The position of two ceremonial structures and a major-gateway in the city wall in relation to the cenote, as well as the presence of artificial constructions on the floor of the cavern, suggested that the erstwhile inhabitants of Mayapán laid considerable stress on this natural feature.

X-Coton is a jug-shaped cenote with a banana grove on the stretch of floor that lies below the rather large, circular opening. The opening is eccentrically located over the southern part of the cavern, the northern part being roofed by natural rock. The cenote is, or was in ancient times, a source of water.

Of particular interest and prominence was a platform, more or less centrally located on the floor of the cenote, approximately under the northern edge of the opening. This wedge-shaped structure was mounted by a stairway at the narrow western end, the blunt eastern end being rounded. To the north of the platform there descended to a lower level an artificially

constructed stairway, almost completely covered by dirt and bat dung. This refuse was cleared away, revealing 18 steps and a clear pool of water at the bottom.

The platform, presumably ceremonial in function, was cleaned and tested but not completely excavated. A trench dug to bedrock at the eastern end of the structure revealed the fact that the foundations were of large and medium-sized stones that included a small amount of pottery of both Puuc and Mayapán Periods (Table 40.8.4, D-4, D-5, D-6, D-18). These foundations rested on a leveled fill of dirt nearly 1 m deep that also contained Mayapán and Puuc Period sherds, and a sizable representation of Classic Period and Regional Polychrome pottery (Table 40.8.4, D-8, D-11, D-15, D-16, D-17).

Neither from the trench east of the platform nor from a pit sunk in the floor of the cenote at the center of the banana grove (Table 40.8.4, D-10) did chronological stratigraphy materialize. At all depths there occurred Mayapán Period sherds mixed with those of the Puuc. Surface sherds were collected throughout the cenote to a depth of 10 cm (Table 40.8.4, D-2). These, as might be expected, were largely of the Mayapán Period.

During the gathering of the surface sherds, two natural recesses, or niches, in the wall of the cenote were encountered and excavated. This resulted in the discovery of a sculptured stone dog and run-of-the-mill pottery in one niche (Table 40.8.4, D-20) and a sculptured squatting human figure associated with a large quantity of censer fragments in the other (Table 40.8.4, D-9).

Four caves were noted during the examination of Cenote X-Coton. These occur as subsidiary caverns in the peripheral wall of the cenote. Only two could be excavated, the others being either too narrow or too shallow for anyone but a small child to enter.

Cave 1 was the more interesting. It had been used for what appeared to be secondary burials, possibly in pre-Mayapán Period times. The cave was deep, extending down to water. The lower section was filled with small and medium-sized rocks. Above this, skeletons were found along with many broken vessels of both coarse and fine wares, most of which were of the Puuc Period style, but an appreciable percentage of which were Classic Period and Regional Polychrome (Table 40.8.4, D-7). A single whole vessel of medium paste slate was recovered. Since it is presumed that the skeletons together with their pots were added at different times, rocks being tossed in to cover them, it is not surprising that the bones were spread over the cave and the pottery was smashed. The action of dripping water of high lime content tended further to obscure the picture, since it cemented the bones to one another and to the rocks.

A small percentage of Mayapán Period sherds was found mixed with the rest of the pottery and bones. No very satisfactory explanation for the presence of these late sherds has been advanced. It is, of course, possible that one or two Mayapán Period individuals were buried there. Actually, the arm bones of one skeleton, just below the top stones, appeared to have been articulated, suggesting that the last burial was primary.

Cave 2 was of less interest. It harbored a few sherds (Table 40.8.41, D-14), mostly of the Mayapán Period, and a single skeleton in poor and fragmentary condition. This cave was like Cave 1 in containing a layer of small and medium-sized stones below which the sherds and skeleton were found. It differed, however, in having a deep carpet of bat dung. No bats were noted in Cave 1, but they occurred in great numbers in the second cave.

An analysis was made collected from house platforms by Ruppert and A. L. Smith (Table 40.8.1). Twenty-six platform cuts resulted in only 3,628 sherds, an average of about 140 sherds per cut. Two major ceramic periods were indicated, the later and the more abundant (92.6 percent) being the Mayapán Period, the earlier (4.5 percent) the Puuc Period. Elements of two other ceramic periods were present: the Classic Maya, represented by Regional Polychrome (0.03 percent), and the Toltec, exemplified by Fine Orange and Plumbate Wares (0.53 percent). Only two Plumbate sherds were found at Mayapán, whereas there were 83 specimens of Fine Orange, mostly of a new Mayapán type but with rare occurrences of X and Z.

The excavation that produced the purest Mayapán Period remains was made in Structure J-50-a, where, save for one Fine Orange body fragment, all sherds belonged to the Mayapán Period (Table 40.8.1, A-13). This cut penetrated a midden which contained, besides pottery, all sorts of bone, shell, obsidian, and stone implements and ornaments. Only one excavation in a house platform yielded a greater percentage of Puuc than of Mayapán Period pottery (Table 40.8.2, A-12). This was in Structure J-49-a. The entire platform had an unusually large percentage (404) of Puuc Period sherds. It would seem from the limited information so far available that house platforms at Mayapán normally were late constructions containing Mayapán Period sherds in the fill. When Puuc Period, pottery is the more abundant, as in the above instance, a nearby refuse dump or occupation area of that period is indicated.

On the suggestion of Ruppert and A. L. Smith, a trench was cut into the north side of Structure J-49-b, a house platform. The trench advanced at bedrock level, encountering first the north terrace wall, then a rough retaining wall, and finally ending against a plastered tomb without skeleton or furniture. There being no

obvious strata, three more or less arbitrary levels were maintained throughout the trench. The ceramic findings in these levels and between walls did not vary appreciably (Table 40.8.1, A-6, A-7, A-11, A-18, A-19, A-20), the percentages of sherds from all the cuts being as follows: Mayapán Period, 95.7, Puuc Period, 2.1, Unidentified, 1.4, Fine Orange, 0.8. Thus, our attempt to find significant stratigraphy was not successful.

A tabulation by periods or wares of the pottery from four city gates and from several ceremonial structures excavated by Shook is included in Table 40.8.2-3. Two cuts associated with Gate T produced unusually high percentages of Puuc Period sherds (Table 40.8.2, B-4, B-5), whereas the ceramic material; (over 50 percent censers) from the nearby ceremonial structures is preponderantly Mayapán Period (Table 40.8.3, C-2, C-3, C-5).

The work of the past season at Mayapán leaves us with an intriguing ceramic picture and a serious problem. So far there is every indication that two major ceramic periods existed at the site: the Puuc and the Mayapán. Just where the Puuc-style pottery fits into the chronological sequence is not clear, owing primarily to the lack of recognizable stratigraphy and to the fact that Dr. G. W. Brainerd's extensive study of peninsular ceramics is not yet available. Together with the Puuc Period pottery are frequently found types called by Brainerd Regional Polychrome. This pottery is the same macroscopically as that found in the Petén in both the Early and Late Classic Periods, but more often in the Early Classic. Fine Orange sherds, some 83 in all, plus two Plumbate fragments, suggest a Toltec horizon, although the chronological implications of the former ware are still far from clear. If Mayapán had been occupied in Toltec times, however, there should be more wares than Fine Orange and Plumbate to represent that period. Is it possible that a portion of the seemingly Puuc-style pottery is actually of Toltec Period, or should certain Mayapán Period ceramics be assigned to Toltec times? The latter seems the more likely, but much investigation is necessary before the situation will be clear.

Table 40.8.1. Sherd Counts at Mayapán House Platforms, 1952 Season.

<i>Cut</i>	<i>Mayapán Period</i>	<i>Puuc Period</i>	<i>Classic Period and Regional Polychrome</i>	<i>Unidentified</i>	<i>Fine Orange</i>	<i>Plumbate</i>	<i>Formative</i>	<i>Total</i>
A-1	76	—	—	—	—	—	—	76
A-2	189	7	—	3	2	—	—	201
A-3	75	—	—	—	—	—	—	75
A-4	35	—	—	—	—	—	—	35
A-5	233	—	—	18	1	1	—	253
A-6	42	1	—	3	1	—	—	47
A-7	162	—	—	2	—	—	—	164
A-8	45	10	—	—	—	—	—	55
A-9	87	—	—	11	2	—	—	100
A-10	34	2	—	—	—	—	—	36
A-11	165	2	—	—	—	—	—	167
A-12	34	82	—	5	—	—	1	122
A-13	775	—	—	—	1	—	—	776
A-14	31	—	—	—	—	—	—	31
A-15	174	—	—	—	1	—	—	175
A-16	205	—	—	7	1	—	—	213
A-17	118	—	—	2	—	—	—	120
A-18	398	16	—	9	8	—	—	431
A-19	155	1	—	—	—	—	—	156
A-20	182	4	—	2	—	—	—	188
A-21	3	—	—	—	—	—	—	3
A-22	65	32	—	2	—	—	—	99
A-23	26	—	—	—	—	—	—	26
A-24	14	8	—	4	—	—	—	26
A-25	34	—	1	—	—	—	—	35
A-26	—	—	—	18	—	—	—	18
<i>Total</i>	3,357	165	1	86	17	1	1	3,628
<i>%</i>	92.6	4.5	0.03	2.3	0.5	0.03	0.04	—

Table 40.8.2. Sherd Counts at Mayapán City Gates, 1952 Season.

<i>Cut</i>	<i>Mayapán Period</i>	<i>Puuc Period</i>	<i>Classic Period and Regional Polychrome</i>	<i>Unidentified</i>	<i>Fine Orange</i>	<i>Plumbate</i>	<i>Formative</i>	<i>Total</i>
B-1	238	3	—	64	—	—	—	305
B-2	88	7	—	36	9	—	—	140
B-3	134	—	—	—	—	—	—	134
B-4	41	36	—	9	—	—	—	86
B-5	54	34	1	28	—	—	—	117
<i>Total</i>	555	80	1	137	9	—	—	782
<i>%</i>	71.0	10.2	0.1	17.5	1.2	—	—	—

Table 40.8.3. Sherd Counts at Mayapán Ceremonial Structures, 1952 Season.

<i>Cut</i>	<i>Mayapán Period</i>	<i>Puuc Period</i>	<i>Classic Period and Regional Polychrome</i>	<i>Unidentified</i>	<i>Fine Orange</i>	<i>Plumbate</i>	<i>Formative</i>	<i>Total</i>
C-1	179	5	—	28	4	—	—	216
C-2	472	16	—	66	—	—	—	554
C-3	1,185	88	1	85	5	1	—	1,365
C-5	56	—	—	—	—	—	—	56
<i>Total</i>	1,892	109	1	179	9	1	—	2,191
<i>%</i>	86.3	4.9	0.1	8.2	0.4	0.1	—	—

Table 40.8.4. Sherd Counts at Mayapán Cenote X-Coton, 1952 Season.

Cut	Mayapán Period	Puuc Period	Classic Period and Regional Polychrome	— Unidentified	Fine Orange	Plumbate	Formative	Total
D-1*	3	—	—	—	3	—	—	6
D-2	2,014	214	8	18	—	—	1	2,255
D-3	516	63	6	9	2	—	—	596
D-4	267	142	8	1	2	—	—	420
D-5	588	78	4	—	—	—	—	670
D-6	614	213	10	29	3	—	—	869
D-7	49	1,049	165	30	—	—	—	1,293
D-8	29	18	60	57	—	—	1	165
D-9	785	127	3	—	—	—	—	915
D-10	52	30	2	14	—	—	—	98
D-11	25	—	—	11	—	—	—	36
D-12	2,080	37	9	716	34	—	—	2,876
D-13	790	235	21	343	3	—	—	1,392
D-14	125	9	—	13	—	—	—	147
D-15	5	13	4	6	—	—	—	28
D-16	11	3	4	6	—	—	—	24
D-17	22	5	—	47	—	—	—	74
D-18	54	23	5	6	—	—	—	88
D-19	95	1	—	143	1	—	—	240
D-20	273	32	—	33	—	—	—	338
Total	8,397	2,292	309	1,482	48	—	2	12,530
%	67.0	18.3	2.4	11.8	0.4	—	0.1	

* In natural sink in Square K.

40.9.

TATIANA PROSKOURIAKOFF

Sculpture and Artifacts of Mayapán

YB 51:256–259, 1952

Although according to native histories Mayapán was “founded” by the hero Kukulcan, whose name is associated with the cult of the feathered serpent, even from surface remains it is clear that in fact city is older, and that long before its reputed “founding” it was occupied by a people with traditions like those of the Puuc. No building of this earlier period has been identified, but everywhere, in surface debris and built into walls of a cruder masonry, one can find accurately cut and smoothly faced stones, as well as, carved elements of decoration almost identical with those of the most elaborate buildings at Kabah and Uxmal. These stones are cut from carefully selected, smooth, hard limestone, and the relief of their carving is still sharp and clear. There are elements of masks and carved moldings, spools, crosses from the lattice motif, and other forms familiar in the Puuc. In addition, there have been found

three excellently carved human heads, distinctly Maya in their features, and designed to be tenoned into masonry construction.

Fragments of stelae with inscriptions, of which there are several, also probably belong to this earlier period. Dates have been suggested for some of them, but none are sufficiently legible to merit acceptance. On the other monuments, apparently similar in design to those with inscriptions, glyphs are blocked out but left blank of detail. Stela 1, now in the hacienda at Xkanchakan, is the only low-relief stela on which figures can still be made out. In design it differs from Classic Maya monuments. The relief is flat, the detail is executed in lines only, and the composition is divided into panels, one containing glyph blocks, and the other an arrangement of figures suggestive of a scene from a codex. The largest stela of this type lies at

the base of a round building on the east edge of the main ceremonial group. It is carved of very poor limestone filled with fossil inclusions of shell; its position, the choice of poor material, and the omission of glyph details raise the question whether the stela cult did not still survive in the later period of Mayapán.

Most of the monuments associated with the late remains are carved of the same coarse-grained, shell-filled limestone, which erodes unevenly, so that much detail is lost and the original quality of the carvings is difficult to judge. As a group, these sculptures are different from any other known group in Yucatán. So far, no attempt has been made to define the style or to trace its antecedents. The work this season consisted mainly in completing and supplementing the record previously made by Andrews [Chapter 15.5] and others of the sculptures, which are concentrated in the main ceremonial group. In the course of this work, the remains of a very low round platform with rectangular additions were discovered in the plaza north of the Castillo. A number of carved monuments and fragments of plain stelae were scattered on and around this platform.

Certain features of late sculpture at Mayapán derive from the Toltec tradition. Among these are carved serpent columns and banner holders in the form of squatting figures. The serpent columns are more crudely executed than those at Chichén Itzá. The shaft is plain, and the heads of the serpents are separate elements. The design was probably finished in stucco. The banner holders are animal figures, with heads turned sharply to one side in the manner of Chacmool statues. No Chacmool has been found, but perhaps this is not significant, for at Chichén Itzá they were often buried in construction. Mayapán, however, clearly lacks the rich low-relief carvings of warriors, priests, and processions, and the carved altars and Atlanteans that distinguish Chichén Itzá. Two low-relief figures of monkeys, found on a mound outside of the main group are of crude workmanship. A very late date is suggested for them by what looks like the Mexican sign *tecpatl*, a flint knife with the features of a skull, behind one of the monkeys.

The principal carvings of the Main Group are figures of somewhat less than life size, in full round or in three-quarters relief. Though some are carved on all four sides, they tend to retain a block-like character, with stronger modeling on the front and sides than on the back. A number have round depressions on top of the headdress. Other figures have a tenon extending part way up the back, as if they were set into masonry. One such figure was found on top of a mound in a position which implied that it once stood in a shrine. These figures are clearly not stelae, nor can they be regarded merely as elements of architectural decoration. They may be the idols which Kukulcan is said to

have introduced into Yucatán in late times. Several squatting figures resemble in a general way the numerous idols of Mexico, and one excavated in Cenote X-Coton is undeniably an idol. The eroded condition of most of the figures precludes a detailed study of their dress and accouterments, which otherwise might furnish a clue to their origin or stylistic affiliations. Both Maya and Mexican traits can be recognized in the surviving detail, but there is not enough to define a complex of traits.

Several other forms seemingly peculiar to Mayapán were observed, but because of the very poor condition of the sculptures found on the surface, a full description is postponed in the hope that future excavations may bring to light better-preserved examples to enable us to classify and evaluate the material more fully.

Any sound appraisal of the sculpture of Mayapán is further hindered by our very imperfect knowledge of the history of sculpture elsewhere in Yucatán. Architectural and ceramic studies indicate that there was a strong and uniform tradition centered in the Puuc region, which at one time spread widely over the northern Maya area. This condition does not seem to be reflected in figure sculpture, which shows bewildering variability. Without a basic chronology of styles to which one can refer, untangling the complex maze of influences and relationships which the Yucatán material implies is a formidable, perhaps an impossible, task. At present, studies limited to variations within definable types or styles of sculpture offer more chance of success than does an attempt to cover the whole field. A classification of mask elements and other architectural motifs, with particular reference to the technique of carving and assemblage, may help us to relate the earlier occupation of Mayapán specifically to individual sites and possibly to a limited period in the Puuc style. A start at gathering together such material was made last fall. A similar study of serpent heads may also prove worth while.

A broader, field of interest can be served by a comprehensive study of the low-relief sculptures at Chichén Itzá. Although this is the best-known body of sculpture in Yucatán, many of the reliefs remain inadequately recorded, and the material has never been studied as a whole. The absence of comparable sculpture at Mayapán poses interesting questions in regard to the chronological and cultural relations between the two cities. Once the chronology is established through ceramic and architectural sequences, the sculpture of Chichén Itzá may become a more valuable source of data on the ethnography and history of Mayapán than are its own inferior sculptures.

The first *desideratum* is a more complete record than we now have of all exposed low reliefs at Chichén Itzá, particularly those depicting human activities.

With a view to determining whether a project to obtain such a record is feasible, and what work and equipment it would involve, Pollock and Proskouriakoff spent several days at the site listing sculptures of which it is desirable to have photographs. The estimate of the number of negatives necessary to cover unrecorded or poorly recorded sculpture is approximate, since this number depends on the type of equipment used and the degree of success in obtaining good lighting for extended areas. About 1050 negatives was estimated as the minimum needed to cover the material actually examined. To this should be added perhaps another 100 for sculptures in several outlying structures which were not visited, and a margin for duplication and spoilage. Many of the subjects require night photography with artificial lighting. In a small number of cases, the use of scaffolding seems necessary.

In addition to the bas-reliefs, there are many figures of Atlantean type at Chichén Itzá not thoroughly recorded. These, being more formal in design, offer fewer ethnographic data. Of more immediate relevance to our studies are minor full-round figures, which have largely escaped attention. It is possible that among aberrant and eroded figures at Chichén Itzá and in the Puuc there are some comparable to the Mayapán idols. A systematic search for them would hardly be advisable at this time, but a review of the known material in the light of what is found at Mayapán may give evidence of late occupation where we do not suspect it.

More than 200 artifacts from Mayapán were catalogued this season. Some came from, a surface collection made by Morris in previous years, many more were gathered by Bullard this year, and others were found in excavations. Among the artifacts are a number of tools of native limestone, most of them articles of household use, others, such as stones for smoothing plaster, being the implements of artisans in building and other trades. There were 83 chipped flints of various forms, differing widely in quality of workmanship. Most were coated with a deep white patina. Among the specialized forms were two sacrificial knives like those recovered from the Sacred Cenote at Chichén Itzá, a number of small hatchet-form and triangular tools of unknown function, and a variety of knives and projectile points. Two very small points may have served as arrowheads, but the only arrow point of specialized form so far recovered was a small, delicately chipped point of obsidian, excavated by Shook.

Obsidian occurred in quantity, mostly in the form of thin flake-blades. Its color is translucent gray, often heavily streaked with a darker tone. A used core intimates that the material was imported unworked, and that the flaking was done locally. Most common among other artifacts of imported stone were small polished celts of dark greenstone. Several jade beads and an ex-

quisitely carved small pendant in the form of a human head were discovered by Shook in his excavations.

Other materials included pottery, shell, bone, antler, and coral. Perforated teeth, both animal and human, were apparently used in necklaces. Several very small flakes of gold and a tiny ball of copper, probably from a bell, established the presence of metals. The collection is still too small to represent the whole range of artifacts we may expect to find at Mayapán. The present material, therefore, after being catalogued and, in part, photographed, was stored for future study.

40.10.

KARL RUPPERT AND
A. LEDYARD SMITH
Mayapán, Yucatán

YB 52:256–257, 1953

The greater part of the 1953 field season, January 16 to May 10, was spent by Ruppert and A. L. Smith at the ruins of Mayapán. Although most of their time was occupied with the continuation of their surface examination of the ruins, started in the 1951 field season and carried on through 1952 [Chapters 40.3 and 40.5], several weeks were devoted to excavation at Mayapán and exploration at three large sites in the Puuc region of Yucatán.

During the season Squares Q, S, T, W, X, BB, DD, and FF were covered, leaving Y, Z, and AA still to be done to complete the surface examination (Jones 1952). This year 1,019 buildings were inspected. With the 2,308 structures examined during the two previous seasons, this leaves about one sixth of the site still to be examined. Following the system used in the earlier field seasons, all structures were given numbers, but only those of the dwelling type, or those associated with groups of the dwelling type, were drawn to scale. No new type of dwelling was found, but when a particularly interesting building or group was encountered it was noted for possible future excavation. The presence of house-type structures in the main ceremonial group, a custom thus far unreported in the ceremonial sites of the southern area of the Maya, is of interest. It may be that they are late constructions.

Again this season the location of metates and the presence in buildings of stones typical of those used in Puuc architecture were recorded. The common metate found at Mayapán has no legs; several fragments of metates with legs were found, however, in excavations in the fill of structures. These metates were invariably of volcanic stone, which is not native to Yucatán, thus marking them as imports in the area.

Three of the larger houses with three passageways leading from the front room to the back room were chosen for excavation, and pits were sunk in the benches, passageways, and front and back rooms. Two of these houses each had a shrine room behind the center of the otherwise back room. In one structure there were two subfloor chambers. A stairway led down from the front room to a small antechamber leading into the main subterranean room, which had a bench along the wall opposite the entrance. Both chambers were roofed with corbelled vaults. Unfortunately these rooms had been robbed at some earlier date and nothing was found in them. There is little doubt, however, that they were built for burial purposes. In one of the other two houses, four skeletons were found buried in the fill under the floor of the central passageway; in the other, the skeleton of a child was found in the fill under the central passageway, parts of three skeletons below the floor of the back room in line with the central passageway, and eight under the floor of the shrine room.

Another structure excavated was a shrine located near the center of the court before one of the three houses mentioned above. It originally was a small single-room building with a doorway facing west toward the principal structure of the group. Later another room, or shrine, was added to its south side. The latter had an entrance at the south, facing a stairway leading from ground level to the elevated terrace that supported the group. Both shrines had secondary benches against their back walls. A pit through the bench and floor of the north room uncovered a small, roughly rectangular tomb built of stone and covered with three stone slabs, and containing a single skeleton.

Little grave furniture was found with the burials uncovered. In one instance a pottery figurine of a woman was unearthed. All the pottery recovered from the various pits dug included sherds from the Mayapán period. A trench off the side of one group disclosed a fair amount of midden material, as did one of the pits sunk through the floor of a house. The finding of a good number of fragments of human effigy incensarios in the shrine room at the back of one of the houses suggests the practice of worshiping household idols. An interesting find was a small stone head of Olmec style under the floor of the shrine mentioned above.

At the end of the season several weeks were spent at Uxmal, Kabah, and Sayil investigating, house-type structures. Through the kindness of Dr. Alberto Ruz Lhuillier, Ruppert and Smith were able to stay at the archaeological quarters of the Instituto Nacional de Antropología e Historia at Uxmal. At that site 33 houses were examined and drawn to scale. At Kabah and Sayil the availability of maps by Shook greatly aided, the work. Fourteen structures were drawn to scale at each site. The houses at all these sites, as at Mayapán, were found associated with ceremonial groups as, well as away from them. With the exception of a type of long single-room building with a bench around three sides, at Uxmal, they differed in plan from the Mayapán house structures. The Puuc dwellings are single-room buildings, each with a doorway in one wall, or structures of a series of adjoining single rooms each with its separate doorway.

At Uxmal a portal vault, hitherto unreported, was discovered about 3 km south of the great pyramid known as the Adivino.

40.11.

WILLIAM R. BULLARD

Property Walls at Mayapán

YB 52: 258–264, 1953

Most of the 1953 season was spent in continuing the study of the property-wall system at Mayapán [Chapter 40.6]. Complete plots were made of the walls in Squares H, and Q [Chapter 40.2]. In addition, other parts of the city, previously unvisited, were reconnoitered. Several small excavations were undertaken in order to investigate certain features of the walls and related structures which were not apparent from surface observation.

At the close of the 1952 season, it was concluded that further plotting would be, desirable in order to give a more adequate sample of the complete wall pattern over a wide area (Bullard 1952). Squares H and I in the eastern part of Mayapán were selected because there was apparently relatively good preservation of the walls in this region. Moreover, these squares contained other features of special interest. The Itzmá Ch'en ceremonial group in Square H offered an opportunity to study the wall pattern as it related to structures of clearly nonresidential function. In Square I,

the presence of certain long lanes, which seemed to run independently of the house property walls, required detailed investigation.

As expected, a reasonably clear wall pattern was obtained for the two squares. There was abundant confirmation of the principal conclusions of last season's work. Nearly every house or house group was surrounded by a stone slab or boulder wall. The dwelling unit thus surrounded could in almost all instances be anticipated from the map of the ruins. An isolated house structure, for example, would generally have its own walled enclosure, as would a group of two or three individual house structures standing in close association with each other, usually on a common terrace. Although variation occurred, the enclosures most often were roughly circular or rectangular in plan and included only enough area for small yards around the houses. There seems little doubt that the walls actually did mark the boundaries of the properties belonging to the houses. Where house properties were close together, there were often narrow lanes, formed by neighboring property walls, which provided routes of access. Gateways could be identified only rarely. Probably most were simple, narrow gaps that have been obscured by subsequent toppling of the wall stones.

Little new information was obtained concerning the construction of the walls. The bases of several walls standing in relatively deep soil were cleared. It was hoped that the accumulated soil might have preserved some feature of construction that would otherwise have been destroyed, but nothing new was discovered. Construction was of the simplest. The slabs and boulders forming the walls were merely tilted upright and braced with smaller stones as the nature of the terrain or the shape of the stone required. The stones averaged about 50 cm to 1 m in height, 40–80 cm in length, and 30–40 cm in width. The interval between the large stones were in most instances probably chinked; sometimes debris is sufficient to suggest that the wall may have been carried up slightly higher than the stones now standing. Some of the debris surrounding the bases of the walls is probably the result of spalling caused by milpa fires.

During the wall plotting certain very fragmentary sections of wall were encountered which seemed to make little or no sense in terms of the over-all wall pattern of the area in which they occurred. A number were found near the northwest corner of Square I in an area which also included the poorly preserved remains of several small house platforms. Yet in close proximity to those poorly preserved platforms and walls were several well preserved houses and property walls. It seems possible that the destruction took place in ancient times and that certain structures and walls were robbed of stone for use in nearby houses.

No ancient walls are associated with the ceremonial buildings at Itzmal Ch'en. A wall circled around the southern half of the cenote opening, but the area around the ceremonial group, from the cenote to the gate in the Great Wall east of Itzmal Ch'en, was evidently free of walls. Except in three instances, house groups bordering this area had property walls. These three are not distinguishable in either size or construction from the common run of houses throughout Mayapán, but their unusual lack of property walls, coupled with their proximity to the ceremonial center, suggests that they served some special purpose in connection with the center.

Of particular interest were the two long lanes running east-west across Square I. They are formed by two parallel walls about 2 m apart, and in appearance resemble the shorter lanes often formed by adjacent property walls. They are unusual because of their great length and because, in the main, they seem to run independently of house property walls. An occasional house, however, may use a section of lane wall to mark one side of its property. The northern lane, discovered during the 1952 season, starts near the west edge of the square and continues eastward for 400 m, coming to an end about 100 m southwest of Cenote Itzmal Ch'en. The southern lane winds across the square in southwest-northeast direction and joins with the northern lane a short distance before its eastern terminus. Both lanes tend to follow low areas and seem to be laid out so as to avoid already existing house properties, a fact suggesting that they are relatively late constructions.

The location and direction of the lanes suggest that they served as through routes to Cenote Itzmal Ch'en and its nearby ceremonial group. The eastern terminus is only a short distance from this large cenote and there are no intervening walls to impede passage. The western terminus of each lane seems to be near the west edge of Square I. Attempts to trace these lanes in the adjoining square farther to the west were unsuccessful.

A test trench across the northern lane at a point where it crossed a low area with relatively deep soil revealed a pavement composed of unshaped slabs and small stones. Since this area would be very muddy in wet weather, the pavement was undoubtedly intended to provide a dry footing. For much of their length the lane walls are set directly on bedrock.

A few short lanes branch off from the two long ones. At least one short lane leads to the stairway of a nearby house group, and another may do so. Near the center of the northern long lane, two shorter lanes converge from north and south, respectively. At their junction is a small cave with steps leading into it. On investigation this proved to be the entrance to a cenote

which had been blocked within recent times, presumably by local farmers. The entrance was cleared and a natural passageway, in which stone steps had been laid, was followed to water. The lane leading south from this cenote joins with the southern long lane; the one leading north could be followed only about 60 m. The association of the cenote with a lane junction is good indication of its importance as a water source for this part of Mayapán.

In an attempt to gain further information concerning the relation of the property walls to ceremonial and public buildings, and also to see if there was a different pattern of walls around house structures located close to the principal ceremonial group of Mayapán, a complete plot was made of the walls in, Square Q. The results of much of this work were disappointing. Square Q is covered by a network of walls of unquestionably post-conquest origin, and the ancient walls were found to be so fragmentary that little in the way of a coherent pattern could be determined.

The great number of modern walls attests the intense farming and ranching activity to which this part of Mayapán must have been subjected from the colonial era on. The size and shape of the enclosures made by many of these walls suggest they were milpa boundaries; others were evidently cattle enclosures connected with Rancho San Joachim, located in the northern part of the square. The modern walls were laid with no regard for the location of ruined buildings. Nearly every modern wall crosses ruins; some even cross large temple structures of the Main Group. This entire group and a considerable area about it are boxed in by the high wall of a large cattle enclosure which was part of the ranch. Since this wall cuts through a number of other post-conquest walls; must be of relatively recent date.

The construction of so many modern walls is the principal reason for the fragmentary condition of the old property walls. Stones were taken and the direction of old walls altered when they were incorporated into later walls. Very likely parts of some old walls were demolished because they interfered with the uses to which the modern enclosures were put. Although the complete pattern of the property walls in Square Q cannot be reconstructed, certain important conclusions can be reached from study of the remnants of those walls. Thus, with certain exceptions to be considered below, the Main Group is free of property walls. Excavations there have disclosed occasional low walls of shaped stones which apparently mark the limits of plazas or ceremonial precincts, but these do not seem comparable either in construction or in function with the rough boulder and slab walls which are omnipresent throughout the residential areas of Mayapán. From these data together with those from Itzmal Ch'en and the small ceremonial group at Cenote X-Coton, it

is safe to conclude that the temples, shrines, colonnaded halls, and other clearly ceremonial or public buildings of Mayapán did not have what we are calling property walls. The latter seem to be almost exclusively associated with residential buildings.

Outside the Main Group proper, Square Q contains a dense concentration of ruined buildings. Many are ordinary house structures of the type found everywhere throughout the city. There is also a liberal scattering of groups which are larger and more elaborate and where we suspect the more important residents of the city lived. Remnants of property walls occur throughout this presumed residential area. It was hoped that some correlation could be made between property-wall patterns and elaborateness of house groups, but the fragmentary condition of the walls rendered this impossible. From data collected elsewhere in Mayapán, there are suggestions that some of the larger groups may not have been enclosed completely by property walls, but may have been only partly surrounded.

It was noticed, particularly in the south part of Square Q, that as one approaches the Main Group remnants of property walls become scarcer. Many house groups, both simple and elaborate, have no trace of property walls. It is improbable that this is due entirely to post-conquest wall building. There are no more modern walls near the Main Group than at the peripheries of the square. Moreover, it is unlikely that every trace of an ancient wall would be destroyed; at least some the larger stones should remain. In fact, a few relatively long sections of ancient wall are preserved in close proximity to large modern walls. All in all, it appears that many houses near the Main Group had no property walls. Furthermore, the scantiness of the wall fragments that do remain suggests that the pattern of property walls and the function of apparently residential structures in this part of Mayapán may have been somewhat different from that found throughout the most of the city.

A notable feature of Square Q is the dense concentration of buildings. House structures are found immediately outside the plazas and courts of the main ceremonial group. Most of them are of the simpler types of Mayapán house construction. Perhaps many were the quarters of caretakers or attendants who worked in the Main Group. A few, however, are so located as almost to suggest a late encroachment of house structures into primarily ceremonial areas. One example, Structure Q-91, is located on the north edge of an area otherwise surrounded by colonnaded halls and temples. South of this structure is a segment of wall, seemingly part of a property wall belonging to the house, which arcs through part of the area and further suggests encroachment.

Another small house structure, Q-86, is built against the east wall of a large colonnaded hall, Structure Q-99. The latter faces west on a court, so the house is built against its back wall. A section of property wall seems to circle around the north and perhaps the east end of the house, one end coming to within a meter of abutting the northeast corner of the larger structure. The plan of the wall suggests that it belonged with the house, and that the back wall of Structure Q-99 provided one boundary of the enclosure. Because this situation was unique because it was the closest thing to direct association of a presumed property wall with a ceremonial structure, it was decided to excavate in an effort to determine the chronological relations of the house, the wall, and the ceremonial building.

No excavation was made within Structure Q-99, but trenches were dug along its back wall, in order to locate the junction with the house platform, and trenches were also dug outward and along the property wall. These excavations disclosed a complex series of constructions which were not at all apparent on the surface, including a buried ash- and marl-filled platform north of Structure, Q-99. Although time did not permit the extended excavations necessary to obtain a complete picture of the sequence of construction, it was clear from superpositions of construction and changes in associated pottery that the house platform and the wall were the latest in the sequence and that they had been built later than the substructure of the colonnaded hall. There is no reason to believe, however, that Structure Q-99 did not remain in use after the house structure had been built. A striking feature of the excavation was the large amount of domestic refuse, utilitarian pottery, obsidian blades, animal bone, and so on, and the scarcity of sherds from figurine incensarios, which are ordinarily so abundant around ceremonial buildings. It indicates that the house structure, despite its location, did in fact have a domestic function.

The work of the 1952 and 1953 seasons disclosed the existence throughout Mayapán of a number of small circular or oval enclosures 2 to 5 m in diameter, constructed of large slabs in exactly the same manner as the property walls. They are generally located close to house platforms but are by no means a regular feature of the Mayapán houses. Search was made for some clue to their purpose. One relatively well preserved circle was cleared of all accumulated soil and debris and others were more briefly tested. In Square DD, a somewhat similar small enclosure, which been built against a high house-terrace wall, was completely excavated. In no instance could any positive information gained concerning the function of these enclosures. The stones were in each case footed on bedrock and ranged from about 60 cm to 1 m in height. Smaller

stones had evidently chinked the cracks between slabs as in the property walls. None of the small enclosures had an opening for entrance.

Reconnaissance was made through parts of Mayapán previously unvisited. Particular attention was given to locating and following lanes. All the lanes observed were formed by house property walls; nothing was noticed comparable to the long lanes in Square I. An effort was made to locate some kind of lane or roadway running between the Main Group and the large gate in the Great Wall in Square O. A reasonably straight route could be followed between the two points without crossing property walls, but no evidence of a road way or other formal route was detected.

In addition to investigations concerned directly with the property walls, explorations were made in order to determine the approximate extension of house structures outside the Great Wall. Trails were followed outward from the wall on all sides of the city, and the territory alongside the trails and in the many large milpas was examined. The number of house structures falls off sharply once the wall is crossed. East and west of the city, houses could be located in some number to about 0.5 km from the wall, but to the north and south, they seem to drop off a very short distance beyond the wall. As the density of settlement diminishes, houses are generally found only on the tops of the more prominent rocky knolls, these clearly being the preferred locations. It is of interest that even the most remote houses have enclosing property walls and that the enclosures are not significantly larger than those associated with houses in the more crowded parts of the city. Less than 0.5 km northeast of the sharp bend in the Great Wall in Square G, two large cenotes were discovered, both unfortunately inaccessible without a ladder. Below the wide opening in the roof of one cenote can be seen what appears to be a rectangular stone platform. House structures of Mayapán type are located near these cenotes.

Examination was also made of the territory along the two foot-trails leading from the northwest part of Mayapán to the village of Telchaquillo, a distance of slightly over 1 km. House ruins cease a short distance north of the Great Wall. At a point about halfway to Telchaquillo house ruins are again seen, and these appear to increase in concentration as one proceeds to the village, clearly suggesting that Telchaquillo was a separate center of settlement. Evidence of ancient construction is abundant, particularly west and south of the plaza of the modern village, and there are remains of large ceremonial structures near the plaza. Some of the house mounds on the outskirts of Telchaquillo have what appear to be property walls and, where surface features are visible, plans not unlike those of houses in Mayapán.

Early in the season a visit of several days was paid to Chichén Itzá, and in early May a trip was made to the Puuc region with Ruppert and A. L. Smith, one day apiece being spent at Uxmal, Kabah, and Sayil. The principal purpose in these visits was to look for evidence of a property wall pattern that could be compared with that at Mayapán.

At Chichén Itzá, trails were followed through the area west and southwest of the main ceremonial groups. The scarcity of trails and the density of vegetation prevented as complete coverage of the area as had been hoped for, but scattered for a considerable distance from the central part of Chichén Itzá are the remains of ruined structures ranging from small ceremonial groups to isolated platforms, usually on knolls, on which dwellings probably once stood. In one district, approximately 2 km west of the Castillo, a group of three small rectangular platforms, the largest 5 by 3 m, was found surrounded by a wall which both in construction and in plan seemed in every way similar to Mayapán property walls. Elsewhere in the same district, traces of similar walls were found which seemed likewise associated with house platforms, but these were infrequent. Most structures seen had no trace of a wall. In other areas, sections of occasional walls of boulders might be seen in the vicinity of what probably were house structures, but their rarity indicates that there was no such system of walls as at Mayapán. The one complete example found, however, is important, and is probably not unique.

At Kabah and Sayil, house structures were visited in areas near some of the large groups; at Uxmal an excursion was made for a kilometer or more west from the great ceremonial center. In general, houses at these sites appear to be restricted largely to knolls and heights of land. The low areas of deep soil are avoided. At Uxmal, where more territory was covered than at the other ruins, the impression was received of a very widely dispersed pattern of settlement. The only constructions seen that at all resembled property walls were a rough boulder wall at Sayil, running between two neighboring house terraces; and near the main aguada, or water hole, at Uxmal, a somewhat similar wall which formed an arc around the corner of a terrace bearing the ruin of small vaulted building. Neither wall can with certainty be stated to be ancient. It is clear that property walls are not a feature of Puuc houses.

In early February Bullard accompanied Dr. Gordon R. Willey, of Harvard University, and Dr. Linton Satterthwaite, Jr., of the University of Pennsylvania, on a ten-day reconnaissance in the Cayo District of British Honduras. Visits were made to the ruins of Benque Viejo, Baking Pot, and other ceremonial centers near El Cayo. Particular attention was given to locating house mounds. Recent agricultural clearings

on the terraces of the Belize River, about 5 km downstream from Baking Pot disclose a concentration of small mounds, presumably house mounds, which suggests a rather heavy population along the river at some distance from the ceremonial centers. Similar small mounds were observed sporadically in cleared fields alongside the Cayo-Belize highway from Cayo to Hog Style, near the beginning of a section of pine forest. Ruins are apparently not found in the pine forest area. On the outskirts of Cayo, examination was made of a cluster of small mounds in an open field about a kilometer from the ceremonial center of Cabal Pech. A test excavation was made in one mound. Part of a stone platform was uncovered and sherd samples were obtained.

40.12.

TATIANA PROSKOURIAKOFF

Plan of the Main Group at Mayapán

YB 52:264–268, 1953

Although the map of Mayapán completed by Jones in 1951 includes a plan of the principal ceremonial group, it is drawn at too small a scale to show individual structures with the degree of detail that comparative architectural studies require. It was decided, therefore, to draw a larger map of the Main Group at a scale of 1 to 200, showing all the plan details that could be observed on the surface or obtained by superficial digging and including also the results of more intensive investigations carried on by other members of the staff. Because of the height of the constructions and their crowded arrangement, direct measurements were often difficult to obtain, and the project involved a resurvey of the entire group. Pollock assisted in this work by supervising the surface excavations to develop the plans of the buildings, which Proskouriakoff measured and plotted on the map.

Some minor constructions are now so ruined that without deep excavation it is impossible to reconstruct their plans. Most of the principal buildings yielded fairly complete information as to their general features, although in some case deep fall covers details of substructures and interior elements such as benches and shrines. A debris line was used to indicate obscured areas. Elevations were taken on observed elements, and at least one cross section was drawn of each building. The datum, on a rock outcrop at 155 S, 290 W, just

outside the north entrance to the court of the Castillo, is 2.1 m above the datum of Jones map (Jones 1952)

This season's work covered only the northern half of the main ceremonial center, and another season will be required before a complete summary of civic and ceremonial building plans of the group can be made. Certain typical plans and assemblages, nevertheless, are already evident. As is well known, the central and tallest structure at Mayapán is a temple resembling the Castillo of Chichén Itzá in all but its size, its roof construction, and the quality of its masonry. The assemblage of buildings around the Mayapán Castillo however, lacks the spaciousness of the Chichén Itzá arrangement and resembles more closely the building group around the principal temple at Tulúm. Outcrops of rock, rising above the level of the Castillo court, are incorporated in the substructures of buildings that almost completely enclose the court. Two colonnaded halls and several smaller buildings about the pyramid of the Castillo, obscuring its lower terraces. A number of platforms and walls in the court further crowd the composition, so that only the crowning temple, towering above the roofs of other buildings, could be seen from a distance.

Building plans frequently recall the architecture of the east coast of Yucatán. Colonnaded buildings are probably more prevalent at Mayapán than in any other Maya city. Unlike most so-called "colonnades" at Chichén Itzá, the colonnaded halls of Mayapán are independent buildings complete in themselves. Three type plans are shown in Figure 40.12.1. The bench along the rear and side walls and a central altar or shrine are typical, as is also the corresponding central stairway. Structure Q-97 is the only example that has a transverse room at each end. More often a colonnaded hall has only one transverse room; some have none. In certain cases, rectangular piers are used together with

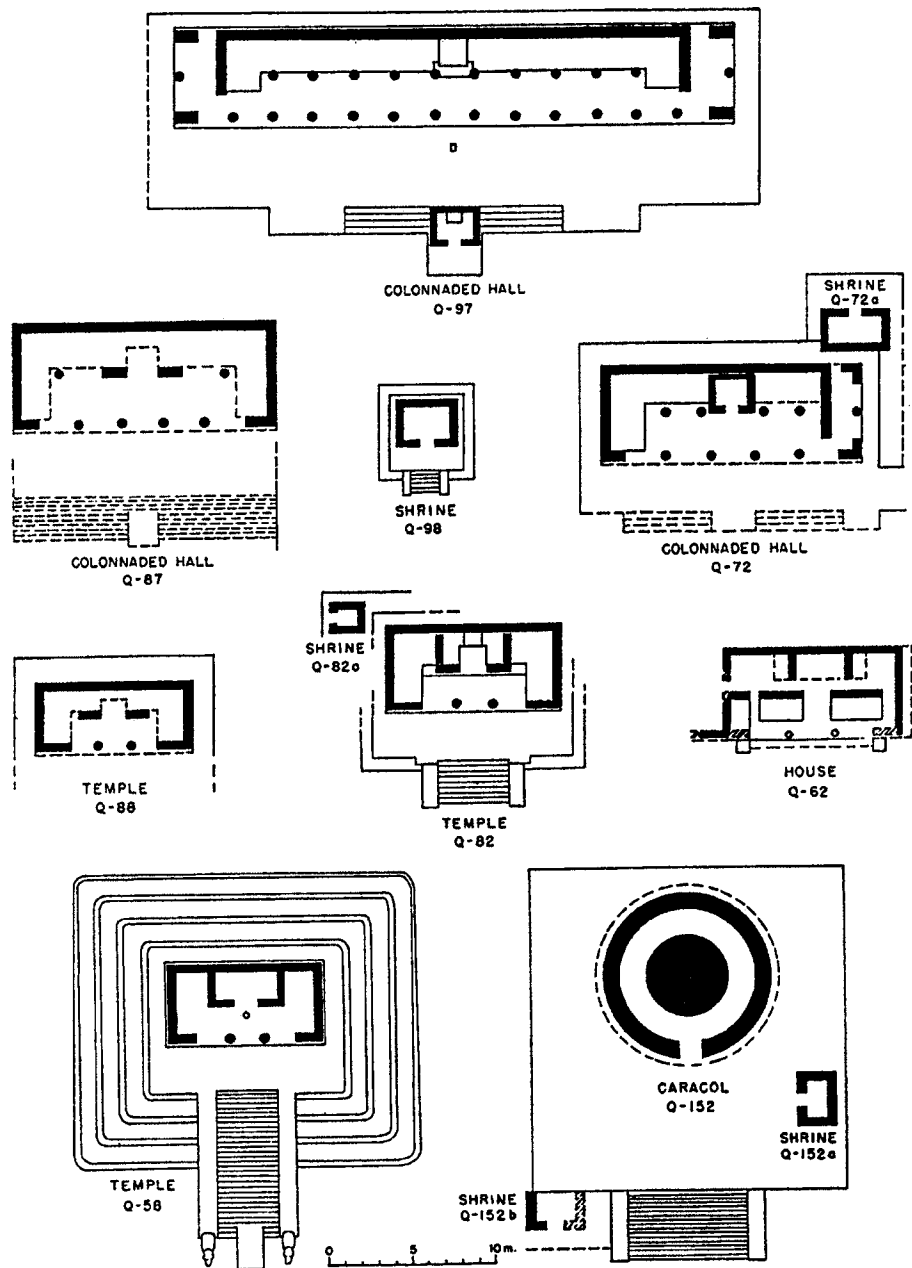


Figure 40.12.1. Mayapán, Main Group, typical building plans, (rectified and partly restored).

columns. Structure Q-87, which has two interior piers and no end room, has a plan which is little more than an expansion of the plan of a three-doorway temple, such as Structure Q-88. This suggests some functional variation of the type.

One colonnaded hall was decorated with mask motifs apparently reassembled from some dismantled building of the late Puuc style. The columns of another carry decoration of human figures in high-relief stucco. No colonnaded hall was vaulted. In some cases, beam and mortar roofing was clearly indicated by the debris; elsewhere, very scant debris suggests thatch-roof,

construction. It may be significant that no stones could be identified, as column capitals. This recalls a building practice reported from the East coast, where false capitals of stucco were sometimes applied to columns.

About as numerous as colonnaded halls at Mayapán are small, one-room buildings we designate as “shrines” (Structure Q-98). It is not certain that this designation is correct for all the small single-room buildings found in the Main Group, but some that have comparatively thick walls for their size seem analogous to the east-coast shrines, although probably none at Mayapán was vaulted and we cannot now determine their height. Some of these shrines stand on independent small platforms containing interment cists; others are built on the substructures of larger buildings with which they seem to have been associated (Str. Q-152a, Q-72a). A stone statue found one shrine (Str. Q-69) confirms their assumed religious function.

Temples with triple doorways formed by two columns or two square piers also be considered typical of Mayapán, though they vary more than do the colonnaded halls and shrines (Strs. Q-58, Q-82, Q-88). A central shrine or two piers seem to be common but not indispensable features of the interior. These temples stand on high substructures which sometimes have a burial shaft descending from the upper level to bedrock. The analogy with the construction of the so-called *Osario* or High Priest's Grave at Chichén Itzá is particularly marked in the case of Structure Q-58 which has a pyramidal substructure. The roofing of these temples, as of most buildings at Mayapán, was probably a combination of wooden beams, stone slabs, and mortar.

There are only two large vaulted buildings in the Main Group. One holds a prominent position among buildings north of the Castillo court. Its plan, unfortunately, is obscure and can be elucidated only by excavation. The building now appears as a thick masonry mass placed off-center on its substructure. A vaulted passage runs through the center, and secondary additions indicate major alterations of the original plan.

Another vaulted building is the Caracol (Str. Q-152), described by Brasseur de Bourbourg and by Stephens, who saw it before the last remnant of the vault had collapsed. The Caracol is the largest of four round buildings at Mayapán, each of which is the sole example in its group. On its high platform are a small shrine, a broken, crudely sculptured monument, fragments of carved hieroglyphic stones, and a large dressed stone that may have been a plain stela.

It was evidently the custom to center a small shrine or open platform on an important stairway, a custom that is also conspicuous in late preconquest sites of highland Guatemala. Small constructions, however, also occur without apparent relation to larger build-

ings. Without excavation it is difficult to determine the character of the numerous small platforms. Some, like the shrine platforms, are known to contain interment cists. The plan of these platforms is usually rectangular, but in one excavation a round interment pit was encountered, and surface observations suggest several more. None of the platforms observed so far has the typical form of the “dance platforms” or “mausoleums” found at Chichén Itzá. The platform in front of the Castillo, which in its earlier phases had four stairways, is the closest analogy, but even this was modified in form in later times.

A number of mounds on or near the periphery of the Main Group can be classed as house mounds, since they are very much like structures found in residential sections of the city. The location of Structure Q-62 near Q-64 and of Structure Q-86 near Q-99 suggests that the houses were built to serve activities carried on in the colonnaded halls, but Structure Q-91, situated on an outcrop of rock within the Main Group, has no apparent relation to a ceremonial structure and seemingly had a property wall delineating it as an independent unit. Bullard's investigation of Structure Q-86 shows it to be of later construction than the colonnaded hall Q-99 to which it is attached, leaving open the possibility that house mounds in the Main Group represent a late encroachment of the residential section on the civic center.

So far we have little evidence bearing on the growth and development of the city plan. All constructions observed seem to belong to one cultural period and to represent a single technique of building. An earlier time, tentatively identified with the period of presumably late Puuc-style structures at Uxmal and Kabah, is represented by many re-used, dressed, and sculptured stones, but no continuity between these two phases has been established. The chronological relation between structures at Mayapán and those of the Toltec style at Chichén Itzá also remains in question, although present observations tend to confirm Andrews' conclusions of 1942 [Chapter 36.3]. It is clear that building practices at Mayapán form a distinct complex, drawing on various sources. Such features as the low plinth of colonnaded halls and of temples, the apron molding on some substructures, and transverse rooms at the ends of long buildings probably survive from the Classic period of Maya architecture. Serpent columns, the occasional use of a sloping zone at the base of a wall, and certain other details mark the influence of Toltec culture. By and large however, similarities to the Toltec, phase of Chichén Itzá architecture are less numerous than analogies with east-coast practices. Particularly striking is the absence of certain building types, such as the ballcourt, the sweat bath, and the patio-gallery complex. The preponderance of colon-

naded halls may be viewed as an extension of a trend observed at Chichén Itzá, but the building of numerous independent shrines implies an emphasis on a religious practice that distinguishes Mayapán and the East Coast sites from other known Maya cities and probably indicates a profound cultural change of more than local significance.

40.13.

EDWIN M. SHOOK

Excavations at Mayapán

YB 52:268–272, 1953

Approximately half the 1953 field season was devoted to excavations of remains of buildings erected primarily for civic and religious purposes, and half the season to study of the material culture recovered from that work and, from the excavations of Adams, Bullard, Pollock, and Strömsvik.

The investigation of the twin temples, Structure T-70, near Cenote X-Coton and Gate T in the extreme southeastern sector of Mayapán was initiated in 1952 [Chapter 40.13], when, only the external features were exposed. During the current year the study of the edifice was completed. An exploratory trench was dug along the central east-west axis of each of the stairways and temples, following limestone bedrock. These trenches penetrated at least half the substructure, and shallower ones were continued to the rear wall of each temple. The trenching disclosed evidence in Structure T-70 of a relatively long sequence of building activity, covering, probably, the full span of occupation during the Mayapán period, and demonstrated the relation between the twin temples. The south one in its earliest stage and through three successive renovations stood alone as a single unit. The fifth remodeling of Structure T-70 was a major change, in which the builders extended the substructural platform northward in order to accommodate the single-chambered north temple. Thereafter the twin temples underwent five more renovations before their final abandonment.

No caches or dedicatory offerings, burials, or burial cists were encountered the stairways or in the platform fill. A small masonry altar against the rear wall of the south temple did, however, contain caches of pottery vessels, jade, and shell beads. These offerings in the oldest and most often refurbished temple,

and the presence of severely burned floors below a surface layer of effigy incensarios and ashes, indicated, religious and ceremonial activity centered more around the south than the north temple.

The placement of two temples on a common platform, each having its individual balustraded stairway leading up from the plaza level to the summit of the same substructure, is an architectural practice unknown in Yucatán or elsewhere in the Maya area, with 4-single exception (El Chile), prior to the Mayapán period. It is a feature associated with fortified hill sites of the Late Postclassic or protohistoric period in the Guatemala highlands and with sites occupied during the Aztec regime in the highlands of Mexico. The one example of this type of structure identified in Mayapán was constructed well along in the period of occupation, as is shown by the fact that four phases of building activity had taken place prior to the conversion of Structure T-70 into a double temple unit.

Within Square Q on the Mayapán map stands the central and dominant feature of the site, the Castillo or Temple of Kukulcan (Fig. 23, Str. Q-162). The temple surmounts a high terraced pyramid with a wide, balustraded stairway on each of the four sides. Tightly clustered around the pyramid within a radius of 100 m from its base are approximately 100 ancient structures of diverse types. A systematic plan of field work calls for the thorough investigation of one or more examples of each type of building. The character of many of the specialized units may be determined by this study, and light cast on their functions in the last coalition government enjoyed by the Maya in northern Yucatán before the arrival of the Spaniards. The excavation of what today may appear to be no more than a rock pile frequently yields more than architectural data. Below, and sealed by the discouragingly thick mass of fallen debris, lie the bits of evidence that must be pieced together to obtain even a dim reflection of ancient life in Mayapán. Pottery and artifacts, and their disposition on the temple floors, in terrace corners, and at the foot of stairways, tell a story of the final activities carried on before the abandonment and disintegration of the buildings. The position of burials in shallow graves, cists, or shafts, the type and number of interments, whether cremations, sacrificed victims of religious rites, warriors slain in battle, or normal deaths, all provide knowledge of the habits of the Maya. The presence or absence of animal and bird bones, pottery and artifacts, charcoal and ashes also aids in outlining the picture. The disposition and contents of rubbish dumps provide information on the material culture and its chronological order.

The major field excavations of the past season were limited to the northern half of the concentrated group centering on the Castillo. The work was closely

coordinated, and many members of the staff participated in each excavation. The study of a single unit was often initiated by one of the staff, continued by another, and completed by a third person.

One type of temple supported by a high platform or pyramid was first investigated, as it seemed to bear resemblances to the *Osario* or High Priest's Grave in Chichén Itzá. Prior to excavation, Structure Q-58 (Fig. 23) showed a much eroded, steep-sided pyramid supporting the remnant of a temple with a double-columned doorway. Within the building a deep, circular burial shaft with the form of a tall-necked wine bottle penetrated the core of the pyramid from the temple floor. The burial shaft lay open, obviously having been looted in modern times, as heaps of human, animal, and bird bones surrounded the orifice and spilled down the back talus of the pyramid. Strömsvik cleared the remaining contents at the bottom of the shaft and recovered evidence of more than four child and adult skeletons (a few bones showed burning, though most were unburned), a variety of animal and bird bones, a jade bead, charcoal, ashes, and fragments of obsidian flake-blades, unworked shell, and pottery.

Shook excavated the temple and portions of the pyramid of Structure Q-58. There were at least two major and four minor rebuildings. The first major construction consisted of a terraced pyramid and temple. The latter subsequently was torn down and another erected on an enlarged pyramid, which completely encased the earlier one. The second pyramid, also terraced, had a stairway on the east side flanked by broad balustrades leading from the plaza level to the summit platform. The temple, set back toward the rear part of the platform, had a triple doorway formed by two serpent columns between the widely spaced jambs. A simple plinth one step higher elevated the temple above the summit platform of the pyramid. The temple proper consisted of a large chamber with a small shrine room placed against the center of the rear wall. In the middle of the main chamber and directly in front of the shrine doorway was the small round opening of the deep burial shaft. The shaft apparently was kept closed most of the time with a capstone, and opened during rites to insert the bodies of the newly sacrificed.

There were four minor renovations of the temple, as evidenced by the refloorings and the replastering and painting of the walls. The lime plaster floor surrounding the entrance of the burial shaft and on the frontal terrace was heavily burned. Also, remains of broken incensarios lay in the corners of the shrine room, on the floor of the main chamber, on the frontal terrace, and particularly at the base of the pyramid next to the stair wall.

An alignment of small low structures, Q-59, Q-59a, Q-59b, and Q-60, lay on the central east-west axis

of Structure Q-58. They were erected at different times on the plaza floor in front of the pyramid stairway. Each unit, except Structure Q-59, contained a burial cist with from one to three skeletons.

Structure Q-82 (Fig. 23), a temple similar in plan to, Structure Q-58, was next investigated. This unit, because of its better state of preservation, was more thoroughly excavated, then solidified and left exposed as an example of Mayapán architecture. It differed from Structure Q-58 in several details. There was no burial cist or shaft associated with the temple, nor did the doorway columns bear serpent ornamentation in stone. A very heavy deposit of broken effigy incensarios lay on the temple floor, more concentrated in the center of the temple before the shrine doorway than elsewhere. All together, we recovered over 8,000 pottery fragments from the surface of temple floors, benches and frontal terraces, and around the base of the substructure. A vast majority of the fragments represent incensarios.

Structure Q-95, the third of the double-columned doorway type to be excavated, differed in several respects from Structure Q-58 and Q-82. The stairway of the structure did not carry flanking balustrades as do most stairways in Mayapán. Also, the earliest plan of the temple consisted of a single long room without the usual one-step riser from the frontal terrace into the chamber and without the inner shrine room. The two doorway columns square instead of round, with no evidence of having simulated serpents. Structure Q-95 underwent many renovations involving major changes both in the substructure and in the temple. Again there was much evidence of copal burning in incensarios, but seemingly not to the extent practiced in Q-58 and Q-82.

A deep, circular burial shaft placed in front of the temple penetrated the substructure from the top floor to underlying bedrock. Strömsvik excavated this shaft, which had been almost filled in ancient times with over 40 skeletons of children, adolescents, and adults of both sexes, bones of animals and birds, charcoal, ashes, pottery fragments, and artifacts of metal, bone, shell, and stone. Below the shaft and sealed by a capstone was a cavity in the bedrock. This apparently natural pocket in the limestone had been enlarged and utilized as a midden and burial place, then sealed prior to the use of the burial shaft. Within the cave were the artificially deformed skulls of two young children and the complete skeletons of an elderly man and woman. The female's head was severely deformed. The bulk of the cave contents consisted of ashes and charcoal mingled with an extraordinary number animal and bird bones. Pottery vessels, sherds, and artifacts of bone, shell, and stone were also present in minor quantities.

The investigation of another type of structure occurring frequently in the Main Group began during

the 1953 season with the excavation of Structure Q-97 (Fig. 23) This is a long colonnaded building, or hall, easily identified without excavation because it is supported by a low substructural platform and has a much greater length in proportion to width than other buildings, and the surface debris shows numerous column drums. Landa speaks of long houses as living quarters for boys and unmarried men. These colonnaded halls best answer his brief description.

Structure Q-97 consists of a long rear wall, its length broken twice by a passage or doorway near each extremity, a long central chamber or gallery with two rows of columns paralleling the rear wall, and a transverse room at each end. A plinth, one step high, elevates the floor of the building above the front terrace, and a raised bench fills the rear half of the central gallery.

A broad stairway leads from the plaza to the front terrace of the building. This, stairway is interrupted in the center by a small shrine in which we recovered fragmentary remains of a modeled stucco figure seated on a low altar or bench against the center of the back wall. The figure, apparently human, faced the entrance.

Directly behind the shrine and on the front terrace stand a sculptured stone monument and a small tapering stone block. The block resembles the altar shown in wall-painting scenes at Chichén Itzá, where an individual, held by attendants, is stretched supine over the block, and a priest cuts out the heart with a knife.

Within the building, placed in the center against the rear wall, was a masonry altar elevated slightly above the bench. The face of the altar bore a lattice-pattern decoration modeled in stucco, and at each front corner stood a small human figure also excellently wrought in stucco. Though the upper parts of the figures were not intact, it is possible that they served as small Atlantean figures supporting the projecting upper part of the altar. Atlantean figures carved in stone are fairly common in Toltec-period buildings in Chichén Itzá, and often occupy a similar position supporting a table-like altar. The shrine, the altar sculptures, the stucco figures, and the presence of many fragments of effigy incensarios on the floor and bench of Structure Q-97 suggest that elaborate ceremonial activities took place in this building. This does not necessarily eliminate the use of colonnaded buildings as living quarters.

The, pottery from the excavations of the above-mentioned buildings and from the structures within the Main Group cleared by Adams, Bullard, Pollock, and Strömsvik was studied. Most of the digging extended from the surface to bedrock and resulted in the recovery of stratified material representative of the site's occupation during the Mayapán period. The pre-

liminary analysis of almost 70,000 sherds collected during the 1953 field season in or near ceremonial and civic buildings indicates the continuity of the dominant wares with only minor modifications of form and surface treatment from the beginning to the end of the Mayapán period. The changes in the most common ware, Mayapán Red, though slight, prove to have chronological value. The innovations in this ware appear to represent the normal evolution one might expect to have occurred over the several centuries Mayapán supposedly was occupied. Among the less common pottery wares are such as Black on Cream (Brainerd's Coarse Slate), which are present in the beginning of the Mayapán period but gradually diminish in percentage in later times. New pottery types appear at certain levels, and others are limited largely to the latest surface deposits. Fine Orange, an imported ware, persists throughout the Mayapán period though never in appreciable amounts. No Plumbate was identified in any of the 1953 excavations; nor were there noted pottery types current, in the Mexican highlands during the Mayapán period, despite suggestions of foreign influence in some of the architecture, sculpture, and artifact at Mayapán.

During most of the Mayapán period the changes in pottery and architecture are too indefinite to permit, as yet, the division of the period into smaller chronological units. Toward the end of the site's occupation there is evidence of a new element in the local culture. Effigy incensarios came into use in such quantities that their fragments, often retaining the burned and unburned copal, cover the floors of temples, shrines, and colonnaded halls. There seems to have been a mania for appeasing the gods through ceremonial burning of copal in large censers decorated with effigy figures welded on the exteriors.

40.14.

ROBERT M. ADAMS, JR.

Excavations at Mayapán

YB 52: 272–275, 1953

As a part of the first season of intensive digging at Mayapán, excavations were carried out in and around a number of small ceremonial structures in the Main Group. In connection with a larger effort to elucidate the nature and function of the ceremonial center within

the city, this work was undertaken, in part, to define classes among some of the smaller and less imposing structures; typicalness, in other words, was an important criterion in the selection of sites for excavation.

About three weeks at the beginning of the season were devoted to the excavation of a trench north of Structure Q-79 (160 S, 270 W, on the map of Mayapán, Jones 1952). This operation was initiated on a modest scale under the direction of R. E. Smith in order to determine the circumstances surrounding a concentration of broken incensario pottery uncovered during work on a road that passes near the structure. A partial superposition of three floors was with over, a meter of total deposit and some evidence of a seriation in pottery. Later work showed that these conditions were not unusual in the Main Group, but at the time of digging they were unique, and the trench was gradually extended to a length of about 10 m in a futile attempt to relate the features uncovered to one phase or another of construction of Q-79.

The great bulk of pottery lay above the uppermost floor, and a substantial majority of the sherds were of figurine incensarios. These apparently had been broken elsewhere and discarded here, for prolonged attempts at fitting together sherds from the same provenience resulted in the construction of not a single complete or nearly complete figurine or vessel. The practice of discarding quantities of pottery, ashes, and other refuse in the vicinity of ceremonial structures was common elsewhere in the Main Group during the terminal period of occupation, but stands in contrast to the absence of debris on earlier floors. In this trench, for example, the earlier floors were separated not by refuse but by well packed fill in which sherds occurred only sporadically.

A feature of considerable importance was a group of seven articulated adult skeletons found above the uppermost floor in the trench. They lay about 5 m north of the north wall of Structure Q-79 apparently flung down side by side with trunks directed northwest and southeast fortunately. No grave offerings were present and less than 30 cm of earth covered all the skeletons, but their pre-Columbian antiquity seems assured by the presence of three large, crudely chipped flint knives; two were found within the rib cases of two of the individuals, and a third blade rested against the pelvis of another.

In the absence of any trace whatever of a higher floor, it seems an inescapable conclusion that these individuals were not buried appreciably deeper than they were found, although why they were not more disturbed by scavenging animals is difficult to understand. Since the skeletons occurred so near the surface in an area of some ceremonial importance, it is tempting to assume that their deaths were connected in some

way with the abandonment of the site, but, again, the ubiquity of scavengers in the region tempers the likelihood of any such conclusion. Had the bodies merely been left on the surface, or hastily and shallowly buried immediately prior to the abandonment of the center of the city, it is difficult to believe that any articulated bones would have been found at all. Although death by violence can probably be assumed for all of them, it is not possible to relate that violence to a specific historical event. In fact, death as sacrificial victims remains at least as likely a possibility as death in warfare.

At least two, and probably three, shrines were excavated by Adams during the 1953 field season. Structure Q-69 flanks an apparent northern entrance to the court of the Castillo (160 S, 290 W); Q-71 stands near, but in no clear relation to, a western entrance (180 S, 325 W). In both of these the final architectural form was cleared of debris more or less completely, and each was trenched sufficiently to determine the major phases in, and manner of, its construction. Structure Q-90 stands alone, near the center of a court or plaza to the northeast (150 S, 210 W); its identification as a shrine is less certain, and it was excavated only to the extent necessary to reconstruct its plan.

Each of these structures consists of a small room on a low terrace platform. Although details vary considerably, the shrine never has more than one room and is reached by a single stairway and entered through a simple doorway without columns. The absence of fallen roof debris within the shrines suggests the use of thatch, although the shrine walls are of typical Mayapán masonry. Roughly shaped or unworked masonry, heavily coated with plaster, and dry rock fill characterize the substructures, although veneer stones of the Puuc style of Late Classic period architecture were re-used in the stairways, balustrades, and plinths. Quantities of pottery and other refuse, including a large proportion of incensario ware, are found within the shrines and thickly bedded in surface levels around the edges of the platforms. An integral part of each substructure is an ossuary cist, containing the remains of several individuals, child and adult, male and female. Grave goods are few and poor, and manner of burial is uncertain; some skeletons are at least partly articulated, but the available space is so limited that it must have been necessary for one body to decompose before another was inserted.

Several phases of construction are generally evident. The substructure of Q-69, for example, reached its final dimensions (6.5 m by 5.5 m) only after three enlargements of the original small, rectangular platform, and its inset stairway on the south was not the result of initial design, but the effect of later extensions of the platform around a previously existing stair. Each

of the enlargements was progressively lower than its predecessor, so that the shrine finally rested on the summit of a small stepped platform. The standing human figures carved in stone and about natural size, were associated with it. Two had tenons for attachment to a wall or corner. These were broken and so badly scattered that their original positions remain problematical. The third figure seems quite certainly to have stood inside the shrine.

Structure Q-90 also consists of an original platform, which was subsequently enlarged. No definite trace remains of, the existence of a shrine on top of this slightly smaller structure (5 m by 4.8 m), but debris above the floor is most easily interpreted as the fallen masonry of walls. Here, too, the enlargement, was lower than the inner building platform and abutted the sides of the stairway, but fragments of associated statuary were not found in the limited exposures made.

Structure Q-71 on the other hand, was, built as unit (6.7 m by 5.8 m) and never enlarged, although it later was heightened slightly by the addition of a plinth. The outer wall of its substructure, above a few courses of rough block and slab masonry, is composed of two two-member moldings separated by a plain-narrow band, all of well cut and probably re-used veneer stones. On the north side a panel, which may have contained stucco figures, is inset in the moldings. Stucco figures occur on a front platform, below the stairs on the West, where they were built up around stalactites, presumably from the nearby cenote, into at least four free-standing statues. The shrine as a whole faces toward an imposing colonnaded hall on which it is imperfectly centered. Some apparently similar structures, not yet excavated, seem quite definitely to have been built to face such halls, but others, like Q-69 and Q-90, are independent of any larger complex. The question of different ceremonial functions for one basic building plan is one that can be answered at all, only by further excavation.

Structure Q-77, a low platform about 7.5 m square lying just north of the main (north) stairway of the Castillo (160 S, 280 W), was at first thought possibly to be related to, shrines in structure and function, but on excavation it turned out to be different in a number of important respects. The structure grew in stature as digging progressed, for it was founded on the underlying bedrock, and subsequent refloorings had raised the level of the surrounding court to more than half the platform's original 2 m height. In all, 12 successive floorings of the court were distinguishable around the side of the platform, including three in which the level was first uniformly raised with a continuous blanket of dry rock fill; furthermore the uppermost, floor in this sequence was followed for about 12 m to the north stairway of the Castillo, where five still higher patches

of reflooring were observable. This unmistakable evidence of continuity of occupation in the center of the main ceremonial group for a considerable period was welcome as it was unexpected.

Three phases were discernible in construction Of Q-77. In the earliest, the platform was ascended by stairs on all four sides and gave no indication of having supported a superstructure. The general similarity of its plan to that of the "dance platforms" at Chichén Itzá is unmistakable. It is preserved to its full height only on the north, and here Mayapán masonry in the lower courses gives way near the top to a narrow projecting molding and better-finished veneer stones resembling those used in the Puuc style of architecture; such stones also occur in the balustrades and stairways. After enough time had elapsed for several refloorings of the court, the north stairway was torn out, although one of its balustrades was incorporated in the projecting platform that was built to enclose the former area of the stair. This renovation, which may have included the erection of a small shrine on the new platform extension, effectively oriented the structure to face the Castillo and may be connected with some building activity on the latter. In a final minor alteration after the latest court reflooring, one corner formed between the platform and its extension was filled and eliminated.

Also extending to bedrock in the court of the Castillo was Structure Q-84, an apparently unique circular platform of crude, plastered Mayapán masonry, which was completely excavated. This structure does not appear on the Mayapán map, for successive floorings finally brought the court surface almost to the level of its top, and it was detected only during the more detailed examination of the ceremonial group that followed the preparation of the map. It is roughly 13 m in diameter and lies about 15 m east of Structure Q-77.

A number of large stone monuments, including a badly weathered serpent head, are at present on the surface of, or near, this structure, suggesting the possibility that it may have served as a monument platform, but no definite proof of this was found in the excavation. A cache of two tripod bowls and several very large flint and obsidian chipped knives may have been placed originally at the base of one of the monuments, but, if so, later movement of the stone has obscured the fact. If the platform did serve as a foundation for monuments, these must have stood open to the weather or have been sheltered at best by pole and thatch, for the total absence of debris above the level of the platform floor makes the former existence of a stone superstructure virtually impossible.

In its first phase of construction, the platform was 1 m or more above floor level and only 5 m in diameter.

It was subsequently enlarged at least five times, so that, in its excavated form its successive walls form a series of very irregular, roughly concentric circles, each of which was filled with rubble at the time of enlargement. As the court level was raised frequently during this process, the platform became relatively lower as it increased in size; and very late renovations along its southern edge, which are not very well understood because of their shallowness, may drastically have altered its previously circular shape. Crude and asymmetrical stairways without balustrades appear on the east and west in the second and later enlargements; if the earlier platforms were ascended by stairs, these were removed before the later enclosing walls were built. A thick-walled cist, about 2 m in inside diameter, was sunk to bedrock alongside the platform and near one stairway after the third enlargement had been completed and plastered. It was found to contain only a few fragmentary skeletal remains and no grave goods. The cist was incorporated within the structure by the fourth and later enlargements.

This work discloses, in sum, the existence and the character of some shrines, similar to one another in architectural design, and at least two kinds of ceremonial platform at Mayapán. At the same time, the breadth of variation found in both basic design and detail would indicate that further work on a number of similarly unimpressive examples of ceremonial architecture is necessary before the place of these structures in the archaeological remains of the site's ritual life may be thought to have been probed at all adequately. The features of the shrines as a group are perhaps clearest, but other functional or stylistic categories of small structures in the Main Group may not even be recognized yet.

40.15.

GUSTAV STRÖMSVIK

Exploration, Excavation and Reconstruction in Mayapán and Vicinity

YB 52:276–279, 1953

It was planned that early in September 1952 the exploration of ruins in the neighborhood of Mayapán would be initiated. This was prevented the torrential rains that continued long beyond the usual end of the wet

season in Yucatán. It was not until early November that two ruins to the south of Mayapán, Yacman and Xmulenscacau, which had previously been marked for closer investigation, could be visited.

The Yacman ruins had previously been visited by R. H. Thompson [Chapter 4.17], who had found no potsherds that could safely be dated later than the Classic period. Strömsvik collected sherds that, according to R. E. Smith, are evenly divided between the Mayapán and Puuc periods. A prismatic compass and tape survey was made of the dozen mounds that surround the cenote, and notes were taken on such architectural features as were visible.

The Xmulenscacau site is located about 200 m east of the Acanceh branch of the railroad from Mérida to Ticul, midway between Kilometers 62 and 63. These ruins were brought to our notice by Eugenio May, an experienced native employee, who had been commissioned a year earlier to explore the territory surrounding Mayapán. May reported sculptured stones and architectural columns, but on closer examination the ruins were found to consist mainly of platforms, at least eight of which were seen around the approximately 10m high pyramid that seems to be the center of the site. From the southeast corner of the pyramid runs a multi-chambered building, about 20 m long, doors facing north, with what may be a passageway through the center of the structure, and column-like, standing door jambs. It is probably these jambs that led May to report the presence of columns. Fragments of several broken metates were seen, but nothing that could be called sculpture. The ruins no doubt were wider spread, than could be observed at this time. Owing to the dense, impenetrable, and thorny underbrush, only a cursory survey could be made, but, enough was seen to warrant a closer examination when time permits. Surface sherds were all of Puuc types.

Across the rails, west of Xmulenscacau in the henequen plantation of the Hacienda Dzitincabchen, are also found ancient remains. About 2 km south of the beautiful Cenote Scoje, in a plantation called Zapata, are two pyramids of nearly the same size as the one seen at Xmulenscacau, but without a single worked stone. It is assumed that when the hacienda built all the face stone in the vicinity, used for building material.

Roughly a league from Hacienda Dzitincabchen, starting on the Sacalum road and turning north after about 1 km, weaving alternately through henequen fields and underbrush, one comes upon a cenote called Uxuchen. This cenote has a perennial water hole. It was said to have inscriptions carved on the rock walls. On examination this appeared to be so, but carvings were covered with fungus obscured. Later, during the latter part of March, Strömsvik, accompanied by Pol-

lock and Proskouriakoff, returned to study so-called inscriptions. On being scrubbed clean with fiber brushes and water, a band of pictographs emerged. These were sketched and photographed.

Excavations at Structure Q-58 Main Group at Mayapán were begun early in February. Strömsvik undertook the exploration of a deep vertical shaft that penetrates the pyramid substructure of this building from top to bottom. The present *comisario*, or mayor, of Telchaquillo, Sr. Felix Pat, relates that when he was a youngster, about 40 years ago, the owner of Hacienda Xcanchakan instructed Pat's father to dig out the shaft. Pat can remember nothing about what was found. At the bottom of the almost 1 m of debris that remained in the shaft, a solid, hard lime floor was met, and below this another. Under the last floor natural red soil, or *kancab*, was found in the irregularities of the underlying limestone bedrock. Pieces of the common Mayapán Red Ware were found in the *kancab*.

An attempt was made at tunneling under the stairway of Structure Q-58. This was abandoned as impracticable because of the amount of labor involved in solidifying the loose fill to ensure safe working conditions.

Guided by a depression in the surface of the terrace before the temple building of Structure Q-95, excavation disclosed another shaft similar to that in Structure Q-58. The rectangular upper passage was completely blocked with rocks. Below this the shaft became round and widened out to the form of a bottle, the space below the neck being filled with rubble mixed with earth. A few crumbly splinters of human bone were found, and sherds started to appear. Halfway down, the fill consisted mainly of human bones, mixed with ashes, potsherds, and rocks. Quantities of bones had been thrown in, disarticulated, helter-skelter, with masses of food refuse, such as animal and fish bones and ashes. A tiny gold flake was discovered and an even smaller copper fragment. A fair amount of potsherds also were found.

When bedrock was reached, a little over 4 m down, it was found that an oval stone had been fitted into a hole in the rock; when this was pried loose and lifted, an open space was revealed below. With a flashlight one could see a pottery vessel standing atop the ashlike debris about 0.5 m down. Also visible were the fragments of a child's skull sticking out of the ashes. In spite of high expectations, this small chultun-like cave contained little beyond a few potsherds, the fragmentary bones of two children that apparently were dismembered before being thrown in, and finally, at the bottom, the skeletons of two adults, a male and a female of advanced age, but without any recognizable grave offerings.

About 150 m east and a little south of Structure Q-162, the Castillo, lies Structure Q-127, a portal vault. It

is not associated with any existing wall, and its function as an entrance or exit is not clear. Since this is the only example of its kind known at Mayapán, it was thought advisable to examine it thoroughly. Part of the spring of the vault could be seen standing above the fallen debris. Like the Great Wall of Mayapán, it was constructed of crudely broken, unshaped or roughly shaped stone slabs laid without mortar. A narrow passage at the west connects with a portico, with one masonry pier and two columns, that faces east. The plan is essentially the same as that of the major gateways in the Great Wall (Shook 1952a). The western passageway of the portal undoubtedly was vaulted, as the first few stones above the spring could be seen. There is some question as to the manner in which the vault over the portico was constructed.

Separated by a hand's width from the east face of the northern half of Structure Q-127 is Structure Q-127a, a single-room temple with a columnar doorway facing east. The substructure, which carries a broad but simple molding at the top, shows some of the best masonry seen thus far at Mayapán, quite different from the typical masonry of the site. In spite of careful search clear-cut age difference, could be established between these two, widely different structures. A refuse or ceremonial dump, rich in pottery of the Mayapán period, was found in the narrow space between the two buildings.

Solidification and a small amount of reconstruction were undertaken in connection with several structures that had been excavated in the Main Group this past season. This work, which was in, the charge of Strömsvik, began early in April, and continued to the middle of June. From time to time, as need arose, Strömsvik consulted with Dr. Alberto Ruz L., of the Instituto Nacional de Antropología e Historia, in regard to methods and details of solidification and reconstruction.

Work began with Structure Q-82, a temple building. First the facing stones of the balustrades were carefully taken down and laid in proper order for replacing. All humus soil or loose earth was then removed to a depth of about 30 or 40 cm, both from the faces of the balustrades and from the staircase walls. These were then rebuilt with the removed stones, laid in the same order in rich lime mortar. The cracks between the stones were left open to be painted with cement at a later stage.

The balustrade at the south side was completely rebuilt with a vertical panel at the top. The vertical panel was to accommodate a serpent head with a deep tenon that was found at the bottom of the balustrade. As the lower stones of the balustrade were in place, precluding the possibility that the head had been tenoned into the masonry there, it was assumed that the

head had fallen from above and that a vertical panel at the top of the balustrade was the most likely original location. There are existing examples of such architectural design in the Maya area, and it was thought better to have the serpent head placed in the structure in a plausible manner than to have it lying loose on the ground.

The five existing steps of the stairway were reset in the manner described above except that here the humus and earth were removed to a greater depth before the fill was replaced, with rock and lime mortar, on which the steps were built. At the south side, abutting the rebuilt balustrade, the four missing upper steps, were partly reconstructed to indicate more fully character of the ancient stairway.

It was difficult to rebuild the substructural terraces to conform to the rude condition in which they were found, as native masons, in spite of having only elementary knowledge of masonry, could not bring themselves to build a wall crude as the ancients had made these. It should be pointed out, however, that the walls originally had been covered with a heavy coat of plaster.

The northeast corner of the temple building, which was missing structure was excavated, was duplicating comparable measurements of the south side of the building. A check against this location of the corner was provided by a single stone of the inner face of the north wall that remained in position. The two columns forming the triple entrance to the temple were reset to height they had when found, and another drum was replaced on the south column to give a better indication of the original appearance of the building. The walls and benches inside the temple were taken down and rebuilt to appear as nearly like the original as possible.

A few patches of floor were laid and were spotted with small stone chips to make the new floor clearly distinguishable from the old. Wherever the original fill of the structure protruded, as between the missing steps and the edge of the terrace floor it was capped with rocks laid in lime mortar and painted with cement, to look as much like the original fill as the materials used permitted.

At Structure Q-71, a shrine, the same procedure was followed. Except for the replacing of a part of the upper course of the cornice molding on the south side of the substructure and a few step stones, the structure was rebuilt to the closest possible likeness of what was uncovered. At the back or east side, the mid section of the substructural wall, carrying the original moldings, was left unexcavated; it remains covered with the debris accumulated since the building fell in ruin. The sides of the gateway from the court of the Castillo to the court on which Structure Q-71 faces were cleared and solidified to the height found.

In the solidification of the small platforms Q-59a, Q-59b, and Q-60, the same methods were followed as with Structures Q-82 and Q-71. These platforms are so small and low that, in spite of careful rebuilding and cement pointing, it is particularly important that they be kept free of the overwhelming vegetation if their solidification is to endure. This holds true, of course, for all reconstruction of buildings in these climates, however strongly built.

40.16.

ROBERT E. SMITH

Pottery of Mayapán and Vicinity

YB 52:279–282, 1953

The first two months of the 1953 field season were spent investigating Cenote Ch'en Mul, located just east of Structure Q-162, the Castillo, in Square Q at Mayapán (Jones 1952). This cenote was selected because of its important central position in the main ceremonial group. Brainerd had dug two pottery test trenches there in 1942 and had found considerable depth of debris [Chapter 4.10].

Ch'en Mul is a jug-shaped cenote with a few banana trees growing on the floor in soil washed in through the rather large circular opening. The mouth is near the southern end of the cavern, the northern part being roofed by natural rock and extending north and northeast for more than 60 m. The cenote was used in ancient times as a source of water.

The main purpose of investigating this cenote was to obtain a good sample of pottery. A related project was to cut through the mound of dirt immediately below the cenote mouth. This mound, which was in the shape of a shallow crater, appeared to be of natural origin but, offered the possibility of proving to be in part artificial. It was also planned to find all possible water holes.

During the first week, with the assistance of R. M. Adams, a map was made of the cenote and pottery was removed by levels from pockets and depressions found close to the main (north) water hole. Although this pottery was predominantly of the Mayapán period, a few Puuc and Classic types were found. Of considerable interest was the appearance of Black on Cream Ware (Brainerd's Coarse Slate) in quantity, especially in the lower levels. Naturally, water jars were

preponderant, forming 95.2 percent of all sherds from this area.

The work on the mound of earth and debris below the mouth of the cenote was initiated by cutting a 1.5 m wide trench through the center from north to south, beginning at the south side of Brainerd's southernmost trench. Later, a column approximately 2 m square was cut from the west side of the trench close to the center of the crater. The column was about 2 m deep, arbitrarily separated into five strata roughly 40 cm each. Mayapán Red, Incensario, Black on Cream, and Puuc Wares were encountered at all levels; Fine Orange, in all but the lowest. A very few Puuc sherds appeared in the three upper strata, whereas in the two lower levels they formed considerable percentages (11.4 and 32.6 respectively).

A most important part of this central mound was the practically sterile red earth, locally known as *kancab*. It appeared below the surface soil, which varies in depth, from 50 to 84 cm, and, at a very early date, it probably composed most of the mound. The fact that a few small potsherds were encountered throughout this red earth may be ascribed to root channels, of which a number, of fair size, were noted. *Kancab* was, and still is, used to color pottery and in the construction of native house walls. It is presumed that large areas of gray and brown earth, stones, and pottery, apparently intrusive in the red earth, collected after the removal of *kancab* for the above-mentioned purposes.

Finally, a search was made for water holes other than the one mentioned above, which was about 2.5 m in diameter. One was located about 60 m from the banana grove, north 30 m, then east about 30 m. Another was found at some distance west of the mouth of the cenote, apparently under the Castillo. Each was smaller than the first. All the water holes were reached by trails still visible because of the sherds outlining them.

An exploratory pit, later extended into a 5.3 m trench, was sunk in the floor of Cenote X-Coton, resulting in what is probably the best stratigraphy so far encountered. This cut, Pit 3, situated about 9 m north of Cave 4 and 1 m west of Pit 2 (R. Smith, 1953, Fig. 1), was 1.5 m square by 1.8 m deep. Like the trench in Cenote Ch'en Mul, this pit-trench showed sections of *kancab*. The surface soil, varying from 50 to 80 cm in depth and composed of humus, roots, and some small stones, included some very large rocks, a few of which, probably fallen from the rim of the cenote, showed on the surface. Below were sections of sterile *kancab* and many large rocks, small stones, and sherds interspersed in a reddish-brown earth. Finally, at the bottom tremendous rock sections of the original cavern roof were encountered. A small man, was able to squeeze between some of these and, working in brownish sandy

soil apparently reaching to bedrock, obtained a small sample of largely Puuc and Classic ceramic types. This cut (pit and trench combined) was divided into six strata, which showed from top to bottom a steady decline in Mayapán-period pottery types and an equally steady increase in Puuc types.

The investigation of what apparently was an ancient *sascab*, or marl, quarry (370 S, 35 E), begun by Shepard in 1952 was continued. In the deepest part of the quarry Shepard had sunk a small pit about 70 cm deep, which actually marked the depth of the surface soil. This original pit was broadened and extended and call Pit 1. The material found strongly suggests that the location was a refuse dump, which is not surprising since house platforms surround the quarry. Pit 1 contained over 3,500 sherds, many flint chips, obsidian knife-blades, shell fragments, and animal bones, plus a shell ornament, worked bone, a flint point, and a mano. The pottery was preponderantly of the Mayapán period from top to bottom. The only significant change noted was the very definite decrease in effigy incensario sherds in the two lowest levels. No Black on Cream pottery was found.

Another pit was started in the southeastern part of the same quarry, but solid rock was encountered at a depth of approximately 40 cm. Ceramically, the Pit 2 material equates with that found in the surface soil of Pit 1.

A basin-shaped depression, probably the blocked entrance of a cenote, was investigated in Square L (450 N, 275 W). It measured roughly 16 by 24 m at the rim and had what appeared to be a subsidiary opening a few meters to the southeast. Four levels were cut in the main depression. The surface humus, a shallow stratum, contained virtually no pottery. The next three levels, composed of small stones and dirt, yielded only a little over 200 sherds, all belonging to the Mayapán period. At a depth of 1.7 m very large stones, closely packed, made further descent extremely difficult. The small pottery sample thus far obtained did not warrant further digging, and the project was abandoned.

In the main plaza of Telchaquillo, a village close to Mayapán, there is a sizable cenote with a large main water hole. The cenote is jug-shaped but has two mouths, one centrally placed, the other a ramp-like entrance from the west which terminates in crudely fashioned steps near the water. Another stairway, well constructed, was uncovered in the center of the cenote. There is also a well shaft cut through the roof of the cavern, presumably in colonial times, but no longer used. Brainerd in 1942 dug a pit in the southeast corner of the cenote, finding only post-conquest pottery [Chapter 4.10].

After the cenote was mapped, a pit almost 2 m square was sunk about 2 m northwest of Brainerd's.

Four 30 cm levels were cut. The surface level contained nothing but post-conquest red jars (some are brownish) and three glazed white or polychrome pieces. The next level included 16 Mayapán Red jar sherds Plus 2 Black on Cream fragments with 172 fragments of post-conquest red jars. The stratum below had a total of 558 sherds, of which eight were Mayapán Red. The bottom level was a small lot of 92 sherds, including 17 Mayapán Red and one from a Puuc Medium Slate jar. The pottery from these excavations that has been identified as Mayapán Red may conceivably be, with the exception of two rim sherds, of post-conquest period. At times body sherds of these red wares are all but indistinguishable, a slight difference in surface texture being the only identifying mark. Rim forms, however, are distinctive, and the two rim sherds mentioned are unquestionably Mayapán Red.

A second but much smaller water hole was found due west of Pit 2, and a small nearby pocket containing dirt and potsherds was excavated. This lot of 45 sherds had only two post-conquest examples; the rest included two Mayapán Red, 28 Black on Cream, three Puuc, seven Early Classic, and three unidentified fragments. Pit 3 was dug under and north of the crude north stairway. It had two strata, the upper having a preponderance of post-conquest red jar fragments plus a few Mayapán Red, Black on Cream, and Puuc sherds, the lower including fewer post-conquest jar sherds and a greater proportion of the earlier types.

The pottery of Mayapán is abundant, almost 150,000 sherds having been collected thus far. It is simple but for the effigy censers, which are elaborately adorned and full of symbolism. As might be expected, a preponderant proportion of the pottery (over 80 percent) seems to be representative of the principal architectural period of the site, the so-called Mayapán period. The ceramics of this period from the main ceremonial center are discussed by Shook (Chapter 40.13). The trends noted there are essentially the same as those seen in the pottery from elsewhere in Mayapán. Differences worth noting are that effigy censers occur in considerably greater proportion in the ceremonial center, whereas Black on Cream Ware (Coarse Slate) is virtually absent in house mounds, although, the number of these presumably domiciliary structures so far excavated is not sufficient to be at all representative of the site as a whole.

As was noted in last year's report [Chapter 1.41], the only other major ceramic period at Mayapán is that of the Puuc (3.4 percent). Parenthetically, it should be noted that 13 percent of all pottery from the site is unidentified because of its fragmentary nature or weathered condition. Often associated with the Puuc pottery is a small amount of polychrome, some of it Petén-like, some of it local to the peninsula, seemingly,

of both Early and Late Classic periods. Most of this Pottery, Puuc and Classic polychrome, comes from excavations in cenotes.

A few figurines (77) occur at Mayapán, and there are trace amounts of special forms (miniature vessels, masks) and rare wares (Thin Slate, Fine Gray, Tohil Plumbate). Also in trace amounts are Formative-period sherds.

The important trade ware at Mayapán is Fine Orange (545 sherds). Mostly it seems to be of a late type associated with the Mayapán period, although rare examples of X and Z types occur.

The ceramic problem concerning the Toltec period at Mayapán, mentioned in last year's report, remains unsolved. It is likely, moreover, that only further work at Chichén Itzá can provide the answer. With the exception of two sherds of Tohil Plumbate and a handful of X Fine Orange, no pottery has been found at Mayapán that can at present be assigned to the period in question. There is some reason to believe that the site was not occupied at that time. We cannot put aside the alternative, however, that the Toltec period, commonly thought to intervene between Classic Puuc times and the Mayapán period, may in fact have been coeval, or in part coeval, with either the Puuc or the Mayapán period. In such case the occupation of Mayapán might have been continuous from Classic to protohistoric, or even historic, times.

40.17.

TATIANA PROSKOURIAKOFF
Artifacts of Mayapán

YB 52:282–283, 1953

Although there was more excavation this season than in 1952, the number of catalogue entries (238) was about the same as last year (229). The increased number of objects from excavations was offset by greatly reduced surface collections. The material gathered this year is consequently more evenly divided among different classes of artifacts, and less weighted in, favor of stone tools, which survive exposure best. Among the 54 chipped flint implements recorded this year are five arrowheads, rarely found elsewhere in Yucatán. Notable, too, is a small (approx. 6 cm) roughly, triangular or hatch form with a working edge at the base. Most chipping at Mayapán is of indifferent quality,

but several finely chipped, large thin blades, came from a cache in the Main Group, and three knives or points, similar in form to the sacrificial knives of Chichén Itzá, were found with human skeletons near the surface.

Of the larger tools recorded, 36 were of limestone or chert and only eight of volcanic or other imported stone. Obsidian flake-blades were numerous. All these were recorded, but only a few outstanding pieces were included in the specimen catalogue. The catalogue also lists several obsidian cores, two “thumbnail” scrapers, and one particularly large, fine chipped blade found with similar blades of chert in the previously mentioned cache.

The jade collection from Mayapán is still meager. Twenty beads were recovered, only one of which is distinguished by its unusually large size (diameter 4 cm). The jade varies in quality and color, and many pieces are discolored by burning. Other objects of fine stone include four fragments of greenstone celts and a small (6.6 cm) head of dark igneous stone carved in the Olmec style. This is probably the most interesting piece in the Mayapán collection. It is carved in the manner of a “mask,” hollowed out in back and bearing two perforations on each side. The typical features of an Olmec face are depicted in very simple forms, lacking the delicate curvatures of the finer Olmec sculptures. It is hard to judge whether this piece survives from the Classic period of Olmec art or is a later imitation.

Artifacts of materials other than stone include fragments of sculptured stucco, bone awls and needles, perforated animal and human teeth, pottery spindle whorls, a pair of pottery earplugs (probably of Fine Orange paste), a copper bell, a tiny fragment of gold, and numerous ornaments of shell. A fragment of a shell ring of the type that has been called a “collar” is incised with hieroglyphs. The glyphs have ascending coefficients of 1, 2, 3, and 4 dots, suggesting a series of days of the *tzolkin*, or Maya day count, but although the glyphs look Maya, they cannot be identified with any known characters. If they are not merely an individual invention but represent a variant of Maya calligraphy or a system of writing yet unknown, it is hoped that more examples will be discovered.

40.18.

A. LEDYARD SMITH AND
KARL RUPPERT
Mayapán, Yucatán

YB 53:267–268, 1954

About two-thirds of the 1954 field season, January 16 to May, was spent in completing the square-by-square surface examination of the structures within the Great Wall of Mayapán or directly associated with the site. This survey, started in 1951, had occupied most of Ruppert’s and Smith’s time during the three preceding field seasons [Chapters 40.3, 40.5, and 40.10]. The remainder of the 1954 season was devoted to excavation at Mayapán and exploration at Chichén Itzá. Ruppert also investigated several small sites in the environs of Telchaquillo.

The survey of Squares Y, Z, and AA this year completed the surface examination (Jones 1952). During the season 813 structures were inspected, making a total of 4,140 examined and recorded on file cards since the beginning of the survey. This is naturally not the exact total number of structures at the site, for not only were there probably some that have been destroyed completely in the building of the many modern walls, but further excavation may bring other structures to light. The approximate number of buildings which from their remains can be said to have served as homes is 2,100. There are, however, many platforms with no traces of superstructures that may well have supported buildings, constructed entirely of perishable materials, which possibly served as dwellings. These are often found associated with house groups and may, of course, have been kitchens or have had some other function. Altar shrines also are often associated with family groups. Although no new types of dwelling were found this season, some refinements or amendments were noted in the general categories established during previous years.

As has been the custom in past seasons, the presence of Puuc-type stones in buildings was noted, and the location of metates was indicated. Almost all metates are of the legless, grooved kind. Several fragments of metates with legs were found, however, and there was one complete example, including the mano. The metates without legs are of limestone; the kind with legs are of tufa, a material not indigenous to Yucatán. An unusual specimen recovered is one with legs and grooved.

During the first part of the season several days were spent in a small group of mounds in Square A,

about 250 m outside the city wall. The group, which rests on a slight rise, is surrounded by a stone wall averaging about 1 m high and 1.4 m thick with an entrance in its north end. Several pits were sunk in one of the structures, exposing a tomb containing two skeletons. The pottery recovered all proved to be of the Mayapán Period.

Structure Q-62 was chosen for complete excavation, as it was situated in the main ceremonial group and was a good example of an average dwelling. It was also hoped that its relationship in time could be established with a nearby colonnaded hall, Structure Q-64. Unfortunately this could not be done. The dwelling consists of a front area with three benches and a back part divided into three rooms: the central, room having a bench along its back wall. Passageways lead from the front to the rooms in the back. The west rear room has a doorway opening out of its west side. The lower portion of the walls was made of stone and probably never rose in more than 50 cm. The upper part of the walls and the roof undoubtedly were of perishable materials. Two burials were found associated with Structure Q-62. One, containing three adult skeletons and three human effigy incense burners, was in front of the structure in line with the central passageway; another was under the central bench. The latter burial held three child skeletons and a collection of pottery whistles representing human figures, animals, and birds. After this building was excavated and mapped, the masonry walls and plastered floors were solidified by Strömsvik.

Other excavations were carried on in various structures in Squares Z and AA where the possibility of finding burials was indicated by depressions or where part of a buried vault was showing. In several instances burials were exposed; in others, nicely constructed stone vaults were found with no skeletal remains. One of the best built vaults was under the west bench of a large dwelling with stone columns (Structure Z-4-b). Here the vault, which was partially corbelled, was entered through a narrow passageway leading from the terrace at the west end of the building. In this case the vault was filled to the spring of the arch with earth, stone, and pottery, and the passageway was completely filled.

During the three years in which excavations have been carried on in house-type structures, pits have been dug in every location associated with them. Burials were found in benches, passageways, front and back rooms, and terraces. There does not seem to have been any definite rule about burying the dead, for not only did the location vary, but also the method. Sometimes the remains were placed in well, built tombs, sometimes in simple cists through the floors of structures. There is no doubt that in most cases the well made

vaults were constructed at the time building the house, with the idea of eventual use for burial purposes.

Although little, grave furniture was found with burials this season, some interesting finds were made, including several copper rings, three still on one of the phalanges of a skeleton, and a pair of copper tweezers. The recovery of parts of pottery figurines with articulated arms and legs was also interesting.

Sherds of the Mayapán Period were present in all the samples recovered by Ruppert and Smith. In the more elaborate house types excavated by Thompson and Proskouriakoff there was a small percentage of Black on Cream Ware which was not represented in pottery from dwellings outside the proximity of the main ceremonial group. It is possible that the people living in the more pretentious dwellings used this type of pottery. Excavation should throw more light on this subject.

During the season four sites, Chun Uc, Chan Pixya, Haol, and Jaba, within easy walking distance of Telchaquillo were visited by Ruppert. They are small ruins located near cenotes and all have house types like those found at Mayapán.

40.19.

TATIANA PROSKOURIAKOFF

Mapping and Excavation at Mayapán

YB 53:268–271, 1954

The map of the Main Group begun last season was completed this year with the assistance of Strömsvik, who performed all the excavations necessary to uncover building plans. The area covered now includes about 130 structures.

The extension of the map has not modified substantially the architectural picture as it was outlined in 1953 [Chapter 40.12]. The colonnaded hall remains the dominant building type at Mayapán, with 22 examples mapped, of which the larger and the more elaborate tend to occur in the southern half of the Main Group. Residential use of these buildings is suggested in a number of cases by the close association of dwelling-type structures, which seem to be built to provide household service for the halls. This greatly enhances the possibility that the colonnaded hall of Mayapán is a counterpart of the Mexican *Telpuchcalli* (bachelors' house) or of the *Calmecac* (monastery). Almost every

hall has a central ceremonial feature, such as a niche or an altar, interrupting the rear bench. Often this central feature was later enclosed in a small shrine; sometimes there is a shrine in the center of the front stairway. In at least nine instances, a platform, shrine, or small temple stands in front, facing the colonnade.

Temple architecture at Mayapán reveals two types of plan and a number of variations. The Castillo, the partially vaulted Structure Q-80, and Structure Q-95 are prominent temples, each of different design. Structures Q-152 and Q-214 both are round in plan, but differ in size, interior arrangement, and roof construction. A more uniform group is formed by Structures Q-58, Q-143, Q-159, and Q-218, all pyramid temples with grotesque columns probably ending in serpent tails. These temples answer the description of the *Cu* or *Teupan* of Mexico. Their number at Mayapán recalls the traditional fourfold division of Mexican towns as well as the four "divisions" or lineages mentioned in Maya history. In front of each are a shrine and platforms centered on the axis of the façade. The second type of temple plan is characterized by a lower substructure, two plain columns in the doorway, and two interior piers. Structures Q-82, Q-55, Q-88, Q-153, and Q-202, representing this type, are less prominently placed than the pyramid temples and do not have subsidiary structures.

The 36 temples and colonnaded halls, together with Structures Q-42a, Q-158, and Q-163a, the nature of which is not clear from the visible remains, can be considered the major civic and religious building of the central group. There are numerous minor buildings that yield less readily to classification. What we call a shrine is typically a one-room building raised on a small platform, facing and centered on a temple or colonnaded hall. Identical small buildings, however, occur independently; on the other hand, subsidiary structures have every degree of elaboration and some are better described as small temples. A general class of subsidiary and minor buildings of one or two rooms would include 23 structures of known plan. Five of these are subsidiary temples or elaborate shrines (Q-141, Q-148, Q-149, Q-155, and Q-201); six are smaller shrines (Q-69, Q-71, Q-89, Q-90, Q-98 and Q-216); 12 are one-room buildings of doubtful function, some on independent platforms and others in some way attached to larger structures. Structures Q-61a, Q-82a, and Q-157a are tiny constructions even smaller than the typical shrine, built possibly to house a single idol. The interior of the largest is hardly more than a meter square.

In addition, there are 21 platforms of various kinds, some of which may have supported small superstructures with plans not now apparent. Eight of these are centered on larger buildings, and one, Structure Q-84,

may have served as a platform for monuments. Ten other minor structures are too fragmentary to identify, and two sizable platforms, Q-152c and Q-160, have only traces of masonry walls and very little debris to indicate a superstructure. They may have served as foundations for perishable buildings, or perhaps they were not in use at the time of the city's abandonment. Sixteen dwelling type houses and platforms associated with them complete the total of 114 structures in the ceremonial group. Sixteen others mapped belong to adjacent house groups. The area covered is about 200 by 300 m. This is a very crowded arrangement as compared with plans of earlier ceremonial centers, which are designed more spaciouly and on a larger scale. It undoubtedly results in part from the space limitations set by the city wall and in part from a decentralized ritual organization-serving a multiplicity of cults.

Thompson's excavations in Structure Q-208, a dwelling-type building, uncovered some fine ritual objects, and architecture that rivals in scale and quality that of many public buildings. The question arises whether such structures were homes of the aristocracy, or if they were, community ritual centers on the order of the Mexican *calpulli*. There are several imposing groups of such houses in the immediate vicinity of the ceremonial center that were not covered in the house survey [Chapter 40.10] and are indicated on the map of the site with conventional mound symbols. One such group was cleared of bush this season, and minor excavations were made to clarify its plan.

The group is about 200 m east of the Castillo and is one of two that are almost identical in plan. It is built on a natural rise in ground, terraced on all sides to form a raised court. Three houses (R-85, R-86, and R-87) set on high foundations, enclose the court on the north, west, and south; at the southwest corner steps lead down to a vaulted passage which provides entrance and exit from the court under one of the houses. The building plans are typical of the Mayapán dwelling, with an open front gallery and a range of rooms in back. The galleries, however, are unusually wide (that of Structure R-87 exceeds 4 m), and the heavy columns are widely spaced. What masonry can be seen is superior to any observed in the Main Group.

On the east side of the court, a less solidly built house, Structure R-88, stands directly on court level. In front of it are two small shrines. One of these, Structure R-90, facing west and centered on Structure R-86, is built on an extension of an earlier terrace. The other, Structure R-89, facing in the opposite direction, is built against this terrace at a lower level, and is approached by a short flight of steps leading into a small areaway. Two "column" altars with carved moldings and a cylindrical stone were lying in the court, apparently moved from their original positions.

It was obvious that someone had previously excavated in this group. A pit had been dug destroying the head of the stairway leading into the vaulted passage. Another was noted in the doorway of the southeast room of Structure R-88, and third in front of the shrine R-90, where one, of the "column" altars probably stood. In clearing this pit, we found a small cache bowl representing a turtle and containing a fine obsidian flake-blade in place just under the surface of the court. A fourth early excavation was a trench through the northeast room of Structure R-85, breaking the medial wall and passing into the bench of the front gallery. It is inconceivable that this was done by an experienced archaeologist or by the departing Maya. The holes were patently made in search of caches and objects of value, but there is little hope of learning when and under what circumstances.

The lower shrine, Structure R-89, had also been entered; there was a pit inside it against the rear wall, where normally an altar would be placed. Afterward, the areaway had been filled with stones, many of which are carved in the Puuc style. Sizable trees had grown up in the areaway since it was filled, but the growth of the Yucatán bush is so rapid that this hint of the age of the excavations eliminates only the past few years.

Unlike most buildings at Mayapán, R-89 still retains its roof intact. The construction is something in the nature of a very, crude vault, formed by a corbel of several layers of irregular slabs projecting from the three free-standing walls, and supporting one very large and one smaller capstone. The door is spanned by a stone lintel, and the upper façade is a single three-member molding probably interrupted by a central decorative feature. There are traces of secondary construction on the roof. In front of the shrine are two stone rings set into the floor of the areaway, which is drained by a small rectangular opening in the floor near the northeast corner. The areaway is secondary to the shrine, which in turn appears to be later than the terrace against which it is built. There are clearly several building periods which involve other structures in the group, but it was not possible this year to investigate the sequence in detail.

Minor investigations included the removal of debris from the main stairway leading to the court at its northeast corner, and from some of the rooms of Structure R-88, which has a rather unusual plan that required clarification. Partial clearing of the stairways to Structures R-86 and R-87 and to the vaulted passageway showed at least two sequent building operations, and a buried terrace in the middle of the court suggested a radically different arrangement of the group at an earlier stage. It is hoped that more excavation can be carried on in the group, for it shows prom-

ise of yielding a determinable sequence of constructions containing ritual artifacts of high quality.

40.20.

EDWIN M. SHOOK

Excavations in Mayapán

YB 53:271–273, 1954

The 1954 field season witnessed the continuation of a program to investigate systematically one or more examples of each type of building found within the principal ceremonial group at Mayapán. This study, initiated in 1953, engaged the efforts of most of the field staff and neared completion by the end of the present season. As part of the general plan of investigation, Shook excavated the Castillo (Structure Q-162) and a round temple (Structure Q-214). He also made stratigraphic tests around these units for data bearing on the growth of Mayapán and the evolution of ceramics during the major occupation of the site. The pottery from these excavations was studied in conjunction with that recovered by Irving, Pollock, P. E. Smith, and Winters from other ceremonial buildings.

The most prominent architectural feature at Mayapán is the so-called Castillo or Temple of Kukulcan. It is a terraced pyramid, approximately 15 m in height, with a balustraded stairway on each of its four sides. Tightly clustered around the pyramid are the numerous lesser temples, colonnaded buildings, shrines, houses, and platforms which form the civic and religious center of the ancient city. Several of these units, built after the Castillo pyramid, abut or overlie its lower terraces.

The study of Structure Q-162 established the existence of an earlier, buried pyramid entirely enclosed by a later one. The inner unit, representing one of the first temples erected in the Mayapán Period, apparently differed only in size from the final structure. Both had plain, battered terrace walls constructed of the typical Mayapán block and slab masonry. Though we probed to a depth of 2 m through the dry rock fill below the top floor of the later temple, we did not encounter an earlier superstructure. It appeared likely that the building had been razed by the builders of the second temple, as was the case in Structure Q-58 [Chapter 40.13].

Our excavations at the north and west base of the Castillo disclosed that only two successive court floors

had joined the earlier pyramid, whereas at least nine floors, each representing renewed building activity, turned up to the stairway of the outer unit. Also, no less than 17 successive lime floors were found in the late temple on the summit of the pyramid. These numerous remodelings and the pottery sealed below the primary floor indicate that the construction of the later Castillo took place quite early in the Mayapán Period.

The temple, similar in plan to the Castillo in Chichén Itzá, has its principal entrance on the north side. Here a triple entrance formed by serpent columns leads to a transverse chamber. Access to the central sanctuary is gained through a single doorway from this northern chamber. Surrounding the east, south, and west sides of the inner sanctuary, but with no interior means of communication with that room, it is a narrow continuous gallery with a single exterior doorway centered on each of the pyramid stairways. The masonry walls of the temple supported a flat beam and mortar roof. The roof types was evident from the composition and amount of fallen debris in the rooms, the absence of stone adequate for vaulting and particularly from the width of the inner sanctuary. This chamber originally had had a masonry altar against the center of the south wall, opposite the doorway. Before the collapse of the temple roof, which buried the floor and lower walls to a depth of 1.3 m, the masonry altar had been torn out and a hole dug 50 cm below it. We assume this destruction was done, at the time Mayapán was abandoned, by looters in search of offerings known to be contained in the altar. Why they took the trouble of refilling the hole with the debris, from their digging is not clear. Among this disturbed material we recovered shell beads and ornaments, obsidian flake-blades, chipped flint implements and many pottery fragments from small vessels and censers. The pottery objects may, have been accidentally broken, and the small artifacts of shell and stone overlooked or not valued by the ancient looters.

Most of the 17 floors representing different refurbishings of the temple bore evidence of much burning. The heaviest concentration of burning took place on the north-south axis of the building from the front terrace to the altar in the sanctuary. Despite the blackened areas and lenses of copal incense between certain floors, there were relatively few censer fragments on the temple floor or at the foot of the north stairway. Several other temples (Structures Q-58 and Q-82, for example), colonnaded buildings (Structures Q-81, Q-97, Q-151), and shrines (Structures Q-69, Q-71, Q-90) were found to be littered with broken censers. Perhaps the Castillo, being the most important temple of the city, was carefully tended and kept clean, whereas slovenliness was permitted in less sacred buildings.

No burial shaft was found in the Castillo. A tapered stone block of a type associated with sacrifice was, however lying at the base of the north stairway and suggests that, sacrifice may have been made before the temple.

The next building investigated was a round temple, Structure Q-214, located about 100 m south of the Castillo. It occupies the central position on the west side a small plaza and faces east toward a temple with serpent columns (Structure Q-218) on the opposite side of the plaza. Structure Q-214 consists of a circular out wall with the interior space divided in half by a partition wall. A single doorway provides access to the front room; another in the partition wall, to the rear chamber. These rooms, small and semicircular in plan, apparently had been vaulted. A burned area 50 cm in diameter on the floor at the center of the rear chamber and opposite the doorway indicated some ceremonial use of the temple. Also, many fragments of human-effigy censers lay on the floor near the back wall, and quantities of such pieces came from around the base of the platform supporting the temple.

The 2 m high platform had square corners on the east or plaza side; on the back or west side each corner was rounded stairway with plain flanking balustrades led from the plaza level to the broad terrace in front of the temple. Originally, the flight of steps was uninterrupted, but at some time after the primary construction, the lower central part of the stairway had been cut into and a miniature shrine room erected there. This tiny roofed chamber housed a stone idol depicting a bare-breasted seated female. The statue sat against the back wall of the shrine facing the doorway. Below the sculpture we discovered an offering that consisted of several jade and shell beads in a small effigy vessel. The female figure, the first of its type to be found in Mayapán, may be the important Maya goddess Ix Chel, and thus may throw a new light on the function of the round temple.

Stratigraphic excavations were made in a deep midden of temple and household rubbish off the southwest corner of Structure Q-24. These produced a sample of sequent materials for the latter half of the site's occupation.

Of more value in establishing ceramic chronology from the beginning of the Mayapán Period were the excavations between Structure Q-77 and the north stairway of the Castillo. Here a vertical sequence of 13 plaza floors from bedrock to the present-day surface spanned the life of the site during the Mayapán Period. Of the oldest material, in the soil overlying bedrock and sealed by the earliest constructions, 94 percent was of Mayapán Period types, the remainder being weathered fragments of Puuc and other pre-Mayapán types. In other words, the small amounts of earlier

material in the old surface soil indicate habitation in the immediate vicinity prior to the Mayapán Period occupation, but there was no evidence of any construction's having existed in the area tested until the establishment of the political capital of Mayapán.

The major pottery types of the Mayapán Period were current in the oldest level and, except for Black on Cream, continued with minor changes throughout the sequence of floors, or for that matter until the abandonment of the site. Pottery censers are present from the beginning, but the human effigy hourglass type does not appear before the latest constructional activities and is most common on the surface floors, a condition true of every type of structure so far investigated in Mayapán.

40.21.

PHILIP E. SMITH

Excavations in Ceremonial Structures at Mayapán

YB 53: 273–276, 1954

Virtually the entire season was devoted to the excavation of three ceremonial structures in a relatively concentrated area of the Main Group. The most important of the three was a temple, Structure Q-153, adjoining Cenote Ch'en Mul, which is at the eastern base of the Castillo. Following the excavation of this temple and its adjacent constructions around the mouth of the cenote, two smaller, single-room buildings (shrines or subsidiary temples) about 30 m east of the cenote were investigated. The work in general was a continuation of the effort begun last year to determine by intensive digging the nature of certain ceremonial structures and their functions in the life of the Main Group.

Owing to the obviously significant ritual position of Cenote Ch'en Mul in the main ceremonial center of Mayapán, it appeared desirable to try to determine the nature of the adjoining temple and whether it would give any indication that a cenote cult had been fashionable at Mayapán as at Chichén Itzá. A Spanish missionary who visited Mayapán less than 50 years after the conquest of Yucatán reported that according to local tradition victims were thrown into this sink after being sacrificed to the gods. Digging inside the cenote during the previous season (R. Smith 1953) es-

tablished that water holes still exist and that they had been used in the Classic as well as in the Mayapán Period; but nothing pointing to the ceremonial casting-in of humans or objects, as had occurred at the Sacred Cenote at Chichén Itzá, was found by the investigations inside Ch'en Mul.

The mouth of the cenote is about 10 m in diameter and roughly circular. The temple is built on the south side, less than a meter from the present rim, so close, in fact, that a good deal of the collapsing superstructure has fallen into the cenote. The structure is approximately 8 m square.

Around the low substructure runs a cornice about 25 cm high; the wall below this cornice does not drop vertically, but has a definite batter or sloping zone. The plan of the building is not unusual and is somewhat reminiscent of the Xtoloc Temple at Chichén Itzá and the Cenote House at Tulúm. The entrance faces east where a balustraded stairway leads to a low, gently rising terrace, at the rear of which stand the plinth of the building and the remains of two columns flanked by door jambs. The column drums are of the low, rough type common in Mayapán; four stones of the south column and five of the north are still standing, and part of the originally thick plaster coating can still be seen on the bottom stones. Thus the original effect must have been that of a triple-entrance doorway to the temple interior.

One suspects from the absence of a thick layer of fallen plaster on the surface of the interior that this building did not have the common beam and mortar roof, but perhaps was thatched. Flakes of red-painted plaster indicate the probable color of the walls.

The altar, against the back wall of the building, behind two interior piers, was found to be undisturbed; the cache, in the center and very near the surface, consisted of two, badly crushed Red Ware tripod bowls laced lip to lip and containing a partly burned ball of copal.

The temple seems to have had only one primary building period, although renovations to the superstructure in the way of varying floor levels and bench construction occurred from time to time. Excavation under the stairway showed that the terrace wall is built directly on the thin layer of sterile earth overlying bedrock, and the same is indicated on the west side. The terrace between the stairway and the front of the building was thoroughly tested by means of a pit extending to bedrock, but under the two top plastered floors only heavy rock fill was encountered.

Last season, burial cists were found in most of the shrines and temples explored in the northern part of the Main Group. It was thought likely that this temple might hold a similar cist or shaft, but nothing of the kind was found. Thus the method of disposition of the

bodies of sacrificial victims, if there were such, is still uncertain. As was mentioned before, no skeletal remains were found in the cenote, although this does not rule out the possibility that corpses were thrown in and later removed. In fact, the closest indication of human sacrifice is a femur found on the west edge of the cenote, a highly doubtful piece of evidence.

The pottery found on the surface and in the various trenches is of the common Mayapán types. No vessels were found intact. Although a number of utilitarian ware sherds were uncovered, the largest percentage was, as might be expected in a structure of this nature, of ceremonial ware, mainly effigy-type incense burners. The exterior northwest corner of the temple, at the cenote edge, seems to have been used as a dumping place, for a great number of animal and bird bones and of sherds (mainly of incense burners, and fairly large) were dug out. From this dump too came a small turtle of a jadelike green stone, well polished, with a somewhat stylized head and body.

On the west and north sides of the cenote, retaining walls of rough stone had been constructed; the east side, from the temple to a ramp adjoining the long colonnaded hall, Structure Q-151, bounded by a low platform, the present height of which is less than a meter. Although from the surface this platform appears to be a single structure, it really represents construction of two different periods. The northern half is contemporary with a low stairway which was later covered by, the ramp mentioned above originally this part of the platforms free, but later it was joined to the northeast corner, of the temple by a southward extension of the platform. When this was done, it was necessary to make a drain under the south section to provide for drainage of the plaza floor. No attempt was made this season to clean the drain entirely of the rubbish which choked it, but many sherds, mostly of incense-burner type, and a number of large lumps of burned copal were recovered from the aperture on the cenote side. There can be little doubt that the platform had some part in the ceremonial functions centered about this important cenote.

The next unit investigated was a shrine or subsidiary temple, Structure Q-149, about 30 m southeast of Cenote Ch'en Mul and facing east toward a temple, Structure Q-143. It was decided to include in these investigations a small, low platform about 5 m east of, and centered on, the stairway of Q-149.

The shrine is typical of Mayapán architecture in most respects, consisting of a single room built on a substructure of moderate height. There is the usual plinth, but no columns, entry being made through a doorway formed by two monolithic jambs which still stand. To judge by the thick layer of fallen plaster inside the shrine, the roof had been a beam and mortar

affair. Several coatings of plaster were visible on the lower parts of the door jambs, the last showing small patches of painted designs in red, black, and green.

Inside the shrine the floor was cleared, and the altar, which had been centered against the back wall, was found to have been ripped out; its original position could be traced by the upturning of the floor around it. A small ho had been dug below the base of the altar through an earlier floor, and the destruction may well have been the work of looters.

When the terrace in front of the plinth of the building was being cleared, a large sculptured stone head was found. From near by came a hand and a leg of the same proportions. The head resembles two others recovered last season near the base of this structure, and it is probable that all three were at one time part of sculptured figures placed, perhaps, on the roof or over the doorway.

In order to ascertain whether this shrine, like others in Mayapán, contained a burial cist, a pit was excavated in the terrace before the plinth. No indication of such a construction was found.

Digging around the base of the balustraded stairway revealed that the original plastered levels of to plaza around Structure Q-149 there had been a rough stone layer which served as a base for a later floor. Built directly over this layer is a secondary wall which extends around the rear half of the shrine's substructure. Roughly U-shaped, about 60 cm thick and with a present maximum height of 1.7 m, it extends around the west side of the substructure and about halfway around the north and south sides. It is hard to believe that its purpose was to beautify the shrine; it may have been erected as a reinforcement for a weakened wall of the substructure.

The small platform in front of the stairway of Structure Q-149 is approximately square, about 1.5 m on each side, and at present only one course of stones high. It rests on the stone layer covering the original plastered floors of the plaza, and thus some idea is obtained of the building sequence. An excavation was made into the small earth-filled depression in the center, but nothing was uncovered. The purpose of this platform is uncertain; it may have been an altar-like construction, the base for a figure, or the foundation for a sacrificial stone such as is known to have been placed sometimes before stairways.

The other shrine or small temple excavated, Structure Q-148, is also a single room building on a substructure of moderate height. In spite of its proximity, it does not seem to have had any ritual connection with either of the structures just described. Rather, it appears to be aligned with the colonnaded hall, Structure Q-151, for its stairway, which faces north, is directly opposite the main altar of the hall.

Unlike Structure Q-149, and for that matter the vast majority of shrines at Mayapán, this building had a triple entrance doorway. A number of Puuc-style mask stones, some badly shattered, were observed on the surface even before clearing, and when the area between the door iambs was excavated, the lower sections of two pillars faced with similar elements came to light. The original height of each pillar as estimated from the fallen stones recovered, must have been at least 1.5 m. The stones, which roughly the sector of a circle in plan, the curved surface being the face, are laid one above another to form the front of each pillar. Some of the stones have designs and others are plain, but actually they were covered with thick coatings of plaster to give the impression from the outside of solid columns supporting the door lintel.

Centered against the back wall of the room was a masonry altar. A small flake of gold the size of a fingernail, bearing a faint design, was found in the debris near by. Also near the altar were discovered several large pieces of charred beams. These not only indicate that the shrine had, a beam and mortar roof, but lend some support to the old tradition of the destruction of the city before its sudden abandonment. The surface of the altar had been destroyed, and the presence of more fragments of charred wood in the earth inside makes one suspect that the altar was open when the roof burned. If so, and if looting had been the intent, the operation was not entirely successful, for between two front stones of the altar was found a small effigy vase containing two jade and three shell beads, a tiny fleck of copper, and a small jadelike flake of a mosaic. A copper bell and another shell bead recovered near by may also have formed part of the cache.

Excavations both inside and outside the shrine revealed several floor levels, which give some idea of the various changes in the original structure. A trench was dug in front of the building into the rock fill of the substructure, but just as with the temple by the cenote and the other shrine, no burial cist or shaft was found.

Digging around the walls of the substructure uncovered an unexpected secondary wall or facing running all along the east, south, and west sides. Like the secondary wall around the rear part of Structure Q-149, this construction may have been a means of changing the original design of the shrine, or it may have been a reinforcement to support collapsing inner walls. A similar structure (Q-154) a short distance southwest seems also to have a secondary wall around it. The thought occurs that this architectural feature may have been fashionable or significant at some period in this section of the Main Group.

40.22.

WILLIAM N. IRVING

Excavation in Mayapán

YB 53:276–277, 1954

The greater part of the field season was spent in the excavation of Structure Q-151, one of the larger colonnaded halls in the main ceremonial group at Mayapán. During the later part of the season a large residential unit, Structure Q-231, was surveyed, and a plan was made showing such details of construction as could be discovered by making limited spot excavations. Finally, observations were made and recorded on the techniques used at Mayapán for working in flint and obsidian.

The colonnaded hall, Q-151, by virtue of its location near the Castillo and Structure Q-152, the largest round temple at the site, and Cenote Ch'en Mul with its nearby small temple, is a prominent member of the main ceremonial group. Its excavation was expected to shed some light on the plan and the nature of the activities associated with such halls in general, and on the use of this building in connection with public functions in the center of the city. The structure was also considered suitable for partial restoration as representative of Mayapán colonnaded halls. Finally, there was promise that stratigraphic cuts would produce information to permit a finer demarcation of phases within the Mayapán Period.

The entire front of the building and substructure were cleared of fallen debris to the most recent levels of construction, from the west end to a point some 3 m east of an enclosed medial shrine set in the bench that runs along the rear wall. This excavation exposed a gallery that had formerly had a beam and mortar roof supported by two rows of columns and short wall sections, the bench and medial shrine just mentioned, and a shrine or altar at the center of the stairway. A notable feature is the installation of Puuc-type façade masks on masonry piers set between Columns 3 and 4 and between Columns 7 and 8 of the 10 columns in the front row. The city abounds in sculpture and stone decorative elements referable to the Puuc style, but this is the first instance of their having been, re-used as originally intended but in a Mayapán Period building.

Of particular interest are the results produced by the stratigraphic trenches. One, in a section of the filled passage formed by the rear wall of the colonnaded hall and the substructure of the round building, Q-152, was excavated to bedrock (ca. 2.5 m) by 50 cm levels. The pottery analysis, undertaken by Shook, showed that the hall was built rather earlier in the

Mayapán Period than had previously been supposed, well before the sudden proliferation of effigy incense burners and the development of certain late forms of utilitarian ware. The passage had apparently been filled alternately by the dumping of rocks and lime mortar, and by debris, presumably from the platform of the round building, which included human corpses and utilitarian as well as ceremonial pottery. The relationships of natural soil and substructures seen at the bottom of the trench indicate that construction of the colonnaded hall postdated that of the round temple.

A second stratigraphic excavation was made in the corner formed by the juncture of the west wall of the substructure of the round building and the rear wall of the colonnaded hall. This revealed a short bench along the former substructure which had been built over a deep (ca. 1 m) accumulation of midden material. The significance of this midden, in an exposed spot next to two prominent public buildings is not yet fully understood.

A trench cut through the center of the colonnaded hall from the bedrock front of the medial stairway to the shrine at the rear showed a building sequence marked by at least nine floors; several significant changes in the central altar at the rear of the building and in the shrine, which produced fragments of stucco and stone sculpture and a wealth of broken incense burners; and apparently one transposition of the supporting columns. It is hoped that a detailed comparison of these features with their counterparts in other similar halls will shed light on the development of this type of structure and perhaps on its intended use.

Structure Q-231, located less than 200 m from the Castillo, is considered to be a residential group, one that might well be described as a palace. It consists of two large dwelling-type structures on high platform mounds, and two smaller buildings on low platforms, the whole arranged in the form of a quadrangle. The small amount of digging done in connection with mapping its gross features suggests that the group would be an interesting one in which to continue excavations.

40.23.

H.E.D. POLLOCK

Excavations at Mayapán

YB 53:277–279, 1954

During the past field season Pollock undertook a number of limited excavations at Mayapán to ascertain needed architectural details and the chronological re-

lations of certain buildings. The first such excavation was concerned with the Castillo and Structure Q-163, a colonnaded hall that lies at the foot of the west stairway of the larger structure. A distance of less than a meter separates the east end of the hall from the lowest step of the stairway, providing an excellent opportunity to discover the relative time of construction of the two buildings. Our excavations revealed a series of eight floors, the lowest of which appeared to be contemporaneous with the construction of the stairway of the Castillo. This floor and the next above it ran beneath the plinth of the colonnaded hall. Floor 3 and all higher floors are well above the level of the bottom of the plinth. Unfortunately they are broken, within the area of our excavation, just short of the plinth course of the hall, a condition which can best be explained by root action, but which may hide the fact that the builders of Structure Q-163 cut through one or more of these floors at the time of construction of the building. What is clear is that the colonnaded hall, Structure Q-163, is contemporaneous with, or later than, Floor 3, and was built later than the west stairway of the Castillo.

The next two excavations involved the determination of roof heights of colonnaded halls. Owing to the relatively unstable construction of this type of building, little remains to give an indication of the proportions and general appearance of such structures in their original condition. At the east side of the Castillo a colonnaded hall, Structure Q-161, is built against the terraces of the pyramid, and on the west side of the pyramid another structure, probably a colonnaded hall, is similarly located. Because of the support provided by the terrace walls of the pyramid, these locations were likely spots to look for fragments of roofs still in position.

Our work at the west side of the Castillo was successful in uncovering what clearly was a section of the roof of the building below. This fragment was preserved in the angle between the south wall of the west stairway of the pyramid and a terrace wall. Excavation of the plinth of the building thus provided a height from floor to roof cap. Unfortunately, the great depth of debris against this side of the Castillo obscures the precise character of the building that had stood here, but there is some reason to believe it was a colonnaded hall.

Our work at the east side of the Castillo pyramid was less conclusive. No surely identifiable roof cap could be found. There were indications, however, that the roof of Structure Q-161 was on the same level as, and merely a continuation of the floor of the upper surface of the second terrace of the pyramid. This gave height above the floor of the colonnaded hall of roughly 3.7 m, a figure closely approximating that determined at the west.

Structure Q-159 is a small pyramid temple immediately south of the Castillo. Although very little of the superstructure, was visible before excavation, there was a columnar entrance at the east and the bare suggestion of a battered lower zone on the walls of the temple. The latter feature seems to be one of the characteristics of serpent-column temples at Mayapán, and the existence of a fallen fragment of a stone serpent tail on the northwest slope of the pyramid added to the possibility of the building's being of that type. Excavation quickly proved the existence of the battered lower wall zone and that the two columns in the entrance to the temple carried stucco figures at their bases. Instead of the expected conventional serpent heads, however, these figures were four-footed monsters, possibly Earth Monsters, although the stucco was not sufficiently well preserved to make identification sure. The finding of part of a stone serpent tail beside one of the doorway columns, a fragment that fitted the one previously noted, and of a second serpent tail off the southeast corner of the pyramid left little doubt that the doorway supports had been completed at the top in conventional serpent-column fashion. In other words, we had here a new and previously unknown form of decorative doorway column, part serpent, part monster. This is a type so far known only at Mayapán.

Further excavation developed a single-room temple building with an altar centered against the rear wall. In front of the altar was the stone figure of a turtle, fallen from its original position. There was nothing distinctive about the terraced pyramid, which carried a balustraded stairway on the east, in which direction the structure faced. Pottery from within the building, was mainly of effigy incense burners and a single sherd of Red Ware from beneath the floor, where only three sherds were recovered would seem to prove the temple to be of the Mayapán Period.

Another small excavation was directed to establishing the sequence of construction of three adjoining structures some 50 m east of the Castillo. Structure Q-143, a small pyramid-temple with serpent column doorway, is clearly older than Structure Q-142a, which abuts it at the north. East of Q-142a is the colonnaded hall, Structure Q-142, the west wall of the latter built against the rear wall of Structure Q-142a. From surface observation it was impossible to tell which of these two buildings was the earlier, but it appeared that the determination of this fact might yield a sequence of three buildings, because of the relationship of the pyramid-temple to Q-142a, all of different types.

Excavation readily revealed that the west wall of Structure Q-142 was erected later than Q-142a. A closer examination of Q-142, however, showed that the west end of the building almost surely was a later addition to the main body of the colonnaded hall to the east. We

were thus unable, without considerably more extensive excavation, to tie the primary part of Structure Q-142 into our sequence. Floor levels suggest that the original building is contemporaneous with, or later than, Structure Q-142a, but this was not proved. A tentative sequence of construction might be, from early to late, Structures Q-143, Q-142a, Q-142, west addition to Q-142.

Lastly, work was undertaken at the northern terminus of the city's principal *sacbé*, or artificial road, which connects two groups of structures roughly 400 m apart. Both groups are of the courtyard variety, the northern in Square R, the southern in Square Z, and probably were domiciliary in character, although they may possibly have served as community ritual centers. Our excavations were designed to discover the relative time of construction of the *sacbé* and the architectural assemblage at its northern end, and if possible to ascertain the period of the road in relation to the time of occupation of the site.

Although these excavations started as a strictly limited operation, the existence of a complex system of superimposed floors, platforms, and terraces led to turning over considerably more dirt than originally was contemplated. Approximately two weeks were spent at this location, and at the end there were several unsolved but pertinent questions that only much more widespread digging could answer. In the main, however, our purpose was achieved. It was perfectly clear that the building of the *sacbé* was at or near the end of the sequence of constructions uncovered by our excavations, and there were good indications that the road was late in relation to the entire group. Pottery from beneath the *sacbé* not only was almost purely of Mayapán Period, but contained an appreciable percentage of wares known to occur late in that period. It thus develops that the northern end of the *sacbé*, and presumably the entire road, was built late in the history of the city, a fact that was not without surprise, as at the time of these excavations no examples of Maya roads from this late period were known. It later developed that the explorations of Sanders this season on Cozumel Island off the east coast of Yucatán disclosed two roadways that may be of Mayapán Period.

40.24.

J. ERIC S. THOMPSON

Excavation of Residential Type Structures in Mayapán

YB 53: 279–281, 1954

Structure Q-208, situated about 80 m south of what may be the southern edge of the ceremonial center, was chosen for excavation because, from what was visible above ground, it appeared to be the residence of some important person, a type of structure not previously explored. The remaining structures were examined to see if, because of their contiguity, any functional relationship to Structure Q-208 could be established.

Structure Q-208 consists of one long room with an open front (north) with four columns. Doorways in the back wall lead to three small and narrow rooms, of which the central one served as a shrine. On the east end of the structure there is a fifth room, without direct communication with the other rooms. Walls are very largely built of re-used dressed stone of the Puuc Period, of excellent quality, and one of the four benches of the front room is decorated with squat spool ornaments typical of Puuc architecture. Heavy layers of fallen mortar showed conclusively that the roof had been of the beam and mortar type.

Great quantities of charcoal, some pieces of which retained the shape of sections of poles, were scattered through the fallen mortar and in some cases underlay it, supplying conclusive evidence that the building was burned. Because a beam and mortar roof could hardly burn and collapse as the result of an accidental fire, we can feel fairly confident that the destruction was deliberate. As ceramic evidence shows this to have happened at or near the end of the occupation of Mayapán, it is reasonable to suppose that the burning took place at the fall of Mayapán (circa 1460 AD). The absence of any noticeable accumulation of dirt between the fallen mortar and the floor, and the presence of offertory vessels on the floor at the entrance to the shrine, indicate that the building was in use at the time of its destruction.

There was no evidence that food was prepared or cooked in the building, but in view of present-day Maya usage (there is often a small hut for cooking behind the main house) that was hardly to be expected. On or slightly above the floor were several artifacts, including two finely polished celts (one of fine-grained greenstone, the other perhaps of basalt), a flint point, and two finely chipped arrowheads, one of obsidian and the other of flint. Unless the archaeologist in charge is directly looking over each shovelful of earth excavated,

it is difficult to know the exact depth of any stray find. Luckily, in the case of one of the celts, it is established that about 4 cm of roof mortar separated it from the floor. As it was close to the base of one of the columns, it is a reasonable conclusion that it was dislodged from some shelf or niche in the wall above the columns and lintels; had it been in full view, the burners of the building would surely have taken it. The second celt also was close to a column, but it is not certain whether it was directly on the floor or in, the fallen mortar. There was no domestic pottery on the floor; many, if not all, of the sherds in the debris had formed part of the ceiling mortar.

At the entrance to the shrine two effigy vessels representing the “diving god” stood before a fallen sculpture of what may be a variant rendering of the same deity. This is, for Mayapán, of remarkably fine workmanship. The cult of the diving god may be of Mexican origin. Beneath the building was an earlier structure of about the same size, and beneath the floor of that were the remains of several small children, one of whom had anklets of copper bells. Above the burials were many sherds of incense burners. Among these were fragments of five bearing effigies of the Mexican god Xipe Totec, easily recognized by the flayed skin he wears. Bishop Landa describes the flaying sacrifice, but as this ritual also had a part in ceremonies of certain Mexican goddesses, it had not previously been known beyond doubt that there was a Xipe cult in Yucatán.

There was no direct evidence of a functional relationship between the other buildings in this group and Structure Q-208, but in the case of two of them a connection may be surmised.

Structure Q-209, directly east of Q-208, was a small residential structure with two rooms, one behind the other, separated by a medial wall. Each room had two benches divided by a passage which pierced the low medial wall. In contrast to Structure Q-208, Q-209 was constructed of inferior masonry; the walls had been low and the roof of perishable materials. As Structure Q-209 stood on a platform separated by a shallow passage, only 59 cm wide, from Q-208, and was of later date, it is reasonable to conjecture that it was the residence of inferior members of the household of the chief who occupied Q-209; for it is difficult to imagine that he would permit strangers to build and occupy an addition to his dignified residence. Structure Q-208a was a small low platform standing on a sub-platform which underlaid that of Q-208. The platform is separated from the northwest front of Q-208 by only 1.3 m, and faces east. Although its sub-platform is earlier than Q-208, the present, simple platform may be of later date. It supported no structure, and no evidence of its use was obtained. Nevertheless, its contiguity to Q-208

and the fact that it faced on the court in front of the latter suggest a connection.

Structure Q-207 occupies a commanding position on a natural hillock immediately south of the east end of Q-208, and faces east. Access was by means of a stairway conforming to the natural slope. The front room had three benches and was open on the east side. Two doorways gave entrance to a long, narrow room behind. This, in turn, had a doorway leading to a shrine room in the rear. Walls were low, and masonry was of inferior quality. A preliminary study of sherds from beneath the floors seems to show that Structure Q-207 was anterior to Q-208. This, together with the eastern orientation of the building and its staircase, argues against a close association with Q-208.

40.25.

GUSTAV STRÖMSVIK

*Exploration and Reconstruction in
Mayapán and Vicinity*

YB 53:281–282, 1954

Toward the end of October, when the extraordinarily heavy rainy season of 1953 approached an end, Strömsvik began the previously planned exploration of the vicinity of Mayapán. The purpose of this work was to gain some idea of the extent of Mayapán culture during the principal period of occupation of that city and to note any ruin of different cultural affinity or of different period. Several groups of ruins were found, the most important being Xcanyulmil, about 4 km south and slightly west of the Castillo in Mayapán; Xpopil, roughly 3 km west-southwest; and Santa Cruz, a little over 2 km south and slightly east. Such groups are usually built near cenotes, each site consisting of a central pyramid structure around which are terraces and smaller mounds. With the exception of Santa Cruz, these sites appear to be of Mayapán Period. Santa Cruz seemed somewhat different. It is more widely spread, and the pyramidal structure is small and seemingly of little importance as compared with those at the other sites. Furthermore, at a platform some distance from the center of the ruins were found potsherds that appeared to be of Puuc type. The site was suggested as offering possibilities in the search for ceramic stratigraphy. Sketch maps were made of the three sites.

With the beginning of large-scale operations at Mayapán the middle of January, Strömsvik undertook a series of small excavations in connection with Proskouriakoff's detailed mapping of the main ceremonial group at the site. This work was designed to develop plans of buildings and hidden details of architecture preparatory to Proskouriakoff's mapping. With the exception of a week given to exploration in Quintana Roo with Pollock, the work continued until the middle of March.

In accordance with an informal agreement made the previous year with the Instituto Nacional de Antropología e Historia of the Mexican Government, Strömsvik took charge of the consolidation and repair of two structures typical of Mayapán architecture. The buildings selected for such treatment this season were a large colonnaded hall, Structure Q-151, just east of the Castillo, and a house-type building, Structure Q-62, adjacent to another colonnaded hall at the northern edge of the Main Group.

Structure Q-151 was excavated by Irving. A little over half of the building was cleared of debris, as it was thought that this part of the structure, which included the centrally placed shrine and altar, would provide a clear understanding of the colonnaded hall. Walls were rebuilt with lime and cement mortar to the height that they stood when excavated. Columns were reset to a height less than that of the back wall, but sufficiently high to indicate their function. For the sake of permanence, lime and cement mortar was placed between column drums instead of the mud mortar that originally had been used. The original 3–5 cm thick lime plaster covering that had encased the columns was not reproduced. The decorative masks on the façade of the building were rebuilt as, completely as available parts allowed.

Structure Q-62, considered to be a good example of simple, living quarters in Mayapán, was excavated by A. L. Smith and Ruppert. Walls and benches were reset in the original manner, and the over-all plan, room arrangement, porches, passageways, and benches, was made clear to the observer. The low walls of masonry had once, of course, supported wood and thatch construction, which we did not attempt to reproduce, as such material would fall prey to the elements in a few brief years.

This task of reconstruction and the not inconsiderable labor of clearing away the tremendous quantities of debris that had accumulated from the excavations lasted until well into June. The work was interrupted the last week of May to make a second trip, this time accompanied by Berlin, to the ruins in Quintana Roo that had been visited earlier in the season by Pollock and Strömsvik.

40.26.

ROBERT E. SMITH

Pottery of Mayapán and Vicinity

YB 53: 282–284, 1954

The number of potsherds collected at Mayapán during the 1954 field season totaled nearly 130,000. A very large percentage of these belonged to the late Mayapán period and were found on or near the surface. Earlier Mayapán Period types (Black on Cream, certain Red Ware shapes, and certain styles of incense burners) were located below floors or in deep stratigraphic cuts, most, of which were associated with ceremonial structures. The ceramics from ceremonial structures have been discussed by Shook [Chapter 40.13]. The trends noted by him are essentially the same as those seen in the pottery from elsewhere in Mayapán. Differences worth mentioning are that effigy censers occur in considerably greater proportion in the house mounds, often elaborate, of the ceremonial center than in the simpler house mounds spread over the site, and that Black on Cream pottery forms a small percentage of the types associated with the house mounds of the ceremonial center and is rarely found in those outside. At present, our knowledge of house mound pottery is limited to the excavation of a few domiciliary structures both inside and outside the ceremonial center. Nevertheless, there is a suggestion that the more elaborate style of domiciliary structure harbors a more elaborate style of pottery, for example, effigy censers, effigy vessels, and rather large painted figurines. Also it is probable that most of the house mounds excavated belong to the Mayapán Period, since the ceramic types of that time are predominant. In fact, the ceramic types of earlier periods taken from all house mounds, excavated from 1952 through 1954 will not form 1 percent of the total house mound pottery. On the other hand, the house platforms of the small outlying site Santa Cruz abound in early potsherds.

The ruins of Santa Cruz are situated about 1.5 km by trail southeast of Cenote Ch'en Carro, which is located in the south-central part (Square Y) of Mayapán. These ruins, which occupy a relatively small area, roughly 200 by 300 m, part of which is used for pasturage and part for growing corn, squash, and peppers, were recovered and mapped by Strömsvik in November 1953. There are in all eight platforms and a small pyramidal structure. This last and five of the platforms are clustered around a sizable jug-shaped cenote which contains what the natives claim to be the coolest, freshest, and most palatable water in the vicinity. The platforms have been numbered from A to H. Only three

were investigated: A, the farthest north; B, just northwest of the cenote; and C, due east of the cenote.

The investigation of Platform A consisted of digging three trenches. The West Trench disclosed the original west wall of the platform to a depth of about 1.5 m. This wall was constructed of large and medium-sized stones and was probably built during the Puuc Period; both the appearance of the wall and the ceramic evidence from inside the platform support this suggestion. The sherds from the three strata in this trench were all of pre-Mayapán Period pottery save for one possible effigy-censer fragment found in the top stratum. The proportion of Formative to Puuc Period types increased from top to bottom.

Perhaps the most instructive of the three trenches was that dug alongside, but not directly next, the north wall. After sinking an exploratory pit well to the west, and finding only Puuc and Formative pottery types except for a single effigy-censer sherd, we prolonged the pit into a broad trench. Two infant burials, both in Puuc-type jars, and two Puuc Medium Slate bowls, apparently associated with an adult burial, were encountered in stratum 2. Very few artifacts were found in the North Trench, all in stratum 2. The ceramic pattern resulting from the three levels excavated resembles closely that of the West Trench with a greater abundance of early types. An interesting fact about this trench is that it appears to have cut through a refuse deposit, at least in the western section.

The East Trench passed through several terraces and finally bisected a single-room shrine at the north edge of the platform. A number of floors at different levels were encountered. Close to the surface at the south end and above the top floor in the shrine at the north end, two rather crudely made, small Mayapán Red vessels were found, whereas about 1.3 m below the top floor and sealed beneath the earliest and best-preserved floor a formal Puuc Period crypt burial was encountered. This burial contained an adult male skeleton, three Puuc-type pottery vessels, a number of jade, shell, and bone ornaments, and five jaguar teeth. Few artifacts were found in the middle and top levels. The ceramic pattern derived from the three levels in the East Trench differs considerably from that of the West and North Trenches. More Mayapán types occur in the top level and fewer Formative types in the bottom.

Platform B supported several house platforms, two of which, and an altar, were investigated. The latter were enclosed within a walled area in the southwest part of the platform. For the most part the walls appeared to be of post-conquest construction, possibly quite recent, but with some sections presumably dating from ancient times. In order to determine the manner in which Platform B was built, as well as to collect a pottery sample, a broad trench was cut into the north

side. This North Trench uncovered at least three terraces and two floors. Very few artifacts were found, all from the surface level. The ceramic pattern disclosed by the five levels excavated resembles that of the West Trench in Platform A.

House Platform 1, rectangular in plan and located in the southeast corner of Platform B, was bisected by a trench reaching to bedrock. Just south of the house platform a cache was encountered 68 cm below a fallen monument or, if not a monument, possibly a door or gate jamb. The cache contained two vessels, one a lustrous, streaky brown jar, the other used as its cover, a Puuc Medium Slate tripod dish with red floor design. Near the cache but above it, two flint points were discovered, one especially well made. Within the house platform there was a fairly good floor 32 cm below the surface, and 86 cm below this floor, just inside the south edge of the house platform, a burial with three pots was found. Most of the skeleton, an adult, was lodged under an enormous rock. The vessels, one of which covered the skull, were all Puuc Medium Slate types. The pottery found in the trench totaled only 185 sherds; because of a cave-in during the removal of the burial vessels, some late sherds were mixed with material from the lowest level. The middle level however, had no pottery later than the Puuc Period.

House Platform 2, rectangular in plan and located just northwest of House Platform was examined by means of a 40 cm deep trench skirting its northern half. Later a pit was sunk to bedrock off the west side, in the upper 40 cm of which a quantity of Mayapán Period porous gray jar sherds were uncovered. They rested in ash and were surrounded by medium sized stones, as if some ceremony had been performed, but the sherds were not burned. All levels associated with House Platform 2 had a preponderance of Mayapán types.

Approximately 9.5 m due east of House Platform 2 a small altar was investigated; directly west of it a cache of five Mayapán type vessels was found buried 20–70 cm below the surface. The vessels consisted of a large porous gray jar, a red tripod dish with effigy feet (human head with turned-up nose) a small red jar, a red cylindrical tripod vase, and a complicated and badly damaged effigy vessel. Nothing remained of the altar save a large rectangular stone set on edge, facing which was a rectangular paved area. The cache was just west of this paving.

Originally Platform C may have supported three single-room shrines consisting of two nearly square structures opening north and south, respectively, and flanking a larger rectangular construction that faced Cenote Santa Cruz to the west. There is now no trace of a shrine on the south side, but there is ample space on the platform for it. Both existing shrines originally had beam and mortar roofs and a centrally located altar or

dais. The pottery collected in the two trenches which cut through the doorways of these shrines and descended to bedrock was predominately of Mayapán Period with little change from top to bottom. On the other hand the ceramic pattern indicated in the three levels excavated in nearby Cenote Santa Cruz was one of increase in early types at the expense of late types as the pit progressed downward.

From the ceramic evidence it would appear the Platforms A and B were originally constructed during the Puuc Period and that both were subjected to later building activity. Platform C suggested only late, Mayapán Period construction.

The next work undertaken was at the large mound in the village of Telchaquillo. This ruin, situated south of the cenote in the Main Plaza and still standing after all the years of stone robbing for village property walls and house foundations, remains an impressive mass of masonry. The principal aim in trenching into this large complex was to determine something of its age through its growth, both horizontal and vertical. It was by reason of the horizontal accretions with their time-sensitive pottery inclusions that a chronological sequence developed. That this sequence did not evolve into something more conclusive is probably due to the fact that the mound was not penetrated sufficiently far. The reason for not continuing deeper was the excessive outlay in time and labor that would have been required. The two trenches, one on the south, the other on the west side, each penetrated through several terrace walls. In the pottery lots, Puuc types were always more abundant than Mayapán. Actually, the farther into the mound we progressed, the greater became the predominance of Puuc over Mayapán types. The fact remains, however, that Mayapán wares were always present. The ceramic trend suggests that farther inside the mound a pure sample of Puuc pottery might have been encountered.

40.27.

TATIANA PROSKOURIAKOFF
Art and Artifacts of Mayapán

YB 53: 285–286, 1954

This season's work has substantially advanced our knowledge of the artistic styles at Mayapán, which document the decay of Maya culture. We were extremely fortunate to uncover a portion of a mural painting on the wall of the front gallery of a large temple, Q-80. The

wall is broken by five niches, which, in the composition of the painting, represent doors of buildings depicted around them. The buildings apparently stand on a terrace represented by a black dado at the base of the wall, interrupted, however, by the niches, which extend to floor level. Between the niches on the black dado are depicted heads of monsters with open jaws, which strongly resemble serpent heads carved on the columns of Structure 2C1 at Chichén Itzá. These heads are painted in vivid tones of green, red, yellow, and blue, and in white. Above them the mural is largely destroyed, but by combining the scattered features still preserved, one can reconstruct the outlines of the houses that frame the niches.

The upper zone of each house consists of a narrow vertical zone between typical Maya two-member (fillet and bevel) moldings. Below, the walls are not vertical, as in most Maya buildings, but are composed of two sloping zones, the upper one projecting slightly beyond the lower. Some of the buildings at Mayapán have a sloping lower zone, but the upper slope is seen for the first time on this mural in connection with a Maya building. The houses are painted on a red background, and their walls and moldings are brightly decorated with geometric designs in polychrome, largely composed in bands and outlined in black. Around each niche is a T-shaped form framing the lintel and jambs in the manner used in Mexican codices.

The mural extends almost to the vault spring of the gallery, above which there are no traces of plaster to show whether or not the painting was continued on the soffit. Unfortunately the condition of the plaster and of the masonry behind it is such that it would be very difficult either to remove the painting or to consolidate it in place. It has been carefully reburied in earth and masonry debris, which will keep it better preserved than could any possible attempt at restoration.

The sculptural style of Mayapán, so little known because of the poor preservation of monuments on the surface, is slowly beginning to emerge from a number of smaller, carvings coming out of excavations. A grotesque figure, examples of which range between 15 and 45 cm in maximum dimension, appears to be a type of ceremonial object associated with shrines of houses and colonnaded halls and in some way to be related to household worship. Two of these carvings representing turtles have a hollow receptacle on the back. The turtle motif strongly prevails and is usually accompanied by anthropomorphic features. In some cases, the turtle has a human head; in others, a human head is held in the mouth. There are also crouching human figures, some with a mantle on the back strongly suggestive of a carapace. One sculpture, recovered from a house (Structure R-88), seems to represent an armadillo with a human figure on its back. On

the sides of the carapace are carved the glyphs 4 Ahau and 13 Ahau, and on the back of the human figure is 1 Ahau. A much smaller carving of a turtle is made of fine polished green stone and is executed with admirable simplicity.

Most of the artifacts recovered this year fall into classes found in previous seasons, but a small fragment of ancient cord and cloth adhering to some copper bells, and preserved by the action of the disintegrating metal, is an unexpected addition to the list. Also new are two fragments of green obsidian, which is rare in Maya collections. The finds of jade continue to be meager and of poor quality jade is used mostly in the form of beads, often marred by fire, though there are several well polished jade disks 3–4 cm in diameter, perforated in the center. Shell beads occur in greater numbers, many in the form of perforated tinklers. Teeth, antlers, sting-ray spines, and bones are also represented, and several more greenstone celts have been found.

Chipped flint implements have produced no strikingly new forms, but the number of arrowheads is increasing both in flint and in obsidian, with the “expanding stem” formed by side notches prevailing as the common form. Also increasing, is the incidence of small obsidian scrapers and other tools made by re-touching flake blades.

Limestone tools and occasional tools of harder volcanic and granitic stones continue to come in, but the use of roughly chipped limestone disks about 10 cm in diameter remains a puzzle. They have sometimes been designated “pot lids” but with very little justification.

The items listed in this year’s catalogue amount to 294, making a total of 761 for the Mayapán project so far. Since shell beads, copper bells, and other small objects are often listed in groups, the actual number of individual specimens is much greater, even if we exclude the sizable collections of obsidian flake blades and of flint chips, which are not listed but are being held for future study.

40.28.

KARL RUPPERT AND
A. LEDYARD SMITH
Mayapán, Yucatán

YB 54:269–271, 1955

The square-by-square surface examination of the building remains at Mayapán having been completed

during the 1954 field season [Chapter 40.18 this volume], the 1955 season, with the exception of two weeks, was spent in excavation at the site. One week not consumed in excavations was used in checking a survey of house types lying within a distance of about 12 km from Mayapán. This survey was undertaken by three laborers, residents of Telchaquillo. The other week was spent at the ruins of Chacchob. At the end of the season A. L. Smith and Strömsvik made a one-day trip to Tulúm, a walled site that has many architectural and ceramic similarities to Mayapán.

During the season Ruppert and A. L. Smith excavated 26 structures at Mayapán. The purpose of this work was twofold: to try to get, through thorough excavations, sealed samples of pottery, and to determine the possible functions of the structures investigated. During the three previous years, Ruppert and Smith had devoted several weeks of each field season to excavations in various structures throughout the site, with emphasis on the average dwelling. This year some of the more elaborate dwellings were chosen, as well as structures with unusual ground plans. In the selection of structures for excavation, their distribution was taken into consideration, so as to have examples from all parts of the site. Several whole groups were also excavated. These consisted of elaborate dwellings with beam and mortar roofs, thatch-roofed dwellings, and simple low platforms with no traces of superstructures, arranged, in each case, around a court with an altar or altar shrine in the center.

In most cases the more elaborate variety of building investigated had two or more columns, built of stone drums, dividing the opening in the front wall into three or more entrances; the masonry was better than average, more Puuc type stones were used, and roofs were of beam and mortar. In one instance, Structure J-71b, there were masonry piers instead of round columns. In another very elaborate dwelling, Structure Q-244b, the upper part of the façade had so fallen that it showed there had been five courses of stones measuring about 60 cm from the supporting beam to the top. There was also one jamb still standing to a height of 1.7 m, which, plus about 20 cm for the beam supporting the upper façade, gave a total height of 2.5 m for the building. The presence of quantities of charcoal and the remains of burned beams on the floors of some structures with beam and mortar roofs indicated that they had been burned.

Types of structure other than the typical dwelling were altars, altar shrines, one room constructions with two columns in the opening in the front wall and two columns inside the room, and one-room structures with or without columns in the front opening. Buildings of the last type may have had a bench around three sides with a recess in the center of that part of the bench

extending along the back wall, forming a small shrine or altar (Structures P-28b and R-171b). In one instance, Structure Y-8b, such a structure had a passageway through the bench along the back wall leading into a shrine room which projected behind the building. Two constructions, Structures R-126a and Q-37a, each of a single room with two columns inside the room, had benches on three sides with an inset in the center of the bench along the back wall. Structure R-91, also a one-room building with two interior columns, had no bench but had a raised area in the center of the back wall. Four stucco human feet on the floor directly in front of the altar and stucco remains on the altar indicated that it supported two seated figures. Structure P-23c differed in that it had only one interior column, placed in the northern half of the room. There were benches along the back wall and north side, the former having a central recess. A doorway led out of the south end of the room. An interesting feature of this structure was an outside platform, abutting the north end, with postholes in the outer corners. The presence of ash and three metates strongly indicates that this was a kitchen. Another type of structure excavated faced in two directions, the opening on each side being divided into three doorways by two columns (Structures J-71a and S-133b).

As far as function goes, there is no doubt that the buildings which so closely follow Landa's description of house constructions in Yucatán (Tozzer 1941) were used as family dwellings. These are structures with a front room, open along the front, with benches and with one or more passageways leading into a back room which may or may not have had, benches or an exterior doorway. There is also no doubt about the functions of altar platforms or altar shrines in the court of a house group. These were surely family shrines. Sometimes altars and shrines occur inside or are a part of a dwelling. Platforms with no signs of superstructures are a problem, as they may have supported wooden structure which could have served many purposes, such as kitchens, temporary shelter for guests, etc. The one-room structures with benches and altars and sometimes with interior columns could have been used as dwellings of priests and served a religious purpose as well. They certainly would not lend themselves to a family group. Structure R-91, a single-room building with two interior columns, no benches, and an altar supporting two stucco figures, must have had a purely religious function.

Several of the structures excavated had earlier constructions under them, and sealed samples of pottery were recovered. All had sherds from the Mayapán Period.

In the course of digging a good many burials were encountered. These occurred in simple cists and in well made vaults, and bore out evidence from former years that there was no definite rule about burying the dead,

both method and location varying greatly. Two particularly interesting stone-lined burial vaults were found under benches in the east room of Structure S-133b. These vaults could be entered by means of low, narrow passages through the wall of the room to the west.

Grave furniture is scarce at Mayapán, but mention should be made of copper rings and a pair of copper tweezers among the objects recovered. Of interest was a complete pottery doll with articulated arms and legs.

During the first part of April, Ruppert and Smith spent five days at the ruins of Chacchob, a walled site visited by Pollock and Strömsvik in 1952 [Chapter 40.15]. The purpose of the trip was to investigate the house types at the ruins and to get pottery samples. According to Pollock and Strömsvik, all the structures they saw seemed to be of the Puuc period. The house structures investigated by Ruppert and Smith proved to be of this period, containing only Puuc types of pottery, with the exception of a small single-room building, possibly a shrine. This latter which was partly built of re-used or discarded Puuc-type stones, contained Mayapán pottery, showing that the site was occupied in Mayapán times.

Throughout the season two or three men were employed in searching the environs of Mayapán within a radius of about 12 km for house structures, the purpose being to find how far the types found at Mayapán extended outside the site. They visited 111 sites, consisting in most cases of a few structures associated with a cenote. Rough plans were made of structures; and samples of pottery were recovered when possible. Near the end of the season Ruppert and Smith spent about a week checking the most likely sites, and found that at only two were there houses of recognizable Mayapán types as far as 12 km away. These were the sites of Itzin Can and Xtubi Ch'en, both to the west. In all other directions Mayapán house types disappear within 3 or 4 km.

an unusually elaborate residence and suggested three points of interest on which we based our plans for the present investigation. Primarily, we were interested in the sequence of major building operations and in the ceramic types accompanying each stage. This, we hoped, would give us some idea of the length of occupation and of possible changes in the function of the group in addition to providing sealed deposits for ceramic study. Secondly, we looked for tombs, expecting to find in them ceremonial and luxury objects appropriate to a rich household. Finally, we planned to excavate what we surmised to be a kitchen, since none had been surely identified elsewhere at Mayapán.

We found that the building site of the quadrangle was unoccupied during the early period represented by so-called "Puuc" Slate and coarsely striated pottery wares, although a few sherds of this period turned up in soil overlying bedrock. The later Black on Cream Ware associated with the earliest constructions of the main ceremonial group was also virtually absent here, and we concluded that a considerable period of time had elapsed between the foundation of the ceremonial center and the building of this residence. Extensive rebuilding and numerous minor alterations, however, led us to believe that the group was occupied at least for the span of several generations before its final abandonment, which in all probability took place when Mayapán was violently destroyed in the middle of the fifteenth century.

The original plan included a broad terrace supporting two building platforms joined at a right angle, and a vaulted underpass near the juncture. We are not sure which way the group faced at this stage, but soon afterward a monumental stairway with a central shrine was built against the east terrace wall. Later, the main terrace was extended forward and to the north, the building platforms were lengthened and broadened, and their superstructures were several times rebuilt before, with the addition of new structures, the quadrangle assumed its final shape. Although too little of the earlier plans was recovered to ascertain the original function of the buildings, the general similarity of early and late arrangements and the continued use of an early shrine gives the impression that the group was planned from the beginning as a residence. At the end of its occupation, at least two of the principal buildings were destroyed by fire, evidently very soon after their inhabitants left, for a number of abandoned pottery vessels were found broken but still in place under the debris of burned roofs, although all articles of value had been removed from graves and caches.

The looting of the caches disappointed our hopes of finding luxury items intact. Of the prized materials, only a few jade and shell beads were recovered, several

40.29.

TATIANA PROSKOURIAKOFF AND
CHARLES R. TEMPLE

*Excavations in a Large Residence at
Mayapán*

YB 54: 271–273, 1955

Preliminary mapping and excavation in Group R-85 to R-90 in 1954 [Chapter 40.19] established that it was

copper bells, and some minute fragments of thin gold. In Structure R-86, however, we came upon a plundered tomb that had been refilled to the brim with ceremonial objects, evidently collected and either purposely cached or simply dumped as too cumbersome to carry away. Among other things, the tomb contained several small sculptures, a huge number of fragments from figure censers with some well-preserved heads of deities, and various restorable pottery vessels of distinctive late types.

This cache or dump explains the lack of ceremonial material in the central rear rooms of house structures R-86 and R-87. These rooms contain altars and probably served as domestic shrines, although the only ritual object we found in place was a small sculptured turtle in Structure R-87. In both rooms there were large storage jars thickly coated with plaster, and in one corner of the room in Structure R-87 there was a small drain formed by a jar neck set in the floor. These features, implying the ceremonial use of water, were quite unexpected. One wonders if some form of ritual bathing was practiced here, especially since we have found no other facilities for this custom at Mayapán, such, for example, as the sweat houses of Chichén Itzá.

The excavation of Structure R-86a proved to be particularly interesting because this structure, which was a kitchen, as we previously guessed, was abandoned with most of its pottery equipment intact and gives us a good idea of the range of utensils used in cooking. The kitchen is actually an integral part of Structure R-86, but it also served Structure R-87, communicating with both houses by doorways and also by small apertures in the end walls of their front galleries. The main walls and columns of the kitchen date back to a time before either house was built, and it is not clear whether it had also, served as a kitchen for earlier houses. In its final form, it was a room roughly 5 by 6 m, with a large L-shaped bench on its west side, and a smaller bench on the east, partly blocking what was originally a wide entrance with two columns that now faces the end wall of Structure R-87 across a narrow corridor. Another wide opening, leading to an open colonnaded gallery on the south, is blocked by a low wall against which is placed a hearth. This rests on the finished floor and consists of three flat stones, originally partly surrounded by a semicircle of upright stones, of which only two remained in place. There may have been a similar hearth on the east bench. Between the two hearths, in the corner of the room, stood a large water jar and several other vessels. More vessels were grouped on the two benches and fragments of others were scattered on the floor. There was no dirt or other debris under the burned beams and plaster of the fallen roof to suggest that the room stood abandoned for any length of time. The pottery is

all of very late types, some of which have slightly convex rims, foreshadowing the peculiar form of the "parenthesis" rim of the colonial period.

Surprisingly few stone artifacts were found in the kitchen. Smaller articles may have been carried away, but the absence of manos and metates shows that corn was ground and prepared outside, probably in the open colonnaded gallery back of the kitchen. A number of metates, manos, and other stone utensils were scattered on the surface in the gallery, in the debris at the foot of the outer terraces, and near a stairway on the west that leads to the kitchen entrance. A few meters to the north of this stairway, where a trench had been opened, to expose the base of a terrace, we found a number of large, very roughly chipped flint tools, some of which resemble crude axes.

In search of early pottery levels, we dug another trench at the outer opening of the vaulted passageway just east of the kitchen. Here we exposed a deep stratum of ash filled with animal bones and fragments of pottery, apparently a kitchen midden that had been leveled to build the latest minor additions to the outer terraces. The pottery collection from this midden, although it includes a few simple figurines, contains almost no censer sherds and represents, almost exclusively, utilitarian wares with an unusually high proportion of lightly striated unslipped gray sherds. The animal and bird bones recovered have been brought to the United States for identification in the hope that they will furnish significant data on the dietary habits of the Maya. Since the ash layer covers early construction, and later additions are built upon it, the collections should be well placed in time when all the implications of the stratigraphy are worked out.

40.30.

J. ERIC S. THOMPSON AND
DONALD E. THOMPSON

*Excavation of a Residential-Type Group in
Mayapán*

YB 54: 273–275, 1955

The group formed by Structures Q-169 to Q-173 was excavated as a part of a program initiated last year [Chapter 40.25 this volume] to investigate supposed residences of the nobility. It is situated immediately

southwest of the Castillo, closer to the hub of the ceremonial center than one would expect to find a residential group, and is composed of six buildings. Three of these are built around a small court, open to the east, in the center of which stands Structure Q-170, a small shrine.

Structure Q-169, the most important building, stands on a fairly high platform occupying the south side of the court. Such of the building as was exposed before excavation indicated that it was a residence of persons of consequence. It comprises a long room with four benches and an open front with four columns, two narrow rear rooms, and a west room with two benches, exterior doorways, and access to the front and west rear rooms. Masonry throughout the building is unusually fine; much of the stone is re-used Puuc type. Drums of columns had been cut with more care; than was customary at Mayapán; indeed, several fall little short of being truly cylindrical. Thick layers of mortar above the floor were conclusive evidence that the ceiling had been of beam and mortar type. A small altar (looted before the collapse of the roof) set against the back wall of the larger rear room and along the central axis of the building is indicative of a private shrine, but no incense burners were on or near it, or in any other part of the building, a situation paralleling that encountered in the large residence (Structure Q-208) excavated last year.

Unfortunately, the floors were entirely free of artifacts which might have helped to clarify the function of the building. Certainly no kitchen was there, and there was no evidence that pottery vessels for eating or even to hold drinking water were kept in the building.

Below the front room and immediately in front of the central doorway to the rear room and altar is a large tomb, the floor of which is below plaza level. The roof is in the form of a crudely corbelled vault, the top of which had apparently been closed with wooden beams or planks in place of the usual capstones. In the tomb were a partly disturbed supine burial, 12 small and crude tripod bowls of Mayapán Red Ware, a handled brazier, and one copper bell. The last was partly hidden under a shin bone. As copper bells are not believed to have been used singly, and in view of the disturbed condition of the burial, it is probable that looters entered the tomb, but overlooked one bell, before the roof of the building collapsed.

The small building in the center of the court yielded no fragments of incense burners or other evidence of having functioned as a religious building, although its size and location suggested that it had been a shrine.

Structure Q-171, on the north side of the court, was a thatched building. There is a long room with benches and open front, narrow rear rooms, and an

exterior bench at the east end. It obviously was residential, but it is difficult to suggest the relation between its residents and the occupants of Structure Q-169.

Structure Q-172, a beam and mortar-roofed building occupying the west side of the court, proved to be of considerable interest because one of its two rooms was clearly for ceremonial use, whereas the other appears to have been residential. Room A contained an altar set against the back wall and benches against the flanking walls. Along the top of the altar, at the back, were the badly smashed remains of about a dozen incense burners. Below the dais-like step in front of the altar was an ossuary holding the jumbled remains of five persons and a pair of copper tweezers. Inside the altar was a well made pottery jar, with a tripod bowl set as a lid in its mouth and sealed in position with mortar. The jar was two-thirds filled with a very fine ash mixed with small fragments of bone. This is the first cremation in a sealed jar found at Mayapán.

Bishop Landa mentions the depositing of cremated remains in large casks over which temples were built, and he also writes of the offertory rites to the ancestral remains which, together with their idols, were kept in the oratories of nobles' houses. Although Landa describes more elaborate rites than the sealed cremation of Structure Q-172 suggests, the placement of this carefully sealed crematory jar beneath the altar does give the impression that a cult of ancestor worship, not unlike that described by Landa, had developed at Mayapán and had its focus in the private family oratory.

All in all, it is highly probable that this Room A of Structure Q-172 served as the private chapel of the residents of the group or, perhaps, only of the family resident in Structure Q-169. In contrast, Room B, from which there was no direct access to Room A, shows no evidence of having served religious ends. It contains two large and handsome benches, one against the west wall, the other against the north wall; and its main doorway does not give on the court, but is on the south side (a doorway giving on the court had been blocked). Clearing of the room revealed no clues to its function. As we have no reason to suppose that professional priests were employed to minister in family oratories, it is highly unlikely that this room was a priest's residence. There is, however, information that in some parts of the Maya area, including Yucatán, men retired into seclusion for the periods of fasting and continence which preceded many, probably all, ceremonies, both public and private. Indeed, segregation of male participants before and during a religious rite is still practiced in Yucatán. It is, accordingly, possible that this room with its benches adjacent to the oratory was reserved for occupation by the men of the group before some important ceremony, of the family if not of the whole community. That the main doorway of this room

is close to the side steps to Structure Q-169 may be significant.

Structure Q-173 is a small, irregular building with thatched roof which is off the court and faces South, just west of Q-172. Excavation supplied no evidence as to its function beyond the fact that benches divided by a medial wall suggested a residence. Plausibly it was the home of menials who served the occupants of Structure Q-169.

In the angle between Structures Q-172 and Q-173 was a most unusual construction. This was a quadrant-shaped room which presumably served for storage, since access to it was through the roof or through an opening in a now fallen part of the wall above floor level. The floor of the room was largely bedrock, with an irregularly shaped crevice in the middle. The position of the room (between the back walls of two structures) and its appearance and construction suggest that it was used for water storage, but the walls of the crevice are not now waterproof. The absence of broken storage jars and the presence, in a pocket of the crevice, of the pieces of a shallow tripod bowl with effigy feet hardly support the suggested use as a cistern. Alternatively, the room may have served as a granary.

The western part of the front room and the west rear room of Structure Q-208, not excavated last year, were cleared this season in order to complete the tally of imperishable objects that looters may have rejected or overlooked before they set fire to the building. Ash and charcoal in great abundance in the west rear room showed that here too the ceiling had been set afire. The only artifacts, apart from a miscellaneous lot of sherds, some from the roof mortar, were one unretouched obsidian blade from a core, and three matching human effigy feet from a bowl of Mayapán Red Ware. As no other pieces of the bowl were found, it seems probable that these feet, to one of which a section of base still adhered, had some secondary use. Could they have been a child's playthings?

40.31.

DONALD E. THOMPSON

Excavations at Mayapán

YB 54: 275–276, 1955

The major part of the season was spent in excavating for architectural features at the Itzmal Ch'en ceremo-

nial group, reported by Chowning, and in a thorough examination of the latest period of a residential group reported by J.E.S. Thompson and the writer. Toward the end of the season, Structure Q-165, herein discussed, was investigated because of its proximity to both a colonnaded hall and a residence, Structure Q-168, excavated by Chowning. It was hoped to discover, if possible, the function of the building and its affiliations.

Structure Q-165 was composed of two rooms connected by a doorway. The larger and main room faced a small court on which the residence, Q-168, also opened. The colonnaded hall, in line with Q-165, faced in the opposite direction, though access to it may have been possible though a space between the end walls of the two buildings. The smaller room faced the opposite way, the same direction as the hall; but it also opened on Structures Q-166 and Q-167, small outbuildings associated with the residence. Since the residence formed a broken T with the end of Structure Q-165, this back door also gave access to one end of the residence.

The main room of Structure Q-165, facing the small court, was of rectangular plan, with two L-shaped benches meeting at the rear center at an altar. The roof, undoubtedly beam and mortar, to judge by the depth of debris and the high plaster content, was supported in the center by four columns, two in the doorway and two, more widely spaced, on the longitudinal axis. The masonry was fairly good, in contrast to that of the other room.

In front of the altar was an ossuary cist containing five burials, two figurines, and a pottery jar. Despite a relative lack of incensario sherds, the altar and ossuary cist argue for this room's being considered a shrine, which, because of the direction it faced, probably served the residence Q-168. Since there was not room in the cist for five complete bodies at once, and since some of the bones were articulated and others were disturbed, it seems likely that the cist served as a family vault and was in some way connected with ancestor worship, the bodies being placed there at death, so that there was time between burials for decomposition to take place.

The adjacent room opening to the rear of the structure was built of very inferior masonry. The floors were almost entirely missing; just enough remained to establish a top floor, level with that of the main room, and a lower one, in places just above bedrock. To judge from the ashy soil, type of refuse, and quantity and type of artifacts, the room served as a kitchen or workshop during at least one period of its existence. Just above bedrock were found three burials which apparently are to be associated with the upper floor.

In the center of the room a narrow natural opening, which had been artificially widened, led down to

a small natural cave. The opening had been plastered around the mouth and covered with several slabs of stone. Within the cave were three burials and a bowl, broken but with large pieces in position, containing charred human and animal bone and ash, presumably representing a cremation. A pot lid from very near by may have covered it, though the fit was poor. Grave goods were almost completely lacking in all burials.

Structure Q-165 seems to have served the dual purpose of shrine and kitchen. The shrine appears to be associated with the residence Q-168. The kitchen, facing the outbuilding at one end of Q-168, could have served as the kitchen for this house or could possibly have been used for the ritual preparation of food for the colonnaded hall. Chowning suggests that Structures Q-166 and Q-167 may have been kitchens. If this is so, then the probability of association with the hall is increased. The doorway between the kitchen of Q-165 and the shrine room suggests religious use of the former, possibly for the serving of food to persons secluded in the shrine during a period of special diet and continence. It is possible, then, that the group as a whole answered the demands of the colonnaded hall, the shrine serving the residence and the attached kitchen serving the hall and the members of the household secluded in the shrine. If Q-166 and Q-167 were for culinary use, this would presumably be to prepare the daily food of the occupants of Q-168.

40.32.

ANN CHOWNING

Excavations at Mayapán

YB 54: 276–277, 1955

Late in the season Chowning excavated three connected house mounds in the Main Group, Structures Q-166, Q-167, and Q-168. They seem to belong to an assemblage which also contains a colonnaded hall, Q-164, and Structure Q-165, excavated by D. E. Thompson. The three structures in question stand on a single L-shaped platform, with the principal house, Q-168, forming the shank of the L and facing southeast. Like Structure Q-165, which is parallel to the short arm of the L and almost touches it, Q-168 faces a small built up area, supported by a terrace wall which runs from the east corner of the building platform and seems

to contain a staircase leading to the group. The house platform is interrupted in front of Q-168 by what may be the entrance to the house. Two lines of large stones set on end, the front line lower than the rear, run across the front of the house. The side and back walls are low, and the lack of surface debris indicates that the upper part of the house was composed of perishable materials. There are three benches, one of them L-shaped, in the front room, medial walls behind each passageways between them, and two benches in the back room. There is no sign of an altar, nor any indication that ceremonial activity was carried on in the building, though fragments of three human figurines and of effigy incensarios were found in the fill of the benches. One of the rear benches completely fills the space between the medial and back walls, but the other is set against the back wall, and next to it is a passageway to an end room, which is cut off by a wall running the length of the L-shaped front bench. This room contains benches in two corners; and another construction partly within the room but extending beyond the back wall; presumably it is an exterior bench. A doorway in the side wall leads to Structure Q-167. Excavation within the passageways and benches of Q-168 revealed no burial crypts, but fragments of human bones were scattered in the fill in front of one of the front benches, and the skeleton of a child, accompanied by bone and shell ornaments, bone awls, and an obsidian arrowhead, was found under a bench in the end room. A broken metate, several manos, including part of one of which the remainder was found in Structure Q-165, and heavy concentrations of coarse household ware indicate that this was a simple dwelling, like many others in Mayapán, in which domestic activities were performed.

The plan of Structure Q-167 is not nearly so clear, and it is difficult to say whether, in fact, one structure or more than one is represented. It fills the angle of the L, and contains an L-shaped bench behind which is a wall that continues as the terrace wall of the short leg of the platform. The orientation of the bench and the wall indicates that this structure faced southwest, away from the plaza, and a break in a low wall in front of the bench may be the doorway. Another narrow bench connects this one with a larger bench which was built against the side wall of Structure Q-168, and in front of the connecting bench is a square bench which is independent of any wall. The floors in this part of the structure are considerably higher than those in front of the L-shaped bench. Attempts to find a wall around the part of the structure adjacent to Q-168 failed. The fill of this structure is true midden debris, full of ash, animal bones, and the sherds of household pottery, and it seems likely that a kitchen, possibly that of Q-168, is represented by at least a part of the construction.

Similar midden debris is piled against all the terrace walls in this group.

Structure Q-166 occupies the end of the L, and is separated by a narrow strip of plaza floor and bedrock from Q-165. It has a clear back wall, a single bench with a medial wall behind it, and a narrow passageway and side exit behind the bench. It again faces the plaza, and the unwallled platform seems to have functioned as the front part of the structure. It stands on a higher level than the adjacent parts of Q-167, and there is no sign of a doorway between the two. The use of Q-166, is conjectural, but the debris within and around it is like that of Q-167, and it probably was part of the same domestic assemblage. A pair of terrace walls runs behind both these structures. A few fragments of effigy incensarios and a figurine head are the only indications of religious life, and both are often found in simple households. The proximity of the three structures to Q-165 indicates that they are connected with it, and perhaps with the colonnaded hall Q-164, but the nature of the constructions and the artifacts within them makes it evident that the role of those who lived and worked here was a subsidiary one, possibly that of servants to the occupants of the more important structures of the group.

40.33.

H.E.D. POLLOCK

Excavations at Mayapán

YB 54: 278–280, 1955

In 1954 a series of test excavations were carried out by Pollock at the northern terminus of the principal *sacbé*, or artificial road, at Mayapán [Chapter 40.34 this volume]. This work was done with the intention of determining the time of construction of the *sacbé* in relation to the architectural assemblage at its northern end and, so far as possible, in relation to the span of occupation of the city. Somewhat surprisingly, it developed that the road was a relatively late construction.

During the field season covered by this report, similar, but slightly more extensive, operations were instituted at the southern end of the *sacbé* where it terminates at the somewhat smaller assemblage of buildings known as Group Z-50. The time of construction of the road was checked, as had been done at the northern end, and in addition Group Z-50 was mapped and limited excavations were made that led to some, but by

no means complete, understanding of the growth and nature of the complex.

Group Z-50 is a raised courtyard enclosed by buildings on the east, south, and west, and entered from the north, where a stairway rises from the surface of the *sacbé* to court level. Near the center of the court are several low platforms suggestive of altars, and a stone of the sort that is thought to have been used for human sacrifice. A simple geometric design runs around the stone. A short distance west of the *sacbé* a subsidiary stairway rises from ground level to the northwest corner of the courtyard, and two other stairways, also rising from ground level, are on the east side of the group. Between them, built into the main platform, is a small room entered from ground level. The ceiling of this room, which had been roofed by beam and mortar construction, must have been about on the level of the surface of the main platform, which here forms the eastern terrace of Structure Z-50a.

Structure Z-50a, the eastern building, consists of two rooms separated by a medial wall with a centrally placed doorway. Each room is entered by a two-column doorway, the one facing east, the other west on the courtyard, and by doorways at each end of each room. Two benches are built along the medial wall in the west room; there is one in the east room. To judge from the depth and character of debris, the roof was of perishable materials, presumably thatch, although the stone walls must have risen to considerable height. This is a type of structure that is relatively rare at Mayapán. It is known to occur in groups of buildings that almost surely were domiciliary. The extraordinarily open plan of Structure Z-50a with entrance from all sides, however, does not suggest the privacy one expects in the typical family residence. At present we are uncertain of the function of this type of structure. It is entirely possible it was for dwelling purposes although not the residence of a family.

Structure Z-50b, the southern building, faces north on the court, where it is entered through a wide two-column doorway. The large front room has a single bench in its southwest corner and a centrally placed doorway in its rear wall that leads to a narrow chamber, without other entrance, occupying the southwest corner of the building. Against the back wall of this room and the back wall of the building, just opposite the doorway, is what we take to be an altar rather than a bench, because of its central location and narrow proportions. From the fill of this altar we removed a little tripod cup of a type commonly found in caches, and a jade bead that had undoubtedly once been inside the now broken cup. East of the front and rear rooms, running around the southeast corner of the building, is an L-shaped chamber entered by single-column doorways on the south and east and by a nar-

rower doorway on the north. This room does not communicate directly with either of the other rooms. A large bench, which blocks the southern half of the eastern doorway and part of the southern doorway, fills the center of the room from wall to wall. Against the east face of this bench, and outside the doorway, a smaller bench, added secondarily, rests on what was a secondary widening of the terrace of the building at that end. The latter bench is thus in the open, but it is entirely possible that this whole area had been covered by thatch, although the rest of the structure had carried a beam and mortar roof. Although Structure Z-50b is hardly typical of Mayapán dwellings, the bench and terrace arrangement at the east, which suggests kitchen appointments, leads one to suspect that this structure may have been used, at least in part, for domestic purposes. Debris of the nature of a kitchen midden was found in the corner between the south end of Structure Z-50a and the east end of Z-50b. This refuse may have come from either building.

Structure Z-50c, a long single-room building that lies along the west side of the group, is approached through a wide four column entrance facing on the court. Two benches and a centrally placed altar, in front of which were fragments of incense burners, run almost the entire length of the rear wall, ending just short of the north end of the room in order to allow passage through a doorway in the rear wall. This doorway and one in the north wall let onto a narrow terrace that runs along the back of the building and across the north end. At the south end of the room a doorway opens to a small courtyard or terrace between the ends of Structures Z-50b and Z-50c. The character of the debris in the room left no doubt that the building had carried a beam and mortar roof. At the north end the charcoal remains of a roof beam and the fire-blackened floor indicated that this part of the roof had burned. Oddly enough, similar signs of burning were not found at the middle of the room, the only other area cleared to floor surface. Structure Z-50c, in plan and interior arrangement, is rather similar to the colonnaded halls found in the main ceremonial center at Mayapán. There is reason to believe that such structures, although primarily ceremonial in nature, were lived in by certain groups a certain times. Structure Z-50c may well have seen similar use.

The previously mentioned area that lies south of Structure Z-50c and west of Z-50b carries the remains of the usual plaster flooring. In this floor, toward the eastern side of the area, is an opening into a roughly built chamber in the fill of the terrace that reaches bedrock and resembles a chultun or cistern. The chamber shows no indication, however, of ever having been watertight; indeed, the open fill that forms its sides and the creviced bedrock of the floor give quite the

opposite impression. The relatively meager amount of pottery, stone implements, and bones that came from the debris in the chamber also seems to rule out its use for the disposal of refuse. If by any chance, the Maya provided toilet facilities within their buildings, a practice that does not seem very likely, this opening might have served such purposes. No other construction was noted in this area. Although the terrace was only partly cleared, the debris was not deep and any walls of stone would presumably have been observed. If the area was roofed, or was walled at the south and west, such construction must have been of a perishable nature.

Our excavations in this group were limited, being designed primarily to date the *sacbé* and to obtain a plan of the architectural assemblage in its final stage. There nevertheless emerged some indications of building sequence and the growth of the complex. To judge by the joints between the plinths or building platforms supporting the three structures, Structure Z-50b was constructed, before Z-50a and Z-50c. Evidence involving the growth of the main platform of the group indicates that Z-50c was the last built. We also ascertained that the *sacbé* had once extended 7–8 m farther south to an old terrace wall buried by the subsequent northward extension of the main platform. There were the barest traces of what may have been a stairway at the earlier terminus of the *sacbé*. Lastly, there was some indication that the main platform had been extended westward to enable the building of Structure Z-50c.

The pottery from the fill of the *sacbé* checks the conclusion from our work of the previous season, namely, that the road is a late construction with reference to the occupation of the city. Indeed, the pottery from all our digging at this group suggests a late period. There seems to be one difference between the situation at the southern end of the road and that at the north. We know that some construction, *viz.*, the northward extension of the main platform, and possibly a western extension, was carried on at Group Z-50 after the completion of the *sacbé*. Indications, and it should be stressed they were no more than indications, at the other end of the road were that the *sacbé* may have been built when the architectural complex there had reached its final form.

The function of Group Z-50 in the life of the city is not so clearly marked as in the case of many other structures. It has been noted in preceding paragraphs that none of the buildings in the group are typically residential, in the sense of the family domicile. The sacrificial stone in the courtyard, if our identification of this form of monument is correct, is not the sort of object one might expect to find associated with the family dwelling. It should be remembered that Group Z-50 is connected by a relatively imposing roadway with a large assemblage of buildings that probably

was a residence of the nobility or aristocracy. One wonders if the road would lead from this residence merely to another group of dwellings. In spite of these indications that Group Z-50 was not a residence in the sense of the primary living quarters of a family or extended family group, the fact is that the nature of the pottery, and to a lesser extent the artifacts of other materials, that was recovered is just about what one might expect from habitations. Taking the evidence in hand, and it leaves much to be desired, it is probably best to think of this group of buildings at the southern end of the sacbé as being essentially ceremonial in nature but involving rituals that required residence during certain periods. One suspects, moreover, because of its connection with the imposing structures at the northern end of the road, that the use of Group Z-50 may have been restricted to the occupants of the other group.

40.34.

ANN CHOWNING

*Excavations in the Itzmal Ch'en
Ceremonial Group at Mayapán*

YB 54: 280–283, 1955

D. E. Thompson and Chowning spent much of the season investigating the small ceremonial group in Square H, next to Cenote Itzmal Ch'en. The group, which is located near the city wall in the thinly populated eastern part of Mayapán, consists of four large structures, H-14, H-15, H-16 and H-17, one on each side of a rectangular plaza, and a fifth structure, H-18, roughly in the middle of the plaza; a sixth one, H-12, lies outside the plaza proper, near the edge of the cenote. Four smaller associated constructions, H-13, H-16a, H-17a, and H-18a, presumably functioned as shrines. All these were excavated sufficiently to make their ground plans clear; only Structure H-18 and the shrines were investigated more thoroughly. Later, all the structures were included in a map of the group prepared by Proskouriakoff. Trenches were also run from H-18 to H-15, H-16, and H-17 in an attempt to determine the temporal relations of the buildings and to obtain stratified pottery samples.

The plaza of the group is on a natural rise in the limestone, which has been leveled in places by the addition of an artificial fill of stones. Supporting terrace walls run around the edge of the plaza, which is

approached by a staircase on the west side. In most parts of the plaza only two plaster floors are visible, though next to buildings the number sometimes rises to 5. No floor was complete enough to make it possible to establish the exact chronological relations of different parts of the group.

The main structure of the group, H-17, stands on the north side, and, like all the other structures, faces the plaza. The substructure is a pyramid with two terraces and a staircase which is inset at the top; the pyramid is surmounted by a small temple. The temple, resting on a plinth, has a two-column doorway facing south, two interior columns, and L-shaped benches. At the rear of the building is an altar probably supported by four crouching human Atlantean figures made of stone covered with painted stucco. The two central figures were still supporting a large slab, but the exact form of the altar top is uncertain. A crudely carved jade head was found in the floor under the altar, and incensario sherds, three stone turtles, and a stone jaguar lay near by. One of the interior columns was originally painted in bands of red, yellow, black, and blue-green, but this decoration was later covered by a layer of plain white plaster. An unknown excavator had dug a trench through the rear wall next to the altar. Incomplete walls and a column adjoining the west wall of the temple indicate that another structure once stood there. The present pyramid represents at least the third remodeling of the substructure.

At the base of the stairway is a complex shrine, H-17a. On one side of it is a low platform or bench, in front of which stand the sandaled feet of two large stucco figures, and between them, a large stone serpent head. Two similar heads lay a short distance away, and a stone of the type thought to have been used for human sacrifice is set in front of the figures. Another platform, of more irregular shape, extends to the west of the first one, and between it and the staircase were several pieces of sculpture, including a round "altar," a square one, and three carvings of serpents; any or all of them may have fallen from above. The exact plan of this part of the shrine is not clear. A stone "diving god" lay on the surface.

Directly south of Structure H-17 is a round building, H-18, which stands on a square platform with a balustraded stair case on each side. The temple has four doorways, oriented, like the stairs, to the cardinal directions. This fact is particularly interesting because this is the only round structure at Mayapán to have four doorways, and Landa reports a legend that such a building was constructed there. In the middle of the single room is a round pier, 1 m in diameter, built around an earlier central column and resting on a wide circular plinth. In the pier are four niches facing the doorways of the room, and in the west niche, which

seems to have been made to accommodate it, rested a well made round stone altar, under which one jade bead was found. It is impossible to say how much taller the pier, now almost 1 m high, formerly stood; presumably the central column, and conceivably the pier, helped support a beam and mortar roof. A stone monkey with tenons on its back lay in front of the south niche, and a turtle with badly weathered glyphs on its back was found beside the substructure. There were remarkably few incensario sherds inside the temple, though the floor showed signs of burning.

The present substructure encloses an earlier one which stood to the same height and also had four staircases, all but one of which were largely destroyed before rebuilding. No traces remained of any earlier superstructure. On the north side of the substructure a crypt was built, using a balustrade and wall of the earlier substructure, the wall of the later substructure, and a specially built end wall for its four sides. In this crypt, in a space roughly 1 m long, 50 cm wide and 1 m deep, were jammed the well-articulated skeletons of 14 adults. There were no grave goods except a large conch shell at the bottom of the crypt. The bodies were of both sexes, showed a considerable age range, and obviously were put in at different times. The skulls of two were missing. The unceremonious manner of burial and the proximity of the crypt to the sacrificial stone in front of Structure H-17 suggest that the skeletons represent the victims of the rites thought to have been performed there.

Southwest of Structure H-18 is a small construction designated as H-18a. It is built directly on the plaza floor and has three parts. One is a low platform in front of which are the remains of two pairs of stone and stucco feet. The scattered parts of the rest of one of the figures, including both hands holding flattened balls, lay in front of the feet; the other figure seems to have been destroyed earlier just west of this one is a much cruder platform or bench. To the south of these constructions, and hiding one of the pairs of feet, is a low-walled, three-sided enclosure, the open end to the west, surrounding the upper half of a large stucco figure which lay on the plaza floor. The rest of the 1.3 m figure was unprotected, and if the walls ever bore a superstructure, it was of perishable materials. The figure wears a garment resembling feathers, and elaborate wrist and ankle ornaments. Its arms and legs are spread so that the elbows and knees form right angles, and on these joints are death's heads, like those depicted on the joints of the Aztec "earth monster." The hands and head of the figure are missing, but scattered plumes may represent part of a headdress. This figure lies over a similar smaller one which was carved in high relief on a single block of stone almost 1 m long. The stone figure also has skulls on its joints, and

serpent heads of classic Maya type were carved in low relief between the arms and legs. Large round holes which pierce the stone represent the eyes and presumably had a functional use; they were the only part of the stone visible under the later stucco covering. The bodies of the serpents cross at the end of the stone, and each tail ends in three rattles. Fragments of effigy incensarios lay between the legs of the stucco figure; the legs, like the arms, extended well beyond the stone and were modeled over small unshaped rocks. Four shell and two jade beads were lying beside the figure, two burnt jade beads were in a broken incensario buried between the legs, and two more jade beads and a fragment of copper lay under the carved stone. It is impossible to say what deity was represented, but the combination of Maya and Mexican motifs is particularly interesting, especially since this figure was in use at the time of the abandonment of the city.

Of the other structures in the group, H-12, H-15, and H-16 are typical Mayapán colonnaded halls, each with two rows of columns, back and side benches, an altar in the rear, and a beam and mortar roof. In all three, there were heavy concentrations of incensario sherds in front of the altars. Only H-12 has attached to it a house (H-11), which seems to represent the building usually associated with colonnaded halls, presumably to provide service. This hall differs from the others in not being approached by a staircase; together with H-11, it stands on a separate knoll or terrace outside the plaza. Like H-15, it has a single transverse room, apparently a late addition. One of its columns is replaced by a rectangular pier. Structure H-15, the largest of the three, is approached by a very wide staircase with massive balustrades. Its transverse room is almost completely filled by a bench. A number of stones carved with designs of the Puuc period were scattered at one end of the main room, and in front lay a stone carved to resemble a sacrificial stone borne on the back of a crouching animal. It apparently was not in place. The third colonnaded hall, H-16, is badly destroyed, partly as the result of the removal of stones both before and after the fall of the roof. It was possible to ascertain that it had undergone extensive remodeling, probably more than once. Both the back row of columns and the rear benches had been moved forward. In the latest period, the benches in the main room were faced with plain and decorated stones of Puuc type, so arranged as to form a simple design. There was a transverse room at each end, and the south one was approached by its own staircase. This latter room seems to have had a thatched roof, though the rest of the hall had a beam and mortar roof, and the presence of metates and plain coarse ware in this room may indicate that some of the household activities often confined to a separate structure were performed here. Exploration

in the altar, of this building and in that of Structure H-12 failed to reveal any signs of a cache, but in both cases breaks in the plaster tops of the altars may indicate looting. In front of the south room, on the level of the plaza floor, a tiny three-sided structure, H-16a, faced west. It contained only two low stone and plaster steps, but the broken parts of a grotesque stone figure found near by may indicate that the shrine once held an idol. A round altar lay on the ground beside the shrine. There were no offerings in evidence.

The other major building, H-14, lies on the west side of the plaza. Like all the structures in the central group, it has its own platform, but in this case the platform is so low that no stairs were necessary. The building, which shows signs of remodeling, is similar in plan to Structure H-17. It has a triple doorway formed by two columns and jambs, two interior columns, and back and side benches. The building is in such a state of disrepair that it is impossible to ascertain if there was an altar in the rear; there was no particular concentration of incensario sherds in the building. Fragments of human bone were found outside it.

Little is left of the remaining structure, H-13, but its square platform; and the scantiness of the debris indicates that if a building ever stood on top, it was made of perishable materials. The small structure stands at an angle in the northwest corner of the plaza and has a balustraded staircase on its southeast side. Off center in the platform, and set at an angle to the platform, a narrow rectangular shaft reaches down 2 m. It contained the badly scattered and decayed bones of at least three adults and one child. Again there were no grave goods. There were indications that a niche on the stairs may once have held a stucco figure.

Itzmal Ch'en seems to have been a secondary and minor center of worship at Mayapán. The fact that the annual rain ceremony of Telchaquillo is still performed at this cenote may indicate the nature of this worship. In addition to its smallness and the apparent lack of much rebuilding and remodeling, Itzmal Ch'en differs from the Main Group in that there is no indication of the burning of buildings and no positive evidence for looting of caches, whereas the beads on the surface of Structure H-18a seem to show that it was not looted. The destruction of the statuary may or may not have been deliberate. Both Structures H-16 and H-17 have certainly been dug in, but it is impossible to say when or by whom. In types of structures and artifacts, such as stone turtles and effigy incensarios, Itzmal Ch'en does not differ from the Main Group, and it is possible that it escaped depredation, if indeed it did simply because of remoteness. As elsewhere in Mayapán, there is extensive re-use of stones, seemingly of the Puuc Period, but no sign of the buildings to, which they once belonged.

40.35.

EDWIN M. SHOOK

Excavations at Mayapán

YB 54:283–284, 1955

A period, of two weeks was spent at Mayapán during the 1955 field season investigating a small round temple, Structure Q-126. This unit, the best preserved of the four round temples at Mayapán, was selected for repair and solidification. The latter, work was carried out by Strömsvik.

Structure Q-126 is situated on the eastern periphery of the concentrated ceremonial group of structures, surrounding the Temple of Kukulcan or Castillo (Structure Q-162), and lies on the north edge of what appears to be the main avenue of approach from the east to the heart of the city. As with the majority of buildings in Mayapán, only a few architectural features were discernible above the fallen mass of rough stone. The partly exposed western walls of the platform and temple provided the initial knowledge that a round building rested on a raised rectangular platform. The excavations included the complete clearing of the temple, the exposure of the west and south sides of the substructure, and minor trenching into the latter for earlier structural phases. The trenching disclosed three plaza floors and a small rectangular temple or shrine predating the round temple, but still built within the Mayapán Period. This earlier building and the floors were later buried by the relatively high substructural platform of the round temple. A broad stairway, flanked by plain ramp-type balustrades, on the south side of the platform gave access to the frontal terrace of the temple. Here evidently stood a line of plain and carved stelae before the temple doorway. Fragments of two plain stelae remained on the terrace, and both plain and sculptured monuments lay at the southern base of the platform, seemingly fallen from the terrace. The temple is a duplicate in plan of Structure Q-214, previously reported [Chapter 40.21 this volume], with a round outer wall enclosing a space divided in half by a medial partition. A single doorway on the south provides access to the first small chamber, another in the medial wall gives entrance to the rear room. The temple's lime concrete floor showed heavy staining from considerable burning, concentrated on a north-south line from the outer doorway and increasing toward the rear chamber. In addition, a layer up to 15 cm thick of ashes and charcoal mingled with pottery censer fragments covered the floor. Against the rear wall, opposite the doorway, an irregular, circular patch where the floor was missing marked an area heaped

with ashes, charcoal, and censer fragments. If a masonry altar once stood against the rear wall, it had been ripped out before the heavy burning which took place in the back room.

The evidence of incense burning within the temple, the accumulation of pottery censer fragments around the base of the substructure (apparently sweepings from the temple and terrace), the secondary addition in the center of the substructure stairway of a tiny shrine room containing a modeled stucco idol, and the many associated stelae, all point to the importance of Structure Q-126 as a temple for ceremonial rites. The striking similarity of Structures Q-126 and Q-214, in all but minor details, suggests that the two temples served identical functions. The fact that one faces south, the other east almost certainly precludes their use for astronomical purposes.

The pottery recovered from Structure Q-126, from the excavations by Chowning and D. E. Thompson, in the ceremonial group at Itzmal Ch'en, and from the digging in Group Z-50 by Pollock was analyzed by Shook during the past season. The major portion of his time was devoted to the general study of the pottery of Mayapán for a forthcoming report.

40.36.

GUSTAV STRÖMSVIK

*Exploration and Reconstruction in
Mayapán and Vicinity*

YB 54:284–285, 1955

During the first part of the field season Strömsvik assisted Chowning and D. E. Thompson in their digging for building plans and architectural details at Itzmal Ch'en. The results of these excavations are reported by Chowning.

In conformity with our policy of consolidating certain representative buildings at Mayapán, Shook cleared the round structure Q-126, 200 m east of the Castillo, at the beginning of the season. Early in March the consolidation of the rectangular substructure was started. The entire west side was taken down, to be relaid in lime mortar, except for a section at the north end, where a joint between this and an earlier structure was plainly visible. Good lime-mixed mortar was still there between the stones, and the wall was undoubtedly as straight as the ancient builders had left it. In this section the cracks were filled with cement

and chinking, without moving the stones. At the south side, the stairway was partly rebuilt as high as the sixth step, and the balustrade stones were reset as far as they were found. Also, a small shrine in the middle of the stairway was solidified to the extent that it was found. In examining the round building on top, it was discovered that the wall contained much of the original mortar. Only the outer facing of this part of the construction was reset in fresh mortar; the cracks between the stones in the inner facing were chinked with mortar without taking the wall down. The inner door-jambs were reset to the height found when they were excavated, as were also the outer door jambs. The tops of the walls and the cracks in floors and stairs were sealed with rich cement mortar. A small, broken stela was repaired and set upright on the west side of the substructure, and at the east side a small, much damaged stela with faint traces of hieroglyphs was laid leaning against the rubble on the unexcavated east side of the substructure.

In addition to this work of repair at Structure Q-126, it was planned to solidify the existing remains of a city gate and a section of the city wall to give an impression of how the Great Wall of Mayapán had once looked. Gate D, 400 m east of the Telchaquillo-Tekit road, was chosen as a good example. This gate had been partly excavated in 1952 (Shook 1952:10–12). A stretch of wall just west of the Telchaquillo-Tekit road was thought to be both representative and easily accessible to visitors, and this section was restored to its original height, with a plaster floor on the banquette, according to the evidence found. By the end of May all work of consolidation was finished.

Some months earlier natives of Telchaquillo had told Strömsvik about a cave near the town of Tecoh, about 10 km north of Mayapán, called *Dzab-Na* (House of Rattles), where, according to legend, the remnants of the Mayapán people took refuge when their city was destroyed. This cave seemed worthy of investigation, and in June this was undertaken. Using a small lighting plant and all available electric cable, the center area, about 100 m in diameter, was investigated and mapped. Three cenotes were seen in the cave, but the natives say there are 7. A good quantity of potsherds was found, but no stratigraphy, there being no depth of soil. Even so, one can say that the cave floor was strewn with typical Mayapán wares, underneath which were found quantities of Slateware. Fragments of classic Maya polychrome were also seen. A discovery of particular interest was a statuette of polished black wood. The seated human figure about 15 cm high, is remarkably well preserved. Articles of perishable materials are of course extremely rare, and any such finds come as more than welcome additions to our knowledge of the ancient arts and crafts.

40.37.

ROBERT E. SMITH

Pottery of Mayapán and Vicinity

YB 54:285–286, 1955

The number of potsherds collected at Mayapán during the 1955 field season approached 200,000. This collection amplified rather than changed the picture as shown in last year's report. A few results, however, are significant. Effigy-type incense burners were more than twice as abundant in and around ceremonial structures as they were in association with dwellings, whether the dwellings were of elaborate or simple type. The smaller number of incense burners found with house mounds was offset by the increase in Mayapán Red and Porous Gray wares. Mayapán Red on Buff or Red and Black on Buff pottery, never found in large percentages, was three times as abundant in house mounds as in ceremonial structures. Black on Cream Ware was twice as abundant in ceremonial structures as in the more elaborate dwellings; the ordinary house mound rarely harbored any Black on Cream sherds. There is still much to be learned from a careful study of the pottery associated with different types of structure, and even of the pottery from functionally different rooms within structures.

The pre-Mayapán Period material found at Mayapán amounted to less than one percent. It was outside the city that early potsherds abounded. In a survey of small outlying sites, usually close to cenotes, sherds were picked up within the cenotes as well as from the surface outside. This collection totaled nearly 3,000 pieces, of which 42.2 percent were of Puuc or lowland Maya Classic type and 1.1 percent were Preclassic. Many of these sites had colonial sherds (12.4 percent). Actually, save for a few fragments of effigy incense burners and even fewer Mayapán Red on Buff sherds, the Mayapán Period was poorly represented.

40.38.

WILLIAM T. SANDERS

Explorations on the East Coast of Yucatán

YB 54:286–289, 1955

This season Sanders continued his ceramic survey of the east coast of Yucatán. The previous field season

had been spent in a general survey of the coast from Holbox to Tulúm, and included small test excavations for ceramic samples at 37 sites. The pottery indicated a great abundance of sites of the Mayapán Period and a few sites of the Classic Period. This year it was decided to concentrate on two major sites, Tulúm and Tancah, within the area mentioned. These were selected as important centers for the Mayapán and Classic Periods, respectively, and it was hoped that extensive testing at both would enable us to break down each period into phases. Aside from ceramic differences, the two sites show important distinctions in architectural style, and by ceramic testing it was thought that some idea of the development of the East Coast architectural style might be attained.

A crew of workers was brought from Kantunilkin to Tulúm to carry on the excavations, labor being completely lacking in the latter area. A total of three weeks was spent at Tulúm, and over 40 trenches were excavated in and around all the major buildings. In general these were dug along the edges of temple and palace platforms, usually in the vicinity of stairways. A few trenches were excavated in buildings, mainly involving small platforms rather than major structures. Several rooms were cleared of roof and wall debris to get above-floor samples.

The average depth of soil and cultural deposit at Tulúm is very shallow, the deeper deposits, 50–100 cm, occurring in and around Main Street, which crosses the city from the west gate in the north wall to the west gate in the south wall. On the rocky knolls which underlie the Inner Enclosure, Cenote House, Temples 45 and 54, and slopes in general, sherds are often found on bare rock, and at most the soil depth runs from 10 to 30 cm. In spite of these conditions, excellent sherd samples were obtained in the vicinity of all major structures. The trenches indicate clearly, by the absence of extensive floor construction, rebuilding, and gross depth of cultural deposit, that the period of occupation at Tulúm was extremely short, probably not exceeding a few centuries.

Six weeks were spent at the site of Tancah. Here the situation was quite different. Excavations were conducted in Groups A and B, with those in the former yielding best results. Excavations in Plaza A revealed a complex succession of paved floors running from three to seven in number, and samples of pottery were obtained from a number of these levels. On top of the first floor and in the top soil layer, typical Tulúm Period censer wares were found, but all the pottery below floor levels is Classic in date. Extensive trenching in the vicinity of the two major groups indicated an over-all soil-refuse depth of approximately 50–100 cm, with several trenches running to 2 m. Very little Tulúm pottery was picked up in these trenches, a fact which

indicates that the Tulúm Period occupation of the site was ceremonial in nature. Lothrop's site map was considerably extended, and the new structures added, mainly platforms and a few temples, are at least equal in number to those mapped by him. Ceramic samples were also obtained from the platforms of the newly mapped temples.

On completion of the work at Tancah, operations were moved to the Chetumal area, where two weeks were spent testing two sites, the walled site of Ichpaatún, which is of the Mayapán-Tulúm Period, and the Classic site of Calderitas. Both have been reported and described by Escalona Ramos. Excellent ceramic samples were obtained from each site, especially the former.

Preliminary analysis of the ceramic material indicates the following important points. Tulúm is the largest Postclassic site seen during the two seasons spent on the East Coast; it seems to be entirely of the Mayapán Period. There are four basic local wares. First, there is a Red Slipped Ware, which in general is very close to Mayapán Red Ware, although with finer paste and better surface finish. It occurs in three definite forms: tripod plates or bowls, tripod *molcajetes* or chile grinder, bowls, and jars, all three shapes showing close linkage with those at Mayapán. Secondly, there are several types of censer wares, at least two of which are exact duplicates in form of Mayapán censers. Thirdly, there is an unslipped ware running entirely to jars which show a close resemblance in lip and neck form to their Mayapán counterparts. The fourth ware, found in very small quantities, is the northern Yucatán Black on Cream. Fine Orange occurs as a light but consistent component and seems to be entirely of Berlin's Talmulté type. No Plumbate was found.

There appears to be slight possibility of breaking down our Tulúm Period into phases; it seems to represent a short period ceramically. Spatially, Tulúm pottery has a considerable range, especially the red and censer wares. Both occur along the coast from Holbox to Tulúm, and the pottery from Ichpaatún in the Chetumal area is almost a duplicate of Tulúm pottery. Good representative sites other than Tulúm are Cancun Island, El Meco, Chiquilá (Period 2), and San Gervasio on Cozumel Island.

The Classic Period along the East Coast is not so easily defined. There seems to be fairly good evidence allowing a breakdown into an Early Classic stage with strong Petén influences (Tzakol), followed by a cessation of Petén influence in favor of that from the Puuc region. The pottery from Tancah should help toward clarifying this problem. The above, statements refer strictly to the Holbox-to-Tulúm region, the situation, in the Chetumal area probably being quite different.

One interesting problem is the representation of the Early Postclassic or Toltec-Chichén Itzá Period on the East Coast. A number of sites excavated last season seem to fall in that time period in part, although lacking the diagnostic ceramic and architectural manifestations found at Chichén Itzá. The period seems to be characterized on the East Coast by a continuation of the Puuc Slate Ware tradition, with the addition of a distinctive local ware called by Sanders Vista Alegre Striated, after the site where it occurs in heaviest concentration.

Aside from study of ceramic stratigraphy, extensive testing, including mapping and excavation, was carried out at Tulúm and Tancah to obtain data on settlement patterns.

At Tancah, trails were cut at 20 to 40 m intervals, forming a grid pattern covering an area 540 m north-south by 600 m east-west and extending in all directions around the two mapped plazas. A careful search was made of all squares to map structures, whether religious or domiciliary in character. Secondly, trenches were excavated at most of the intersections of the grid trails to get an idea of the depth and quantity of habitation refuse and its distribution over the site. These trenches were all of uniform surface area (1 m by 1.5 m) and were carried to bedrock. Some 180 trenches were dug, and they gave an excellent idea of population distribution. A preliminary study of the data indicates the following conclusions: 1. There are few heavy refuse deposits anywhere at the site. Good deposits almost invariably occur just off temple platforms or house mounds. There are large areas of little to no cultural deposition between plazas or house mound clusters. 2. It seems almost certain that a good estimate of the population maximum of the site may be obtained on the basis of the house mound count alone. 3. The site is curiously overbalanced; there are as many buildings of purely religious function as there are domiciliary platforms, and the total of house mounds does not exceed a few dozen. 4. Almost all the house platforms are very large, often running 40–50 m in length, and are quite obviously not remains of dwellings of a proletariat. 5. We seem to have at Tancah an important religious center with a small resident elite population, probably not exceeding a few hundred persons, in other words a typical ceremonial center as, described by Torquemada for the lowland areas of Mesoamerica in general. 6. In the interior for a distance of several kilometers there are scattered through the forest small groups, each consisting of a small pyramid or two surrounded by six to 12 house platforms; apparently these were small agricultural hamlets of the type mentioned by Gaspar Antonio Chi in *Relaciones de Yucatán*.

At Tulúm the situation seems to be quite different. In spite of the lack of soil and much shorter period of

occupation, Tulúm has much more cultural refuse in general, and many more good ceramic dumps. The area enclosed within the main wall is approximately 450 m north-south by 200 m east-west, or approximately nine hectares or 22 acres [0.09 sq km]. Of this total, approximately three hectares are occupied by purely religious structures or by large palaces. The rest of the enclosed space, that lying west of Main Street and the section east of Main Street which lies south of the Inner Enclosure, shows abundant surface indications of a dense nucleated population. The area lying south of the Inner Enclosure and east of Main Street is sharply sloping, and the slopes are worked into a series of terraces to provide locations for dwellings. House mounds are rare, the population evidently having lived in pole and thatch dwellings directly on the terraces of the slopes, or directly on bedrock in more level areas. Approximately 70 trenches of the type excavated at Tanchah were made here. The results of these excavations checked the conclusions reached on the basis of surface remains. The indications are that we have a settlement pattern similar to that found at highland Mexican sites, an interesting fact in view of the strong highland Mexican influence in architecture and pottery at the site. One is, however, surprised at the small area urbanized, considering the number of religious structures and the importance of the site. The reason lies undoubtedly in the deficiencies of slash and burn agriculture as an economic basis for true urban society.

The entire area enclosed by the southern extension of the west wall is notable for the almost complete absence of refuse deposits and structures. It probably served as a refuge for the surrounding farming population in times of attack. Outside the walled areas there is no evidence of urbanization. An interesting discovery was made in the survey of the area south of the site. The forest just south of the walled area is crisscrossed by an amazingly complex system of defensive works, involving intersecting walls, double walls, and walls with parapets, which runs into the bush for hundreds of meters. Unfortunately, time did not permit mapping, a task which should be done within a few years, as the walls are in an advanced state of destruction.

40.39.

ROBERT E. SMITH

Ceramic studies in Yucatán

YB 55: 338–339, 1956

During the past field season Smith's work encompassed three main ceramic projects: a study of the surface material from Mayapán; the analysis of pottery from a number of test trenches dug by Strömsvik at Uxmal and Kabah; and a review of three wares (X Fine Orange, Tohil Plumbate, and Petén-like Polychrome) well represented in the Alberto Márquez Collection in Mérida. In addition, ceramic summaries of the pottery from Dzab-Na and from Xcaret were made, respectively, for Strömsvik and for E. Wylls Andrews.

The principal wares and forms found on the surface at Mayapán are representative of the latest ceramic phase at the site. They may be divided into six main wares: Unslipped Porous Gray or Cinnamon, Slipped Mayapán Red, Mayapán Red and Buff, Mayapán Red on Buff or Orange, Mayapán Red and Black on Buff or Orange, and V Fine Orange. The unslipped forms include low-necked, wide-mouthed jars with lightly striated bodies; huge high necked, bolster-rim jars, usually thickly coated with plaster; censers of three types, namely, effigy, ladle, and jar shapes, either tripod or with pedestal bases; effigy vessels in the form of turtles, humans or gods, and, frogs; figurines; and some bowls and dishes. The effigy and jar censers, effigy vessels, and figurines are usually painted, and most have appliquéd adornos. The slipped forms include jars, both water and storage; tripod dishes and bowls; flat-based bowls, both open-mouthed and restricted; basins with bolster rims and horizontal strap handles; and in the case of V Fine Orange (Berlin 1956), tripod basal-flanged bowls or dishes. The use of feet in the latest Mayapán phase (as well as in all earlier Mayapán phases) is prolific. Such supports, three, never 4, in number, are associated with nearly all forms, even, though rarely, with jars. The pottery, both slipped and unslipped, is closely comparable to the latest pre-conquest material found on the east coast of the Yucatán peninsula.

In the eight trenches dug at Uxmal, the pottery recovered amounted to about 25,000 sherds. All were reviewed rapidly, and about 14,000 were actually studied, material from the three best-stratified trenches, comprising 14 cuts in all, being used. All the pottery examined appears to be late in the Puuc sequence. There are six main wares: Unslipped Light Brown, Medium Slate, Thin Slate, Puuc Red, Holactún Slate, and Z Fine Orange. The principal forms associated with the

unslipped ware are coarsely striated jars and spiked censers with flange and pedestal bases. Medium Slate forms are water jars, bolster rim basins with vertical strap handles, flaring- or out curving-sided dishes, and incurved-rim ring-stand bowls. Thin Slate forms, which differ somewhat from Medium Slate, are round-sided bowls with direct or bead rim (often with three nubbin feet), cylinder vases with flat or pedestal bases, restricted orifice bowls, flaring- or out curving-sided tripod dishes, deep bowls, and basins. Puuc Red shapes, much the same as those of Thin Slate, are round-sided bowls with, direct or bead rim, (rarely with pedestal or three hollow oven feet), flaring or outcurving-sided tripod dishes, cylindrical vases, and flaring-sided bowls rounding to flat base (mostly with moldmade carving). Holactún Black on Cream Ware has very distinct forms, including bolster or thickened-rim jars, T-bolster rim basins, and incurved and bolster rim bowls.

The ceramic picture at Kabah, as shown by our findings, differs from that at Uxmal in that there is evidence of a sequence comprising an early and a late phase, and possibly a middle phase. Z Fine Orange and Holactún Black on Cream are found in the upper and middle levels but not at the bottom, where a small quantity of Petén-like Early Classic polychrome types occurs. Many other differences between the Kabah and Uxmal material will be presented in a later publication.

The recording of the X Fine Orange, Plumbate, and Petén-like Polychrome wares from, the Marquez collection is important, even though precise data as to the circumstances under which the pieces were discovered are lacking. As the specimens are recognized ceramic types, they add to the body of information regarding those types. This is particularly true of, categories of pottery that are known only in the form of sherds, whole pieces such as these shedding light on vessel shapes and systems of decoration. Finally, it is always well to make record of material in private hands, for not only is this often difficult of access to students, but also there is danger that it may become scattered and lost to science.

A few words will suffice for the material from Dzab-Na and Xcaret, since the work done at these sites is being published by the respective excavators. Dzab-Na is a cave and cenote located near the town of Tecoh. The pottery collected in the Pave was not stratigraphically separated but was removed as a unit. It consists of Preclassic, Puuc and Petén-like Classic, and Mayapán Period pottery, in that order of importance. Xcaret is a large site on the east coast of the Yucatán peninsula, opposite the northern extremity of Cozumel Island. Ceramically, Xcaret appears to be primarily of Puuc type: although Mayapán Period and even recent types, as well as Petén-like, polychromes and a few

Preclassic specimens, are present, the great majority, of sherds belong to the Puuc tradition.

40.40.

TATIANA PROSKOURIAKOFF
Artifacts of Mayapán

YB 55: 339–341, 1956

Archaeological work in recent years has been centered largely on architecture settlement patterns, and pottery collections. Stone tools and other small artifacts that would throw light on, the technologies of the peoples concerned have received very little study. Only major excavation projects yield collections of a size that can provide an adequate sample of tools used by a given people. Comparison and even description of the technologies of various Middle American cultures still await necessary reports of relevant data. Such reports are available for only a very few sites in the Maya area and are completely lacking for most of Mexico. A. V. Kidder's studies of the artifacts of Uaxactún and of Kaminaljuyú, and Woodbury's description of those from Zaculeu, give us information on the tools used by the Maya during the Classic period in the Petén and in the highlands. The collection from Mayapán will extend our knowledge to the Postclassic period in Yucatán.

Unfortunately, literature is particularly deficient in data that would acquaint us with locally antecedent techniques, but the Institution's unpublished catalogue of objects from Chichén Itzá, and scattered pieces in museum collections, provide some background for judging the effect of the violent events of the Postclassic era on the material culture and resources of the people of Mayapán. The present study, however, remains primarily descriptive, and is concerned not so much with the history of particular techniques or the tracing of trade relations as with the total complex of tools and ornaments characterizing a particular stage of Maya culture. For this purpose, technical identification of the material of every specimen, although highly desirable, was not deemed essential, and expert advice was sought only on selected samples. Metal was the only exception; the entire collection of metallic specimens was brought to the United States for analysis, and Dr. William C. Root, of Bowdoin College, is now examining

it both for composition and for working technique. Mr. Robert Berman has given us help with the identification of samples of stone imported to Mayapán from other regions, and Dr. W. J. Clench, of Harvard University, has examined and identified varieties of shell. In addition, Miss Joy Mahler has helped us with descriptions of fragments of textiles, and Mr. Clayton Ray with animal bones used for artifacts.

Although the study has barely passed its initial stages, a general view brings out interesting contrasts with other known collections. For example, highly specialized forms of large stone tools found at Mayapán are comparable to those at other sites, but the number of roughly shaped tools used in stone working and plaster smoothing far exceeds what has been reported elsewhere.

The most radical changes are reflected in the flint-working trade. Techniques seem to decline, and the materials used are inferior. The absence of the large chipped celt with a polished edge which is found in earlier Yucatán collections may point to a significant change in cultivation procedure. A common small celt form, on the other hand, appears as a new feature. Small arrowheads probably mark the introduction of the bow in warfare or hunting, and the rarity of larger stemmed points may mean a decline in the use of the spear thrower.

Obsidian flake blades were manufactured in great numbers, but there are few chipped implements. The fact that green obsidian, common in late periods in Mexico, is even more rare here than in early times in the Guatemala highlands suggests that, contrary to expectation and in spite of historical evidence of Mexican settlements at Xicalango, Mexican traders were not conspicuously successful in the Maya capital.

The collection of jades and other fine stone ornaments from Mayapán is disappointingly meager; this scarcity is due mainly, no doubt, to the fact that so many caches and tombs had been looted, but even from our small collections it is clear that few such objects were manufactured locally and that the best pieces were antiques when they were acquired.

Shell, bone, tooth, antler, and other organic materials exhibit ancient traditional techniques, which our shell collection illustrates somewhat better than other groups, containing, as it does, a large number of rejected pieces that often show technical process more clearly than does the finished product.

Proskouriakoff spent two months in Mérida this season classifying and studying the collections. Over 250 photographs were made by Sr. Raul Acuña, of Mérida, to serve as illustrations for the report now in preparation, which is designed to make this material available for comparison with collections from other cultures.

40.41.

ROBERT E. SMITH

Ceramic Studies in Yucatán

YB 56:410–412, 1957

During the past winter and spring, work was continued on the extensive collection of pottery from Mayapán. A year ago the study of the surface material was largely completed, including a separation and analysis of the pottery from what we are calling the Late Mayapán Ceramic Phase. Besides the late phase, an early and a middle phase of the Mayapán Ceramic Period (ca. 1200–1450 AD) appear to exist, and it was in their study that most of the time was spent.

It is interesting to review how the phases were determined in view of the rather inferior stratigraphic conditions at Mayapán: the scarcity of refuse dumps, none of which represents more than a single phase; the dearth of deep deposits; and the lack of marked architectural change. In order to determine the ceramic changes and therefore the possible ceramic phases, the material was separated into three groups according to level: the uppermost or surface the middle, and the lowest.

The uppermost level included material found in the humus or surface soil, on floors of rooms, or in fallen debris. Naturally, the pottery in the fallen debris is not necessarily contemporary with that found on the floors of rooms, but since these two groups are often hard to separate, and since no ceramic differences were noted, it was decided to lump them together as surface lots. Included in the surface lots is found a small percentage of earlier types, some of which came from fill (taken from early refuse deposits) mixed with fallen debris, some being early types still used, although in small quantities.

In separating the pottery of the lowest levels from the rest it was apparent that not all the lowest-level lots were typologically early; some might even belong with latest levels as far as the material was concerned. Therefore, in determining what was a truly early lowest level, we had to review the pottery to make certain that no late ceramic traits were present.

The middle lots include all those not considered surface or lowest and early. In this middle collection of potsherds we find Early as well as Late Mayapán Period traits. The early traits are found in smaller percentages, since they were gradually being discarded to make way for the late traits which were just coming in and which in the surface levels become predominant. The middle phase is essentially transitional.

The Mayapán Ceramic Period, believed to be approximately 250 years long, is represented through-

out by two principal wares: Mayapán Red and Mayapán Unslipped Porous Gray or Cinnamon. The red has minor shape changes from early to late and a few forms identified specifically with either the early or late phases. There may be typical middle-phase forms so far not identified. The story in the unslipped group is similar to that of the slipped red. Minor wares also play their part. Black on Cream Ware is well represented in the early, diminishes considerably in the middle, and disappears in the late phase. Cream Ware follows much the same pattern. Red on Buff and Red and Black on Buff, which may be considered subtypes of Mayapán Red, appear first in the middle but are most prolific in the late phase. There are other minor wares, of which some may be local but most are probably from trade. In the last category the most important is V Fine Orange, first noted in the middle but most abundant in the late phase.

In all levels, occasionally even in the surface lots, pre-Mayapán Period pottery occurs, including Puuc, Toltec-Chichén, and Petén-like Classic types. The appearance of these early types, mixed with material found in Mayapán Period levels, strongly suggests that they were taken from early deposits and refuse dumps and used for fill.

Another task completed this past season was the recording and analysis of the pottery from nine of the 19 cuts dug at Chichén Itzá in 1954 by E. M. Shook and R. E. Smith. The three objectives advanced in the report [Chapter 40.27 this volume] on that work were: to check the range of the site's occupation; to seek for refuse deposits, especially of long duration or in association with well known Maya and Toltec styles of architecture; to discover and record the full range and context of ceramics pertaining to the epoch of Toltec influence in Chichén Itzá.

The range of the site's occupation is marked by a small collection of formative sherds from one cut, whereas in all other cuts either Puuc or Toltec-Chichén types were present, although rarely in stratigraphic sequence. As for post-Toltec-Chichén pottery the situation remains the same as described in the above-cited report.

The second objective, a search for refuse deposits, was only partly successful. Only one deposit of long duration was encountered. Located behind the Temple of the Three Lintels, it disclosed nothing later than Puuc types below the floor and mostly Toltec-Chichén pottery above. The association of ceramic deposits with either Maya or Toltec styles of architecture is still inconclusive, primarily because no strictly architectural cuts were attempted.

The third objective, involving the range and context of the Toltec-Chichén Ceramic Period, has been successfully attained. There is nothing important to

add to the summary of that period given in [Chapter 40.27 this volume], although a very considerable amount of such material was encountered in the nine cuts examined this season.

40.42.

J. ERIC S. THOMPSON

Studies in Maya Religion and Hieroglyphs

YB 56:412, 1957

Thompson spent three weeks of March in Mérida, examining the effigy incense burners, recovered from Mayapán during the excavations. A few are complete, but most are fragmentary. The purpose of the study was to gather information on the religious cults of Mayapán and their bearing on late Maya history.

The incense burners are large pottery vessels, often as much as 60 cm high; to the front is attached the upright figure of a god. Parts of the figures, such as feet, arms, and faces were made in molds, details and differentiating characteristics being added in appliqué, and the parts joined with clay in a sort of primitive assembly line technique. From ethnological sources it is known that effigy incense burners portray specific members of the Maya pantheon.

After fragments too small to be identified as specific deities, and those that lacked specific characters, had been discarded, a total of 65 faces suitable for study remained. Their examination led to the identification of three Mexican deities in addition to Xipe, god of human sacrifice and of agriculture, recognized by Thompson in 1954. The first is Tlazolteotl, a mother goddess, whose original home may have been Veracruz, but whose cult was widespread among the peoples of the Mexican plateau. Tlazolteotl so closely parallels the Maya goddess Ixchel-Acna in functions that the fact that her cult was able to flourish in Mayapán is of considerable interest. It may suggest a deliberate effort to keep alive practices that separated the rulers of Mayapán, with their claims to Mexican ancestry, from the rank and file of the subjected peoples.

Another Mexican deity represented on a Mayapán censer is Tlauizcalpantecutli, "Lord of the Dawn," an aspect of the Venus god of the planet Venus. Finally, there is a god of merchants with a straight "Pinocchio" nose, who probably originated southern Mexico. None

of these Mexican gods is common, and the impression persists that they may have been worshipped by the relatively small group that comprised the ruling class at Mayapán.

On the other hand, Chac, the Maya rain god, who is depicted with great frequency in the Maya codices and at other Maya sites, appears somewhat infrequently on the effigy incense burners; the relative scarcity of this favorite deity of the Maya peasant in urban Mayapán, which was more interested in the political domination of the country than in farming, may be significant.

Thompson also visited the museums of Campeche and Villahermosa in search of comparative material.

In continuing work on his catalogue of Maya hieroglyphs, Thompson has carried out research on hi-

eroglyphs for disease in general and for particular diseases. He has identified parallel passages in two of Maya codices as divinatory almanacs for various diseases with a glyph for each complaint written in each compartment. Thompson made a popular presentation of his findings at the annual meeting of the Society for American Archaeology in Madison this past May in an endeavor to acquaint colleagues in the general field of anthropology with the nature of the problems of Maya hieroglyphic decipherment and how they are being attacked here.

Thompson also carried out research on the use of cacao in the religious and economic life of ancient Middle America and on fluctuations in its value as a currency in the colonial period. Results have appeared in a paper published by this Department.

41.0. UXMAL

The site of Uxmal, located in the Puuc hills of the Yucatán peninsula, has attracted many visitors since the time of the Mexican Independence, including Jean Frederic Waldeck in 1838, and John Lloyd Stephens and Frederick Catherwood in early 1840s. Désiré Charnay took a series of photographs of the site in the 1860, and three years later Empress Carlota of Mexico visited Uxmal. Sylvanus G. Morley made a map of the site in 1909 which included some previously overlooked buildings. The Mexican government consolidated some of the structures in 1927, and in 1930 Frans Blom made plaster casts of the façade of the Nunnery Quadrangle. These were later displayed at the 1933 World's Fair in Chicago. Further repair and consolidation was undertaken by José Erosa Peniche for the Mexican government in 1936. The Maya chronicles say that Uxmal was founded about 500 AD by Hun Uitzil Chac Tutul Xiu. For generations Uxmal was ruled over by the Xiu lineage. It was for a while in alliance with Chichén Itzá, and after about 1200 AD no new major construction was made at the site, possibly related to the fall of Chichén Itzá and the shift of power in Yucatán to Mayapán. The Xiu moved their capital to Maní,

and the population of Uxmal declined. After the Spanish conquest, during which the Xiu allied themselves with the Spaniards, colonial documents suggest that Uxmal was still an inhabited place of some importance into the 1550s. However, Uxmal was soon after largely abandoned. While much work has been done at Uxmal to consolidate and restore buildings, little serious excavation and research has been done. Most of the architecture visible today was built during the Late Classic period. Some of the more noteworthy buildings include the Governor's Palace, Pyramid of the Magician (Adivino), Nunnery Quadrangle, and the ballcourt. A number of others temple-pyramids, quadrangles, and other monuments, some of significant size, and in varying states of preservation, are also at Uxmal. A further suggestion of possible war or battle is found in the remains of a wall which encircled most of the central ceremonial center. A large raised stone causeway links Uxmal with the site of Kabah, some 18 km to the south.

41.1.

SYLVANUS G. MORLEY

Yucatán: Uxmal

YB 41:250–253, 1942

Dr. Morley returned to Yucatán by way of Mexico City in September 1941. While in Mexico City he delivered a lecture at the University Club, for the benefit of British war relief, on the archaeological investigations of the Institution during the past 25 years, and repeated the lecture in Spanish before the Sociedad Científica de Antonio Alzate.

During Dr. Morley's field work at Uxmal in the early part of 1941, a preliminary examination of the Great South Pyramid, a high, tree-covered mound southwest of the House of the Governor, revealed a section of a collapsed corbelled vault on the north or front side. This confirmed an impression, formed many years ago, that near the summit of this pyramid there had originally been ranges of rooms on each of the four sides. Dr. Morley devoted three weeks to excavations on all four sides of the pyramid, near the top, in order to establish the nature of the construction that had stood there.

The Great South Pyramid, the highest and largest at Uxmal, measures 96 m north and south by 80 m east and west, and is 27.5 m high from the north base to the summit. It is built on a slope which rises from north to south, so that its base at the south is 4 m higher than at the front. Two definite architectural periods were noted, and it is quite possible that the pyramid may contain still older constructions. The earliest building now visible consisted of a single range of at least four rooms, with long axes running east and west and doorways in their north walls. These were later incorporated into the northwest corner of the pyramid, their exterior back walls being covered by its masonry fill.

The pyramid proper was of 11 terraces, 10 at the back because of the southward rise of the terrain. The terraces, 1.4 m in vertical height, have battered faces. They are built of very roughly dressed stone like that of the substructure of the House of the Dwarf, and were finished with a heavy coat of plaster. There were no recessed panels or other decoration on the faces of these terraces. A centrally placed stairway on the north side, 23.5 m wide, projecting from the base of the pyramid and having about 70 steps, gave access to the uppermost terrace, which was also reached from the back by a somewhat narrower stairway, asymmetrically placed and in two offset flights.

On the highest terrace is a platform, 1.3 m high, all four faces of which are decorated with an elaborate sculptured mosaic, the principal elements being the

lattice pattern and the familiar Maya grecque. The platform is ascended by relatively narrow stairways of five steps each, at the north and south. On the platform, and built around and against a solid central core on the top of the pyramid, are four ranges of rooms; that on the front or north side seems originally to have consisted of five nonconnecting vaulted chambers entered by doorways in their north walls. The east, south, and west ranges, however, were almost entirely solid, there being only a single vaulted room at the middle of each; the long ends of all three, so far as could be determined, were of solid masonry. These four ranges of rooms are 6 m high.

At some later time, a second outer tier of three vaulted rooms had been built in front of the three middle rooms of the north range. When these were added, the floor level of the old middle room was raised 1 m above the floor level of the new chamber in front of it. The 1 m from the floor of the outer middle room to the sill of the doorway of the inner room was sculptured with a magnificent Maya mask 3.3 m wide and 1 m high, which is in a perfect state of preservation. Indeed, it seems probable that the level of the inner middle room was raised expressly to provide a surface for the presentation of this panel very closely resembles the mask panel in an identical position in the middle outer room of the palace at Kabah.

The solid central core of the pyramid, surrounded by these four ranges, rises another 1.7 m above the level of their respective roofs. There seems never to have been any construction on its summit, or any stairway ascending to it from the level of the sculptured terrace which supported the rooms.

As a second major constructional undertaking, the pyramid was covered from bottom to top with a layer of rubble 1.5 m thick, much of it composed of dry-laid, large, irregularly shaped pieces of limestone. The surface of this rough covering, completely enclosing not only the stucco faced, terraced pyramid and sculptured upper terrace but, also the elaborately ornamented façades of the four ranges of rooms, would also seem to have been terraced, though these later terraces are much broken down.

A possible reason for the encasement of the pyramid and its superstructure may have been that the sculptured façades of the four ranges of chambers had begun, soon after they were built, to fail, to crack, and bulge outward so seriously that it became necessary, in order to keep the whole upper part of the pyramid from crashing down, to give it the support of added masonry, especially at the top where it could sustain the falling façades and prevent them from pushing outward. Incidentally to these operations, the ranges of rooms were filled solidly with dry-laid rough rubble, and the entire construction was converted into a great

new pyramid, the main stairways on its north and south sides still being retained. It is probable that eventually this larger pyramid would have served as substructure for some sort of building had not final collapse of the Maya in the thirteenth and fourteenth centuries halted this grandiose project before its crowning structure could be erected.

Owing to the burial of the elaborately sculptured façades of the building near the top before they had been exposed too much weathering, the façades were in practically perfect preservation. The north façade bears an intricate mosaic in both the upper and lower zones, in which panels decorated with geometric designs, grecques, and so forth, appear. On the east, south, and west the upper zones only are decorated, the lower zones being of plain dressed stone.

Such is the beauty of the mosaic, the grace of the proportions, the size and commanding height of this pyramid, that it must in its day, have been the most arresting building in the city.

As nothing like complete excavation could be attempted in the time available only such trenches were

dug, on the four sides and at the four corners near the top, as would permit the making of ground plans and elevations. The style of architecture indicates that the building was erected at the very height of the Puuc period, perhaps during the twelfth or thirteenth century. Some associated ceramic material was found, and two human skeletons, the bones and crania gone to powder.

In addition to the work on the Great South Pyramid, the Northwest Group was entirely bushed, and a map and north-south cross section were made. This group has become of the earliest masonry found at Uxmal; the flat building stones are only very roughly dressed, and in some cases extend clear through the walls; both exterior and interior surfaces undoubtedly were plastered.

Dr. Morley left Yucatán April 8, 1942. He delivered the Benjamin Franklin Medal Lecture before the American Philosophical Society at Philadelphia April 23, and is spending the summer at Santa Fe, New Mexico, where he has had summer offices at the Laboratory of Anthropology for many years.

42.0. YAXUNÁ

Yaxuná is a relatively small site located approximately 20 km south of Chichén Itzá. The structures of Yaxuná were some of the largest constructions in the northern Maya lowlands erected during the Middle Preclassic and Classic periods, and the longest known causeway (sacbé) extends from Yaxuná to Cobá, 100 km to the east. A boundary settlement of Cobá, Yaxuná eventually fell victim to conquest by Chichén Itzá. The site was surveyed by John P. O'Neill and Gustav Strömsvik in the 1930s. In the late 1940s and early 1950s, George Brainerd surveyed the site and reported pottery from the east and west coasts of Yucatán, specifically from Cobá and from the Puuc region.

42.1.

JOHN P. O'NEILL

Survey of Yaxuná

YB 32:88–89, 1933

The ruins of Yaxuná, located a short distance to the south of Chichén Itzá, are archaeologically important because their architecture differs strongly from that of Chichén, because they are allied ceramically to the cities of the Puuc and Cobá, and because they form the apparent terminus of the great ancient highway running westward from Cobá. In preparation for possible future excavations, Mr. O'Neill and Mr. Strömsvik devoted a week in early February to mapping the site.

Yaxuná is reached from Chichén Itzá in seven hours on horseback by a trail which runs from Pisté to the ruined hacienda of Xcolup and thence through the village of Yaxuná; or in six hours via Old Chichén and Yulá. The present Maya village of Yaxuná lies about 1 km west of the ruins.

The survey began by a preliminary examination from the top of a high, centrally located pyramid. It and all other structures rise from a flat plain covered with a low, sparse growth of bush. This permitted the establishment by triangulation of reference points

upon all important platforms or pyramids, from which traverse lines were run wherever necessary. Measurements were made almost entirely by stadia readings, the tape being used only in rare instances where walls were discernible, or for determining short distances upon mounds.

The site is roughly diamond shaped, the short axis measuring about 0.5 km, and the long axis (north by northeast) a little less than 1 km. This layout includes a group to the south not before reported. A cenote near the ruins was found to be 300 m, N 53 W, from the northwest corner of the platform which supports the northernmost pyramids and the only standing struc-

ture at the site. A large artificial mound is said by the natives to stand 1 km north of this cenote.

On a clear day, when the sun is near or past the meridian, the Castillo at Chichén can be seen from the high central pyramid of Yaxuná. Under especially favorable conditions some of the other structures at Chichén are visible by the aid of the theodolite. Observations for bearing and distance were therefore made, which show Yaxuná to be 17.8 km, S 32 degrees 00'W (true) from the Castillo. Referring to the recorded position of the Castillo at Chichén, the latitude of the ruins of Yaxuná is 8.3', or 20 degrees 32.6'N; and the longitude, +5'30", or 88 degrees 39'40"W.

APPENDIX I

CARNEGIE INSTITUTION OF WASHINGTON ARCHIVES

The Carnegie Institution of Washington is located at 1530 P Street, NW, Washington, DC, 20005. A guide to the administrative records of the Carnegie Institution of Washington is available online at www.carnegieinstitution.org/archives.pdf and contains approximately 200 titles pertaining to the CIW Maya Program. These documents include correspondence, financial documents, articles, biographies, maps, publications, reports, news clippings, and miscellaneous items.

Director's correspondence includes S. G. Morley (1903–1928), A. V. Kidder (1934–1949), and H.E.D. Pollock (1950–1965).

Correspondence between the CIW, project members, and others, includes J. M. Dimick (1940–1941), M. Gamio (1923–1931), A. V. Kidder (1925–1932), S. G. Morley (1912–1918, 1929–1951), E. H. Morris (1925–1956), H.E.D. Pollock (1936–1979), T. Proskouriakoff (1959–1974), O. G. Ricketson (1934–1935), A. O. Shepard (1936–1973), S. Tax (1934–1949), E. H. Thompson (1911–1934), and J.E.S. Thompson (1947–1958).

Research correspondence includes Allotments (1919–1930); Bonampak Expedition (1946–1949); Buildings, quarters, and grounds (1905–1953); Chichén hacienda (1924–

1944); Closing of the Department of Archaeology (1956–1969); Copan Project (1934–1940); Equipment (1917–1963, 1967); Fieldwork (1924–1929, 1932, 1933); Finances (1919–1931); Funds (1921–1926, 1930); Guatemala contract renewal (1930–1948); Historical research (1936–1958); Leases (1923–1961); Maya glyph catalog (1961); Mesoamerican archaeological research (1922–1942); Mexican contracts renewal (1931–1955); Publications (1903–1936); and Quiriguá stela removal (1931).

Financial records include information on allotments (1904–1944), budgets (1903–1933), finance (1924–1959), finance budget (1969–1970), financial statements (1954–1958), and receipt of funds (1922–1927).

Individual finance and expense records are available for T. Proskouriakoff (1959–1973), R. Redfield (1945), R. L. Roys (1949–1952), K. Ruppert (1946–1955), W. T. Sanders (1953–1957), F. V. Scholes (1946), A. O. Shepard (1958–1969), E. M. Shook (1946–1955), A. L. Smith (1945–1959), P. Smith (1954), R. E. Smith (1941–1951, 1953–1957), G. Stromsvik (1946–1955), S. Tax (1945–1948), C. Tejada (1947), C. Temple (1955), D. Thompson (1955), J.E.S. Thompson (1951–1959), R. Thompson (1950–1951), A. Villa Rojas (1945–1947), H. Williams (1949), and H. D. Winters (1954).

APPENDIX 2

ARCHAEOLOGICAL ARCHIVES OF THE CARNEGIE INSTITUTION OF WASHINGTON, PEABODY MUSEUM OF ARCHAEOLOGY AND ETHNOLOGY, HARVARD UNIVERSITY

The archaeological papers of the Carnegie Institution of Washington Maya program were deposited in 1958 at the Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, Massachusetts, 02138. The records of the Archaeology Division of the Carnegie Institution of Washington, 1919–1958 (inclusive), take up approximately 75 linear feet of space and include filed notebooks and diaries; maps, plans and section drawings; specimen cards; architectural and pencil drawings; watercolor paintings; photographs; correspondence; research reports; and manuscripts. Various materials, accessioned and unaccessioned, have been added to the collection, especially by Ian Graham, Gordon R. Willey, and other former Carnegie investigators (Swerdlow and Demb 2000).

PHOTOGRAPHIC ARCHIVES

The most significant related collection is the Carnegie Institution of Washington Photographic Collection, consisting of 35,000 negatives and maintained in the Peabody Museum Photographic Archives. Approximately 2,500 images, especially of Chichén Itzá, Copán, Mayapán, Piedras Negras, and Uaxactún, are digitized at <http://www.peabody.harvard.edu/col/default.cfm>.

OTHER RELATED COLLECTIONS

Other related collections at the Peabody Museum include the papers of Charles P. Bowditch, Carl E. Guthe, Alfred V. Kidder, Sylvanus G. Morley, Tatiana Proskouriakoff, Oliver G. Ricketson, Karl Ruppert, Edward H. Thompson, J. Eric S. Thompson, and Alfred M. Tozzer, as well as the Chichén Itzá Expedition Records and the Central American Expedition Records.

Other archival collections at the American Philosophical Society in Philadelphia (Alfred V. Kidder and Sylvanus G. Morley); British Museum Department of Ethnography Library (J.E.S. Thompson); Harvard University Archives (Alfred V. Kidder,

Clyde K.M. Kluckhohn, and Tatiana Proskouriakoff); National Anthropological Archives (T. Dale Stewart, Sol Tax, and Walter W. Taylor); National Geographic Society (974 photographs from Yucatán in the 1950s); National Museum of Health and Medicine (Morris Steggerda); University of California Bancroft Library (Lila O'Neale); University of Chicago Library (Robert Redfield and Sol Tax); University of Colorado, Boulder (Earl H. Morris and Anna O. Shepard); University of Michigan Harlan Hatcher Graduate Library (Carl E. Guthe); and University of Washington Libraries (Ralph L. Roys).

ARCHAEOLOGY

Adams, R. M., field notebooks, 1953 (3 v).

Album of unpublished photographs of monuments and rubbings of inscriptions at Calakmul, La Muñeca, Rio Bec II, Rio Bec V, Alta Mira, Naachtún, Oxpemul, Balakbal, Uxul, Pasión de Cristo, and Pechal, 1943.

Amsden, M., field notebook, Uaxactún, 1928.

Andrews, E. W., field notebooks: Campeche, 1940 (2); Yucatan, 1940 (2); Mayapan, 1942 (3).

Berlin, H., field notebooks, Tabasco Survey, 1952–1955 (5 vols.); supplementary illustrations for *Current Reports*, 7, n.d.

Boggs, S. H., field notebooks: Tazumal, 1944; El Salvador, 1947, 1950; unidentified, 1947; Campana San Andres, field notes and section drawings, n.d.; drawings for Tazumal report, n.d.; San Andres drawings, n.d.

Bolles, J. S., field notebooks, Chichén Itzá (1932–1934; 14 v); Chichén Itzá, Monjas Group, architectural drawings, n.d.; ballcourt, plan, perspective, and reconstruction drawings, n.d.; plan drawing, n.d.; list of drawings, n.d.

Bolles, J. S., and R. T. Smith, Chichén Itzá, Monjas Group, detail elevation drawing, n.d.; renderings of Masks 1–18, 25–28, 30–34, 39, n.d.

Bonampak, Room 1, print of mural, n.d.

Bourne, R., Bonampak structure, plans and photographs, n.d.

Bowers, W., field notebooks, Chichén Itzá, 1932.

Brainerd, G. W., field notebooks, Yucatan, 1940, 1942 (2 v); Santa Rosa Xtampak, Dzibilnocac, and Xpuhil site plans, 1949.

Bullard, W. R., field notebooks, Mayapan, 1952; Yucatan, 1953; Mayapan, Cenote Acambalam, plan drawing, 1952, 1953; original field plots of house lot walls, 1952, 1953; Structure Q-99, section drawings, 1953; site plan, enlargement, n.d.; Structure Q-99, property wall excavation plan and sections drawings, 1953.

Burgh, R., Copán Valley maps, 12 large sheets, 45 small sheets, 3 Copán sites, one aerial photograph, and one survey notebook, n.d.

Butler, M., Nebaj, pottery analyses, 1941.

Canby, J., and H. Berlin, field notebooks, Kaminaljuyú, 1950.

Charlot, J., Chichén Itzá; miscellaneous drawings and rubbings, Monjas Group upper chamber; siege of a city, n.d.; 28 small water colors from Chichén Itzá, n.d.; 2 small unmounted water colors from Chichén Itzá, n.d.

Chichén Itzá, accessions book, n.d.; Monjas Group, accession list, n.d.; Chichén Itzá and other sites in Yucatan, specimen catalogs of material collected prior to 1951, n.d.

Chowning, A., field notebooks, Yucatan, 1955.

Copán, architectural section and plan drawings, n.d.

Currie, L. J., Copán, ball-court marker drawings, n.d.

Daremus, E. B., field notebooks, Copán, 1946.

De Harport, D. L., field notebooks, Yucatan, 1953.

Denison, J. H., field notebooks, Campeche, 1933, 1934, 1938 (9 v); Chichén Itzá, 1934; rubbings of hieroglyphs from various sites, n.d.; San Lorenzo and El Palmar, hieroglyphic rubbings, n.d.

Doumus, L. B., field notebooks, Copán, 1946

El Palmar site plan, n.d.

Fontaine, P. N., field notebooks, Chichén Itzá, n.d. (2).

Fry, E. I., field notebooks, Mayapan, 1955.

Guthe, C. E., field notebooks, British Honduras, 1921(2); Guatemala, 1922(3); Xultun, 1922; Tayasal site plan, 1921; Mound IV, section drawings, 1921.

- Harrington, J. C., field notebooks, Campeche, 1936 (5); Campeche, magnetic observations, 1936; computations, 1936.
- Hester, J. A., field notebooks, Yucatan, 1952–1953 (2).
- Irving, W. N., field notebooks, Yucatan, 1954.
- Jennings, J., field notebooks, Kaminaljuyú 1937 (13).
- Jones, M. R., field notebooks, Mayapan 1949–1951 (5 v.); Mayapan site plan, 1950–1951 (9 negatives); Mayapan site plan, original, n.d.; Mayapan survey, n.d.
- Kidder, A. V., field notebooks, San Agustín Acasaguastlan, 1935; Zacualpa, 1935; Kaminaljuyú, 1935, 1936 (3), 1942; El Salvador, 1944; Unidentified, 1945–1950 (6); Guatemala, 1952–1953 (2); Asunción Mita, specimen catalog, n.d.; Copán notes and drawings, n.d.; Kaminaljuyú, color plates, n.d.; Kaminaljuyú, Miraflores, specimen catalog, 1935; Kaminaljuyú, Mound E-III-3, Tomb I, specimen catalog, 1946; Kaminaljuyú, Mound E-III-3, Tomb I, specimen catalog, 1948; Kaminaljuyú, Mounds A–B, specimen catalog, including Tombs A1-I–A2-II, 1936–1937; Kaminaljuyú, specimen catalog, 1942, 1943; San Agustín Acasaguastlan, specimen catalog, 1935, 1940.
- Kidder, A. V., and A. O. Shepard, San Agustín Acasaguastlan, pottery notes, n.d.
- Kilmartin, J. O., Chichén Itzá site plan, 1924 (4 copies); Laguna of Petén map, n.d.
- Libbey, W. F., Carbon-14 samples, n.d.
- Lincoln, W. L., field notebooks, Yaxhá, 1932.
- Longyear, J. M., field notebooks, Copán, 1938 (4), 1939 (3), 1946 (2); El Salvador 1942 (2); Copán, architectural plan drawings, 1938; pottery section drawings, 1946; Copán pottery manuscript, 1950; Test 6-39, sherd temper analysis, n.d.
- Martin, P. S., field notebooks, Chichén Itzá, 1928.
- Mayapan, Itzmal Ch'en Group, plan drawing, 1955; specimen catalogs, 1952–1957; Structure Q-81, photographs of incensarios found in shrine, n.d.
- Morley, S. G., field diaries, 1905–1908, 1912, 1914–1924, 1937, 1941, 1944, 1947 (72 v.); field notebooks, Calakmul, 1932; Chiapas, 1923, 1928; Chichén Itzá, 1923–1928; Coba, 1926; Copán, 1915, 1916, 1926; Copán, Tegucigalpa, Santa Rita, Río Amarillo, Los Higos, Quiriguá, Palenque, 1914; El Encanto, 1921, 1922; Edzna, 1927; Holmul, n.d.; Itsimte, 1921; Ixlu, 1921; Jaina, 1924; Jalacal, Yula, n.d.; Kultun, 1920, 1921; La Honradez, Cancun, La Reforma, Seibal, Itsimte, Motul, Flores, Yaxhá, Benque Viejo, Nakum, 1915; Nakum, 1922; Naranjo, 1921, 1922; Naranjo, Seibal, Altar de Sacrificios, Aguas Calientes, Tikal, Ixkun, Piedras Negras, 1914; Palenque, 1918, 1922, 1931; Piedras Negras, 1921, 1929; Pusilha, 1926; Quiriguá, 1912, 1919, 1923, 1928; Tabi, Santa Rosa Xlabpak, Labna, Kabah, Cave of Loltun, Uxmal, Ichaul, Zelan, Holctun, Mayapan, Chichén Itzá, Yula, Tulum, 1918; Tayasal, La Pita, 1922; Tikal, 1921, 1922, 1928; Topoxte (Ixloste), Yaxhá, Chunhuitz, 1917; Tulum, Uaxactún, Quiriguá, Guarda Viejo, 1916; Uaxactún, 1921, 1922, 1928; Uolantun, 1921, 1922; Xmakabatun, Naachtun, Chichtun (San Clemente), 1922; Yaxchilán, 1931; Yaxchilán, El Pabellón, Ucanal, Quiriguá, 1914; Yaxhá, 1915 (54 v).
- Morley, S. G., field notebooks, Yucatan, 1909; Calakmul, 1932 (4); Copán, 1935 (4); Uxmal, 1941 (2) 1942 (2); Mexico and Guatemala, 1944 (6); Guatemala 1935, 1947 (4); Copán (?); map showing relationships of stela and equinoxes, n.d.; Copán, plan drawings, n.d.; glyph drawings, n.d.; list of photographs, n.d.; Chichén Itzá, report to Mexican government, n.d.; Chilam Balam of Tusik, handwritten in Yucatec and typescript in English, n.d.; correspondence with Dr. Woodward regarding death of Dr. LaFleur in British Honduras, 1916; correspondence between Morley and various Indian chiefs from Xcocal to the territory of Quintana Roo, 1929–1936; guide to Chichén Itzá, plan drawings, n.d.; guide to Chichén Itzá, text, n.d.; manuscript, “The stela platform and the ball court at Uxmal, Yucatan, Mexico,” n.d.; Naachtun site plan, original, 1922; photographs of pottery, n.d.; San Juan Bautista Yaxacumche, church plan drawings, n.d.; Xiu charts, negatives, n.d.
- Morley, S. G., and L. Roys, illustrations for Xiu manuscript, n.d.
- Morris, E. H., field notebooks, Chichén Itzá, 1925.
- Nusbaum, D., field notebooks, Copán, 1935; Copán manuscript, n.d.
- O'Neill, J. P., field notebooks, Chichén Itzá 1932; Campeche 1933 (3); Campeche, magnetic observations, 1933; Chichén Itzá, Monjas Group, drawings of Masks 1–10, n.d.
- Parris, F. P., field notebooks, Campeche 1934 (6); Campeche, magnetic observations, 1934.
- Parris, F. P., and K. Ruppert, field notebooks, Campeche, architecture and survey notes, 1934.
- Patton, R., field notebooks, Mayapan, n.d. (2); maps of wall of Mayapan, cloth originals, n.d.
- Pollock, H.E.D., field notebooks, Campeche, 1940 (4); Chichén Itzá, 1929–1930 (2); Chichén Itzá, 1931; Coba, 1930 (2); Guatemala, 1937 (6); Peten, Usumacintla, 1937 (2); Uaxactún, 1928; Yucatan, 1932, 1935, 1936, 1940, 1946–1951, 1952–

- 1957 (13), 1935–1936 (4); architectural site surveys: Acanmul, Almuchil, Bahna, Bobil, Bohola, Cacabxnuuk, Caccabbeec, Chacbolay, Chacchob, Chacmultun, Chelemi, Chenchán, Chuncatzin, Chunhahub, Dsehkabtun, Dsibiltun, Dzibilnocac, Etzna, Halal, Hochub, Holactun-Xcalumkin, Holtunchan, Huntichmul I, Ichmac, Itsimte, Kahba, Kanaku, Kanki, Kiuic, Labna, Maioch, Muluch Seca, Naox, Nocuchich, Nohcacab II, Oxkintok, Pomuch, Sabacche, San Felipe, San Pedro, Sayil, Sisila, Sitio, Tabasqueno, Uxmal, Xcocha, Xcochxax, Xcorralche, Xcuksuc and Haltunsil, Xculoc, Xkalachetzimin, Xkastun, Xkichmook, Xlaboak Maler, Xtampak, Xtampak (Chenes), Yakalmai, Yaxuna, n.d.; Chacchob, sketch and description of Castillo, house mound, and house platform in milpa, 1952.
- Pollock, H.E.D., and E. M. Shook, architectural drawings of various sites, n.d.
- Proskouriakoff, T., field diaries, Copán, 1939; Chichén Itzá, 1940, Uxmal, 1940; Guatemala, 1945, 1946; Monte Alban, 1945, 1946; Nebaj and Guatemala highlands, 1947; El Tajin, 1950; Mayapan, 1952–1955; field notebooks, Copán, 1939; Chichén Itzá and Uxmal, 1940; Guatemala and Mexico, 1945; Guatemala highlands, 1947; Jalapa, El Tajin 1950; Ake, Izamal, Chichén Itzá, Campeche, Mayapan, Los Angeles, 1951; Yucatan 1951–1956 (5); Los Angeles, Mayapan, 1952–1954; Mayapan, 1954–1956; Mayapan, temple, 1955; Mayapan artifacts, 1956; Mayapan, Main Group section drawings, n.d.; Mayapan, Main Group, plan drawing, 1957; Mayapan, miscellaneous maps and original drawings, n.d.; “Scroll designs of Mesoamerica,” manuscript, n.d.
- Ray, C. E., Mayapan, checklist of vertebrata, Yucatan, 1956.
- Remondet, A., drawing, Castillo, Chichén Itzá, n.d.
- Richardson, F. B., field notebooks, Guatemala, 1938; Copán, 1938; Central America, 1938 (4).
- Ricketson, O. G., field notebooks, Baking Pot 1924; Chichén Itzá project, 1925; Uaxactún 1926–1930 (10); Cobán 1932; Quiriguá 1933; Quiriguá, Uaxactún 1934 (2); San Agustín Acasaguastlan 1935; Zacualpa 1935; Kaminaljuyú 1936; field notebooks, Chichén Itzá, drawings of west window of Caracol, n.d.; field notebooks, Chichén Itzá; NE Colonnade, Throne Band, drawings, n.d.
- Ricketson, O. G., and F. Blom, “Map of the Maya area and adjacent regions, Mexico-Guatemala-British Honduras-Honduras-San Salvador,” 1925; “Index of ruins in the Maya area,” 1924–1926.
- Ricketson, O. G., and E. B. Ricketson, report, diagrams, and photos on the reconnaissance at the ruins of Quiriguá made in 1933, n.d.
- Roberts, H. B., field notebooks, Yucatan, 1932 (6), 1935 (3); Chichén Itzá, 1930, 1933 (3), 1936; Chichén Itza, Monjas Group, pottery notebook, n.d.
- Roys, L., Chichén Itzá, essays on masonry, n.d.; Chichén Itzá, drawing for a report on early period masonry, n.d.; “Letter from R. L. Roys concerning work in Yucatan in the winter of 1935,” 1935; map of Yucatan, n.d.
- Ruppert, K., field notebooks, Bonampak, 1947 (2 v.); Chichén Itzá, 1925–1932, 1936–1937, 1939, 1946 (15); Campeche 1932, 1933–1934, 1938 (16); Naachtún, 1933; Veracruz and Rio Candelaria, 1937–1939 (5); Yaxchilán, n.d.; Yucatan 1949, 1952–1953 (3); Bonampak, negative and photostats of all plans, sections of all structures, photostat negatives and prints of latest map, 1948; Campeche, architectural notes, 1933; Chichén Itzá, Caracol, West Annex, color fresco on altar, n.d.; Chichén Itzá, Caracol, miscellaneous plan drawings, grinding stones, Temple 3D-13, Initial Series Group, 1000 Columns, Mercado SE Colonnade, n.d.; Chichén Itzá, Structures 2D-1, 2D-2, 2D-3, 2D-4, plan and elevation drawings, n.d.; Chichén Itzá, Mercado, field notebooks, n.d.; Chichén Itzá, Mercado, stone charts, n.d.; Chichén Itzá, miscellaneous notes, n.d.; Chichén Itzá, numbered sites, n.d.; Iki, plan drawing of principal building glyphs on recess lintels, n.d.; Group E arrangements in Maya area, n.d.; Río Bec V graffiti, original drawings, n.d.; report, including texts, plan drawings, photographs, and two watercolor paintings of pottery, on work in Vera Cruz, 1938; reports, including text, maps, and photographs, on work in Vera Cruz and Oaxaca, 1941; Yaxchilán, architectural drawings, n.d.; Yaxuna, site plan, n.d.
- Sanders, W. T., field notebooks, Yucatan, 1954 (2); unidentified, 1955.
- Shattuck, G. C., field notebook, Chichén Itzá, 1930; Guatemala, Medical Survey, clinical notes, 1932.
- Shepherd, W. E., Campeche, n.d. (2).
- Shook, E. M., field notebooks, Chichén Itzá 1954; Copán, 1936; Guatemala and Yucatan 1948; Guatemala, 1941–1942, 1943–1946, 1944–1946 (2), 1948–1949; Guatemala and El Salvador, 1942–1949; Kabah, 1935; Kaminaljuyú, 1942 (3), 1947; Mexico 1945–1946; Polol, 1936; Sayil, 1935 (3); Survey Project, 1943; Tiquisate, 1947; Unidentified, 1942–1945, 1943, 1943–1944, 1943–1945, 1944, 1950, 1954–1955 (6); Uaxactún, 1934, 1935, 1937, 1940 (4); Uaxactún and Usumacintla, 1937; Usumacintla, 1937 (2); Yucatan, 1936, 1940, 1949, 1951–1953 (11); Zuculeu and Paraiso 1947; architectural section and plan drawings, n.d.; field notebook, Yucatan, magnetic observations, 1934–1935; Uaxactún, Groups A and B, plan drawings, n.d.; Kaminaljuyú, blueprint of first contour plan, n.d.; Kaminaljuyú, Mound E-III-3, original drawings, n.d.
- Smith, A. L., field notebooks, Guatemala, 1940 (3); Guatemala Highland Survey, 1945, 1947; Mayapan, 1952; Uaxactún, 1928 (4), 1930–1937 (18); unidentified, 1946, 1947, 1948–1949, 1955; Yucatan, 1951–1954 (3); field notebooks, Kaminal-

- juyú, Ball Courts A, B, and 7, n.d.; Kaminaljuyú, Ball Court A, plan and section drawings, n.d.; miscellaneous pottery notes, maps, and structure drawings, n.d.; site plan of Mayapan, with structure numbers, n.d.; Uaxactún and the Middle Motagua Valley, 1940.
- Smith, R. E., field notebooks, Yucatan, 1931 (2), 1932 (3), 1933 (2), 1935 (2), 1952 (2), 1953 (2), 1955 (2), 1956 (2), 1957 (2); painting of a polychrome plate, published as figure 6E in R. E. Smith (1957); Alta Verapaz, Chipec, pottery drawings, n.d.; Mayapan ceramic report, tables 1–13, n.d.; Mayapan ceramic report, miscellaneous figures, n.d.; Uaxactún, figurine materials, n.d.
- Smith, R. T., field notebooks, Chichén Itzá, 1933–1934 (2); Chichén Itzá, Monjas Group, architectural drawings, n.d.; Chichén Itzá, Monjas Group, study of masks, n.d.; Chichén Itzá, Monjas Group, working drawings of masks and mask elements, n.d.
- Spinden, H. J., manuscript on masks, n.d.
- Stromsvik, G., field notebooks, Chichén Itzá, 1932, 1933 (3); Quiriguá, 1934; Copán, 1935 (3), 1936 (4), 1937 (4), 1938 (4), 1939 (2), 1940 (2), 1941, 1942–1943 (2), 1946; Bonampak, 1947–1948 (2); Yucatan, 1951–1954 (4); Zaculeu, 1947; Copán report, 1941; plan and section drawings of Copán ball courts, notes, n.d.; “Serpent” manuscript, n.d.; Copán, drawings of stela foundations, 1935; site plan drawings of Asuncion Mita, Rincon de Jicaque, Las Tapias, San Pedro Pinula, Quiriguá, La Union, n.d.
- Stromsvik, G., and A. Villa Rojas, Chichén Itzá, photographs, 1933.
- Tejeda, A. J., El Baul, monument drawings, n.d.; miscellaneous drawings (82) of greenstone, jadeite, stone tools and weapons, figurines, incensarios, masks, spindle whorls, shell, pottery ring stand, and stela, n.d.; miscellaneous pottery drawings (118) of Usulután, Amatlé Hard (Tejar type), Copador Polychrome, Miscellaneous Brown, Fine Orange, Cherry on Coffee, Red on Buff (Arenal Phase), and Black-Brown wares, n.d.; miscellaneous pottery drawings (72) of unidentified wares, effigy vessels, Tohil Plumbate, n.d.; miscellaneous pottery drawings (77) of Petén Gloss Ware, n.d.; Salama, San Cristóbal, Kaminaljuyú, and Uaxactún, outline drawings, n.d.; Tazumal and miscellaneous El Salvador drawings, n.d.
- Tejeda, C., field notebooks, Kaminaljuyú, 1944.
- Temple C. R., field notebooks, unidentified, 1955.
- Thompson, D. E., field notebooks, Mayapan, 1955.
- Thompson, J. E. S., field notebooks, San José, 1934 (3), 1938 (3); Campeche, 1936 (6); El Baul, 1942 (2); Mexico, 1944; Bonampak, 1947; Palenque, 1951; Mayapan, 1954, 1955; Yucatan, 1955; No Te Metos, Las Escobas, San Lorenzo, S.E. Campeche, and Quintana Roo, plans of buildings, photographs, and short text, 1936; Benque Viejo sherds counts, Benque Viejo, n.d.; San Lorenzo and El Palmar, site plan drawings, n.d.
- Thompson, R. H., field notebooks, Yucatan, 1950–1951, 1951 (5).
- Trik, A. S., field notebooks, Holactun and Xkalumkin, 1935.
- Tulum site plan, original, n.d.
- Uaxactún, field notebooks, 1927–1937 (14 v.); chart showing distribution of pottery by phase, form, and ware, n.d.
- Vaillant, G., “The chronological significance of Maya ceramics,” n.d.
- Wadell, H., drainage map of El Petén, Guatemala, 1923–1924.
- Wauchope, R., field notebooks, Guatemala 1934 (3); Kaminaljuyú 1936; Uaxactún 1932 (3); Yucatan 1934 (5); Zacualpa 1936 (4).
- Winters, H., field notebooks, Yucatan, 1954.

ETHNOGRAPHY

- Atwood, R. S., and W. Atwood, “Four surveys made by the Carnegie Inst. in Guatemala during 1932,” n.d.
- Hansen, A. T., field notebooks, Yucatan, 1932–1933.
- LaFarge, O., Santa Eulalia report, n.d.
- MacKay, K., field notebooks, Chichén Itzá report on clinical and social work, 1928.
- Morley, S. G., correspondence with various Maya Indian chiefs from Xcocal to the territory of Quintana Roo, Mexico, and various associated villages from November 1939 to June 2, 1936.
- Redfield, M. P., field notebooks, Merida, 1931; Antonio, autobiography document obtained in Mérida, 1931.

- Redfield, R., field notebooks, Chan Kom, 1930, 1931, 1932, 1933; Dzitas, 1933; ethnology, 1935, 1937; Guatemala, 1937, 1939 (2), Mexico, 1930 (4).
- Redfield, R., and A. Villa Rojas, field notes, Chan Kom and Mérida, 1931.
- Sanchez, C., field notebooks, Guatemala ethnology, 1932 (6).
- Shattuck, G. C., clinical notes, medical survey, Guatemala, 1932.
- Stadelman, R., Guatemala, agronomic photographs, 1937.
- Tax, S., Highland Guatemala, ethnological notes, 1934–1939, 1941; Chichicastenango, n.d.; Atitlan, 1936.
- Tumin, M., Jilotepeque, Guatemala, notes on modern pottery, n.d.
- Villa Rojas, A., field notebooks, Chan Kom, 1931; notes on maize investigations, n.d.; Chan Kom, 1930–1931; Quintana Roo, 1932–1933; ethnographic notes, 1935, 1936; “Breve reporte etnológico de un viaje a la zona tzeltal del estado de Chiapas, Mexico,” 1938; East Central Quintana Roo, n.d.

ETHNOHISTORY

- Barrera Vásquez, A., manuscript, “Books of Chilam Balam,” n.d.
- Chamberlain, R. S., Mexican tribute lists manuscripts and notes, n.d.
- Morley, S. G., 2 original charts of Xiu family, n.d.
- Morley, S. G., and Ralph L. Roys, Photostat negatives of illustrations for Xiu manuscript, n.d.
- Roys, R. L., cut from Indian Background (fig. 1, map of Yucatan), 1943.
- Scholes, F. V., transcript of Tovilla manuscript on *entradas* into Chol country, carbon, n.d.

LINGUISTICS

- Andrade, M., Motul dictionary, photostat, n.d.

APPENDIX 3

ETHNOGRAPHIC FIELD NOTES, CARNEGIE INSTITUTION OF WASHINGTON, UNIVERSITY OF CHICAGO

Notes of ethnographic field research conducted under the auspices of the Carnegie Institution of Washington by Robert Redfield in Yucatán and Sol Tax in the Guatemala highlands, and linguistic studies by Manuel J. Andrade, Norman A. McQuown, and other researchers from the University of Chicago, are reproduced in the *Manuscripts on Middle American Cultural Anthropology* (series 1–7, nos. 1–51), *Manuscripts on American Indian Cultural Anthropology* (series 8–14, nos. 52–92), and *Microfilm Collection of Manuscripts on Cultural Anthropology* (MCMCA; series 15, nos. 95–). The collection originally covered only Mesoamerican cultures and American Indians but was later expanded to include cultural anthropology in general. Most of the collection consists of linguistic materials: grammar notes, vocabularies, dictionaries, phonology, linguistic atlases, texts, translations, field data, and also materials on ethnography. Documents pertaining to field notes collected under the auspices of the Carnegie Institution of Washington include the following items:

Andrade, Manuel J. 1946a. Materials on the Huastec language. MCMCA, 9. Full posthumous field notes done in 1930 and 1933 among the Potosí and Vera Cruz Huastec Indians of Mexico.

Andrade, Manuel J. 1946b. Materials on the Kekchí and Pokomam languages. MCMCA, 12. 474 leaves. Posthumous field notes of work done for the Carnegie Institution of Washington in 1936 and 1938 in central and northern Guatemala.

Andrade, Manuel J. 1946c. Materials on the Mam, Jacalteco, Aguacateco, Chuj, Bachahom, Palencano, and Lacandon languages. MCMCA, 10. 1,152 leaves. Full posthumous field notes of work done for the Carnegie Institution of Washington in 1931, 1935, and 1937 among Maya groups in Chiapas and western Guatemala, including Mam texts transcribed by Rev. Horace D. Peck, Mrs. Dorothy Peck, and Rev. Edward F. Sywulka.

Andrade, Manuel J. 1946d. Materials on the Quiché, Cakchiquel, and Tzutuhil languages. MCMCA, 11. 942 leaves. Full posthumous field notes of work done for the Carnegie Institution of Washington in 1935–1936 in central Guatemala; includes Cakchiquel texts written and translated by Juan de Dios Rosales and an English-language summary of the texts by Gertrude Tax.

- Andrade, Manuel J. 1956. A grammar of modern Yucatec. MCMCA, 41. 462 leaves. Brought almost to completion before the author's death and subsequently arranged by S.L.K. Bradshaw; based on a large accumulation of Yucatec materials in the files of the Macro-Mayan Project of the Department of Anthropology at the University of Chicago.
- Andrade, Manuel J. 1971. Yucatec Maya texts. MCMCA, 108. Preliminary transcription and translation; recorded by Manuel J. Andrade; transcribed and translated by Refugio Vermont-Salas; transcriptional system, Norman A. McQuown.
- Andrade, Manuel J. 1975. Huastec text word: Concordance, texts recorded on aluminum discs by Manuel J. Andrade; transcribed and translated by Norman A. McQuown; concordanced on the basis of a revised and updated version of programs by A. James Trubulsee. MCMCA, 166. 1558 p.
- Andrade, Manuel J. 1976a. Mam texts, disc-recorded by Manuel J. Andrade, 1935; transcribed and translated by Dorothy Peck, 1950–1951; key-punched by Lois Bisek, 1969–1970. MCMCA, 106.
- Andrade, Manuel J. 1976b. Quekchi texts, recorded or taken down from dictation by Manuel J. Andrade in 1939; with interlinear Spanish translation. MCMCA, 170.
- Andrade, Manuel J. 1977a. Mam miscellany: vocabulary, verb conjugation. MCMCA, 302. 28 leaves.
- Andrade, Manuel J. 1977b. Mopán notes, with Yucatec, Itzá, and Quekche, gathered in Bacalar, Corozal, San Luis, San Antonio, Belize in 1931 by Manuel J. Andrade. MCMCA, 246.
- Andrade, Manuel J. 1977c. Yucatec Maya stories, taken down from dictation with various informants; transcribed and translated into Spanish (interlinear) and English, 1931. MCMCA, 262.
- Andrade, Manuel J., and Remigio Cochojil-González. 1971. Quiché (Maya) texts. MCMCA, 111. 784 leaves. Disk-recorded in 1935 by Manuel J. Andrade and transcribed and translated into Spanish by Remigio Cochojil-González in 1964–1971; transcriptional system by Norman A. McQuown.
- Andrade, Manuel J., and Alfred V. Kidder. 1976. Notes on “Choltí” and “Chortí”: on an anonymous author's “Choltí,” on Charles Wisdom's Chortí, on Ernest Noyes Chortí, 1976. MCMCA, 158.
- Andrade, Manuel J., and Norman A. McQuown. 1971. Textos huastecos, 1970. MCMCA, 103. 250 leaves.
- Baer, Philip, and Mary Baer. 1950. Materials of Lacandon culture of the (Pelhá) region. MCMCA, 34. 334 leaves. Field notes from a study in the Lake Nahal area, in the material culture, social structure, kinship terminology, division of labor, economics, and life cycle, psychology and belief system, and religious culture.
- Blair, Robert W., Refugio Vermon Salas, and Norman A. McQuown. 1978. Spoken Yucatec Maya: Book 1 (Lessons 1–12), 1978. MCMCA, 110. 656 leaves.
- Blair, Robert W., Refugio Vermon Salas, and Norman A. McQuown. 1993. Spoken Yucatec Maya: Book 1, Lessons 1–6. MCMCA, 411.
- Cámara Barbachano, Fernando. 1945a. Monografía de los tzotziles de San Miguel Mitontik, Chiapas, Mexico. MCMCA, 6. 90 leaves. Original field notes of a study made in 1944 in Chiapas, Mexico, as part of the joint expedition of the Instituto Nacional de Antropología e Historia de México, the State of Chiapas, and the University of Chicago, with a grant supplied by the Viking Fund, with the cooperation of the Carnegie Institution of Washington.
- Cámara Barbachano, Fernando. 1945b. Monografía sobre los tzeltales de Tenejapa, Chiapas, Mexico, 1945. MCMCA, 5, xxxiv, 522 leaves. Original field notes of a study made in 1943–1944 in Chiapas, Mexico, as part of the joint expedition of the Instituto Nacional de Antropología e Historia de México, the State of Chiapas, and the University of Chicago, with a grant supplied by the Viking Fund, with the cooperation of the Carnegie Institution of Washington.
- Cámara Barbachano, Fernando. 1947. Notas sobre Zinacantán, Chiapas, por miembros de la expedición a Zinacantán, 1942–1943 bajo la dirección de Sol Tax; primera parte, capítulos sobre la organización religiosa-política. MCMCA, 20. 304 leaves. Original field notes of a joint expedition of the Escuela Nacional de Antropología e Historia de México, the State of Chiapas, and the Carnegie Institution of Washington Middle American Research Program.
- Dios Rosales, Juan de. 1949a. Notes on Aguacatán. MCMCA, 24. 99 leaves. Diary and notes of a three-month stay in Aguacatán, Huehuetenango, Guatemala, by the author and Agustin Pop, in connection with the Carnegie Institution of Washington survey of food habits in Guatemala, under the direction of Sol Tax. In addition to the miscellaneous notes contained in the diary, there is a systematic description of various aspects of the culture.
- Dios Rosales, Juan de. 1949b. Notes on San Pedro La Laguna. MCMCA, 25. 944 leaves. Original field notes collected during a thirteen-month study (1938–1939) of San Pedro La Laguna of approximately 2,000 Tzutujil Maya, under the direction of Sol Tax as part of the Carnegie Institution of Washington Middle American Research Program.
- Dios Rosales, Juan de. 1950. Notes on Santiago Chimaltenango. MCMCA, 30. 40 leaves. Diary and notes of a two-month stay during winter 1941, in connection with the Carnegie Institution of Washington Survey of food habits in Guatemala under the direction of Sol Tax.

- Dios Rosales, Juan de. 1976. Cakchiquel texts, vocabularies, and miscellaneous notes, noted down in the 1930s and 1940s. MCMCA, 123. 240 leaves.
- Dios Rosales, Juan de. 1987. Cakchiquel texts, 1987. MCMCA, 124. 502 leaves.
- Fisher, William M., and Norman A. McQuown. 1990. Toward the reconstruction of proto-Yucatec; William M. Fisher and Norman A. McQuown, Yucatec Maya root list; William M. Fisher, On tonal features in the Yucatecan dialects. MCMCA, 263–265.
- Goubaud Carrera, Antonio. 1949a. Notes on San Juan Chamelco, Alta Verapaz. MCMCA, 23. 163 leaves. Diary of a three-month visit to San Juan Chamelco, a Kekchí community of Alta Verapaz, Guatemala, in connection with the Carnegie Institution of Washington survey of food habits in Guatemala, under the direction of Sol Tax.
- Goubaud Carrera, Antonio. 1949b. Notes on the Indians of Eastern Guatemala. MCMCA, 22. 90 leaves. Diary of a two-month stay in Jocotán (Chortí) and a two-month stay in San Luis Jilotepeque (Pokomam), Guatemala, in connection with the Carnegie Institution of Washington survey of food habits in Guatemala, under the direction of Sol Tax.
- Goubaud Carrera, Antonio. 1949c. Notes on the Indians of the Finca Nueva Granada. MCMCA, 21. 35 leaves. Diary of a one-month visit to a coffee plantation in connection with the Carnegie Institution of Washington survey of food habits in Guatemala, under the direction of Sol Tax.
- Goubaud Carrera, Antonio, Juan de Dios Rosales, and Sol Tax. 1944. Reconnaissance of northern Guatemala. MCMCA, 17. 181 leaves. Original field notes of a trip across northern Guatemala in 1944; made as part of a survey of food consumption habits in Guatemala, as part of the Carnegie Institution of Washington Middle American Research Program.
- Guiteras Holmes, Calixta. 1945. Informé de Cancuc, 1945. MCMCA, 8. 30,388 leaves. Original field notes of a study made in 1944 in Chiapas, Mexico, as part of the joint expedition of the Instituto Nacional de Antropología e Historia, the State of Chiapas, and the University of Chicago, with a grant supplied by the Viking Fund, and with the cooperation of the Carnegie Institution of Washington.
- Guiteras Holmes, Calixta. 1946. Informé sobre San Pedro Chenalhó. MCMCA, 14. 25,378 leaves. Original field notes of a study made in 1944 in Chiapas, Mexico, as part of the joint expedition of the Instituto Nacional de Antropología e Historia, the State of Chiapas, and the University of Chicago, with a grant from the Viking Fund, and with the cooperation of the Carnegie Institution of Washington.
- Larsen, Ramón, and Norman A. McQuown. 1981–1983. Vocabulario huasteco del estado de San Luis Potosí, 1981–1983. MCMCA, 168–169. Compiled by Ramón Larsen during 1940–1954 and re-edited by Norman A. McQuown.
- Materials on the Mayan languages of Mexico: texts and dictionaries in Chol, Tojolabal and Tzotzil, by field workers of the Summer Institute of Linguistics, during the period 1939–1948. MCMCA, 26. Contains Chol texts recorded by Ruth Hitchner Yourison; Chol dictionary by Evelyn Woodward Aulie; Tojolabal texts and dictionary by Cecilia Douglas Mendenhall and Julia Supple; and Tzotzil texts and dictionary by Nadine Douglas Weathers.
- McQuown, Norman A. 1940. Gramática de la lengua totonaca (Coatepec, Sierra Norte de Puebla), 1987. Translation of the author's doctoral dissertation, Yale University. MCMCA, 101.
- McQuown, Norman A. 1957. El Tzeltal hablado; basado en Hablemos en Tzeltal por Carlo Antonio Castro G., Instituto Nacional Indigenas, San Cristobal Las Casas, Chiapas, México, 1955 reelaborado provisto de notas gramaticales, ejercicios, vocabularios, e índices léxicos tzeltal-español y español-tzeltal. MCMCA, 320. 311, 69, and 49 leaves (429 leaves total).
- McQuown, Norman A. 1962. Huehuetenango vocabularies. MCMCA, 58. 696 p. Vocabularies from twelve towns, including San Miguel Acatán, San Rafael la Independencia, Jacaltenango, Concepción, San Marcos, San Andrés, Todos Santos Cuchumatán, San Mateo Ixtatán, Santa Eulalia, San Mateo Ixtatán, San Sebastián Coatán, San Juan Ixcay, and San Pedro Solomá; collected on magnetic tape and transcribed by Brent Berlin, Nicholas A. Hopkins, and Norman A. McQuown.
- McQuown, Norman A. 1976a. Huastec morpheme list: Huastec-Español, assembled in 1946–1947 in the field, in Tancanhuitz, San Luis Potosí, Mexico; computer print-out of card images. MCMCA, 167. 739,153 p.
- McQuown, Norman A. 1976b. Quekchi vocabulary: recorded November 25–26, 1948. MCMCA, 171.
- McQuown, Norman A. 1976c. Textos kanjobales; grabados en discos de aluminio, por Manuel J. Andrade, con informantes Francisco Pedro de Santa Eulalia y Domingo Castañeda de Santa Cruz Barillas, Huehuetenango, Guatemala; transcritos por él y por Newberry Cox. MCMCA, 196.
- McQuown, Norman A. 1976d. Vocabulario chol recopilado el 15 de noviembre de 1949, con la ayuda de John Beekman, en Tuxtla Gutiérrez, Chiapas, México, con Mateo Vásquez, indígena chol de la Cueva, Chiapas. MCMCA, 156. 25 leaves.
- McQuown, Norman A. 1976e. Vocabulario chortí, recopilado entre el 21 y el 26 de noviembre de 1949 en la Ciudad de Guatemala con Atanasio de León, indígena chortí de Jocotán, Chiquimula, Guatemala. MCMCA, 157.

- McQuown, Norman A. 1976f. Vocabulario chuj: recopilado el 25 de noviembre de 1949, en la ciudad de Guatemala, con Gaspar Baltasar, indígena chuj de San Sebastián Coatán. MCMCA, 226.
- McQuown, Norman A. 1976g. Vocabulario kanjobal, recopilado del 18 al 19 de noviembre de 1949, en la Ciudad de Guatemala con Juárez Juan, indígena de Santa Eulalia, Huehuetenango. MCMCA, 195.
- McQuown, Norman A. 1976h. Vocabularios totonacos: Hueytlalpan, Olintla, Ozomatlán, Papantla, Tajín, Tepanco, Zapolitlán, Zongozotla, recopilados en el invierno de 1940 por Norman A. McQuown. MCMCA, 188.
- McQuown, Norman A. 1977a. Apuntes macromayanos: cognadas yuto-aztecas, zoque-totonacanas, popopoluca-totonacanos, 1942, 1948. MCMCA, 291.
- McQuown, Norman A. 1977b. La familia lingüística totonacana, con vocabulario tepehua-totonaco, 1941. MCMCA, 289.
- McQuown, Norman A. 1977c. Mam text, transcribed in Guatemala City in September 1948. MCMCA, 245.
- McQuown, Norman A. 1977d. Notes on the Tzotzil of San Bartolomé de los Llanos (Venustiano Carranza). MCMCA, 235.
- McQuown, Norman A. 1977e. Palabras y frases útiles tzotziles de San Bartolomé de los Llanos (Venustiano Carranza). MCMCA, 273. 6 leaves.
- McQuown, Norman A. 1977f. Proyecto para un diccionario mame-español, noviembre de 1948. MCMCA, 301.
- McQuown, Norman A. 1977g. Relaciones genéticas entre la familia mizocuave y la totonacana, con vocabularios comparativos, 1942. MCMCA, 292.
- McQuown, Norman A. 1977h. Vocabulario pocomame de San Luis Jilotepeque, Jalapa, Guatemala. MCMCA, 251. 34 leaves.
- McQuown, Norman A. 1977i. Vocabulario pocomchí de Purulhá, Baja Verapaz, Guatemala. MCMCA, 256. 34 leaves.
- McQuown, Norman A. 1977j. Vocabulario tojolabal. MCMCA, 266. 35 leaves.
- McQuown, Norman A. 1977k. Vocabulario tzeltal de Bachahom y Yajalón, transcrito el 18 de noviembre de 1949, 1977. MCMCA, 181.
- McQuown, Norman A. 1977l. Vocabulario tzotzil de Iztapa, Chiapas, Mexico. MCMCA, 233. 36 leaves.
- McQuown, Norman A. 1977m. Vocabulario xinca, recopilado en Chiquimulilla del 29 al 30 de noviembre (1948), con Mauricio García y Desiderio García Gonzalez por Norman A. McQuown. MCMCA, 296.
- McQuown, Norman A. 1977n. Vocabulario zoque de Copainalá, Chiapas, Mexico, recopilado en Tuxtla Gutiérrez en mayo de 1942. MCMCA, 297.
- McQuown, Norman A. 1977o. Vocabularios comparativos de los dialectos pocomames de Palin, Chinautla, Mixco y Jilotepeque. MCMCA, 252. 12 leaves.
- McQuown, Norman A. 1977p. Vocabularios maya-yucatecos de Valladolid, Dzilam González, Xocempich, Tzucacab, Maxcanú, Ich Ek, Becal. MCMCA, 261. 140 leaves.
- McQuown, Norman A. 1980. San Luis Potosí Huastec grammar (June 30, 1948). MCMCA, 102. 245 leaves.
- McQuown, Norman A. 1982a. Introducción al náhuatl clásico: ejercicios. MCMCA, 133. 721 leaves.
- McQuown, Norman A. 1982b. Poesias nahuas. MCMCA, 135. 78 leaves.
- McQuown, Norman A. 1982c. Textos nahuas. MCMCA, 134. 78 leaves.
- McQuown, Norman A. 1987a. Cuarenta años de investigaciones antropológicas en Chiapas. MCMCA, 379.
- McQuown, Norman A. 1987b. Textos mames de San Juan Ostuncalco, Quetzaltenango, editados y retraducidos al español en La Antigua, Guatemala en 1981. MCMCA, 343–345. 4 microfilm reels.
- McQuown, Norman A. 1989a. Catálogo de manuscritos y libros en, ó sobre, lenguas indígenas americanas que se encuentran en los archivos y en las bibliotecas de la Europa hispano e italiano-parlante. MCMCA, 154. 411 leaves.
- McQuown, Norman A. 1989b. Catalogue des manuscrits américains conservés dans le fonds américain, le fonds mexicain, et d'autres fonds de la Bibliothèque nationale à Paris. MCMCA, 151. 516 p.
- McQuown, Norman A. 1989c. Catalogue of American Indian language manuscripts and printed books in the British (Museum) Library in London. MCMCA, 152. 373 leaves.
- McQuown, Norman A. 1989d. Kataloge der Handschriften und gedruckten Bücher in bzw. Über Indianer-Sprachen in deutsch-sprachiger Europa. MCMCA, 153. 665 leaves.
- McQuown, Norman A. 1990. Catalog of selected manuscripts and printed books in American Indian languages in the John Carter Brown Library, Providence, Rhode Island, in the Latin American Library of Tulane University, New Orleans, Louisiana, and in the Library of Congress, Washington, DC. MCMCA, 155. 270 leaves.

- McQuown, Norman A., and Francisco García. 1977. Vocabulario tepehua y textos tepehuas de Huehuetla, Hidalgo, Mexico: con notas demográficas. MCMCA, 286. 56 leaves.
- McQuown, Norman A., and Mariano Juárez Aguilar. 1977a. Notes on Aguacatenango Tzeltal. MCMCA, 277.
- McQuown, Norman A., and Mariano Juárez Aguilar. 1977b. Palabras y frases útiles tzeltales (Aguacatenango). MCMCA, 52. 5 leaves.
- McQuown, Norman A., and Mariano Juárez Aguilar. 1977c. Palabras y frases útiles tzeltales, Aguacatenango. MCMCA, 278.
- McQuown, Norman A., and Pablo Morales. 1977a. Mam grammar notes. MCMCA, 244. 301 leaves.
- McQuown, Norman A., and Pablo Morales. 1977b. Vocabulario mame de San Juan Ostuncalco (Concepción Chiquirichapa) San Marcos, Guatemala, recopilado entre el 12 de julio y et tres de diciembre de 1948 en la Ciudad de Guatemala. MCMCA, 129. 83 leaves.
- McQuown, Norman A., José Ordóñez Tzoc, and Pascual Ren Xirun. 1977. Vocabularios quichés de Totonicapán y de Chichicastenango. MCMCA, 113. 99 leaves.
- McQuown, Norman A., and Manuel Oropeza Castro. 1977. Vocabulario tepehua-totonaco. MCMCA, 288. 46 leaves.
- McQuown, Norman A., and Marcos Ramírez. 1977. Vocabulario mame de Ixtahuacán, Huehuetenango, Guatemala, transcrito los días 17 y 24 de noviembre de 1949 en la Ciudad de Guatemala, 1977. MCMCA, 243.
- Metzgar, Duane G., Terrence Kaufman, Norman A. McQuown, and Mariano Juárez Aguilar. 1977. Textos tzeltales de Aguacatenango, Chiapas, Mexico. MCMCA, 319. 57 leaves.
- Morales, Pablo, Norman A. McQuown, Lois Bisek, and A. James Trabulse. 1969, 1970. Cuentos mames, 1949. MCMCA, 130. 29 leaves.
- Oropeza Castro, Manuel. 1971. Textos totonacos, escritos en lengua materna por Manuel Oropeza Castro en los años 1939 a 1942; traducidos al español por Manuel Oropeza Castro en los años 1949 a 1950; grabados in disco (textos 1–24) por Manuel Oropeza Castro en 1949; procesados mediante la computadora IBM 360 con tarjetas perforados por Lois Bisek y con programas creados por Alexander James Trabulse en los años 1967 a 1968; impresos en Los Angeles por Allen-Babcock Computing, Inc., en 1968; editorialmente responsable es Norman A. McQuown entre 1938 y 1968, 1971. MCMCA, 100.
- Paul, Benjamin D., and Lois Paul. 1957. Ethnographic materials on San Pedro La Laguna, Sololá, Guatemala. MCMCA, 54. 5,339 leaves.
- Peck, Horace D., Dorothy Peck, Eleuterio Gómez, and Norman A. McQuown. 1981–1983. Mam texts on conversion, 1981–1983. MCMCA, 303–305. 3 v.
- Pozas Arciniega, Ricardo. 1947. Monografía de Chamula. MCMCA, 15. 500 leaves. Original field notes of a study made in 1944 in Chiapas, Mexico, as part of the joint expedition of the Instituto Nacional de Antropología e Historia, the State of Chiapas, and the University of Chicago, with a grant supplied by the Viking Fund, and with the cooperation of the Carnegie Institution of Washington.
- Redfield, Robert. 1945a. Ethnographic materials on Agua Escondida. MCMCA, 3. 33,688 leaves. Original field notes on a ladino community near Lake Atitlán, Guatemala, in 1940–1941; with the cooperation of the Carnegie Institution of Washington.
- Redfield, Robert. 1945b. Notes on San Antonio Palopó. MCMCA, 4. 13,379 leaves. Original field notes on a Cakchiquel-speaking community on the shore of Lake Atitlán in Guatemala; studied in 1940–1941 as part of the Carnegie Institution of Washington Middle American Research Program.
- Sywulka, Edward, and Abraham Halpern. 1977. Mam texts, transcribed by Edward Sywulka (118-A) (5 leaves) and Abraham Halpern (125-A) (3 leaves); aluminum disc recordings (nos. 118-A and 125-A) made by Manuel Andrade in 1935. MCMCA, 242. 8 leaves.
- Tax, Sol. 1946. The towns of Lake Atitlán. MCMCA, 13. 338 leaves. Original field notes on the indigenous communities bordering Lake Atitlán in Guatemala; collected in 1935 and 1936 in a preliminary survey as part of the Carnegie Institution of Washington Middle American Research Program.
- Tax, Sol. 1947a. April is this afternoon: report of a three-day survey by Robert Redfield and Sol Tax in Eastern Guatemala. MCMCA, 19. 79 leaves. Original field notes on a three-day survey in eastern Guatemala in January 1937, as part of the Carnegie Institution of Washington Middle American Research Program.
- Tax, Sol. 1947b. Miscellaneous notes on Guatemala. MCMCA, 18. 75 leaves. Original field notes of various survey trips throughout Guatemala, 1934–1937, undertaken as part of the Carnegie Institution of Washington Middle American Research Program.

- Tax, Sol. 1947c. Notes on Santo Tomas Chichicastenango. MCMCA, 16. 931 leaves. Complete field notes on a large indigenous community in the Department of El Quiché, Guatemala; studied mainly in 1934–1935, as part of the Carnegie Institution of Washington Middle American Research Program.
- Tax, Sol. 1950. Panajachel: field notes. MCMCA, 29. 3,464 leaves. Original field notes collected by the author during a total of eighteen months' study from 1936 to 1941 in conjunction with the Carnegie Institution of Washington Middle American Research Program; also contains the diary and field notes of Juan de Dios Rosales prepared under the direction of the Tax, diaries of Tax and his wife, Gertrude Tax, and an autobiography of a native of Panajachel.
- Tax, Sol. 1977. Quiché notes from Chichicastenango, 1935. MCMCA, 306.
- Tax, Sol. 1980. April is this afternoon: correspondence of Robert Redfield and Sol Tax, 1933–1944, 1980. MCMCA, 330.
- Tax, Sol. 1988. Practical animism: the world of Panajachel; a Guatemala Indian ethnography. MCMCA, 392.
- Tumin, Melvin M. 1945. San Luis Jilotepeque: a Guatemalan pueblo. MCMCA, 2. 848 leaves. Field notes of a study made in 1942–1943 in a Pokomam-speaking community in eastern Guatemala, with the cooperation of the Carnegie Institution of Washington.
- Villa Rojas, Alfonso. 1946. Notas sobre la etnografía de los indios tzeltales de Oxchuc, Chiapas, Mexico, 1946. MCMCA, 7. 49,790 leaves. Original field notes on a community in Chiapas, Mexico, the result of fieldwork of 1942–1943 and 1943–1944, as part of the Carnegie Institution of Washington Middle American Research Program.
- Wick, Stanley A., Remigio Cochojil González, and Norman A. McQuown. 1979. Spoken Quiché Maya: Books 1 and 2 (Lessons 1–12), 1979. MCMCA, 115. 644 leaves.
- Wisdom, Charles. 1950. Materials on the Chortí language. MCMCA, 28. 1,135 leaves. Texts, vocabulary, grammatical notes and classified lists of terms recorded by the author in eastern Guatemala.
- Zambrano Bonilla, Joseph. 1938. Arte de la lengua totonaca; conforme á el arte de Antonio Nebrija, compuesto por Don Joseph Zambrano Bonilla; lleva añadido una Doctrina de la lengua de Naolingo con algunas voces de la lengua de aquella Sierra, y de esta de acá su author . . . Francisco Dominguez . . . ; mecanoscrito por Norman A. McQuown. MCMCA, 186.

APPENDIX 4

FRANCE V. SCHOLÉS COLLECTION, LATIN AMERICAN LIBRARY, TULANE UNIVERSITY

The France V. Scholes Collection, curated at the Latin American Library, Tulane University, consists of approximately 280,000 photoprints, microfilms, and typescripts of documents relating to the history of colonial Spanish America found in Spanish and Mexican archives, principally the Archivo General de Indias in Seville and the Archivo General de la Nación in Mexico City, and collected primarily under the auspices of the Carnegie Institution of Washington (<http://www.tulane.edu/~latinlib/scholescoll.html>).

The content of the documentation may be described, in general terms, under the following topical headings:

1. Documents that illustrate the character of Spanish colonial government and policy in the sixteenth and early seventeenth centuries with special reference to Mexico.
2. Documents that illustrate, in more specific detail, problems and policies of administration of the Indian population of Spanish America (with special emphasis on Mexico) in the sixteenth to the eighteenth centuries, and particularly with reference to the encomienda system, forced labor for wages, and chattel slavery.
3. Materials relating to the Spanish conquest of Mexico and Guatemala, including several thousand pages of photoprints of the *probanzas* of merits and services of prominent conquistadores (including the Alvarado brothers) and the residencia of Pedro de Alvarado as governor of Guatemala.
4. Documents that illustrate the life and times of Hernando Cortes from 1521 (the year of his final victory over the Aztec Confederacy) to his death in Spain in 1547. These materials deal principally with the history of events in the chaotic decade of the 1520s, and with the history of the estate (Marquesado del Valle) founded by Cortes. The documentation on Cortes and his times, 1521–1547, includes the residencias of Cortes, the First Audiencia of Mexico, and early *alcaldes mayores* of Oaxaca. Scholes considered his collection of Cortes material the most extensive collection of unpublished Cortes documentation in the world.

5. Selected documents relating to the history of the Cortes Estate subsequent to 1547, especially with reference to litigation concerning execution of various provisions of Cortes's last will and testament.
6. Selections from the correspondence of the viceroys and treasury officials of Mexico (sixteenth century), and miscellaneous documents on various topics of sixteenth-century Mexican history.
7. Extensive documentation relating to the history of Yucatán and the Maya area in the sixteenth and seventeenth centuries. The documentation has value not only for students of colonial Spanish American and Mexican history, but also for those specializing in other disciplines, such as anthropology, ethnohistory, and art history.

The corpus of material consists of the following items:

1. 180,000 units of enlargement photoprints from microfilm or, in a few cases, prints from photostat negatives. The size of these photoprints varies: some are 7½ x 10 inches; others are letter size (8½ x 11 inches); but the majority are legal size, that is, 11 x 14 inches or 11 x 16 inches. It should be noted that most of the photo-enlargement prints (and also films mentioned below) reproduce two pages of manuscript documentation.
2. 70,000 frames, or exposures, of 35 mm negative microfilm of documents.
3. 15,000 pages (letter size) of typescripts of documents.
4. The Archive File consisting of 12,000 to 14,000 cards (4 x 6 inches) that record data concerning content and organization of Spanish and Mexican archives with notations concerning documents reproduced, and also notations concerning documents examined, which may be useful for students of colonial Spanish American history.

Access to the documents may be obtained by consulting the index card of documents description that Scholes prepared. The documents follow the order of this card index. These cards identify the documents by their archive provenance, provide a brief description of the documents or their titles, and indicate the form of reproduction (i.e., photoprints, microfilm, typescripts, or in a few cases, handwritten cards) with the number of photographs, exposures, or pages. They are arranged alphabetically by archive and section, with the Spanish archives first, followed by the Mexican archives, then by other repositories. The arrangement of documents in the filing cabinets and of the microfilm in boxes is in the same order. The collection consists of reproductions of documents from the following archives and sections. The photoprints are found in the indicated filing cabinets.

ARCHIVES OF SPAIN

Archivo de Protocolos, Sevilla (APS); Archivo General de Indias, Sevilla (AGI): Contaduria, Contratacion, Escribania de Camara, Estado, Guadalajara, Guatemala, Indiferente General, Justicia, Mexico, Patronato; Archivo Historico Nacional, Madrid (AHN): Cartas de Indias, Inquisicion, Ordenes Militares; Biblioteca Nacional, Madrid (BN); Real Academia de la Historia, Madrid (RAH): Coleccion Muñoz, Coleccion Vargas Ponce.

ARCHIVES OF MEXICO

Archivo General de la Nacion (AGN): Alcaldes Mayores, Archivo Historico de Hacienda, Bienes Nacionales, Civil, Clero, Congregacion, Cruzada, Historia, Hospital de Jesus, Indiferente General, Indios, Inquisicion, Mercedes, Ordenanzas, Real Acuerdo, Real Hacienda, Reales Cédulas (Originales; Duplicados), Tierras, Vinculos; Archivo Parroquial de la Catedral de Merida, Yucatán: Libro de Bautismos y Matrimonios; Archivos Parroquiales de Campeche, Campeche: Libro de bautizos, matrimonios, etc.; Biblioteca Nacional, Mexico: Archivo Franciscano; Museo Nacional, Mexico: Matricula de Tributos.

MICROFILMS

The microfilms duplicate part of the material found in photoprint from, except for a few instances in which the microfilm is the only copy. This information is noted on the cards of the indexed document descriptions. The content of the twenty-eight boxes of microfilm include the following items:

Archivo General de Indias: Contaduria 806; Escribania de Camara 163A, 204A-7, 304B-5, 308B-30; Guatemala 151-153; Guatemala 343; Indiferente 81; Justicia 3-139, 141-205(4), 206(2)-234, 242-712(1-2), 1017(3)-1144(3); Mexico 91-995; Patronato 182, 237.

Archivo General de la Nacion: Archivo Histórico de Hacienda, Civil, Clero, Hospital de Jesús 235, 247-285(99), 288-293, 300-387(9), 394-432(2); Hospitales; Reales Cédulas Duplicados, Tierras 1520(2), (3082); Vinculos 4-276.

Biblioteca Nacional; RAH: MS A-57, MS 27-5E-131.

Real Academia de la Historia, Madrid: Vargas Ponce; El Escorial: Documents on the customs of the Chichimecas Indians and justification of war with them; 1542 list of the men who were conquistadors with Cortes, with and without encomiendas of Indians, sixteenth century (MS K-11-8, ff. 392-418; MS S-11-7, ff. 331-343; MS S-11-7, ff. 423-456).

SCHOLES ARCHIVE FILES

The Scholes Archive Files consist of some 12,000–14,000 handwritten cards. It provides a more comprehensive record of the contents of the Spanish and Mexican archives than that recorded in the index file of document descriptions and contains Scholes's comments concerning these archives and information on documents not included in the collection. The contents of the Archive Files are the following items:

Archivo General de Indias: Audiencia-Contaduría (Leg. 657, nos. 1–4, ramos 1–4; 659, 660, 911A-B, 913). Royal treasury and taxation records for New Spain, sixteenth and seventeenth centuries; Contratación (Leg. 1675A-B). Royal treasury accounts of New Spain, sixteenth century, Guatemala. Documents on the treatment, reducción of Indians, affairs in Guatemala and Honduras, sixteenth and seventeenth centuries, Indiferente. Registries of reales ordenes. Indian affairs, petitions, personal affairs in New Spain, sixteenth and seventeenth centuries, Justicia. Civil and criminal lawsuits in New Spain, regarding property, money, taxation, grievances, and especially encomiendas of Indians, many concern Hernando Cortes, the first Audiencia of New Spain, Nuño de Guzmán, and Pedro de Alvarado. Also the residencias of Cortes, Guzmán, Alvarado and others, early sixteenth century; Mexico (leg. 1–3201). Reales cédulas for New Spain. Letters and official documents of viceroys and oidores of New Spain; merits and services of conquistadors, tax records, petitions; papers of government officials of Yucatán and documents regarding Indian labor and affairs, sixteenth through eighteenth centuries Patronato (leg. 1–179, 180–294). Documents regarding founding of cathedral and churches in New Spain, first Bishop Zumarraga and treatment of Indians; documentation on Cortes, on discoveries, merits, and services of conquistadors, including those with Cortes, the Alvarado family in Guatemala, and Bernal Díaz del Castillo; information on Doña Marina and succession of Montezuma; documents on affairs in Hispaniola, Cuba, and road from Yucatán to Guatemala; records of taxes owed Crown in 1571, sixteenth century.

Archivo General de la Nación: Alcaldes Mayores, Hospital de Jesús; Reales Cédulas-Tierras; Biblioteca Nacional de México. Included are temporary cards in Scholes's handwriting. They parallel the material found in the card index. A few of the documents listed in the card index of document descriptions are noted as missing. These documents were either not received from Scholes in the original shipments or were sent back to him for further research and not returned. The index contains France V. Scholes's notations and correlations with the modern classification in the archive

and these correspond to many items in the LAL Scholes Collection, University of New Mexico Library; France V. Scholes Papers; Scholes's correspondence with distinguished Latin American historians and anthropologists, his personal notebooks, and copies of documents from the AGI and AGN, covering major figures and topics in the ethnohistory of early colonial Mexico (ca. 50 boxes).

RELATED COLLECTIONS

Tozzer Library, Peabody Museum of Archaeology and Ethnology, Harvard University, was the repository for a collection of manuscript facsimiles, transcripts, and extracts relating to the Spanish conquest of the lowland Maya of southern Mexico and Guatemala, and the development of early Hispano-Indian society in the colonial provinces of New Spain and Yucatán. These materials cover the period from 1520 to 1800, with the periods 1570 to 1579 and 1640 to 1720 represented most thoroughly. Most of these papers were assembled during the 1930s by France V. Scholes, Eleanor B. Adams, and Robert S. Chamberlain at the Archivo General de Indias in Seville, Biblioteca Nacional in Madrid, Archivo General de la Nación in Mexico City, and Archivo Notarial in Mérida. After the closing of the CIW Maya research program in 1958, these documents were held by Scholes until the middle 1960s when they were donated to Tozzer Library. Duplicate copies of some reproductions were deposited in the Latin American Collection (Miscellaneous) Section, Division of Manuscripts, of the Library of Congress in Washington, D.C.

The scope and contents of the various groups of documents indicate the importance of the collection for basic ethnohistorical research. General coverage summarized by the following themes:

1. Selected letters and petitions of private individuals, secular and ecclesiastical, to the viceroyalty of New Spain.
2. Miscellaneous documents regarding Indian administration, especially problems of personal service, perpetuity of encomiendas, and levy of tithes, in New Spain.
3. Letters from treasury officials of New Spain.
4. Memorials, reports, and litigation relating to controversies between royal officials and local Spanish ruling minorities in the sixteenth and seventeenth centuries.
5. Documents dealing with military and missionary activities in the Petén and Verapaz regions of Guatemala in the late seventeenth century.
6. Letters and reports of provincial governors of the province of Yucatán between 1644 and 1750.
7. Maya linguistic material from various residencias of Yucatán.

8. Matricula of encomienda Indians in Yucatán from 1688.
9. Trial records detailing encomienda administration in early Colonial-period Yucatán.
10. Proceedings relating to Landa's auto-defé against idolatry in sixteenth-century Yucatán.
11. Documents dealing with English pirates and the fortification of the west coast of Yucatán in the 1670s.

12. Documents relating to the province of Acalan-Tixchel in Campeche for the sixteenth and seventeenth centuries.
13. Papers regarding Spanish missionary activities in Chiapas in the late sixteenth century.

An inventory of the Tozzer Library holdings was published by Weeks (1987).

APPENDIX 5

PUBLICATIONS OF THE CARNEGIE INSTITUTION OF WASHINGTON MAYA PROGRAM

CAA	<i>Contributions to American Archaeology</i> , 1(1–4)–4(20–23), 1931–1937
CAAH	<i>Contributions to American Anthropology and History</i> , 5(24–29)–12(60), 1939–1960
CIW	Carnegie Institution of Washington
CR	<i>Current Reports</i> , 1–41, 1952–1957
NCL	<i>Notes From a Ceramic Laboratory</i> , 1–4, 1962–1971
NMAAE	<i>Notes on Middle American Anthropology and Ethnology</i> , 1–131, 1940–1957
NSB	<i>News Service Bulletin</i> , 1–4, 1926–1938
P	<i>Publication</i> , 1–, 1902–
SP	<i>Supplementary Publication</i> , 1–, 1929–
TAP	<i>Theoretical Approaches to Problems</i> , 1–3, 1941–1947

- Adams, R. M. 1953. Some small ceremonial structures of Mayapán. CIW-CR 1(9):144–179.
- Ancient ceremonial treasure. 1928. CIW-NSB 1(25).
- Ancient Maya almanac in stone found at Cobá, Yucatan. 1926. CIW-NSB 1(2).
- Ancient Maya Paintings of Bonampak*. 1955. CIW-SP 46,. 36 p.
- Anderson, A. Hamilton, and Herbert J. Cook. 1944. Archaeological finds near Douglas, British Honduras. CIW-NMAAE 2(40):83–92.
- Andrews, E. Wyllys, IV. 1939. A group of related sculptures from Yucatan. CIW-CAAH 5(26):71–79.
- Andrews, E. Wyllys, IV. 1941a. An ethnological note from Cilvituk, southern Campeche. CIW-NMAAE 1(5):22–23.
- Andrews, E. Wyllys, IV. 1941b. The ruins of Culubá, north-western Yucatan. CIW-NMAAE 1(3):11–14.
- Andrews, E. Wyllys, IV. 1943. The archaeology of south-western Campeche. CIW-CAAH 8(40):1–100.
- Archaeological research in Middle America. CIW-NSB 312, 1933–1935.
- Art of the Maya. CIW-NSB 1(36), 1926–1929.
- Barlow, Robert H. 1943. The periods of tribute collection in Moctezuma's empire. CIW-NMAAE 1(23):152–155.
- Barlow, Robert H. 1944. The graphic style of the Tlalhuica. CIW-NMAAE 2(44):127–132.
- Barlow, Robert H. 1946a. Some examples of Yeztla-Naranjo Geometric Ware. CIW-NMAAE 3(73):79–81.
- Barlow, Robert H. 1946b. Some Mexican figurines of the colonial period. CIW-NMAAE 3(70):59–61.
- Barlow, Robert H. 1946c. The codex of the Derrumbe del Templo Mayor. CIW-NMAAE 3(72):75–78.
- Barlow, Robert H. 1946d. The Malinche of Acacingo, Estado de Mexico. CIW-NMAAE 3(65):31–33.
- Barlow, Robert H. 1946e. The Tamiahua codices. CIW-NMAAE 3(64):26–30.
- Barlow, Robert H. 1946f. The "Tortuga" of Coatlan del Rio, Morelos. CIW-NMAAE 3(76):104–106.
- Barlow, Robert H. 1947a. The Codex of Tonayan. CIW-NMAAE 3(84):178–187.
- Barlow, Robert H. 1947b. Stone objects from Cocula and Chilacachapa, Guerrero. CIW-NMAAE 3(80):151–155.
- Barrera Vásquez, Alfredo, and Sylvanus G. Morley. 1949. The Maya chronicles. CIW-CAA 10(48):1–86.
- Benedict, Francis G., and Morris Steggerda. 1936. The food of the present-day Maya Indians of Yucatan. CIW-CAA 3(18):155–188.

- Berlin, Heinrich. 1943. Notes on Glyph C on the Lunar Series at Palenque. *CIW-NMAAE* 1(24):156–159.
- Berlin, Heinrich. 1944. A tentative identification of the head variant for eleven. *CIW-NMAAE* 2(33):16–20.
- Berlin, Heinrich. 1946. Three Zapotec stones. *CIW-NMAAE* 3(66):34–36.
- Berlin, Heinrich. 1953. Archaeological reconnaissance in Tabasco. *CIW-CR* 1(7):102–135.
- Berlin, Heinrich. 1955. Selected pottery from Tabasco. *CIW-NMAAE* 5(126):83–87.
- Berlin, Heinrich. 1956. Late pottery horizons of Tabasco, Mexico. *CIW-CAA* 12(59):95–153.
- Berlin, Heinrich. 1957. A new inscription from the Temple of the Foliated Cross at Palenque. *CIW-NMAAE* 5(130):131–134.
- Beyer, Hermann. 1937. Studies on the inscriptions of Chichén Itzá. *CIW-CAAH* 4(21):29–175.
- Blom, Frans. 1950. A polychrome Maya plate from Quintana Roo. *CIW-NMAAE* 4(98):81–84.
- Boggs, Stanley H. 1944a. A human effigy pottery figurine from Chalchuapa, El Salvador. *CIW-NMAAE* 2(31):1–7.
- Boggs, Stanley H. 1944b. A preconquest tomb on the Cerro del Zapote, El Salvador. *CIW-NMAAE* 2(32):8–15.
- Boggs, Stanley H. 1945. Archaeological material from the Club Internacional, El Salvador. *CIW-NMAAE* 2(60).
- Boggs, Stanley H. 1949. Tlaloc incensarios in the Baratta Collection. *CIW-NMAAE* 4(94):26–45.
- Boggs, Stanley H. 1950. Olmec pictographs in the Las Victorias Group, Chalchuapa archaeological zone, El Salvador. *CIW-NMAAE* 4(99):85–92.
- Borhegyi, Stephan F. de. 1950a. A group of jointed figurines in the Guatemala National Museum. *CIW-NMAAE* 4(100):93–99.
- Borhegyi, Stephan F. de. 1950b. Rim-head vessels and cone shaped effigy prongs of the Preclassic period at Kaminaljuyú. *CIW-NMAAE* 4(97):60–80.
- Borhegyi, Stephan F. de. 1950c. Tlaloc effigy jar from the Guatemala National Museum. *CIW-NMAAE* 4(96):55–59.
- Borhegyi, Stephan F. de. 1951a. Further notes on three-pronged incense burners and rim head vessels in Guatemala. *CIW-NMAAE* 4(105):162–176.
- Borhegyi, Stephan F. de. 1951b. Loop nose incense burners in the Guatemala National Museum. *CIW-NMAAE* 4(103):143–158.
- Borhegyi, Stephan F. de. 1951c. A study of three-pronged incense burners from Guatemala and adjacent areas. *CIW-NMAAE* 4(101):100–124.
- Botany of the Maya Area: Miscellaneous Papers, nos. 1–13.* 1940. *CIW-P* 461. 328 p. Contents include (1) Harley H. Bartlett, A method of procedure for field work in tropical American phytogeography based upon a botanical reconnaissance in parts of British Honduras and the Petén forest of Guatemala, pp. 1–25; (2) Harley H. Bartlett, various *Palmae coryphaeae* of Central American and Mexico, pp. 27–41; (3) Harley H. Bartlett, *Scheelea Lundellii*, a new “corozo” plam from the Department of Petén, Guatemala, pp. 43–57; (4) Paul C. Standley, New plants from the Yucatan peninsula, pp. 49–91; (5) E. B. Mains, Rusts and smuts from the Yucatan peninsula, pp. 93–106; (6) Joyce Hedrick, Lichens from the Yucatan peninsula, pp. 107–114; (7) William R. Taylor, Marine algae from the Yucatan peninsula, pp. 115–124; (8) C. V. Morton, Enumeration of the *Malpighiaceae* of the Yucatan peninsula, pp. 125–140; (9) Jason R. Swallen, The grasses of British Honduras and the Petén, Guatemala, pp. 141–189; (10) E. C. Leonard, The *Acanthaceae* of the Yucatan peninsula, pp. 191–238; (11) C. V. Morton, Notes on *Dioscorea*, with special reference to the species of the Yucatan peninsula, pp. 239–253; (12) E. P. Killip and C. V. Morton, A revision of the Mexican and Central American species of *Smilax*, pp. 255–297; and (13) E. P. Killip, *Passifloraceae* of the Mayan region, pp. 299–328.
- Botany of the Maya Area: Miscellaneous Papers, nos. 14–21.* 1940. *CIW-P* 522. 474 p. Contents include (14) C. L. Lundell, The 1936 Michigan-Carnegie Botanical Expedition to British Honduras, pp. 1–57; (15) Robert E. Woodson, The *Apocynaceae* flora of the Yucatan peninsula, pp. 59–102; (16) Lyman B. Smith and C. L. Lundell, The *Bromeliaceae* of the Yucatan peninsula, pp. 103–136; (17) Harold N. Moldenke, The *Eriocaulaceae*, *Verbenaceae*, and *Avicenniaceae* of the Yucatan peninsula, pp. 137–223; (18) Carl Epling, The *Labiatae* of the Yucatan peninsula, pp. 225–245; (19) Hugh T. O'Neill, The sedges of the Yucatan peninsula, pp. 247–322; (20) Henry A. Gleason, The *Melastomaceae* of the Yucatan peninsula, pp. 323–373; (21) Russell J. Seibert, The *Bignoniaceae* of the Maya area, including Yucatan, Campeche, Quintana Roo, Chiapas, Tabasco, British Honduras, and Guatemala, pp. 375–434.
- Bullard, William R. 1952. Residential property walls at Mayapán. *CIW-CR* 1(3):36–44.
- Bullard, William R. 1954. Boundary walls and house lots at Mayapán. *CIW-CR* 1(13):234–253.
- Buried Maya treasures. 1927. *CIW-NSB* 1(10). 3 p.
- Buried temple discovered at site of ancient Maya capital. 1926. *CIW-NSB* 1(1). 3 p.
- Calakmul: a lost Maya city. 1930–1932. *CIW-NSB* 2(33):225–226.
- Calakmul: a recently discovered Maya city. 1930–1932. *CIW-NSB* 2(34):228–234.
- Caracol: a perplexing Maya ruin. 1935. *CIW-NSB* 3(27):211–226.
- Chamberlain, Robert S. 1939. Castilian background of the repartimiento-encomienda. *CIW-CAAH* 5(25):19–66.
- Chamberlain, Robert S. 1948a. *The Conquest and Colonization of Yucatan*. *CIW-P* 582. 364 p.
- Chamberlain, Robert S. 1948b. The governorship of the adelantado Francisco de Montejo in Chiapas, 1539–1544. *CIW-CAAH* 9(46):163–207.
- Chamberlain, Robert S. 1953. *The Conquest and Colonization of Honduras*. *CIW-P* 598. 264 p.
- Chowning, Ann. 1956. A round temple and its shrine at Mayapán. *CIW-CR* 2(34):443–462.
- Chowning, Ann, and Donald E. Thompson. 1956. A dwelling and shrine at Mayapán. *CIW-CR* 2(33):425–442.
- Christensen, Bodil. 1947. Otomí looms and quechquemtitla from San Pablito, State of Puebla, and from Santa Ana Hueytlalpan, State of Hidalgo, Mexico. *CIW-NMAAE* 3(78):122–142.

- Coe, William R. 1952. A possibly early Classic site in northern Yucatan. *CIW-NMAAE* 4(108):189–192.
- Coe, William R., and Michael D. Coe. 1949. Some new discoveries at Cobá. *CIW-NMAAE* 4(93):28–35.
- Colonel and Mrs. Lindbergh aid archaeologists: 2. The aerial survey of the Pueblo region. 1929. *CIW-NSB* 1(50):109–121.
- Culture of the Maya, Being Three Lectures Delivered at the Administration Building of the Institution.* 1933. *CIW-SP* 6. Includes O. G. Ricketson, Excavations at Uaxactún, pp. 1–15; R. Redfield, The Maya and modern civilization, pp. 16–29; and S. G. Morley, The Calakmul expedition, pp. 30–43.
- Du Solier, Wilfrido. 1943. A reconnaissance on Isla de Sacrificios, Veracruz, Mexico. *CIW-NMAAE* 1(14):63–80.
- Ekholm, Gordon F. 1945. A pyrite mirror from Queretaro, Mexico. *CIW-NMAAE* 2(53):178–181.
- El Castillo, pyramid-temple of the Maya god, Kukulcan. 1937. *CIW-NSB* 4:105–116.
- El Castillo, templo piramidal del dios Kukulcan.* 1937. *CIW-SP* 32. 11 p.
- Espejo, M. A. 1945. Rock paintings at Texcalpintado, Morelos, Mexico. *CIW-NMAAE* 2(52):173–177.
- Etná: “The City of Grimacing faces.” 1926–1929. *CIW-NSB* 1(24). 4 p.
- Exodus of the Maya. 1931. *CIW-NSB* 2(24):163, 164.
- Fernández, Miguel A. 1954. Drawings of glyphs of Structure XVIII, Palenque. *CIW-NMAAE* 5(119):38–44.
- Franco C., Jose L. 1954. Snares and traps in the Codex Madrid. *CIW-NMAAE* 5(121):53–58.
- Fresh discoveries in Maya exploration. 1928. *CIW-NSB* 1(29). 5 p.
- Fry, Edward I. 1956. Skeletal remains from Mayapán. *CIW-CR* 2(38):551–572.
- Fulton, Charles C. 1947. Elements of Maya arithmetic, with particular attention to the calendar. *CIW-NMAAE* 3(85):188–201.
- Fulton, Charles C. 1948. Did the Maya have a zero? *CIW-NMAAE* 3(90):233–239.
- García Payón, José. 1945a. Mausolea in central Veracruz. *CIW-NMAAE* 2(59):229–237.
- García Payón, José. 1945b. Un sello cilíndrico con barras y puntos. *CIW-NMAAE* 2(55):185–188.
- Great “white ways” of the Maya. 1933. *CIW-NSB* 3(9):63–67.
- Halpern, A. M. 1942. A theory of ts-sounds. *CIW-NMAAE* 1(13):51–62.
- Important Maya discovery in the Guatemalan highlands. 1936. *CIW-NSB* 4(6):53–60.
- Jones, Morris R. 1951. Map of the ruins of Mayapán, Yucatan, Mexico. *CIW-NMAAE* 4(106):177–180.
- Jones, Morris R. 1952. Map of the ruins of Mayapán. *CIW-CR* 1(1):2–6.
- Kelly, Isabel T. 1943. Notes on a West Coast survival of the ancient Mexican ball game. *CIW-NMAAE* 1(26):163–175.
- Kelly, Isabel T. 1944a. Isthle weaving at Chiquilistlán, Jalisco. *CIW-NMAAE* 2(42):106–112.
- Kelly, Isabel T. 1944b. Worked gourds from Jalisco. *CIW-NMAAE* 2(43):113–126.
- Kempton, J. H., and Wilson Popenoe. 1937. Teosinte in Guatemala; report of an expedition to Guatemala, El Salvador, and Chiapas, Mexico. *CIW-CAA* 4(23):198–217.
- Kidder, Alfred V. 1935. Notes on the ruins of San Agustín Acasaguastlán, Guatemala. *CIW-CAA* 3(15):105–120.
- Kidder, Alfred V. 1940a. Clay heads from Chiapas, Mexico. *CIW-NMAAE* 1(1):2–3.
- Kidder, Alfred V. 1940b. Pottery from Champerico, Guatemala. *CIW-NMAAE* 1(2):4–10.
- Kidder, Alfred V. 1942. Archaeological specimens from Yucatan and Guatemala. *CIW-NMAAE* 1(9):35–40.
- Kidder, Alfred V. 1943a. Grooved stone axes from Central America. *CIW-NMAAE* 1(29):189–193.
- Kidder, Alfred V. 1943b. Pottery from the Pacific slope of Guatemala. *CIW-NMAAE* 1(15):81–91.
- Kidder, Alfred V. 1943c. Spindle whorls from Chichén Itzá, Yucatan. *CIW-NMAAE* 1(16):92–99.
- Kidder, Alfred V. 1944. Certain pottery vessels from Copán. *CIW-NMAAE* 2(36):31–34.
- Kidder, Alfred V. 1947. *The Artifacts of Uaxactún, Guatemala.* *CIW-P* 576. 76 p.
- Kidder, Alfred V. 1948. Kaminaljuyú, Guatemala: addenda and corrigenda. *CIW-NMAAE* 3(89):224–232.
- Kidder, Alfred V. 1949a. Certain archaeological specimens from Guatemala I. *CIW-NMAAE* 4(92):9–27.
- Kidder, Alfred V. 1949b. Jades from Guatemala. *CIW-NMAAE* 4(91):1–8.
- Kidder, Alfred V. 1950. Certain archaeological specimens from Guatemala II. *CIW-NMAAE* 4(95):46–54.
- Kidder, Alfred V. 1954. Miscellaneous archaeological specimens from Mesoamerica. *CIW-NMAAE* 5(117):4–26.
- Kidder, Alfred V., Jesse D. Jennings, and Edwin M. Shook. 1946. *Excavations at Kaminaljuyú, Guatemala.* *CIW-P* 561. 284 p. Includes technological notes by A. O. Shepard.
- Kidder, Alfred V., and Anna O. Shepard. 1944. Stucco decoration of early Guatemalan pottery. *CIW-NMAAE* 2(35):23–30.
- Kidder, Alfred V., and Edwin M. Shook. 1946. Rim-head vessels from Kaminaljuyú, Guatemala. *CIW-NMAAE* 3(69):54–58.
- LaFarge, Oliver. 1947. Cuchumatán textiles: the course of an error. *CIW-NMAAE* 3(82):166–169.
- Lincoln, J. Steward. 1942. The calendar of the Ixil of Guatemala. *CIW-CAAH* 7(38):99–128.
- Long, Richard C.E. 1942a. A note on Aztec chronology. *CIW-NMAAE* 1(11):45–47.
- Long, Richard C.E. 1942b. The payment of tribute in the Codex Mendoza. *CIW-NMAAE* 1(10):41–44.
- Long, Richard C.E. 1944. The Venus calendar of the Aztec. *CIW-NMAAE* 2(46):139–141.
- Long, Richard C.E. 1948a. Observations of the sun among the Ixil of Guatemala. *CIW-NMAAE* 3(87):214–218.
- Long, Richard C.E. 1948b. Some remarks on Maya arithmetic. *CIW-NMAAE* 3(88):219–223.
- Longyear, John M. 1947. *Cultures and Peoples of the Southeastern Maya Frontier.* *CIW-TAP* 3. 14 leaves.
- Longyear, John M. 1952. *Copán Ceramics: A Study of Southeastern Maya Pottery.* *CIW-P* 597. 114 p.
- Los mayas de la región central de America.* 1931. *CIW-SP* 4. 25 p. Contents include (1) A. V. Kidder, El problema

- arqueológica, pp. 1–7; (2) Earl H. Morris, El Templo de los Guerreros, pp. 7–12; (3) Suoichi Ichikawa, La restauración del mosaico de turquesas, pp. 13–16; (4) Jean Charlot, Los bajo relieves del Templo de los Guerreros, pp. 16–19; (5) Ann A. Morris, Las pinturas del Templo de los Guerreros, pp. 20–25.
- Lothrop, Samuel K. 1924. *Tulúm: An Archaeological Study of the East Coast of Yucatan*. CIW-P 355. 179 p.
- Lothrop, Samuel K. 1933. *Atitlán: An Archaeological Study of Ancient Remains on the Borders of Lake Atitlán, Guatemala*. CIW-P 444. 122 p.
- Lothrop, Samuel K. 1936. *Zacualpa: A Study of Ancient Quiché Artifacts*. CIW-P 472. 130 p.
- Lothrop, Samuel K. 1952. Zutugil dugout canoes. CIW-NMAAE 4(111):203–210.
- Lundell, Cyrus L. 1934a. Ruins of Polol and other archaeological discoveries in the Department of Petén, Guatemala. CIW-CAA 2(8):173–186.
- Lundell, Cyrus L. 1934b. Preliminary sketch of the phytogeography of the Yucatan peninsula; with an appendix on the grasses of the Yucatan peninsula by Jason R. Swallen. CIW-CAA 2(12):255–355.
- Lundell, Cyrus L. 1937. *The Vegetation of the Petén; With an Appendix: Studies of Mexican and Central American Plants*. CIW-P 478. 244 p.
- Maize and the Maya. 1938. CIW-NSB 4(26):219–224.
- Makemson, Maude W. 1943. The astronomical tables of the Maya. CIW-CAAH 8(42):183–221.
- Maya of Middle America. 1931. CIW-NSB 2(17–21):121–144. Includes (1) A. V. Kidder, The archaeological problem; (2) E. H. Morris, The Temple of the Warriors; (3) Shoichi Ichikawa, Restoration of the turquoise mosaic plaque; (4) J. Charlot, Bas-reliefs from the Temple of the Warriors; (5) A. A. Morris, Murals from the Temple of the Warriors.
- McDougall, Elsie. 1943. A vase from Santimta, Alta Verapaz, Guatemala. CIW-NMAAE 1(30):194–197.
- McDougall, Elsie. 1946. Observations on altar sites in the Quiché region, Guatemala. CIW-NMAAE 3(62):6–17.
- McDougall, Elsie. 1947. Easter ceremonies at San Antonio Palopó, Guatemala. CIW-NMAAE 3(81):156–165.
- McDougall, Elsie. 1955. Easter ceremonies at Santiago Atitlán in 1930. CIW-NMAAE 5(123):63–74.
- Metates of Chichén Itzá, 1932. Yucatan. CIW-NSB 2(31):203–210.
- Morley, Frances R., and Sylvanus G. Morley. 1938. The age and provenance of the Leyden Plate. CIW-CAAH 5(24):1–17.
- Morley, Sylvanus G. 1913. Archaeological research at the ruins of Chichén Itzá, Yucatan. In *Reports Upon the Present Condition and Future Needs of the Science of Anthropology*, by W.H.R. Rivers, Albert E. Jenks, and Sylvanus G. Morley. CIW-P 200:61–91.
- Morley, Sylvanus G. 1920. *The Inscriptions at Copán*. CIW-P 219. 643 p. Includes F. E. Wright, A petrographic description of the material of the Copán monuments; D. García de Palacio, A description of the ruins of Copán [1576]; F. A. Fuentes y Guzmán, A description of the ruins of Copán [1689]; J. Galindo, A description of the ruins of Copán [1834]; W. E. Gates, The distribution of the several branches of the Mayance linguistic stock.
- Morley, Sylvanus G. 1935. *Guide Book to the Ruins of Quirigua*. CIW-SP 16. 205 p.
- Morley, Sylvanus G. 1937–1938. *The Inscriptions of the Petén*. CIW-P 437. 5 v. Contents include H. Wadell, Physical-geological features of Petén, Guatemala; J. L. Page, The climate of Petén; J. O. Kilmartin, Results of a topographic survey of Lake Petén Itzá, Petén, Guatemala.
- Morley, Sylvanus G. 1945a. Combinations of Glyphs G and F in the Supplementary Series. CIW-NMAAE 2(49):153–158.
- Morley, Sylvanus G. 1945b. The initial and supplementary series of Stela 5 at Altar de Sacrificios, Guatemala. CIW-NMAAE 2(58):222–228.
- Morris, Earl H., Jean Charlot, and Ann A. Morris. 1931. *The Temple of the Warriors at Chichén Itzá, Yucatan*. CIW-P 406. 2 v.
- Neys, Horace, and Hasso von Winning. 1946. The treble scroll symbol in the Teotihuacán and Zapotec writing. CIW-NMAAE 3(74):82–89.
- Nottebohm, Karl-Heinz. 1944. A possible lunar series on the Leyden Plate. CIW-CAA 2(34):21–22.
- Nottebohm, Karl-Heinz. 1945. A second Tlaloc gold plaque from Guatemala. CIW-NMAAE 2(51):170–172.
- O’Neale, Lila M. 1945. *Textiles of Highland Guatemala*. CIW-P 567. 319 p.
- O’Neale, Lila M. 1948. Textiles of Pre-Columbian Chihuahua; with a forward by A. V. Kidder, and chemical notes on the coloring matter by Michael Kasha. CIW-CAAH 9(45):95–161.
- On Maya Research, Being Two Papers Read at the Hispanic-American Session of the Meeting of the American Historical Association at Providence in 1936. CIW-SP 28, 1937, Includes A. V. Kidder, A program for Maya research, pp. 1–10; R. Redfield, The second epilogue to Maya history, pp. 11–22.
- Origin of maize. 1937. CIW-NSB 4(16):147–148.
- Osborne, Lila de J. 1945. Costumes and wedding customs at Mixco, Guatemala. CIW-NMAAE 2(48):148–152.
- Pearse, A. S. 1938. *Fauna of the Caves of Yucatan*. CIW-P 491. 304 p. Contents include (1) Frederick A. Wolf, Fungal flora of Yucatan caves, pp. 19–21; (2) Libbie H. Hyman, Land planarians from Yucatan, pp. 23–32; (3) Horace W. Stunkard, Parasitic flatworms from Yucatan, pp. 33–50; (4) B. G. Chitwood, Some nematodes from the caves of Yucatan, pp. 51–66; (5) J. Percy Moore, Leeches (Hirudinea) from Yucatan caves, pp. 67–70; (6) Grace E. Pickford, Earthworms in Yucatan caves, pp. 71–100; (7) Ralph V. Chamberlain and Ivie Wilton, *Arachnida* of the Orders *Pedipalpida*, *Scorpionida*, and *Ricinulida*, pp. 101–107; (8) Joseph C. Chamberlain, A new genus and three new species of false scorpions from Yucatan caves (*Arachnida*, *Chelonethida*), pp. 109–121; (9) Ralph V. Chamberlain and Wilton Ivie, *Araneida* from Yucatan, pp. 123–136; (10) G. W. Wharton, *Acarina* of Yucatan caves, pp. 137–152; (11) A. S. Pearse and C. B. Wilson, *Copepoda* from Yucatan caves, pp. 153–154; (12) Norma C. Furtos, A new species of *Cypridopsis* from Yucatan, pp. 155–157; (13) Edwin P. Creaser, large cave *Crustacea* of the Yucatan peninsula, pp. 159–164; (14) Ralph V. Chamberlain, *Diplopoda* from Yucatan, pp. 165–182; (15) Harlow B.

- Mills, *Collembola* from Yucatan caves, pp. 183–190; (16) Theodore H. Hubbell, New cave-cricket from Yucatan, with a review of the *Pentacentrinae*, and studies on the Genus *Amphiacusta* (Orthoptera, Gryllidae), pp. 191–233; (17) Nathan Banks, A new *Myrmeleonid* from Yucatan, p. 235; (18) A. S. Pearse, Insects from Yucatan caves, pp. 237–249; (19) William M. Wheeler, Ants from the caves of Yucatan, pp. 251–255; (20) J. Bequaert and W. J. Clench, A third contribution to the molluscan fauna of Yucatan, pp. 261–295; (21) Carl L. Hubbs, Fishes from the caves of Yucatan, pp. 261–295; (22) Helen T. Gaige, Some reptilian records from caves of Yucatan, pp. 297–298; (23) A. S. Pearse, Birds in Yucatan caves, p. 299; (24) A. S. Pearse and Remington Kellogg, *Mammalia* from Yucatan caves, pp. 301–304.
- Pearse, A. S., Edwin P. Creaser, and F. G. Hall. 1936. *The Cenotes of Yucatan: A Zoological and Hydrological Survey*. CIW-P 457. 304 p. Contents include (1) F. G. Hall, Physical and chemical survey of cenotes of Yucatan, pp. 5–16; (2) A. S. Pearse, Results of survey of the cenotes in Yucatan, pp. 17–28; (3) Marcus C. Old, Yucatan freshwater sponges, pp. 29–31; (4) H. W. Manter, Some *Trematodes* of cenote fish from Yucatan, pp. 33–38; (5) Claudeous J. D. Brown, Polyzoa, p. 39; (6) J. Percy Moore, *Hirudinea* from Yucatan, pp. 41–43; (7) A. S. Pearse, Parasites from Yucatan, pp. 45–59; (8) J. Bequaert and W. J. Clench, A second contribution to the molluscan fauna of Yucatan, pp. 61–75; (9) C. B. Wilson, *Copepods* from the cenotes and caves of the Yucatan peninsula, with notes on *Cladocerans*, pp. 77–88; (10) Norma C. Furtos, On the *Ostracoda* from the cenotes of Yucatan and vicinity, pp. 89–115; (11) Edwin P. Creaser, Crustaceans from Yucatan, pp. 117–132; (12) Ruth Marshall, *Hydracarina* from Yucatan, pp. 133–137; (13) E. B. Williamson, *Odonata* from Yucatan, pp. 139–143; (14) H. B. Hungerford, Aquatic and semiaquatic *hemiptera* collected in Yucatan and Campeche, pp. 145–150; (15) A. S. Pearse, Chironomid larvae from Yucatan, p. 151; (16) P. J. Darlington, Aquatic *Coleoptera* from Yucatan, pp. 153–155; (17) Carl L. Hubbs, Fishes of the Yucatan peninsula, pp. 157–287; (18) Helen T. Gaige, Some reptiles and amphibians from Yucatan and Campeche, Mexico, pp. 289–304.
- Pollock, Harry E.D. 1936a. The Casa Redonda at Chichén Itzá. CIW-CAA 3(17):129–154.
- Pollock, Harry E.D. 1936b. *Round Structures of Aboriginal Middle America*. CIW-P 471. 182 p.
- Pollock, Harry E.D. 1954. The northern terminus of the principal sacbé at Mayapán. CIW-CR 2(15):1–14.
- Pollock, Harry E.D. 1956. The southern terminus of the principal sacbé at Mayapán, Group Z-50. CIW-CR 2(37):529–550.
- Pollock, Harry E.D., and Clayton E. Ray. 1957. Notes on vertebrate animal remains from Mayapán. CIW-CR 2(41):633–660.
- Pollock, Harry E.D., Ralph L. Roys, Tatiana Proskouriakoff, and A. Ledyard Smith. 1962. *Mayapán, Yucatan, Mexico*. CIW-P 619. 442 p. Contents include H.E.D. Pollock, Introduction; R. L. Roys, Literary sources for the history of Mayapán; T. Proskouriakoff, Civic and religious structures of Mayapán; A. L. Smith, Residential and associated structures at Mayapán; T. Proskouriakoff, The artifacts of Mayapán.
- Pollock, Harry E.D., and Gustav Strömsvik. 1953. Chacchob, Yucatan. CIW-CR 1(6):82–101.
- Pottery discovery in ancient Maya grave. 1932. CIW-NSB 2(36):243–250.
- Proskouriakoff, Tatiana. 1944. An inscription on a jade probably carved at Piedras Negras. CIW-NMAAE 2(47):142–147.
- Proskouriakoff, Tatiana. 1946. *An Album of Maya Architecture*. CIW-P 558. 44 p.
- Proskouriakoff, Tatiana. 1950. *A Study of Classic Maya Sculpture*. CIW-P 593. 209 p.
- Proskouriakoff, Tatiana. 1952. The survival of the Maya tun count in colonial times: notes on pages 124–131 of the Codex Perez and pages 124–125 of the Kaua. CIW-NMAAE 4(112):211–219.
- Proskouriakoff, Tatiana. 1954. Varieties of Classic central Veracruz sculpture. CIW-CAA 12(58):61–94.
- Proskouriakoff, Tatiana. 1955. A residential quadrangle: Structures R-85 to R-90. CIW-CR 2(29):289–363.
- Proskouriakoff, Tatiana, and Clayton E. Ray. 1957. Notes on vertebrate animal remains from Mayapán. CIW-CR 2(41):633–660.
- Proskouriakoff, Tatiana, and Charles R. Temple. 1955. A residential quadrangle: Structures R-85 to R-90. CIW-CR 2(29):289–363.
- Proskouriakoff, Tatiana, and J. Eric S. Thompson. 1947. Maya calendar round dates such as 9 Ahau 17 Mol. CIW-NMAAE 3(79):143–150.
- Redfield, Margaret P. 1935. The folk literature of a Yucatecan town. CIW-CAA 3(13):1–50.
- Redfield, Robert. 1938. Race and class in Yucatan. *Cooperation in Research*. CIW-P 501:511–532.
- Redfield, Robert, and Margaret P. Redfield. 1940. Disease and its treatment in Dzitas, Yucatan. CIW-CAAH 6(32):49–82.
- Redfield, Robert, and Alfonso Villa Rojas. 1934. *Chan Kom: A Maya Village*. CIW-P 448. 387 p.
- Redfield, Robert, and Alfonso Villa Rojas. 1939. Notes on the ethnography of Tzeltal communities of Chiapas. CIW-CAAH 5(28):104–120.
- Reports Upon the Present Condition and Future Needs of the Science of Anthropology, Presented by W.H.R. Rivers, A. E. Jenks, and S. G. Morley, at the Request of the Carnegie Institution of Washington*. 1913. CIW-P 200. 91 p. Contents include W.H.R. Rivers, Report on anthropological research outside America; A. E. Jenks, Report on the science of anthropology in the western hemisphere and the Pacific Islands; S. G. Morley, Archaeological research at the ruins of Chichén Itzá, Yucatan, pp. 61–91.
- Ricketson, Oliver G. 1929. Excavations at Baking Pot, British Honduras. CIW-CAA 2(1):1–27.
- Ricketson, Oliver G. 1937. *Uaxactún, Guatemala: Group E, 1926–1931*. CIW-P 477. 314 p. Contents includes O. G. Ricketson, The excavations; E. B. Ricketson, The artifacts; and appendices by M. Amsden, A. L. Smith, and H.E.D. Pollock.
- Roys, Lawrence. 1934. The engineering knowledge of the Maya. CIW-CAA 2(6):27–105.

- Roys, Lawrence. 1945. Moon age tables. *CIW-NMAAE* 2(50):159–169.
- Roys, Ralph L. 1933. *Chilam Balam of Chumayel: The Book of Chilam Balam of Chumayel*. CIW-P 438.
- Roys, Ralph L. 1939. *The Titles of Ebtun*. CIW-P 505. 472 p.
- Roys, Ralph L. 1940. Personal names of the Maya of Yucatan. *CIW-CAAH* 6(31):31–48.
- Roys, Ralph L. 1943. *The Indian Background of Colonial Yucatan*. CIW-P 548. 244 p.
- Roys, Ralph L. 1944. The Vienna dictionary. *CIW-NMAAE* 2(41):93–105.
- Roys, Ralph L. 1946. The Book of Chilam Balam of Ixil. *CIW-NMAAE* 3(75):90–103.
- Roys, Ralph L. 1949a. Guide to the Codex Pérez. *CIW-CAA* 10(49):87–106.
- Roys, Ralph L. 1949b. The Prophecies for the Maya tun or years in the Books of Chilam Balam of Tizimín and Mani. *CIW-CAA* 10(51):153–186.
- Roys, Ralph L. 1952. Conquest sites and the subsequent destruction of Maya architecture in the interior of northern Yucatan. *CIW-CAA* 11(54):131–182.
- Roys, Ralph L. 1954. The Maya katun prophecies of the Books of Chilam Balam, series I. *CIW-CAA* 12(57):1–60.
- Roys, Ralph L. 1957. *The Political Geography of the Yucatan Maya*. CIW-P 613. 187 p.
- Roys, Ralph L., France V. Scholes, and Eleanor B. Adams. 1940. Report and census of the Indians of Cozumel, 1570. *CIW-CAAH* 6(30):1–30.
- Ruins of Quiriguá. 1934. *CIW-NSB* 3(19):151–156.
- Ruppert, Karl. 1931. The Temple of the Wall Panels, Chichén Itzá. *CIW-CAA* 1(3):117–140.
- Ruppert, Karl. 1935. *The Caracol at Chichén Itzá, Yucatan*. CIW-P 454. 294 p.
- Ruppert, Karl. 1943. The Mercado, Chichén Itzá, Yucatan. *CIW-CAAH* 8(43):223–260.
- Ruppert, Karl. 1952. *Chichén Itzá: Architectural Plans and Notes*. CIW-P 595. 169 p.
- Ruppert, Karl, and John H. Denison. 1943. *Archaeological Reconnaissance in Campeche, Quintana Roo, and Petén*. CIW-P 543. 156 p.
- Ruppert, Karl, and A. L. Smith. 1952. Excavations in house mounds at Mayapán. *CIW-CR* 1(4):45–66.
- Ruppert, Karl, and A. L. Smith. 1954. Excavations in house mounds at Mayapán III. *CIW-CR* 2(17):27–52.
- Ruppert, Karl, and A. L. Smith. 1955. Two gallery-patio type structures at Chichén Itzá. *CIW-NMAAE* 5(122):59–62.
- Ruppert, Karl, and A. L. Smith. 1957. House types in the environs of Mayapán and at Uxmal, Kabah, Sayil, Chichén Itzá, and Chacchob. *CIW-CR* 2(39):573–598.
- Ruppert, Karl, J. Eric S. Thompson, and Tatiana Proskouriakoff. 1955. *Bonampak, Chiapas, Mexico*. CIW-P 602. 71 p.
- Sanders, William T. 1955. An archaeological reconnaissance of northern Quintana Roo. *CIW-CR* 2(24):179–224.
- Sanders, William T. 1960. Prehistoric ceramics and settlement patterns in Quintana Roo, Mexico. *CIW-CAAH* 12(60):154–264.
- Satterthwaite, Linton. 1943a. Animal head feet and a bark beater in the Usumacinta region. *CIW-NMAAE* 1(27):176–181.
- Satterthwaite, Linton. 1943b. New photographs and the date of Stela 14, Piedras Negras. *CIW-NMAAE* 1(28):182–188.
- Satterthwaite, Linton. 1943c. Notes on the sculpture and architecture at Tonala, Chiapas. *CIW-NMAAE* 1(21):127–136.
- Scholes, France V. 1937. *The Beginnings of Hispano-Indian Society in Yucatan*. CIW-SP 30. 9 p.
- Scholes, France V., and H. P. Mera. 1940. Some aspects of the Jumano problem. *CIW-CAAH* 6(34):1–20.
- Scholes, France V., and Ralph L. Roys. 1938. Fray Diego de Landa and the problem of idolatry in Yucatan. *Cooperation in Research*. CIW-P 501:585–620.
- Scholes, France V., and Ralph L. Roys. 1948. *The Maya Chontal Indians of Acalan-Tixchel: A Contribution to the History and Ethnography of the Yucatan Peninsula*. CIW-P 560. 565 p.
- Shattuck, George C. 1933. The Peninsula of Yucatan: Medical, Biological, Meteorological, and Sociological Studies. CIW-P 431. 576 p.
- Shattuck, George C. 1938. *A Medical Survey of the Republic of Guatemala*. CIW-P 499. 253 p.
- Shepard, Anna O. 1948a. *Plumbate: A Mesoamerican Trade Ware*. CIW-P 573. 176 p.
- Shepard, Anna O. 1948b. The symmetry of abstract design, with special reference to ceramic decoration. *CIW-CAAH* 9(47):209–293.
- Shepard, Anna O. 1956. *Ceramics for the Archaeologist*. CIW-P 609. 414 p.
- Shepard, Anna O. 1963. Beginnings of ceramic industrialization: an example from the Oaxaca Valley. *CIW-NCL* 2. 24 p.
- Shepard, Anna O., and E. Wyllys Andrews. 1963. Imitation jade ornaments from Dzibilchaltun, Yucatan. *CIW-NCL* 3. 13 p.
- Shepard, Anna O., and Hans B. Gottlieb. 1962. Maya Blue: alternative hypothesis. *CIW-NCL* 1. 18 p.
- Shepard, Anna O., and Harry E.D. Pollock. 1971. Maya Blue, an updated record. *CIW-NCL* 4. 32 p.
- Shook, Edwin M. 1945. Archaeological discovery at Finca Arizona, Guatemala. *CIW-NMAAE* 2(57):200–221.
- Shook, Edwin M. 1946. Blowguns in Guatemala. *CIW-NMAAE* 3(67):37–43.
- Shook, Edwin M. 1952a. The great wall of Mayapán. *CIW-CR* 1(2):7–35.
- Shook, Edwin M. 1952b. The ruins of Cotio, Department of Guatemala, Guatemala. *CIW-NMAAE* 4(107):181–183.
- Shook, Edwin M. 1953. The X-Coton temples at Mayapán. *CIW-CR* 1(11):207–221.
- Shook, Edwin M. 1954a. A round temple at Mayapán, Yucatan. *CIW-CR* 2(16):15–26.
- Shook, Edwin M. 1954b. The temple of Kukulcan at Mayapán. *CIW-CR* 2(20):89–108.
- Shook, Edwin M. 1954c. Three temples and their associated structures at Mayapán. *CIW-CR* 1(14):254–291.
- Shook, Edwin M. 1955. Another round temple at Mayapán, Yucatan. *CIW-CR* 2(27):267–280.
- Shook, Edwin M., and William N. Irving. 1955. Colonnaded buildings at Mayapán. *CIW-CR* 2(22):127–168.
- Shook, Edwin M., and Alfred V. Kidder. 1952. Mound E-III-3, Kaminaljuyú, Guatemala. *CIW-CAA* 11(53):33–127.

- Smith, A. Ledyard. 1934. Two recent ceramic finds at Uaxactún; with notes by Sylvanus G. Morley. *CIW-CAA* 2(5):1–25.
- Smith, A. Ledyard. 1937. Structure A-XVIII, Uaxactún. *CIW-CAA* 4(20):1–27.
- Smith, A. Ledyard. 1950. *Uaxactún, Guatemala: Excavations of 1931–1937*. CIW-P 588. 108 p.
- Smith, A. Ledyard. 1955. *Archaeological Reconnaissance in Central Guatemala*. CIW-P 608. 87 p.
- Smith, A. Ledyard, and Alfred V. Kidder. 1943. Explorations in the Motagua Valley, Guatemala. *CIW-CAAH* 8(41):101–182.
- Smith, A. Ledyard, and Alfred V. Kidder. 1951. *Excavations at Nebaj, Guatemala*. CIW-P 594. 90 p. Includes notes on the skeletal material by T. D. Stewart.
- Smith, A. Ledyard, and Karl Ruppert. 1953. Excavations in house mounds at Mayapán II. *CIW-CR* 1(10):180–206.
- Smith, A. Ledyard, and Karl Ruppert. 1954. Ceremonial formal archway, Uxmal. *CIW-NMAAE* 5(116):1–3.
- Smith, A. Ledyard, and Karl Ruppert. 1956. Excavations in house mounds at Mayapán IV. *CIW-CR* 2(36):471–528.
- Smith, P. E. 1955. Excavations in three ceremonial structures at Mayapán. *CIW-CR* 2(21):109–126.
- Smith, Robert E. 1937. A study of Structure A-1 complex at Uaxactún, Petén, Guatemala. *CIW-CAA* 3(19):189–231.
- Smith, Robert E. 1944. Archaeological specimens from Guatemala. *CIW-NMAAE* 2(37):35–47.
- Smith, Robert E. 1952. Pottery from Chipoc, Alta Verapaz, Guatemala. *CIW-CAAH* 11(56):215–236.
- Smith, Robert E. 1953. Cenote X-Coton at Mayapán. *CIW-CR* 1(5):67–81.
- Smith, Robert E. 1954a. Cenote exploration at Mayapán and Telchaquillo. *CIW-CR* 1(12):222–233.
- Smith, Robert E. 1954b. Exploration on the outskirts of Mayapán. *CIW-CR* 2(18):53–70.
- Smith, Robert E. 1954c. Pottery specimens from Guatemala I. *CCIW-NMAAE* 5(118):27–37.
- Smith, Robert E. 1955a. Early ceramic horizons at Mayapán and Santa Cruz. *CIW-CR* 2(26):253–266.
- Smith, Robert E. 1955b. Pottery specimens from Guatemala II. *CIW-NMAAE* 5(124):75–78.
- Smith, Robert E. 1955c. Pottery vessels from Campeche. *CIW-NMAAE* 5(125):79–82.
- Smith, Robert E. 1957a. The Marquez Collection of Fine X Orange and Fine Orange polychrome vessels. *CIW-NMAAE* 5(131):135–181.
- Smith, Robert E. 1957b. Tohil Plumbate and Classic Maya polychrome vessels in the Marquez collection. *CIW-NMAAE* 5(129):117–130.
- Stadelman, Raymond. 1940. Maize cultivation in northwestern Guatemala. *CIW-CAAH* 6(33):83–263.
- Steggerda, Morris. 1932. *Anthropometry of Adult Maya Indians: A Study of Their Physical and Physiological Characteristics*. CIW-P 434. 113 p.
- Steggerda, Morris. 1941. *Maya Indians of Yucatan*. CIW-P 531. 280 p.
- Strömsvik, Gustav. 1931. Notes on the metates of Chichén Itzá. *CIW-CAA* 1(4):141–157.
- Strömsvik, Gustav. 1935. Notes on the metates from Calakmul, Campeche, and from the Mercado, Chichén Itzá, Yucatan. *CIW-CAA* 3(16):121–128.
- Strömsvik, Gustav. 1941. Substela caches and stela foundations at Copán and Quirigua. *CIW-CAAH* 7(37):63–96.
- Strömsvik, Gustav. 1947. *Guide Book to the Ruins of Copán*. CIW-P 577. 76 p.
- Strömsvik, Gustav. 1952. The ball courts at Copán, with notes on courts at La Union, Quirigua, San Pedro Pinula, and Asunción Mita. *CIW-CAA* 11(55):183–214.
- Strömsvik, Gustav. 1953. A portal vault and temple at Mayapán. *CIW-CR* 1(8):136–143.
- Strömsvik, Gustav. 1956. Exploration of the cave of Dzabna, Tecoh, Yucatan. *CIW-CR* 2(35):463–470.
- Strömsvik, Gustav, and John M. Longyear. 1946. A reconnaissance of El Rincon del Jicaque, Honduras. *CIW-NMAAE* 3(68):44–53.
- Strömsvik, Gustav, Harry E.D. Pollock, and Heinrich Berlin. 1955. Exploration in Quintana Roo. *CIW-CR* 2(23):169–178.
- Swadesh, Morris. 1953. The language of the archaeological Huastecs. *CIW-NMAAE* 4(114):223–227.
- Teeple, John E. 1931. Maya astronomy. *CIW-CAA* 1(2):29–115.
- Tejeda, Antonio. 1947. Drawings of Tajumulco sculptures. *CIW-NMAAE* 3(77):107–121.
- Temple of the Warriors. 1927. *CIW-NSB* 1(12). 3 p.
- Textile arts of the Guatemalan natives. 1935. *CIW-NSB* 3(2):157–168.
- Thompson, Donald E. 1955. An altar and platform at Mayapán. *CIW-CR* 2(28):281–288.
- Thompson, Donald E., and J. Eric S. Thompson. 1955. A noble's residence and its dependencies at Mayapán. *CIW-CR* 2(25):225–252.
- Thompson, J. Eric S. 1934a. Maya chronology: the fifteenth tun glyph. *CIW-CAA* 2(11):243–254.
- Thompson, J. Eric S. 1934b. Sky-bearers, colors, and directions in Maya and Mexican religion. *CIW-CAA* 2(10):209–242.
- Thompson, J. Eric S. 1937a. Maya chronology: the correlation question. *CIW-CAA* 3(14):51–104. Contents include J.E.S. Thompson, The astronomical approach; L. Roys, Maya planetary observations; R.C.E. Long, Remarks on the correlation question; J.E.S. Thompson, The Maya year bearers.
- Thompson, J. Eric S. 1937b. A new method of deciphering Yucatecan dates with special reference to Chichén Itzá. *CIW-CAA* 4(22):177–197.
- Thompson, J. Eric S. 1939a. *Excavations at San Jose, British Honduras*. CIW-P 506. 292 p.
- Thompson, J. Eric S. 1939b. The moon-goddess in Middle America with notes on related deities. *CIW-CAAH* 5(29):121–174.
- Thompson, J. Eric S. 1940. Late ceramic horizons at Benque Viejo, British Honduras; with notes, classification of the painted wares, by Anna O. Shepard. *CIW-CAAH* 7(35):1–35.
- Thompson, J. Eric S. 1941a. Dating of certain inscriptions on non-Maya origin. *CIW-TAP* 1. 85 p.
- Thompson, J. Eric S. 1941b. Maya arithmetic. *CIW-CAAH* 7(36):36–62.
- Thompson, J. Eric S. 1941c. The missing illustrations of the Pomar Relación. *CIW-NMAAE* 1(4):15–21.

- Thompson, J. Eric S. 1941d. The prototype of the Mexican codices Telleriano-Remensis and Vaticanus A. *CIW-NMAAE* 1(6):24–26.
- Thompson, J. Eric S. 1942a. Observations on Glyph G of the Lunar Series. *CIW-NMAAE* 1(7):27–29.
- Thompson, J. Eric S. 1942b. Representations of Tezcatlipoca at Chichén Itzá. *CIW-NMAAE* 112:48–50.
- Thompson, J. Eric S. 1943a. A figurine whistle representing a ball game player. *CIW-NMAAE* 1(25):160–162.
- Thompson, J. Eric S. 1943b. The Initial Series of Stela 14, Piedras Negras, and a date on Stela 19, Naranjo, Guatemala. *CIW-NMAAE* 1(18):113–116.
- Thompson, J. Eric S. 1943c. Maya epigraphy: a cycle of 819 days. *CIW-NMAAE* 1(22):137–151.
- Thompson, J. Eric S. 1943d. Maya epigraphy: directional glyphs in counting. *CIW-NMAAE* 1(20):122–126.
- Thompson, J. Eric S. 1943e. Representations of Tlalchitonatiuh at Chichén Itzá and at El Baul, Escuintla. *CIW-NMAAE* 1(19):117–121.
- Thompson, J. Eric S. 1943f. Some sculptures from southeastern Quezaltenango, Guatemala. *CIW-NMAAE* 1(17):100–112.
- Thompson, J. Eric S. 1944a. The dating of seven monuments at Piedras Negras. *CIW-NMAAE* 2(39):65–82.
- Thompson, J. Eric S. 1944b. The fish as a Maya symbol for counting and further discussion of directional glyphs. *CIW-TAP* 2. 26 leaves.
- Thompson, J. Eric S. 1944c. Jottings on inscriptions at Copán. *CIW-NMAAE* 2(38):48–64.
- Thompson, J. Eric S. 1944d. Variant methods of date recordings in the Jacate drainage, Chiapas. *CIW-NMAAE* 2(45):133–138.
- Thompson, J. Eric S. 1945. The inscription on the altar of Zoomorph O, Quiriguá. *CIW-NMAAE* 2(56):189–199.
- Thompson, J. Eric S. 1946a. The dating of Structure 44, Yaxchilan, and its bearing on the sequence of texts at that site. *CIW-NMAAE* 3(71):62–74.
- Thompson, J. Eric S. 1946b. Some uses of tobacco among the Maya. *CIW-NMAAE* 3(61):1–5.
- Thompson, J. Eric S. 1946c. Tattooing and scarification among the Maya. *CIW-NMAAE* 3(63):18–25.
- Thompson, J. Eric S. 1948. An archaeological reconnaissance of the Cotzumalhuapa region, Escuintla, Guatemala. *CIW-CAAH* 9(44):1–94.
- Thompson, J. Eric S. 1950. *Maya Hieroglyphic Writing: An Introduction*. *CIW-P* 589. 347 p.
- Thompson, J. Eric S. 1952a. The introduction of Puuc style of dating at Yaxchilan. *CIW-NMAAE* 4(110):196–202.
- Thompson, J. Eric S. 1952b. Waxen idols and a sacrificial rite of the Lacandon. *CIW-NMAAE* 4(109):193–195.
- Thompson, J. Eric S. 1953. A stela at San Lorenzo, southeastern Campeche. *CIW-NMAAE* 4(115):228–231.
- Thompson, J. Eric S. 1954a. Memoranda on some dates at Palenque, Chiapas. *CIW-NMAAE* 5(120):45–53.
- Thompson, J. Eric S. 1954b. A presumed residence of the nobility at Mayapán. *CIW-CR* 2(19):71–88.
- Thompson, J. Eric S. 1956a. Chronological decipherments from Uaxactún, Naranjo, and Ixlú, Petén. *CIW-NMAAE* 5(127):89–94.
- Thompson, J. Eric S. 1956b. Notes on the use of cacao in Middle America. *CIW-NMAAE* 5(128):95–116.
- Thompson, J. Eric S. 1957. Deities portrayed on censers at Mayapán. *CIW-CR* 2(40):599–632.
- Thompson, J. Eric S., Harry E.D. Pollock, and Jean Charlot. 1932. *A Preliminary Study of the Ruins of Cobá, Quintana Roo, Mexico*. *CIW-P* 424. 213 p.
- Toscano, Salvador. 1945. Informe sobre la existencia de jugadores de pelota mayas en la cerámica escultórica de Jaina. *CIW-NMAAE* 2(54):182–184.
- Trik, Aubrey S. 1939. Temple XXII at Copán. *CIW-CAAH* 5(27):81–103.
- Villa Rojas, Alfonso. 1934. The Yaxuná-Cobá causeway. *CIW-CAA* 2(9):187–208.
- Villa Rojas, Alfonso. 1945. *The Maya of East Central Quintana Roo*. *CIW-P* 559. 182 p.
- Wauchope, Robert. 1934. House mounds of Uaxactún, Guatemala; with notes on the pottery by Edith B. Ricketson. *CIW-CAA* 2(7):107–170.
- Wauchope, Robert. 1938. *Modern Maya Houses: A Study of Their Archaeological Significance*. *CIW-P* 502. 181 p.
- Williams, Howel. 1952. Geologic observations of the ancient human footprints near Managua, Nicaragua. *CIW-CAAH* 9(52):1–31.
- Winning, Hasso von. 1947a. Certain types of stamped decoration on pottery from the Valley of Mexico. *CIW-NMAAE* 3(86):202–213.
- Winning, Hasso von. 1947b. Representations of temple buildings as decorative patterns on Teotihuacán pottery and figurines. *CIW-NMAAE* 3(83):170–177.
- Winning, Hasso von. 1953. A decorated vessel support from Acapulco, Mexico. *CIW-NMAAE* 4(113):220–222.
- Winters, Howard D. 1955a. Excavation of a colonnaded hall at Mayapán. *CIW-CR* 2(31):381–396.
- Winters, Howard D. 1955b. Three serpent column temples and associated platforms at Mayapán. *CIW-CR* 2(32):425–442.
- Winters, Howard D. 1955c. A vaulted temple at Mayapán. *CIW-CR* 2(30):363–380.

APPENDIX 6

BIOGRAPHICAL NOTES ON CONTRIBUTORS

The biographical summaries in this appendix include only those individuals who have authored a contribution in one of the *Year Books*.

Eleanor B. Adams (historian). A collaborator with France V. Scholes, Adams served as editor of the *New Mexico Historical Review* in Santa Fe from 1964 to 1975. She wrote extensively on the early colonial and ecclesiastical history of the Maya as well as on the American Southwest and Southern California.

Robert McC. Adams (1926–, archaeologist). Educated at the University of Chicago (Ph.B., 1947; M.A., 1952; Ph.D., 1956), Adams served on the faculty of the University of Chicago (1955–1984) and was director of the Oriental Institute (1962–1968). From 1984 to 1994 he was secretary of the Smithsonian Institution and served on the faculty of Johns Hopkins University. He has done regionally oriented archaeological studies in Iraq, emphasizing the analysis of settlement patterns, and written extensively on the role played by

irrigation, warfare, and ecological diversity in the evolution of the earliest states.

Monroe Amsden (archaeologist). A native of Farmington, New Mexico, as a boy and young man he worked for Neil Judd at Chaco Canyon, where his tasks included pottery sorting and classification with Frank Roberts. In 1925 he went with Alfred Kidder and Earl Morris to Canyon de Chelly as part of an archaeological party from the Peabody Museum (Woodbury 1993:66).

Manuel J. Andrade (1885–1941; linguist). Born in Spain, Andrade was educated at the Instituto Regional of Coruña, and came as a young man to the United States, where he held various positions as a teacher of Romance languages. Becoming interested in the scientific aspects of linguistics, he studied under Franz Boas and received his doctorate from Columbia University in 1929. The following year he accepted a joint appointment as associate professor at the University of Chicago and staff investigator of the Carnegie Institution. Half

of Andrade's time was devoted to teaching advanced students in linguistics and half to fieldwork and research on the languages of the Maya stock. He made many trips to Mexico and Guatemala, amassing enormous amounts of material concerning Yucatecan Maya, Huastec, Quiché, Tzutujil, Cakchiquel, Pokoman, Mam, and other tongues. In the course of this work he developed remarkably effective means for the mechanical recording of speech.

E. Wylllys Andrews IV (1916–1971; archaeologist). Educated at Harvard University (A.B., 1938; Ph.D., 1942), Andrews conducted archaeological investigations of the northern Maya lowlands, including the excavation and restoration of Dzibilchaltún. A collection of over 900 black-and-white photographs by Andrews from Yucatán are at the National Geographic Society in Washington, D.C. (Ruz Lhuillier 1973; Stirling 1973).

Robert H. Barlow (1918–1951; ethnohistorian). Barlow was born in Leavenworth, Kansas, and educated at the Kansas City Art Institute and San Francisco Junior College. He received his B.A. in anthropology from the University of California, Berkeley, in 1941 and taught at Universidad Nacional Autónoma de México and Universidad de las Américas (Mexico City College). His research interest emphasized Mexican anthropology, especially the ethnohistory and ancient history of Mexico. Barlow founded the journal *Tlalocan* (Bernal 1951a, 1951b; Dibble 1951; Harcourt 1951; McQuown 1951; Monjaras-Ruiz and Limon 1996; Smisor 1952).

Heinrich Berlin (1915–1988; archaeologist). At the same time that Tatiana Proskouriakoff was working on a dynastic history of Piedras Negras, Berlin, a German-born investigator living in México City, identified a series of signs that he termed *Emblem Glyphs*, the names for actual city-states (Riese 1988, 1989).

Frans Blom (1893–1963; archaeologist). Born in Copenhagen, Blom excavated at Pueblo Bonito in the American Southwest and conducted fieldwork in southern Mexico (1923, 1925, 1930), Guatemala (1924, 1928, 1937), and Honduras (1935). His manuscripts may be found at the Latin American Library, Tulane University, and the Bancroft Library, University of California, Berkeley (Brunhouse 1976; Guthe 1963b; Luján Muñoz 1964; Termer 1964b, 1964c, 1965; Leifer, Nielsen, and Reunert 2002).

John S. Bolles (1905–1983; architect). Bolles obtained his B.A. degree in engineering from the University of Oklahoma in 1926 and graduated from Harvard with an M.A. degree in architecture in 1932. He worked as a structural engineer in Oklahoma and as an archeolo-

gist for the Oriental Institute of the University of Chicago on the excavations at Persepolis, the ancient capital of Persia, and also for the Carnegie Institution of Washington on a comprehensive study of Chichén Itzá. Many years later he assembled that work into a book titled *Las Monjas: Major Pre-Mexican Architectural Complex at Chichén Itzá*, published by the University of Oklahoma Press in 1977. Bolles is best known for the design of Candlestick Park in San Francisco, on which construction began in August 1958.

George W. Brainerd (1909–1956; archaeologist). Educated at Lafayette College (B.S., 1930) and Ohio State University (M.S., 1935; Ph.D., 1937), Brainerd participated in a University of Pennsylvania–Boston Museum of Fine Arts Joint Expedition to Persia in 1934. Between 1939 and 1942 he was an archaeologist for the Carnegie Institution of Washington and excavated at Oxkintok in 1940 and at Yaxuna, Dzibilchaltún, Acanceh, Mayapan, Ticul, Dzan, and Mani in 1942. He taught at University of California at Los Angeles and was affiliated with the Southwest Museum. He conducted fieldwork in Iran (1929–1934), Arizona (1935–1938), Tennessee (1939), and Yucatán (1940, 1943) (Hoijer and Beals 1956; Rosaire 1956; W. Smith 1956).

Kirk Bryan (1888–1950; geologist). Educated at the University of New Mexico (B.A., 1909) and Yale University (Ph.D., 1920), Bryan's professional life began in 1912 as an aide in the U.S. Geological Survey, where he rose to senior geologist by 1926. He served as visiting lecturer in physiography at Harvard University in 1924–1925, was appointed assistant professor in 1926, and full professor in 1943. Bryan's scientific reputation is based primarily on his research on arid-region landforms and processes, conducted largely in the southwestern United States. He was also a noted leader in the geology and dating of archeological sites (Larsen 1951).

William R. Bullard (1926–1972; archaeologist). The son-in-law of Oliver G. Ricketson, Bullard was educated at Harvard University (Ph.D., 1959) and had an extremely active career as a field archaeologist. After researching property walls within the site of Mayapán in the early 1950s, Bullard worked in the Belize River valley (1954–1956), at Altar de Sacrificios (1959–1960) and Topoxté in Guatemala, and at Baking Pot and San Estevan in Belize. His final research was at Macanché in the Petén region of Guatemala where Bullard examined the duration of the Postclassic occupation after the Classic-period Maya collapse (Willey 1973, 1988h).

Pedro Carrasco Pizana (1921– ; ethnohistorian). Carrasco was born in Madrid and educated at Escuela

Nacional de Antropología (1945), Universidad Nacional Autónoma de México (M.A., 1945), and Columbia University (Ph.D., 1945). An ethnographer and ethnohistorian, he conducted research among Nahua and Otomí, Tarasco, Mixe, Chontal de Oaxaca, Quiché, and Cakchiquel. He taught at the State University of New York at Stony Brook and was later senior research associate at Brandeis University.

Jean Charlot (1898–1979; artist). Born in Paris, Charlot was the great-nephew of Eugène Goupil, a collector of pre-Hispanic Mexican antiquities. He was educated at the Lycée Condorcet and studied informally at the École des Beaux-Arts in Paris. Charlot was commissioned as staff artist for the Carnegie Institution of Washington expedition to Chichén Itzá, Yucatán (1926–1928). Charlot's archaeological renderings and descriptions were also included in *A Preliminary Study of the Ruins of Coba, Quintana Roo, Mexico* (Thompson, Pollock, and Charlot 1932). After the completion of the Yucatán project in 1928 Charlot accepted a series of academic and other positions. In 1949 he accepted a position as professor of art at the University of Hawaii and retired as senior professor emeritus in 1966.

Ann Chowning (1929–; archaeologist). Chowning received her Ph.D. in anthropology from the University of Pennsylvania. Her doctoral thesis was based on her 1954 fieldwork with the Lakalai people of West New Britain Province, Papua New Guinea. During her lengthy career she maintained an interest in social organization, gender issues, and cargo cults in Melanesia.

Guy N. Collins (1872–1938; botanist). Collins, of the U.S. Department of Agriculture's Bureau of Plant Industry, traveled to Mexico and Guatemala on teosinte hunts, discovered or rediscovered a number of teosinte populations, brought seed back to the United States, and began to study teosinte and its hybrids with maize. He had a central role in raising the interest level in teosinte among maize geneticists in the United States through a series of seminal papers.

John H. Denison (1906–1943; archaeologist). Denison owned and operated a ranch in Bighorn, Wyoming, but much of his life had been spent in both archaeological and anthropological studies. Denison died of pneumonia during World War II shortly after arriving as an American Field Service ambulance driver at Gambut, North Africa.

John M. Dimick (archaeologist). Dimick was a professional engineer who became interested in archaeology and began to organize digs and restore ruins in various parts of the world. He was the author of *Epi-*

sodes in Archaeology: Bit Parts in Big Dramas (Barre, MA: Barre Publishers, 1968).

Ralph A. Emerson (1912–1979; botanist). Emerson, a pioneer in experimental mycology, was educated at Harvard University (M.A., 1933, 1934; Ph.D., 1937). After a year at Harvard as a Harvard research fellow, he joined the faculty at Berkeley in 1940 and spent his entire academic career at the University of California at Berkeley.

Carl E. Guthe (1893–1974; archaeologist). Guthe was educated at the University of Michigan (B.S., 1914) and Harvard University (M.A., 1915; Ph.D., 1917). He served as associate director, Andover Pecos Expedition, Phillips Academy (1917–1920); research associate, Carnegie Institution of Washington (1920–1922); associate director (1922–1929) and director (1929–1943), University Museum, University of Michigan; and director, New York State Museum (1944). He conducted field research in New Mexico (1916–1920); Belize and Guatemala (1920–1922); and the Philippines (1922–1925) (Griffin and Jones 1976; Woodbury 1993:75).

Asael T. Hansen (1903–; linguist). Hansen was educated at Utah State University (B.S.) and University of Wisconsin (Ph.D., 1930). He was a field worker for the Carnegie Institution of Washington and later taught at Michigan State University and the University of Alabama. His research interests included urbanization, urban-rural relationships, Yucatán, Japanese minorities, and West Coast evacuee camps.

Joseph A. Hester (geographer). Hester was educated at University of California at Los Angeles (A.B., 1949; Ph.D., 1954). Published with Ralph L. Beals on land-use patterns among California Indians.

William N. Irving (1927–1987; archaeologist). Irving taught at University of Toronto, and his research interests included the archaeology and ethnology of Yukon Territory and the Mackenzie and Keewatin districts of Canada, and Early Man studies in northern North America (Julig and Hurley 1988a, 1988b).

Jesse D. Jennings (1909–1997; archaeologist). Educated at Montezuma College, New Mexico (B.A., 1925) and the University of Chicago (Ph.D., 1943), Jennings served as an archaeologist for the Carnegie Institution of Washington at Kaminaljuyú in Guatemala and later taught at the University of Utah.

James H. Kempton (botanist). While employed by Bureau of Plant Industry, U.S. Department of Agriculture

in 1911, G. N. Collins and Kempton found the first clearly recognized linkage in corn, discovering that the gene for the waxy endosperm is linked to the gene aleurone color. This discovery led to the concept of crossing-over, in which segments of homologous chromosomes break and exchange genes creating genetic recombinations.

Alfred V. Kidder (1885–1963; archaeologist). Born in Marquette, Michigan, Kidder entered Harvard University to train as a physician. During summer 1907 he changed his career goal to archaeology after a summer field experience under Edgar Lee Hewett in the American Southwest. He received his bachelor's degree in 1908 and his Ph.D. in 1914 with a dissertation that put forward a new methodology for the study of prehistoric Southwestern pottery. From 1914 to 1915 Kidder collaborated with Samuel J. Guernsey to formulate the archaeological chronology of the southwestern United States. From 1915 to 1925 Kidder maintained one of the longest field archaeological projects in the Southwest at Pecos Pueblo, New Mexico. The principle of geologic stratigraphy was practiced at Pecos Pueblo, and Kidder used this principle to tie other archaeological sites of the area to Pecos Pueblo in time and space. During his years at Pecos, Kidder used a multidisciplinary approach to field archaeological studies by involving many specialists from other disciplines in the resolution of archaeological problems. Pecos Pueblo was a field method training ground for students such as Frans Blom, Carl Guthe, Samuel K. Lothrop, George C. Vaillant, and Robert Wauchope. In 1929 Kidder became chairman of the Carnegie Institution of Washington's Division of Historical Research effort in Maya archaeology. He introduced his "pan-scientific" or multidisciplinary approach to the study of Maya archaeology. Aerial archaeology began as a method at this time as Kidder and Charles A. Lindbergh worked jointly on the discovery of Maya sites. Kidder's best known Maya investigations were at Kaminaljuyú in the Guatemala highlands. In 1950 Kidder retired from the Carnegie Institution as the institution's focus of support began to move away from the social sciences and humanities and toward the hard sciences. The Alfred Vincent Kidder Papers, on deposit in the Harvard University Archives, are a primary resource for charting the development of archaeology in the Southwest and Mesoamerica (Caso 1963; Givens 1989, 1992a; Greengo 1968; Guthe 1963a; Judd 1965; Ruz Lhuillier 1963; Samayoa Chinchilla 1965; Termer 1964a; R. Thompson 1991; Wauchope 1965a; Willey 1988a; Woodbury 1973, 1993).

J. O. Kilmartin (surveyor). Using traditional surveying equipment and cartographic techniques of the period,

J. O. Kilmartin, John P. O'Neill, and Karl Ruppert produced the Carnegie map of Chichén Itzá. The J. O. Kilmartin Papers are presently housed at the Boundary End Archaeology Research Center in Barnardsville, North Carolina.

John M. Longyear (1914–; archaeologist). Educated at Cornell University (B.A., 1936) and Harvard University (Ph.D., 1940), Longyear investigated Maya archaeological sites in Honduras and El Salvador, and later taught at Colgate University.

Cyrus Lundell (1907–1993; botanist). While still an undergraduate at Southern Methodist University, Lundell accepted a position as assistant physiologist at the Tropical Plant Research Foundation in Washington, D.C. He served as a field worker in Belize, undertaking tapping experiments on the sapodilla (*Achras zapota*) tree for the U.S. chewing gum industry. In 1931, while traveling deep into unmapped Campeche, he located Calakmul with its sixty-five stela. Lundell directed botanical expeditions to Guatemala, Mexico, and Belize for the Carnegie Institution of Washington, and discovered sixteen Maya archaeological sites. In 1981 he was awarded the Order of the Quetzal by the Guatemalan government (Lipscomb 1995:67).

Paul S. Martin (1898–1974; archaeologist). Educated at the University of Chicago (Ph.B., 1923; Ph.D., 1929), Martin excavated in Wisconsin (1925), Illinois (1927), Yucatán (1926–1928), Colorado (1928–1934, 1937–1938), and New Mexico (1939, 1941, 1946, 1947). Martin was employed by the Field Museum of Natural History from 1929 until his death in 1974. For nearly thirty years (1935–1964) he served as chief curator in the Department of Anthropology (Longacre 1976).

Norman A. McQuown (1914–; linguist). McQuown was educated at the University of Illinois (B.A., 1935; M.A., 1936) and Yale (Ph.D., 1940), and later taught at the University of Chicago. His research interests included descriptive grammar, texts, and lexicon in Mayan languages (especially Huastec, Yucatec, Mam, and Quiché), Classical Nahuatl, and Turkish

Sylvanus G. Morley (1883–1948; archaeologist). Morley received a degree in civil engineering from the Pennsylvania Military College in 1904 and a B.A. (1907) and M.A. (1908) from Harvard University. He never pursued a doctorate but received an honorary doctorate from the Pennsylvania Military College in 1921. He spent from 1910 to 1912 at Quiriguá, Guatemala, where the restoration work, much of it overseen by Morley, was the first to be undertaken at any Maya site. In 1914 the Carnegie Institution of Washington

accepted Morley's proposal to excavate Chichén Itzá, Yucatán. Morley headed the Carnegie program until 1929, when Alfred Vincent Kidder was named the director of the Division of Historical Research. Like Alfred Maudslay and Teobert Maler before him, Morley undertook daring expeditions into the remote jungles of Mexico and Guatemala to record new sites and monuments. His greatest single achievement in exploration came in 1916 with the discovery of Uaxactún; the site yielded some of the most important archaeological findings in pre-World War II Maya research. Morley was at heart an epigrapher. His epigraphic research led to the decipherment of a variant of the tun (360-day period) glyph, the end-of-tun glyph, and the five-tun and ten-tun anniversary glyphs. He established the general lunar significance of the Supplementary Series (a set of glyphs following the major calendrical glyphs that lead off many Maya descriptions). Morley is less well known, however, for breakthrough epigraphic discoveries than for amassing an enormous database of primarily calendrical inscriptions through his relentless field explorations. Morley's lectures and articles, especially those appearing in the 1920s and 1930s in *National Geographic* with dramatic scenes in brilliant color, stimulated public interest as never before. He was appointed director of the School of American Research in 1947 and, at the time of his death in Santa Fe, had planned to assume that post on retirement from the Carnegie Institution. Morley's personal papers related to his Carnegie years are at the Peabody Museum of Archaeology and Ethnology, Harvard University (Black 1990a, 1990b; Brunhouse 1971; Carnegie 1923; Carpenter 1950; Givens 1992a; Harris and Sadler 2003; Harrison 1950; Kidder 1930a, 1948, 1950, 1959; Morley 1943; Recinos 1948; Roys and Harrison 1949; Ruz Lhuillier 1948, 1950; R. Smith 1949; J. Thompson 1949; Villacorta Calderon 1932, 1939; Wauchope 1965b).

Ann Axtell Morris (1900–1945; artist). Morris graduated from Smith College in 1922 and then studied in France with the American School of Prehistoric Research. From 1923 onward she collaborated with her husband, Earl H. Morris, on archaeological work in the Southwest and Yucatán. She copied all paintings at Chichén Itzá and later wrote two popular books on her experiences (A. Morris 1931; E. Morris, 1931; Tisdale 1993; Woodbury 1993:16).

Earl H. Morris (1889–1956; archaeologist). Morris conducted excavations in southwestern Colorado, northwestern New Mexico, Arizona, Chichén Itzá, and Guatemala. He entered University of Colorado in 1908 after working his way through high school as an expert fireplace and chimney mason. He left the university

temporarily in 1912 to go to Quiriguá with Edgar Hewitt and Sylvanus Morley before receiving his degree in 1914 (University of Colorado, M.A., 1916; D.Sc., 1942). That winter he returned to Quiriguá with Neil Judd and Jesse L. Nusbaum to make glue molds of the large sculptured monuments for the Panama-California Fair in San Diego. From 1924 to 1929 he worked winters in Yucatán and summers in the Southwest. In 1929 he left Carnegie and concentrated on the Southwest. The Earl Morris Papers are at the University of Colorado, Boulder (Burgh 1957; Kidder 1957; Woodbury 1993:46).

Lila M. O'Neale (1886–1948; textile specialist). During her lifetime, O'Neale was acknowledged as the foremost expert on prehistoric textiles of the indigenous Americas. A graduate of Leland Stanford Junior University, O'Neale worked as a teacher in the Oakland Public Schools from 1910 to 1913). She continued her education at the Teacher's College, Columbia University, and in 1926 enrolled at the University of California, Berkeley, as a graduate student in household arts. It was there that O'Neale collaborated with Alfred Kroeber, who had just returned from fieldwork in Peru with textiles excavated for the Field Museum in Chicago. Kroeber recognized the quality of O'Neale's scholarship and professionalism and suggested in 1929 that she study the material culture of the Hupa, Yurok, and Karok peoples of northern California. Her dissertation, *Yurok-Karok Basket Weavers*, was published in 1932 in the University of California Publications in American Archaeology and Ethnology Series. The O'Neal Papers are deposited in the Department of Textile Design at University of California, Berkeley (Harrison 1948; Schevill 1986, 1988).

John P. O'Neill (archaeologist). O'Neill served as cartographer at Chichén Itzá and surveyed several other sites during the 1932–1933 field season. The papers of John P. O'Neill are deposited at the Yucatec Maya Program of the Duke–University of North Carolina Program in Latin American Studies.

Alexander Pogo (1893–1950?; astronomer). Pogo compared dates in the Dresden Codex with actual observable eclipses in the Maya region, concluding that the tables dealt with lunar, not solar, eclipses.

Harry E.D. Pollock (1901–1982; archaeologist). Pollock was born in Salt Lake City and attended the Thatcher School in Ojai, California, the Hill School in Pottstown, Pennsylvania, and Harvard University (B.A., 1923; M.A., 1930; Ph.D., 1936). Pollock conducted the CIW Architectural Survey in the Maya region and served as the final director of the archaeology program (H.E.D.

Pollock 1980; Willey 1983, 1988e).

Tatiana Proskouriakoff (1909–1985; archaeologist). Proskouriakoff received her B.S. in architecture from Pennsylvania State University in 1930. During the Depression she worked for Linton Satterthwaite at the University of Pennsylvania Museum and in 1936 joined the University Museum expedition to Piedras Negras. Through her later analysis of patterns of dates and glyphs at Piedras Negras she was able to identify a sequence of seven rulers for a span of almost two hundred years. She also showed that these texts indicated rites of passage and major feats of these rulers. For her discovery that ancient Mayans were recording their history, Proskouriakoff was awarded the Alfred V. Kidder Medal in 1962. She was given honorary degrees from Tulane University and Pennsylvania State University in the 1970s, and in 1984 she received the Order of the Quetzal, the highest honor awarded to a foreigner by Guatemala. She retired as Curator of Maya Art at the Peabody Museum of Archaeology and Ethnology, Harvard University (Berlin 1985; Graham 1990; Homenaje 1986; Rivera 1987; Rosas 1988; Villela 2000).

Robert Redfield (1897–1958; ethnographer). Educated at the University of Chicago (B.A., 1920; J.D. 1921; Ph.D., 1928), Redfield began teaching at the University of Chicago in 1928. He was later professor of anthropology and dean of the Social Science Division. His field research in Mexico in the 1920s resulted in *Tepoztlán* (1930), a pioneer case study of a folk community. As research associate (1930–1947) at the Carnegie Institution, he directed anthropological investigations in Yucatán and Guatemala and evolved the concepts of folk society and folk culture. In later years he turned increasingly to the comparative study of civilizations. The Redfield papers are in Special Collections, University of Chicago Library (Eggan and Miner 1959; Eidheim 1959; Guiteras Holmes 1961; Hansen 1976; Leslie 1976; Mendelson 1981; Miner 1959; Singer 1959a, 1959b, 1976).

Oliver G. Ricketson (1894–1952; archaeologist). Ricketson studied anthropology at Harvard University (B.A., 1916) but changed to medicine after he returned from World War I. He never completed his medical degree, and in 1920 he moved to Flagstaff and then to Kayenta, about thirty kilometers south of the Utah border, where he lived with John and Louisa Wetherill at their trading post. For a while Ricketson worked in Marsh Pass with the archaeologist Samuel J. Guernsey of Peabody Museum. In 1921 Ricketson met Sylvanus Morley and went with him to Yucatán as a mule skinner, returning the next year as a cartographer and draftsman. In 1923 he again worked for Morley, first at Chichén Itzá and

then at Uaxactún in 1926, where he took charge of the work. Ricketson's study of Uaxactún was the basis for his doctoral dissertation submitted at Harvard in 1934 (Lothrop 1953; Woodbury 1993:55).

Henry B. Roberts (1904–1960; archaeologist). Roberts was involved in the study of Yucatán Maya ceramics between 1931 and 1936. He conducted excavations at Uxmal, Sayil, Labná, Kabah, Sabacché, Yaxuna, Coba, and Holactún. After military service in World War II he joined Prentice-Hall as a staff editor and remained in publishing until his death (Woodbury 1993:102).

Ralph L. Roys (1879–1965; ethnohistorian). Roys was educated at the University of Michigan (Ph.B., 1900) and Whitman College (L.H.D., 1936) and spent his entire career in the lumber business. A chance meeting with William E. Gates in California in 1915 gave Roys access to a number of documents, including the books of Chilam Balam and Ritual of the Bacabs. When Gates was made director of the Department of Middle American Research at Tulane University, he arranged a part-time position for Roys (1924–1930), who was able to continue supervision of the family lumber interests. After publication of his *The Ethno-Botany of the Maya* in 1931, Roys joined the staff of the Carnegie Institution on a part-time basis. He often explored remote parts of Yucatán, either on foot or muleback, trying to trace the boundaries of the old provinces into which Yucatán had been divided before the Spanish conquest. The Roys Papers are at University of Washington Libraries, Special Collections (Ventur 1978).

Karl Ruppert (1895–1960; archaeologist). Born in Phoenix and educated at the University of Arizona (B.S., 1920), George Washington University (M.S., 1925), and Harvard University (M.A., 1928), Ruppert conducted fieldwork for the Carnegie Institution of Washington in Campeche (1932–1938), Bonampak (1946), Veracruz (1937), Chichén Itzá (1924–1937, 1942, 1945–1947, 1952), and Mayapán (1951–1954) (Lambert 1961; Woodbury 1993:77).

William T. Sanders (archaeologist). Educated at Harvard University (Ph.D., 1957), Sanders is currently Evan Pugh Professor Emeritus of Anthropology at Pennsylvania State University. His major contribution has been his development of cultural ecology as an explanatory tool for understanding the development of prehistoric urbanism. His use of these concepts in his extensive archaeological research in the Teotihuacan Valley of central Mexico, Kaminaljuyú in the Guatemala highlands, and Copán in western Honduras has provided major insights into the functioning of prehistoric Mesoamerica.

Anna O. Shepard (1903–1973; ceramicist). Educated at the University of Nebraska (1926) with graduate study at the University of New Mexico (1929), Claremont College (1930), New York University (1938), Massachusetts Institute of Technology (1940), and the University of Colorado (1943), Shepard was a pioneer in the technical analysis of pottery from archaeological contexts in the American Southwest and Mesoamerica. The Anna O. Shepard archive (48 linear feet) is located at the University of Colorado Museum (Bishop 1991; Rands 1991).

Edwin M. Shook (1911–2000; archaeologist). Shook studied at the Drexel Institute (1930–1931), Columbia Institute of Technology in Washington, D.C. (1932–1933), George Washington University (1933–1934), and Harvard University (1937–1940). He was originally hired by the Carnegie Institution of Washington as a draftsman in its Washington, D.C., office but was eventually developed into a field archaeologist. After his work at Mayapán he directed excavations for the University of Pennsylvania Museum at Tikal (Love 2002; Popenoe de Hatch 2000; Shook 1990, 1998).

A. Ledyard Smith (1901–1985; archaeologist). Smith, a 1925 graduate of Harvard College, worked for the Carnegie Institution of Washington from 1927 until 1958 at Uaxactún, the Guatemala highlands, and Mayapán, and later for the Peabody Museum of Archaeology and Ethnology at Harvard University at Altar de Sacrificios and Seibal. In 1968 he was awarded the Order of the Quetzal by the government of Guatemala (Willey 1988c).

Robert E. Smith (1899–1983; archaeologist). The elder brother of A. Ledyard Smith, Robert Smith received his primary and secondary education while living in Switzerland and Massachusetts, and graduated from Harvard University in 1922 with a degree in history and romance languages. He became involved in archaeology when he accompanied Ledyard to Uaxactún in 1929. He accepted a position with the Carnegie Institution of Washington and spent the next twenty years as the Carnegie's Guatemala City representative. Smith ended his career as a research associate of Middle American Ceramics at Harvard University's Peabody Museum from 1965 to 1968, and as an honorary research associate of that institution until his death in 1983. The Robert Eliot Smith Papers are at Special Collections and University Archives, Malcolm A. Love Library, San Diego State University (*New York Times*, October 24, 1967, p. 44).

Morris Steggerda (1900–1950; geneticist). Steggerda received his B.A. from Hope College in 1922, and his

M.A. and Ph.D. from the Department of Zoology, University of Illinois (1923, 1928). In 1930 he was hired by the Carnegie Institution of Washington at the Cold Spring Harbor Laboratory. His professional interests included the growth of Maya, Navajo, Black, and Dutch children, and the development of anthropometric instrumentation. Between 1944 and 1950 he taught at the Hartford Seminary Foundation in Connecticut. His personal papers, including anthropometric records collected by the Carnegie Institution of Washington and photographs, measurements, hair samples, palm prints, and dental records, are at the National Museum of Health and Medicine, Armed Forces Institute of Pathology, Washington, D.C. (Count 1951).

Gustav Stromsvik (1901–; carpenter, mechanic, archaeologist). A former Norwegian sailor, Stromsvik participated in fieldwork at Chichén Itzá, directed excavations at Copán (1935–1942), and did stela restoration at Quiriguá.

Sol Tax (1907–1995; ethnographer). Educated at University of Wisconsin, Madison (Ph.B., 1931) and University of Chicago (Ph.D., 1935), Tax conducted early fieldwork in Algeria (1930) and New Mexico (1931). Employed by Carnegie Institution of Washington between 1934 and 1948, he conducted ethnographic fieldwork at Santo Tomas Chichicastenango (1934–1935, 1938–1939), Panajachel (1935–1937) in Guatemala, and Zinacantan (1943–1944) in southeastern Mexico. He was later professor of anthropology at the University of Chicago. His field notes are deposited at University of Chicago Library (Memoriam 1995; Stanley 1996).

Donald E. Thompson (1931–; archaeologist). The son of J. Eric S. Thompson, Thompson focused on Inca archaeology and ethnohistory. He conducted archaeological fieldwork in Peru on the north-central coast at Casma and Huarmey and in the eastern Andes along the Upper Marañón River. He was professor of anthropology at the University of Wisconsin, Madison.

J. Eric S. Thompson (1898–1975; archaeologist). Educated at Winchester College and Cambridge University (1922–1925), Thompson participated in the Carnegie Institution of Washington excavations at Chichén Itzá (1926). He served as assistant curator at the Field Museum of Natural History (1926–1934), and in 1935 joined the Carnegie Institution of Washington (Barthel 1979; Graham 1976; Hammond 1977, 1978; León Orozco 1979; Piña Chan 1977; Ruz Lhuillier 1976–1977; Satterthwaite 1975; Willey 1979).

George C. Vaillant (1901–1945; archaeologist). Vaillant was educated at Harvard University (A.B., magna cum

laude, 1922; M.A., 1925; Ph.D., 1927) and his unpublished but widely circulated doctoral dissertation *The Chronological Significance of Mayan Ceramics* was a pioneering work on the chronology and cultural history of the Maya. Between 1927 and 1941 Vaillant served as curator of Mexican archaeology at the American Museum of Natural History in New York City. In addition, Vaillant taught part time in the anthropology departments at Columbia, Yale, and New York universities. He carried out archaeological expeditions in the Southwest (1921–1922, 1922–1925), Egypt (1923–1924), and Central America (1926, 1928–1936). In 1941 he took the position of director of the University Museum at the University of Pennsylvania. Besides working as museum director, Vaillant was a part-time professor of anthropology on the graduate faculty at the University of Pennsylvania. During World War II, Vaillant served as the first cultural attaché in the American embassy in Lima, Peru (Bleeker 1945; Caso 1946; Kidder 1945; Strong 1945; Willey 1988d).

Alfonso Villa Rojas (1906–1998; ethnographer). Villa Rojas was born in Mérida, came to Chan Kom as a teacher in 1927, and lived there until December 1931. He met Robert Redfield when the latter first visited Chan Kom in 1930. Villa Rojas went to the University of Chicago from 1933 to 1935. Villa Rojas held many public offices in which he was responsible for apply-

ing anthropological knowledge to the improvement of the social conditions of the Indians. He directed a program of ethnographic studies of the Indians affected by the construction of a hydroelectric dam on the Papaloapan River (1949–1952). He assumed the directorship of the Centro Coordinador Indigenista Tzeltal-Tzotzil in San Cristóbal de las Casas (1955). He was director of anthropological research at the Interamerican Indian Institute (1967–1970) and sub-director of the Instituto Indigenista Nacional (1970–1976) (Bricker and Vogt 1998).

Robert Wauchope (1909–1979; archaeologist). Wauchope was educated at the University of South Carolina (B.A., 1931) and Harvard University (M.A., 1933; Ph.D., 1942). He taught at University of Georgia (1938–1940), University of North Carolina (1940–1942), and later was head of the Middle American Research Institute, Tulane University. He served as a temporary staff member of the Carnegie Institution of Washington from 1932 to 1936. Alfred Kidder first took Wauchope to the field at the excavation of Forked Lightening Ruin as a college freshman. He joined the Carnegie Institution of Washington (1932–1936) and made major contributions to Mesoamerican archaeology, as well as to the archaeology of the American Southeast (Harrison 1978; King 1978; Pohorilenko 1978; A. Smith 1978; Woodbury 1993:72–73).

APPENDIX 7

INDIVIDUALS ASSOCIATED WITH CARNEGIE INSTITUTION OF WASHINGTON MAYA PROGRAM

- Adams, E. B., historian, 1936–1948
 Adams, J. P., archaeologist, 1915
 Adams, R. M., archaeologist, 1953
 Amsden, M., archaeologist, 1924, 1927, 1928, 1931, 1955
 Andrade, M. J., linguist, 1930–1938
 Andrews, E. W., archaeologist, 1939–1942
 Atwood, R. S., geographer, 1932
 Atwood, W. W., geographer, 1932
 Barlow, R. H., ethnohistorian, 1950
 Barrett, S. A., museologist, 1937
 Barrow, D., archaeologist, 1938
 Bartlett, H. H., botanist, 1931
 Bennett, B. L., medical laboratory technician, 1929, 1931, 1932
 Bequaert, J. C., entomologist, 1929
 Berlin, H., archaeologist, 1953, 1954
 Binney, A., archaeologist, 1946
 Binney, D., archaeologist, 1946, 1947
 Blom, F., archaeologist, 1924,
 Boggs, S. H., archaeologist, 1939, 1940, 1942
 Bolles, J. S., architect, 1931–1934
 Bradshaw, S. L., linguist, 1941–1947
 Brainerd, G. W., archaeologist, 1939–1942, 1949
 Bryan, K., geologist, 1945
 Bullard, W. R., archaeologist, 1952, 1953
 Burgh, R. F., archaeologist, 1941
 Camara Barbachano, F., ethnographer, 1944
 Carpenter, A. W., photographer, 1916
 Carrasco, P., ethnohistorian, 1953
 Chamberlain, R. S., historian, 1932–1942, 1947
 Charlot, J., artist, 1926–1929
 Chowning, A., archaeologist, 1955
 Clarke, S. T., medical researcher, 1934
 Collins, G. N., botanist, 1935, 1937
 Connell, F. H., protozoologist, 1931, 1932
 Cook, O. F., agronomist, 1922
 Cooke, C. W., geologist, 1931
 Cosgrove, Harriet S., conservator, 1937
 Crandall, E. L., agronomist, 1925–1927
 Currie, L. J., archaeologist, 1941
 Curth, W., dermatologist, 1932
 Davidson, W., ethnographer, 1946
 De Harport, D., photographer, 1953
 Denison, J. H., archaeologist, 1932–1934, 1937, 1938
 Dimick, J. M., archaeologist, 1941
 Dios Rosales, J. de, ethnographer, 1938, 1941

- Elliott, D., archaeologist, 1942
 Emerson, R. A., botanist, 1935
 Ennis, M., archaeologist, 1938
 Fite, H., sculptor, 1938
 Franks, R. A., archaeologist, 1926, 1927
 Fry, Edward I., archaeologist, 1955
 Gaige, F. M., biologist, 1931
 Gann, T.W.F., archaeologist, 1916, 1918, 1926
 Gates, W. E., archaeologist, 1920, 1921
 Gillin, J., ethnographer, 1944
 Goodner, K., bacteriologist, 1929
 Goubaud Carrera, A., ethnographer, 1944, 1945
 Guillot, I., mechanic, 1928
 Guiteras Holmes, C., ethnographer, 1944–1946
 Guthe, C. E., archaeologist, 1920–1922
 Hall (Duke), 1936
 Hammond, L. C., mechanic, 1927
 Hanke, L., historian, 1935
 Hansen, A. T., linguist, 1931–1938
 Harrington, J. C., archaeologist, 1936
 Harrison, M. W., editor, 1934–1955
 Held, J., archaeologist, 1917, 1918
 Hester, J. A., geographer, 1952–1954
 Hill, T. J., clinical oral pathologist, 1937
 Holbrook, B. L., secretary/bookkeeper, 1929
 Holmes, W. H., archaeologist, 1916
 Houser, L., artist, 1927, 1928
 Ichikawa, Schouchi, conservator, 1928
 Irving, William, archaeologist, 1954
 Jacobus, D., secretary/bookkeeper, 1931
 Jameson, K., secretary/bookkeeper, 1926
 Jennings, J. D., archaeologist, 1937
 Jessup, M. K., archaeologist, 1922
 Johnson, T. R., surveyor/draftsman, 1928
 Jones, M., surveyor, 1950, 1951
 Kempton, J. H., botanist, 1935–1937
 Kennedy, E.T.P., archaeologist, 1937
 Kerr, A. J., mechanic, 1929
 Kidder, A. V., archaeologist, 1931–1950
 Kilmartin, J. O., surveyor, 1923, 1924, 1929
 Kratz, C., archaeologist, 1936
 Lincoln, J. S., ethnographer, 1941
 Lincoln, W. L., draftsman, 1932
 Longyear, J. M., archaeologist, 1938, 1939, 1946
 Loomis, H. F., agronomist, 1922
 Lothrop, S. K., archaeologist, 1916, 1922, 1932, 1933
 Love, W. A., surveyor, 1923
 Lucas, V., artist, 1937
 Lundell, C. L., botanist, 1933, 1937, 1938
 MacKay, K., nurse/housekeeper, 1927–1929, 1931
 Martin, agronomist, 1922
 Martin, P. S., archaeologist, 1927, 1928
 McBryde, F. W., geographer, 1932
 McQuown, N. A., linguist, 1947–1949
 Morgan, H., archaeologist, 1948
 Morley, S. G., archaeologist, 1914–1946
 Morris, A. A., artist, 1925–1929
 Morris, E. H., archaeologist, 1924, 1925, 1927–1928, 1934
 Murie, A., mammalogist, 1931
 Núñez, J., archaeologist, 1942
 Nusbaum, D., archaeologist, 1935
 O'Neale, L. M., textile specialist, 1936
 O'Neill, J. P., archaeologist, 1932, 1933
 Parris, F. P., archaeologist, 1934
 Patton, R. T., archaeologist, 1937
 Pearse, A. S., biologist, 1936
 Peter, G., museologist, 1937
 Piatt, N. E., secretary/bookkeeper, 1927, 1928
 Pogo, A., astronomer, 1935
 Pollock, H.E.D., archaeologist, 1929, 1931–1933, 1936, 1937, 1939, 1940, 1946, 1947, 1951–1958
 Popenoe, W., botanist, 1936
 Pozas Arciniegas, R., ethnographer, 1944–1946
 Proskouriakoff, T., archaeologist, 1939, 1946, 1947, 1950–1958
 Ray, Clayton, zoologist, 1955
 Redfield, R., ethnographer, 1930–1939, 1941–1946
 Remondet, A., architect, 1937
 Rhoads, F. K., camp assistant, 1931
 Richard, Paul, conservator, 1937
 Richardson, F. B., archaeologist, 1933, 1935, 1938, 1941, 1942
 Ricketson, E. B., archaeologist, 1925, 1929, 1931–1933, 1936
 Ricketson, O. G., archaeologist, 1921–1926, 1929–1936
 Rife, D. M., physician, 1931
 Roberts, H. B., archaeologist, 1927, 1930–1933, 1935
 Roosevelt, G. E., archaeologist, 1938
 Roys, L., archaeologist, 1936, 1951, 1952
 Roys, R. L., ethnohistorian, 1931–1945, 1947, 1949, 1951, 1953
 Rubio Mañe, J. I., historian, 1935–1939
 Ruppert, K., archaeologist, 1925–1934, 1937, 1938, 1942, 1946, 1947, 1949, 1951–1955
 Rutherford, A. K., archaeologist, 1921
 Sánchez, C., secretary/interpreter, 1932
 Sanders, W. T., archaeologist, 1955, 1956
 Sandground, J. H., helminthologist, 1929
 Saunders, G. M., medical clinician, 1931, 1932
 Scholes, F. V., historian, 1931–1947
 Shattuck, G., physician, 1929–1932, 1936, 1939
 Shepard, A. O., ceramicist, 1936–1944, 1946, 1947, 1950–1952, 1957
 Shepherd, T. E., archaeologist, 1938
 Shook, E. M., archaeologist, 1934–1936, 1939–1940, 1942, 1947–1955
 Shufeldt, E., archaeologist, 1929
 Smith, A. L., archaeologist, 1929, 1931, 1933–1937, 1940–1942, 1945–1947, 1949, 1951–1955
 Smith, J. L., artist, 1926, 1941
 Smith, P. E., archaeologist, 1954
 Smith, R. E., archaeologist, 1932–1957
 Smith, T. R., archaeologist, 1933, 1934
 Sopena, J., photographer, 1922, 1926
 Stadelman, R., agronomist, 1937, 1938
 Steggerda, M., geneticist, 1931–1939
 Stewart, T. D., physical anthropologist, 1947
 Stone, R. G., climatologist, 1932
 Stromsvik, G., carpenter, mechanic, archaeologist, 1927–1955
 Stuart, L. C., herpetologist, 1933
 Tax, S., ethnographer, 1935–1946
 Teeple, J., archaeologist, 1929, 1930

- Tejeda, A., artist, 1941, 1947, 1948
Tejeda, C., artist, 1942, 1945–1949
Temple, C. R., archaeologist, 1955
Thompson, D. E., archaeologist, 1955
Thompson, J.E.S., archaeologist, 1926, 1933, 1934, 1936, 1938, 1942–1957
Thompson, R. H., archaeologist, 1950–1952
Trautman, M. B., ornithologist, 1936
Traylor, M. A., ornithologist, 1939
Trik, A. S., archaeologist, 1936, 1938
Underhill, G., physician, 1916
Vaillant, G. C., archaeologist, 1928
Van Tyne, J., ornithologist, 1931, 1936, 1937
Villa Rojas, A., ethnographer, 1931–1946
Wauchope, R., archaeologist, 1932, 1934–1936
Webb, W., photographer, 1942
Wheelwright, A. W., archaeologist, 1941
Williams, G. D., physical anthropologist, 1931
Williams, H., geologist, 1941, 1950
Winter, Howard, archaeologist, 1954

GLOSSARY

Adelantado: title conferred on governor of a newly conquered territory or newly established province.

Aguada: water hole or surface pond.

Ahau: literally “lord” or “ruler,” this title was carried by the upper stratum of royal figures, including women; an inherited status.

Alcalde: municipal mayor, judge, or justice of the peace; member of a *cabildo*.

Alcalde mayor: chief executive officer of a town or district composed of several towns.

Alcaldía: office or territorial jurisdiction of an *alcalde*.

Aldea: small village; hamlet.

Alguacil: constable.

Archivo General de Indias: The Archivo, located in Seville, was established by Carlos III in 1785 to collect in one place all documents associated with the Spanish colonization of the Americas. Documents date from the fifteenth through nineteenth centuries. The Archivo General de Indias is operating a massive project to preserve and make accessible the contents

of the 45 million documents and 7,000 maps and blueprints that form the written heritage of Spain’s 400 years in power in the Americas.

Arriero: muleteer.

Atlantean figure: an architectural support in the form of a standing human, identified with the Toltec. Colossal Atlanteans rise on the platform of the pyramid of the Temple of Quetzalcoátl at Tula in central Mexico. Smaller figures supporting stone slabs found at the Temple of the Warriors at Chichén Itzá attest to the influence of the Toltec on Postclassic Yucatán.

Audiencia: administrative and judicial tribunal.

Auto-de-fé: public announcement of the sentences imposed by the Inquisition.

Ayuntamiento: corporation or body of magistrates in cities or towns; municipal government; replaced in nineteenth century by the term *cabildo* in referring to municipal officers.

Bacabs: Maya deities who supported the sky at four corners of the earth.

Baile: dance.

Bajo: low, swampy depressions; a source of water during the summer months in the Petén region of northern Guatemala.

Bak: four hundred

Baktun: Maya time period of 20 *katuns*, 400 *tuns*, or 144,000 days.

Ballgame: a definitive aspect of Mesoamerican civilization. Ball courts were called *tlachtli* by the Mexicans and *pok-ta-pok* by the Maya. They had an I-shaped playing area but varied in size and architecture. Classic-period ball courts generally consisted of raised viewing platforms along the sides, with lower walls sloping inward to the court. Markers were represented by both stone disks flush in the playing surface and *hachas* tenoned in the parallel facing walls, dividing the length of the court into three sections. In the Postclassic period the facing stones became more vertical, with a single stone ring embedded high and centrally in each wall; players scored by placing a rubber ball through the stone ring. Relief-sculptured ball-court panels at Chichén Itzá portray ballgame ceremonies involving human sacrifice.

Barranca: ravine or gorge.

Barrio: section or subdivision of a town.

Batab: civil and military head of a town; later a *cacique*.

Books of Chilam Balam: Post-conquest manuscripts prepared by Yucatec Maya in European scripts, relating traditions and myths, calendrical data, and medicinal recipes of pre-Hispanic origin. Of the eighteen such books extant, most informative are the *Chilam Balam* of Chumayel, Tizimín, Maní, Kaua, Ixil, and the Pérez Codex.

Cabildo: a town council or local government council.

Cacicazgo: at the time of the conquest, a territory controlled by a *cacique*.

Cacique: hereditary indigenous ruler; chief; political leader.

Calendar Round: an interval of 52 vague years computed by the permutation or intermeshing in cogwheel fashion of the 260-day ritual calendar (composed of 20 named days and 13 numbers) with the solar calendar of 365 days (18 months of 20 days each, followed by a final 5-day period).

Calpul: territorially defined sub-community; lineage or clan.

Cantón: region; district.

Carga: load; *carga de hombre*, about 50 pounds; *carga de mula*, about 200 pounds.

Cédula: royal decree or order; document containing such an order.

Cenote: a natural underground reservoir of water, such as occurs in the limestone of Yucatán, Mexico.

Chac mool: life-sized stone figure lying on its back with flexed legs, hands holding a flat receptacle on its stomach, and with head turned to one side. Although first discovered—and misnamed “Red Jaguar,” which is the meaning in Yucatec Maya—at Chichén Itzá, its origin can be traced to the Toltec capital of Tula, in the state of Hidalgo, central Mexico.

Chicleros: woodsmen engaged in the bleeding of the sap sapodilla trees for chicle, an important ingredient for the manufacture of chewing gum. Morley employed *chicleros* to report the locations of archaeological sites in the Petén region.

Chinampa: small garden patch between lagoons.

Chultun: cistern; jar-shaped chambers cut into the limestone bedrock.

Cienaga: a shallow salt-water swamp behind the dunes, which has wide areas of open water with islands of mangrove.

Coati: small raccoon-like arboreal animal of the tropical forest and coastal plains; also known as *pisote* or *tejón*.

Cofradia: religious brotherhood or sodality formed to honor an important patron saint.

Congregación: indigenous community forcibly established by the Crown.

Definitorio: governing council.

Departamento: Each political *departamento* in Guatemala is divided into *municipios*, each of which is typically homogeneous in language and culture and all of which differ from one another in varying degrees. The *municipios* are effective social segments, each tending to be specialized economically, having its own social and religious system, its own distinguishing costume, its own dialect; each has, in addition, a strong feeling of unity and a desire to be endogamous.

Divisas: emblems.

Doctrina: mission district administered by Dominicans or Franciscans; such districts supposedly later became parishes when secular clergy were available to administer them.

Eclipse syzygies: (a) either of two points in the orbit of a celestial body where the body is in opposition to or in conjunction with the sun; (b) either of two points in the orbit of the moon when the moon lies in a straight line with the sun and Earth; (c) the configuration of the sun, the moon, and Earth lying in a straight line.

Ejido: common public land, either of indigenous or Spanish jurisdiction.

Encomienda: grant of indigenous population by the Spanish Crown to an individual, who was entrusted with their Christianization and protection in return for tribute and, sometimes, labor.

Estatuas: wooden idols; statues.

Finca: in colonial times, any rural estate; since the nineteenth century, refers more specifically to cattle ranches or coffee plantations.

Fine Orange: pottery of fine-grained paste, little temper, from the western Maya lowlands, probably near Laguna de Términos, the lower Usumacinta and Grijalva rivers region.

Haab: Maya year of 360 days composed of 18 months of 20 days each. It was followed by a period of five unlucky days, called *Uayeb*, to arrive at a vague year of 365 days.

Hacienda: landed property; plantation devoted to grain production and ranching.

Hematite: an iron oxide used to make red pigment.

H-men: shaman-priest of Yucatec Maya.

Hotun: in Maya temporal reckoning, a quarter *katun*, or five years.

Incensarios: vessel in which resin incense is burned.

Initial Series: Maya calendrical count, so-called because it was the first series of glyphs after the "introducing glyph" inscribed on stela.

Justicia: justice.

Katun: a period of 20 years in the Maya calendar, or 7,200 days.

Kin: smallest unit of the Maya time count.

Ladino: a person not identified as either indigenous or a Spaniard, or an ethnic term for *castas* in late seventeenth and eighteenth centuries; a non-Spaniard seen as Hispanicized.

Laguna: lake.

Lahuntun: a half-*katun*, or a ten-year period in the Maya time count.

Legajo: bundle of papers.

Long Count: A calendrical system for measuring absolute time, devised in Mesoamerica during the Formative (Preclassic) period. The day forms the basic unit (*kin*), thereafter multiplying up into larger units progressing by 20s: *uinal* (20 days), *tun* (360 days), *katun* (7,200 days), and *baktun* (144,000 days). Dates are expressed as units in a five-place notation starting with the largest units. Thus 8.2.4.5.1 means 8 *baktunob*, 2 *katunob*, 4 *tunob*, 5 *uinalob*, and 1 *kin*. The Maya began their counting at a time equivalent to 3114 BC, perhaps marking some mythical event in Maya history. They inscribed their dates in the notation given above as hieroglyphs in which bars represented units of five and dots units of one. The long-count system was replaced after AD 900 by a short-count system in which the *katun* replaced the *baktun* as the largest unit.

Maestro: master, teacher, artisan.

Mangrove: any of several tropical evergreen trees or shrubs of the genus *Rhizophora*, having stiltlike roots and stems and forming dense thickets along tidal shores.

Mano: grinding stone.

Matriculá: register; census.

Mayordomo: superintendent; overseer; custodian; officer of a *cofradia*.

Mecate: surface measure of approximately 20 meters square.

Mestizo: Originally, a person of mixed Spanish and Indian blood in Latin America—the product of *mestizaje*, "racial mixing." The term is now sometimes used to refer more generally to racially mixed persons. Ladino is the common Central American equivalent.

Metate: stone platform upon which a *mano* is used for grinding.

Milpa: field; in Central America and Mexico: a small cultivated field, usually of corn.

Municipio: in highland Guatemala, a political unit more or less resembling a county, but at the same time an ethnic unit, the population of which is most comparable to a "tribe," with its own costume, culture, and identity. Each *municipio* has at least one "town," like a county seat. There are three types of *municipios*: One consists of a town, which may be simply an economic and religious center unpopulated except on certain occasions and surrounding country in which the people live on their scattered farms. A second type is like the first except that there are one or more smaller villages in addition to and dependent upon the town. In the third type, all or most of the people live permanently in the town and leave it when necessary, for short periods, to work the surrounding fields.

Nagualism: belief in the transformation of animal spirits.

New Empire: Obsolete designation applied to the Toltec-influenced Postclassic Period (ca. AD 900–1521) of the northern lowland Maya.

Old Empire: Obsolete designation for the lowland Maya Classic period (ca. AD 300–900); distinguished from New Empire, former name for the period of Toltec influence in Postclassic northern Yucatán.

Olla: Spanish term for a pottery jar with a flaring neck.

Ordenanzas: royal regulations, including those that were devised by visiting judges and members of the *audiencia*.

Padrón: census or tribute list; register of taxpayers.

Peristyle: a series of columns surrounding a building or enclosing a court.

Pipil: a term loosely applied to the language and culture of various Nahuatl-speaking groups whose influence penetrated southern Mesoamerica and Central America from the Mexican highlands.

Plumbate Ware: a pottery characterized by slips of high iron content fired at unusually high temperatures, resulting in a lustrous, glazelike finish, the only Mesoamerican semivitrified ware. Plumbate pottery was widely traded, from Mexico to El Salvador, and its manufacture ceased at the beginning of the Late Postclassic period.

Popolna: community house.

Probanza: evidence or proof.

Pueblo: legally recognized town chartered to elect its own council; village or small town.

Ramada: an open structure of pole and thatch.

Regidor: town councilman in colonial *cabildo*; magistrate.

Relación: relation; report; narration.

Residencia: impeachment.

Sacbé (pl.: *sacbéob*): causeway, or roads, connecting parts of sites, as well as entire sites. The longest *sacbé* known extends 100 km from Cobá to Yaxuná in the Yucatán peninsula.

Sascab: lime gravel.

Sastún: conjuring stone.

Spondylus: red spiny or rock oyster shell (*Spondylus* princes) found in Pacific coastal waters.

Stela: an upright stone slab or column typically bearing a commemorative inscription or relief design.

Supplementary Series: A series, usually of six glyphs, found on Classic-period Maya stela, inserted between the main body of the Initial Series and its final glyph stating the month of the date. This Supplementary Series of glyphs treated the age of the moon on the recorded date, length of this particular lunar month, and other lunar data.

Sweat Bath: a building (*temascalli* in Nahuatl) housing facilities for the steam bath (*temascal*), possibly connected ritually with the ballgame. The buildings usually had a fire area for heating stones over which water was poured to produce steam.

Talpetate: decomposed volcanic tuff.

Tecpan (Nahuatl): government house.

Teosinte: *Euchloenana mexicana*, the nearest known relative of maize; a Mexican fodder grass believed to be a parent plant of maize [*Zea mays* subsp. *Mexicana*].

Título: title, deed, certificate; title of nobility.

Tun: Unit equal to 365 solar days used in the Classic Maya long-count system.

Tzolkin: 260-day calendar.

Usulután Ware: A distinctive Late Preclassic-period pottery found from southern Mexico to northern Nicaragua, most popular in western El Salvador and at Copán, Honduras.

Villa: town enjoying certain privileges by charter; municipal charter.

Visita: tribunal for official inspection of a specified area, or of the work of Crown officials; conducted under the jurisdiction of a Crown-appointed inspector (*visitador*).

Yaxche: term for the ceiba tree (*Bombax pentandra*), sacred to the Maya.

Zoomorph: a representation in the shape or having attributes of an animals; term has been applied to the large, elaborately carved stone boulders found at the Classic-period Maya site of Quiriguá.

REFERENCES

- Andrade, Manuel J., and Hilaria Máas Collí. 1990–1991. *Cuentos mayas yucatecos; U tsikbalilo'ob mayab (uuchben tsikbalo'ob)*. Mérida: Ediciones de la Universidad Autónoma de Yucatán. 2 v.
- Andrews, E. Wyllys, IV. 1943. The archaeology of southwestern Campeche. Carnegie Institution of Washington, Contributions to American Anthropology and History 8(40):1–100.
- Andrews, E. Wyllys, IV. 1961. *Preliminary Report on the 1959–60 Field Season National Geographic Society–Tulane University Dzibilchaltún Program*. Tulane University, Middle American Research Institute, Miscellaneous Series, 11. New Orleans.
- Andrews, E. Wyllys, IV. 1975. *Archaeological Investigations on the Yucatán Peninsula*. Tulane University, Middle American Research Institute, Publication, 31. New Orleans.
- Andrews, E. Wyllys, IV, E. Wyllys Andrews V, and Jennifer S.H. Brown. 1980. *Excavations at Dzibilchaltún, Yucatán, Mexico*. Tulane University, Middle American Research Institute, Publication, 48. New Orleans.
- Arnold, Channing, and Frederick J.T. Frost. 1909. *The American Egypt: A Record of Travel, in Yucatan*. New York: Hutchinson.
- Bancroft, Hubert H. 1875–1876. *The Native Races of the Pacific States*. New York: n.p. 5 v.
- Barthel, Thomas S. 1979. Sir Eric Thompson (1898–1975). *Indiana* 5:323–327.
- Bastian, Adolf P.W. 1882. *Steinsculpturen aus Guatemala*. Berlin: Weidmannsche Buchhandlung.
- Becerra, Marcos E. 1937. Vocabulario de la lengua chol que se habla en el distrito de Palenque del estado de Chiapas, de la República mexicana. *Anales del Museo Nacional de Mexico* 2(5):249–278.
- Beltrán de Santa Rosa, Pedro. 1859. *Arte del idioma maya reducido a sucintas reglas, y semilexición yucateco, por el R.P.Fr. Pedro Beltrán de Santa Rosa Maria, ex-custodio, lector, que sue de filosofía y teológica, revisor del santo oficio, e hijo de este santa recolección franciscana de Mérida; formoló y dictolo, siendo maestro de lengua maya en el convento captiular de N.S.P.S. Francisco de dicha ciudad, año de 1742; y lo dedica a la glorioso, indiana Santa Rosa de Lima*. Mérida de Yucatan: Imprenta de J. D. Espinosa.

- Berlin, Heinrich. 1985. Tatiana Proskouriakoff (1909–1985). *Anales de la Sociedad de Geografía e Historia de Guatemala* 59:277–278.
- Bernal, Ignacio. 1951a. Robert H. Barlow (1918–1950). *Boletín Bibliográfico de Antropología Americana* 13(2):249–251.
- Bernal, Ignacio. 1980. *A History of Mexican Archaeology: The Vanished Civilizations of Middle America*. London: Thames and Hudson.
- Bishop, Ronald L. 1991. Anna O. Shepard: a correspondence portrait. In *Ceramic Legacy of Anna O. Shepard*, ed. Ronald L. Bishop and Frederick W. Lange, 42–87. Niwot: University Press of Colorado.
- Black, Stephen L. 1990a. Carnegie Uaxactún Project and the development of Maya archaeology. *Ancient Mesoamerica* 1(2):157–176.
- Black, Stephen L. 1990b. Field Methods and Methodologies in Lowland Maya Archaeology. Doctoral dissertation, Department of Anthropology, Harvard University. 428 leaves.
- Bleeker, Stephen. 1945. George Clapp Vaillant. *American Journal of Archaeology* 49:360–361.
- Bolles, John S. 1976. *Las Monjas: A Major Pre-Mexican Architectural Complex at Chichén Itzá*. Norman: University of Oklahoma Press.
- Bowditch, Charles P. 1901a. Memoranda on the Maya calendars used in the books of Chilam Balam. *American Anthropologist* 3:129–138.
- Bowditch, Charles P. 1901b. On the age of Maya ruins. *American Anthropologist* 3:697–700.
- Bowditch, Charles P. 1901c. Notes on the report of Teobert Maler. In *Researches in the Central Portion of the Usumatsintla Valley*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoir 2(1). Cambridge, MA.
- Bowditch, Charles P. 1903a. Notes on the report of Teobert Maler. In *Researches in the Central Portion of the Usumacintla Valley*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoir 2(2). Cambridge, MA.
- Bowditch, Charles P. 1903b. *A Suggestive Maya Inscription*. Cambridge, MA: Cambridge University Press.
- Bowditch, Charles P. 1904. *Mexican and Central American Antiquities, Calendar Systems, and History; Twenty-Four Papers by Eduard Seler, E. Förstemann, Paul Schellhas, Carl Sapper, and E. P. Dieseldorff; Translated from the German, Under Supervision of Charles P. Bowditch*. Bureau of American Ethnology, Bulletin 28. Washington, DC.
- Bowditch, Charles P. 1906. *The Temples of the Cross, of the Foliated Cross, and of the Sun at Palenque*. Cambridge, MA: Cambridge University Press.
- Bowditch, Charles P. 1909. Dates and numbers in the Dresden Codex. In *Putnam Anniversary Volume*, 271–301. New York: Torch Press.
- Bowditch, Charles P. 1910. *The Numeration, Calendar Systems, and Astronomical Knowledge of the Mayas*. Cambridge, MA: Cambridge University Press.
- Brainerd, George W. 1958. *The Archaeological Ceramics of Yucatan*. University of California, Anthropological Records, 19. Los Angeles.
- Breton, Adela. 1906. The wall paintings at Chichén Itzá. *Proceedings of the International Congress of Americanists* (15 session, Quebec), 165–169.
- Bricker, Victoria R., and Evon Z. Vogt. 1998. Alfonso Villa Rojas (1906–1998). *American Anthropologist* 100(4):994–998.
- Brinton, Daniel G. 1882a. *American Hero Myths: A Study in the Native Religions of the Western Continent*. Philadelphia: H. C. Watts.
- Brinton, Daniel G. 1882b. *The Maya Chronicles*. Brinton's Library of Aboriginal American Literature, 1. Philadelphia: D. G. Brinton.
- Brinton, Daniel G. 1882c. The graphic system and ancient records of the Mayas. In *U.S. Geographical and Geological Survey of the Rocky Mountain Region*, xvii–xxxvii. Contributions to American Ethnology 5(3). Washington, DC.
- Brinton, Daniel G. 1882d. The Books of Chilam Balam, the prophetic and historic records of the Mayas of Yucatan. *Pennsylvania Monthly* 13:261–275.
- Brinton, Daniel G. 1885. *The Annals of the Cakchiquels; The Original Text with a Translation, Notes and Introduction*. Brinton's Library of Aboriginal American Literature, 6. Philadelphia.
- Brinton, Daniel G. 1890. *Essays of an Americanist*. Philadelphia: Porter and Coates.
- Brinton, Daniel G. 1894. *A Primer of Mayan Hieroglyphics*. Publications of the University of Pennsylvania, Series in Philology, Literature, and Archaeology, 3(2). Philadelphia.
- Brunhouse, Robert L. 1971. *Sylvanus G. Morley and the World of the Ancient Maya*. Albuquerque: University of New Mexico Press.
- Brunhouse, Robert L. 1976. *Frans Blom: Maya Explorer*. Albuquerque: University of New Mexico Press.
- Burgh, Robert F. 1950. Comment on Taylor's "A Study of Archeology." *American Anthropologist* 52(1):114–117.
- Burgh, Robert F. 1957. Earl Halstead Morris, 1889–1956. *American Anthropologist* 59:521–523.
- Butler, Mary. 1940. A pottery sequence from the Alta Verapaz, Guatemala. In *The Maya and Their Neighbors*, ed. C. Hay, 250–267. New York: Appleton-Century.
- Cámara Barbachano, Fernando. 1966. *Persistencia y cambio cultural entre tzeltales de los altos de Chiapas: estudio comparativo de las instituciones religiosas y políticas de los Municipios de Tenejapa y Oxchuc*. México: Escuela Nacional de Antropología e Historia, Sociedad de Alumnos.
- Carnegie expedition to Yucatan. 1923. *El Palacio* 14:65–68.
- Carpenter, Arthur. 1950. The death of Lafleur: two letters from Morley. In *Morleyana*. 21–48. Santa Fe: School of American Research.
- Casares, David. 1905. A notice of Yucatan with some remarks on its water supply. *Proceedings of the American Antiquarian Society* 17:207–230. Worcester, MA.
- Casas, Bartolomé de las. 1909. *Apologética historia de las Indias*. Madrid: Bailly, Baillié e Hijos.
- Caso, Alfonso. 1946. George C. Vaillant. *Ethnos* 11:1–7.
- Caso, Alfonso. 1963. Alfred Vincent Kidder (1885–1963). *Revista Mexicana de Estudios Antropológicos* 19:123–126.

- Catherwood, Frederick. 1844. *Views of Ancient Monuments in Central America, Chiapas and Yucatan*. London: F. Catherwood.
- Chamberlain, Robert S. 1939. Spanish methods of conquest and colonization in Yucatán, 1527–1550. *Scientific Monthly* 49:227–244.
- Chamberlain, Robert S. 1948. The governorship of the adelantado Francisco de Montejo in Chiapas, 1539–1544. *Carnegie Institution of Washington, Contributions to American Anthropology and History* 9(46):163–207.
- Chamberlain, Robert S. 1951. *Pre-Conquest Tribute and Service System of the Maya as Preparation for the Spanish Repartimiento-Encomienda in Yucatán*. Coral Gables: University of Miami Press.
- Charnay, Desiré. 1886. Ma dernière expedition au Yucatan 1886; texte et dessins inédits. In *Le Tour du Monde: nouveau journal des voyages*, ed. Edouard Charton, Ferdinand de Lanoye, and Elisée Reclus, 298–304. Paris: Hachette.
- Charnay, Désiré. 1888. *The Ancient Cities of the New World: Being Voyages and Explorations in Mexico and Central America From 1857–1882*. New York: Harper.
- Churchill, William. 1911a. *Beach-la-Mar: The Jargon or Trade Speech of the Western Pacific*. Carnegie Institution of Washington, Publication 134. Washington, DC.
- Churchill, William. 1911b. *The Polynesian Wanderings: Tracks of the Migration Deduced From an Examination of the Proto-Samoan Content of Efaté and Other languages of Melanesia*. Carnegie Institution of Washington, Publication 154. Washington, DC.
- Churchill, William. 1912. *Easter Island: The Rapannui Speech and the Peopling of Southeast Polynesia*. Carnegie Institution of Washington, Publication 174. Washington, DC.
- Churchill, William. 1916. *Sissano: Movements of Migration Within and Through Melanesia*. Carnegie Institution of Washington, Publication 244. Washington, DC.
- Churchill, William. 1917. *Club Types of Nuclear Polynesia*. Carnegie Institution of Washington, Publication 255. Washington, DC.
- Coe, Michael D. 1992. *Breaking the Maya Code*. New York: Thames and Hudson.
- Coe, Michael E. 1993. *The Maya*, 5th ed. New York: Thames and Hudson.
- Concesión otorgada por el Gobierno Mexicano a la Carnegie Institution of Washington para explorations arqueologicas en Chichén Itzá, Yucatan, Mexico. 1925. Mexico: Secretaria de Educación Pública, Dirección Editorial.
- Conference of archaeological staff at Chichén Itzá. 1931. *Carnegie Institution of Washington, News Service Bulletin* 2:177.
- Corpus of Maya Hieroglyphic Inscriptions*. Cambridge, MA: Peabody Museum of Archaeology and Ethnology, Harvard University, 1975–.
- Count, Earl W. 1951. Morris Steggerda, 1900–1950. *American Journal of Physical Anthropology* 9:97–106.
- d'Aloja, Ada. 1939. *Sobre la variabilidad de algunos caracteres antropométricos observados en grupos de indígenas centroamericanos*. Instituto Panamericano de Geografía e Historia, Publicación 43. Mexico.
- Daniel, Glyn E. 1951. Review of *A Study of Archaeology* by Walter W. Taylor. *Man* 139:82–83.
- Deetz, James. 1988. History and archaeological theory: Walter Taylor revisited. *American Antiquity* 53(1):13–22.
- Dibble, Charles E. 1951. Robert Haywood Barlow, 1918–1951. *American Antiquity* 16:347.
- Dorsey, George A. 1904a. *The Mythology of the Wichita*. Carnegie Institution of Washington, Publication 21. Washington, DC.
- Dorsey, George A. 1904b. *Traditions of the Arikara*. Carnegie Institution of Washington, Publication 17. Washington, DC.
- Dorsey, George A. 1905. *Traditions of the Caddo*. Carnegie Institution of Washington, Publication 41. Washington, DC.
- Dorsey, George A. 1906. *The Pawnee: Mythology*. Carnegie Institution of Washington, Publication 59. Washington, DC.
- Eggan, Frederick R., and Horace M. Miner. 1959. Robert Redfield, 1897–1958. *American Journal of Sociology* 64:405.
- Eidheim, Harald. 1959. Robert Redfield (1898–1958). *Ethnos* 25(3–4):228–240.
- Finley, John P., and William Churchill. 1913. *The Subanu: Studies of a Sub-Visayan Mountain Folk of Mindanao*. Carnegie Institution of Washington, Publication 184. Washington, DC.
- Förstemann, Ernst W. 1880. *Erläuterungen zur Mayahandschrift der Königlichen Öffentlichen Bibliothek zu Dresden*. Dresden: Warnatz, Lehmann.
- Förstemann, Ernst W. 1906. *Commentary of the Maya Manuscript in the Royal Public Library of Dresden*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Papers 4(2):48–266. Cambridge, MA.
- Gann, Thomas W.F. 1897–1898. Mounds in northern Honduras. *Annual Report of the Bureau of American Ethnology* 19(2):661–692. Washington, DC.
- Gann, Thomas W.F. 1900. Mounds in northern Honduras. *Bureau of American Ethnology, Annual Report* 19:655–692. Washington, DC.
- Gann, Thomas W.F. 1918. *The Maya Indians of Southern Yucatan and Northern British Honduras*. Smithsonian Institution, Bureau of American Ethnology, Bulletin 64. Washington, DC.
- Gates, W. E. 1910. Commentary upon the Maya-Tzental Peres Codex, With a Concluding Note Upon the Linguistic Problem of the Maya Glyphs. *Papers of the Peabody Museum of American Archaeology and Ethnology* 6(1):5–64.
- Givens, Douglas R. 1989. The impact of A. V. Kidder on the Carnegie Institution of Washington and American archaeology. *Athenaeum Society Review* 5(1):5–11.
- Givens, Douglas R. 1992a. *Alfred Vincent Kidder and the Development of Americanist Archaeology*. Albuquerque: University of New Mexico Press.
- Givens, Douglas R. 1992b. Sylvanus G. Morley and the Carnegie Institution's program of Mayan research. In *Rediscovering Our Past: Essays on the History of*

- American Archaeology*, ed. Jonathan E. Reyman, 137–144. Aldershot, Eng.: Avebury.
- Givens, Douglas R. 1999. Alfred Vincent Kidder (1885–1963). In *Encyclopedia of Archaeology: The Great Archaeologists*, Ed. Tim Murray, 1:357–370. Santa Barbara, CA: ABC-CLIO.
- Goodman, J. T. 1897. The archaic Mays inscriptions. In A. P. Maudslay, *Biologia Centrali-Americana, Archaeology*, Part 18. London: Taylor and Francis, 1889–1902.
- Gordon, George B. 1896. *Prehistoric Ruins of Copán, Honduras. A Preliminary Report of the Explorations by the Museum, 1891–1895*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoir 1(1). Cambridge, MA.
- Gordon, George B. 1898a. *Prehistoric Caverns at Copán, Honduras: Report on Explorations by the Museum, 1896–1897*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoir 1(5). Cambridge, MA.
- Gordon, George B. 1898b. *Researches in the Uloa Valley, Honduras. Report on Explorations by the Museum, 1896–1897*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoir 1(4):1–44. Cambridge, MA.
- Gordon, George B. 1902. *The Hieroglyphic Stairway of Copán*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoir 1(6). Cambridge, MA.
- Graham, Ian. 1976. John Eric Sidney Thompson (1898–1975). *American Anthropologist* 78(2):317–320.
- Graham, Ian. 1990. Tatiana Proskouriakoff (1909–1985). *American Antiquity* 55(1):6–11.
- Graham, Ian. 2002. *Alfred Maudslay and the Maya: A Biography*. London: British Museum.
- Greengo, Robert E. 1968. Alfred Vincent Kidder (1885–1963). *American Anthropologist* 70(2):320–325.
- Greenleaf, Richard E. 1971. France V. Scholes: historian of New Spain. *Americas: Quarterly Review* 27(3):223–227.
- Griffin, James B., and Volney H. Jones. 1976. Carl Eugen Guthe, 1893–1974. *American Antiquity* 41(2):168–177.
- Guide to the Maudslay Collection of Maya Sculptures (Casts and Originals) from Central America*. 1923. London: Trustees of the British Museum, Department of Oriental Antiquities and of Ethnography.
- Guiteras Holmes, Calixta. 1961. Robert Redfield, 1897–1958. *Boletín bibliográfico de antropología americana* 21–22(1):223–225.
- Guiteras Holmes, Calixta. 1992. *Cancuc: etnografía de un pueblo tzeltal de los altos de Chiapas, 1944*. Tuxtla Gutiérrez: Gobierno del Estado de Chiapas, Consejo Estatal de Fomento a la Investigación y Difusión de la Cultura, DIF-CHIAPAS; Instituto Chiapaneco de Cultura.
- Guthe, Carl E. 1921. Report on Tayasal. *Carnegie Institution of Washington, Year Book* 20:364–368.
- Guthe, Carl E. 1922. Report on Tayasal. *Carnegie Institution of Washington, Year Book* 21:318–319.
- Guthe, Carl E. 1952. Twenty-five years of archeology in the eastern United States. In *Archeology of Eastern United States*, ed. James B. Griffin, 1–12. Chicago: University of Chicago Press.
- Guthe, Carl E. 1963a. Alfred Vincent Kidder, 1885–1963. *Teocentli* 67:1–2.
- Guthe, Carl E. 1963b. Frans Blom, 1893–1963. *Teocentli* 67:2–3.
- Hammond, Norman. 1977. Sir Eric Thompson, 1898–1975: a biographical sketch and bibliography. In *Social Process in Maya Prehistory*, ed. Norman Hammond, 1–17. London: Academic Press.
- Hammond, Norman. 1978. Sir Eric Thompson: bibliographical addenda. *American Antiquity* 43(1):103.
- Hammond, Norman. 1983. Lords of the jungle: a prosopography of Maya archaeology. In *Civilization in the Ancient Americas: Essays in Honor of Gordon R. Willey*, ed. Richard M. Leventhal and Alan L. Kolata, 1–32. Albuquerque: University of New Mexico Press; Peabody Museum of Archaeology and Ethnology, Harvard University.
- Hansen, Asael T. 1976. Robert Redfield, the Yucatan Project, and I. *Proceedings of the American Ethnological Society* 1974:167–186. Seattle.
- Hansen, Asael T., and Juan Ramón Bastarrachea Manzano. 1984. *Mérida, su transformación de capital colonial a naciente metrópoli en 1935*. México: Instituto Nacional de Antropología e Historia; SEP Cultura.
- Harcourt, Raoul d'. 1951. Robert H. Barlow (1918–1950). *Journal des Société des Americanistes* 40:245.
- Harcourt, Raoul d'. 1951. Robert H. Barlow (1918–1950). *Journal des Société des Americanistes* 40:245.
- Harris, Charles H., and Louis R. Sadler. 2003. *The Archaeologist Was a Spy: Sylvanus G. Morley and the Office of Naval Intelligence*. Albuquerque: University of New Mexico Press.
- Harrison, Margaret W. 1948. Lila Morris O'Neale: 1886–1948. *American Anthropologist* 50(1):657–665.
- Harrison, Margaret W. 1950. Writings of Sylvanus Griswold Morley. In *Morleyana*, 72–84. Santa Fé, NM: School of American Research and Museum of New Mexico.
- Harrison, Margaret W. 1978. Bibliography of Robert Wauchope. *Human Mosaic* 12:7–10.
- Herrera, Antonio de. 1726–1730. *Historia general de los hechos de los castellanos en las islas i tierra del mar oceano*. 5 v. Madrid: En la Imprenta real de Nicolas Rodriguez Franco.
- Hester, Joseph A. 1954. Natural and Cultural Bases of Ancient Maya Subsistence Economy. Doctoral dissertation, Department of Anthropology, University of California, Los Angeles.
- Hewett, Edgar L. 1911a. Two seasons' work in Guatemala. *Bulletin of the Archaeological Institute of America* 2:117–134.
- Hewett, Edgar L. 1911b. The third seasons' work in Guatemala. *Bulletin of the Archaeological Institute of America* 3:163–171.
- Hewett, Edgar L. 1912. Excavation of Quirigua, Guatemala, by the School of American Archaeology. *Proceedings of the International Congress of Americanists* (18 session, London, 1912). v. 2, pp. 241–248. London.
- Hewett, Edgar L. 1916. Latest work of the School of American Archaeology at Quirigua. In *Holmes*

- Anniversary Volume: Anthropological Papers Presented to William Henry Holmes in Honor of His Seventieth Birthday, December 1, 1916*, ed. F. W. Hodge, 157–162. Washington, DC: J. W. Bryan Press.
- Hojjer, Harry, and Ralph L. Beals. 1956. George Walton Brainerd, 1909–1956. *American Anthropologist* 58:908–912.
- Holmes, William H. 1895–1897. *Archaeological Studies Among the Ancient Cities of Mexico*. Field Columbian Museum, Anthropological Series, 1(1). Chicago.
- Homenaje a la arqueóloga Tatiana Proskouriakoff (17 de abril de 1986). 1986. *Anales de la Sociedad de Geografía e Historia de Guatemala* 60:290–291.
- Houston, Stephen, Oswaldo Chinchilla Mazariegos, and David Stuart, eds. 2001. *The Decipherment of Ancient Maya Writing*. Norman: University of Oklahoma Press.
- Howe, George P. 1911. The ruins of Tulum. *American Anthropologist* 13:539–550.
- Ivens, Walter G. 1918. *Dictionary and Grammar of the Languages of Sa'a and Ulawa, Solomon Islands*. Carnegie Institution of Washington, Publication 253. Washington, DC.
- Ivens, Walter G. 1921. *Grammar and Vocabulary of the Lau language, Solomon Islands*. Carnegie Institution of Washington, Publication 300. Washington, DC.
- Jenks, Albert E. 1905. *The Bontoc Igorot*. Philippine Islands Ethnological Survey, Publication, 1. Manila: Bureau of Public Printing.
- Jochelson, Waldemar. 1925. *Archaeological Investigations in the Aleutian Islands*. Carnegie Institution of Washington, Publication 367. Washington, DC.
- Jochelson, Waldemar. 1928. *Archaeological Investigations in Kamchatka*. Carnegie Institution of Washington, Publication 388. Washington, DC.
- Jones, Morris R. 1952. Map of the ruins of Mayapan, Yucatan, Mexico. *Carnegie Institution of Washington, Current Reports* 1(1):2–6.
- Judd, Neil M. 1965. Alfred Vincent Kidder, a tribute. *American Antiquity* 31(2):272.
- Julig, Patrick, and William Hurley. 1988a. William Nathaniel Irving (1927–1987). *Arctic* 41(4):332–333.
- Julig, Patrick, and William Hurley. 1988b. William Nathaniel Irving (1927–1987). *Canadian Journal of Archaeology* 12:210–217.
- Kidder, Alfred V. 1924. *An Introduction to the Study of Southwestern Archaeology*. New Haven: Yale University Press.
- Kidder, Alfred V. 1930a. Conference at Chichén Itzá. *Science* 71:391–392.
- Kidder, Alfred V. 1930b. Division of Historical Research. *Carnegie Institution of Washington, Year Book* 29:91–119.
- Kidder, Alfred V. 1931. Division of Historical Research. *Carnegie Institution of Washington, Year Book* 30:101–104.
- Kidder, Alfred V. 1935. Division of Historical Research. *Carnegie Institution of Washington, Year Book* 34:113–115.
- Kidder, Alfred V. 1936. Division of Historical Research. *Carnegie Institution of Washington, Year Book* 35:111–115.
- Kidder, Alfred V. 1937. *A Program for Maya Research*. Carnegie Institution of Washington, Special Publication 28. Washington, DC.
- Kidder, Alfred V. 1945. George Clapp Vaillant, 1901–1945. *American Anthropologist* 47:589–602.
- Kidder, Alfred V. 1948. Sylvanus Griswold Morley, 1883–1948. *El Palacio* 55:267–274.
- Kidder, Alfred V. 1950. Sylvanus Griswold Morley, 1883–1948. In *Morleyana*, 93–102. Santa Fé, NM: School of American Research and Museum of New Mexico.
- Kidder, Alfred V. 1957. Earl Halstead Morris, 1889–1956. *American Antiquity* 22:392–397.
- Kidder, Alfred V. 1959. The diary of Sylvanus G. Morley. *Proceedings of the American Philosophical Society* 103(6):778–782.
- Kidder, Alfred V., Jesse D. Jennings, and Edwin M. Shook. 1977. *Excavations at Kaminaljuyú, Guatemala*. University Park: Pennsylvania State University Press.
- Kilmartin, J. O. 1923. Report on the topographic survey of Lake Petén. *Carnegie Institution of Washington, Year Book* 22:272–273.
- Kilmartin, J. O. 1924. Report on the survey and base-map at Chichén Itzá, Mexico. *Carnegie Institution of Washington, Year Book* 23:213–217.
- King, Arden R. 1978. First encounters. *Human Mosaic* 12:35–37.
- Kingsborough, Edward King. 1830–1848. *Antiquities of Mexico: Comprising Fac-Similes of Ancient Mexican Paintings and Hieroglyphics, Preserved in the Royal Libraries of Paris, Berlin and Dresden, in the Imperial Library of Vienna, in the Vatican Library; in the Borgian Museum at Rome; in the Library of the Institute at Bologna; and in the Bodleian Library at Oxford; Together with the Monuments of New Spain, by M. Dupaix, With their Respective Scales of Measurement and Accompanying Descriptions; The Whole Illustrated by Many Valuable Unedited Manuscripts, by Augustine Aglio*. 9 v. London: A. Aglio.
- Gluckhohn, Clyde. 1940. The conceptual structure in Middle American studies. In *The Maya and Their Neighbors*, 41–51. New York: D. Appleton-Century.
- La Farge, Oliver. 1947. *Santa Eulalia: The Religion of a Cuchumatán Indian Town*. Chicago: University of Chicago Press.
- Lambert, Marjorie F.T. 1961. Karl Ruppert, 1895–1960. *American Antiquity* 27(1):101–103.
- Landa, Diego de. 1864. *Relation des Choses de Yucatan: texte espagnol et traduction française en regard, comprenant les signes du calendrier et de l'alphabet hiéroglyphique de la langue maya*. Paris: A. Durand.
- Larsen, E. S. 1951. Memorial to Kirk Bryan. *Proceedings of the Geological Society of America, Annual Report*, 91–96.
- Lehmann, Walter. 1909. *Methods and Results in Mexican Research*, trans. Seymour de Ricci. Paris: H. Clarke.
- Leifer, Tore, Jesper Nielsen, and Toke Sellner Reunert. 2002. *Det urolige blod: Biografi om Frans Blom*. Copenhagen: Høst & Søn's Forlag.
- León Orozco, Javier V de. 1979. Addenda bibliográfica de John Eric Sidney Thompson. *Estudios de Cultura Maya* 12:289–295.

- Leslie, Charles M. 1976. The hedgehog and the fox in Robert Redfield's work and career. *Proceedings of the American Ethnological Society*, 146–166. Seattle.
- Lester, Robert M. 1941. *Forty Years of Giving: A Summary of the Benefactions of Andrew Carnegie and the Work of the Philanthropic Trusts Which He Created*. New York: Charles Scribner's.
- Lipscomb, Barney. 1995. Cyrus Longworth Lundell, 1907–1993. *Herbal Gram* 34:67.
- Longacre, William A. 1976. Paul Sidney Martin (1899–1974). *American Anthropologist* 78(1):90–92.
- Lothrop, Eleanor. 1948. *Throw Me a Bone: What Happens When You Marry an Archaeologist*. New York: McGraw-Hill.
- Lothrop, Samuel K. 1953. Oliver Garrison Ricketson, Jr., 1894–1952. *American Antiquity* 19:69–72.
- Lothrop, Samuel K. 1961. Archaeology, then and now. In *Essays in Pre-Columbian Art and Archaeology*, 1–13. Cambridge, MA: Harvard University Press.
- Loubat Prize won by Dr. S. G. Morley. *New York Times*, April 20, 1943.
- Love, Michael. 2002. In memoriam: Edwin M. Shook, 1911–2000. *Ancient Mesoamerica* 13(1):1–2.
- Love, Michael, Marion Popenoe de Hatch, and Héctor L. Escobedo, eds. 2002. *Incidents of Archaeology in Central America and Yucatán: Essays in Honor of Edwin M. Shook*. Lanham, MD: University Press of America.
- Luján Muñoz, Luis. 1964. Frans Blom. (1893–1963). *Anales de la Sociedad de Geografía e Historia de Guatemala* 37(1–4):275–279.
- Lumholtz, Carl. 1902. *Unknown Mexico; A Record of Five Years' Exploration Among the Tribes of the Western Sierra Madre; In the Tierra Caliente of Tepic and Jalisco; and Among the Tarascos of Michoacan*. New York: Charles Scribner's Sons.
- Maler, Teobert. 1901. *Researches in the Central Portion of the Usumatsintla Valley*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoir 2(1):9–75. Cambridge, MA.
- Maler, Teobert. 1903. *Researches in the Central Portion of the Usumacintla Valley*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoir 2(2). Cambridge, MA.
- Maler, Teobert. 1908. *Explorations in the Department of Petén, Guatemala, and Adjacent Region*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoir 4(2). Cambridge, MA.
- Maler, Teobert. 1910. *Explorations in the Department of Petén, Guatemala, and Adjacent Regions*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoir 4(3):131–170. Cambridge, MA.
- Maler, Teobert. 1911. *Explorations in the Department of Petén, Guatemala: Tikal*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoir 5(1):3–91. Cambridge, MA.
- Martínez Hernandez, Juan. 1910. *Las grandes ciclos de la historia maya según el Manuscrito de Chumayel*. Mérida: Imprenta de Luis Rosado Vega.
- Martínez Hernandez, Juan. 1912. *La creación del mundo, según los mayas; paginas ineditas del M.S. de Chumayel*. Mérida: Imprenta de Luis Rosado Vega.
- Maudslay, Alfred P. 1889–1902. *Biología Centrali Americana, or Contributions to the Knowledge of the Flora and Fauna of Mexico and Central America*. Archaeology. 5 v. London: R. H. Porter.
- Maudslay, Ann C., and A. P. Maudslay. 1899. *A Glimpse of Guatemala and Some Notes on the Ancient Monuments of Central America*. London: John Murray.
- Maya conference at Chichén Itzá. 1932. *El Palacio* 32:169–170.
- McQuown, Norman A. 1949. The Mayan linguistic research program. *Boletín Bibliografico de Antropología Americana* 12(1):168–169.
- McQuown, Norman A. 1951. Robert H. Barlow, 1918–1951. *American Anthropologist* 53:543.
- Means, Philip A. 1917. *History of the Spanish Conquest of Yucatan and of the Itzas*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Papers 7. Cambridge, MA.
- Memoriam Sol Tax (1907–95). 1995. *Current Anthropology* 36(2):155.
- Mendelson, E. Michael. 1981. Robert Redfield. In *Totems and Teachers*, ed. Sydel Silverman, 255–286. New York: Columbia University Press.
- Merwin, Raymond E., and George C. Vaillant. 1932. *Ruins of Holmul, Guatemala*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoir 3(2). Cambridge, MA.
- Miner, Horace M. 1959. Robert Redfield 1897–1958. *American Journal of Sociology* 64:405.
- Monjaras-Ruiz, Jesús, and Elena Limon. 1996. Robert Hayward Barlow (18.5.1918–1.1.1951). *Arqueología mexicana* 3(18):67–68.
- Morley, Sylvanus G. 1909. The inscriptions at Naranjo, northern Guatemala. *American Anthropologist* 9:543–562.
- Morley, Sylvanus G. 1910a. A group of related structures at Uxmal, Mexico. *American Journal of Archaeology* 14:1–18.
- Morley, Sylvanus G. 1910b. Correlation of Maya and Christian chronology. *American Journal of Archaeology* 14:193–204.
- Morley, Sylvanus G. 1911a. Ancient cities and temples of the New World, Chichén Itzá. *Bulletin of the Pan-American Union* 32(3):453–468.
- Morley, Sylvanus G. 1911b. Ancient temples and cities of the New World, Uxmal, the City of the Xius. *Bulletin of the Pan American Union* 32(4):627–642.
- Morley, Sylvanus G. 1911c. Ancient temples and cities of the New World: Copán, the Mother City of the Mayas. *Bulletin of the Pan-American Union* 32(5):863–879.
- Morley, Sylvanus G. 1912. Quiriguá: an American town 1,400 years old. *Scientific American* 107:96–97, 105.
- Morley, Sylvanus G. 1913. Excavations at Quiriguá, Guatemala. *National Geographic* 24(3):339–361.
- Morley, Sylvanus G. 1915. *An Introduction to the Study of the Maya Hieroglyphics*. Bureau of American Ethnology, Bulletin 57. Washington, DC.

- Morley, Sylvanus G. 1918. The Guatemalan earthquake. *American Museum Journal* 18(3):200–210.
- Morley, Sylvanus G. 1920. *The Inscriptions at Copán*. Carnegie Institution of Washington, Publication 219. Washington, DC.
- Morley, Sylvanus G. 1935. *Guide Book to the Ruins of Quiriguá*. Carnegie Institution of Washington, Supplementary Publication 16. Washington, DC.
- Morley, Sylvanus G. 1936. *Guía de las ruinas de Quiriguá*. Washington, DC: Carnegie Institution of Washington.
- Morley, Sylvanus G. 1937–1938. *The Inscriptions of the Petén*. Carnegie Institution of Washington, Publication 437. 5 v.
- Morley, Sylvanus G. 1943. Archaeological investigations of the Carnegie Institution of Washington in the Maya area of Middle America, during the past twenty-eight years. *Proceedings of the American Philosophical Society* 86:205–219.
- Morley, Sylvanus G. 1946. *The Ancient Maya*. Stanford, CA: Stanford University Press.
- Morley, Sylvanus G. 1947. *The Ancient Maya*, 2nd ed. Stanford: Stanford University Press.
- Morley, Sylvanus G. 1948. *Check List of the Corpus Inscriptionum Mayarum and Check List of All Known Initial and Supplementary Series*. Washington, DC: Carnegie Institution of Washington.
- Morley, Sylvanus G. 1975. *Introduction to the Study of the Mayan Hieroglyphs*. New York: Dover.
- Morley, Sylvanus G. 2001. *Introduction to the Study of the Mayan Hieroglyphs*. Pahrump, NV: Library of New Atlantis.
- Morley, Sylvanus G., and George W. Brainerd. 1956. *The Ancient Maya*, 3rd ed. Stanford: Stanford University Press.
- Morley, Sylvanus G., George W. Brainerd, and Robert J. Sharer. 1983. *The Ancient Maya*, 4th ed. Stanford: Stanford University Press.
- Morris, Ann A. 1931. *Digging in Yucatan*. Garden City: Doubleday, Doran.
- Morris, Earl H. 1931. *Temple of the Warriors: The Adventure of Exploring and Restoring a Masterpiece of Native American Architecture in the Ruined Maya City of Chichen Itzá, Yucatan*. New York: Charles Scribner's Sons.
- Morris, Earl W., Jean Charlot, and Ann A. Morris. 1931. *Temple of the Warriors at Chichén Itzá, Yucatan*. Carnegie Institution of Washington, Publication 406. Washington, DC. 2 v.
- Morris, Elizabeth A. 1974. Anna O. Shepard, 1903–1973. *American Antiquity* 39(3):448–451.
- Müller, W. Max. 1906–1920. *Egyptological Researches*. 3 v. Carnegie Institution of Washington, Publication 53. Washington, DC.
- O'Neale, Lila M. 1965. *Tejidos de los Altiplanos de Guatemala*. Seminario de Integración Social Guatemalteca, Publicación 18. Guatemala.
- Piña Chan, Román. 1977. Recordando a J. Eric S. Thompson (1898–1975). *Antropología e historia de Guatemala* 1:253–257.
- Pohorilenko, Anatole. 1978. Dr. Wauchope: a personal account Codex Wauchope: a tribute roll. *Human Mosaic* 12:81–82.
- Pollock, Harry E.D. 1958. Closing of the Department of Archaeology, Carnegie Institution of Washington. *Man* 58:94.
- Pollock, Harry E.D. 1980. *The Puuc: An Architectural Survey of the Hill Country of Yucatan and Northern Campeche, Mexico*. Peabody Museum of Archaeology and Ethnology, Harvard University, Memoir, 19. Cambridge, MA.
- Pollock, Harry E.D. 1982. *Anthropology Newsletter* 83(5):3.
- Ponce, Alonso. 1932. Fray Alonso Ponce in Yucatan, 1588; translated and annotated by Ernest Noyes. In *Middle American Papers*, 297–372. Department of Middle American Research, Tulane University, Publication, 4. New Orleans.
- Popenoe de Hatch, Marion. 2000. Edwin M. Shook: noted archaeologist and dear friend. *PARI Journal: Quarterly Publication of the Pre-Columbian Art Research Institute* 1(1):23–24.
- Popol Vuh. 1950. *Popol Vuh: The Sacred Book of the Ancient Quiché Maya*, ed. Adrian Recinos, Delia Goetz, and Sylvanus G. Morley. Norman: University of Oklahoma Press.
- Proskouriakoff, Tatiana. 1946. *An Album of Maya Architecture*. Carnegie Institution of Washington, Publication 558. Washington, DC.
- Proskouriakoff, Tatiana. 1950. *A Study of Classic Maya Sculpture*. Carnegie Institution of Washington, Publication 593. Washington, DC.
- Proskouriakoff, Tatiana. 1963. *An Album of Maya Architecture*. Norman: University of Oklahoma Press.
- Pumpelly, Rafael. 1905. *Explorations in Turkestan; With an Account of the Basin of Eastern Persia and Sistan; Expedition of 1903*. Carnegie Institution of Washington, Publication 26. Washington, DC.
- Pumpelly, Rafael. 1908. *Explorations in Turkestan; Expedition of 1904; Prehistoric Civilizations of Anau: Origins, Growth, and Influence of Environment*. Carnegie Institution of Washington, Publication 73. Washington, DC.
- Rands, Robert L. 1991. Intellectual development of Mesoamerican archaeology and an assessment of Shepard's influence. In *Ceramic Legacy of Anna O. Shepard*, ed. Ronald L. Bishop and Frederick W. Lange, 154–173. Niwot: University Press of Colorado.
- Recinos, Adrián. 1948. El doctor Sylvanus G. Morley. *Anales de la Sociedad de Geografía e Historia de Guatemala* 23:239–240.
- Redfield, Margaret P. 1935. The folk literature of a Yucatecan town. *Carnegie Institution of Washington, Contributions to American Archaeology* 3(13):1–50.
- Redfield, Robert. 1941. *The Folk Culture of Yucatan*. Chicago: University of Chicago Press.
- Redfield, Robert. 1950. *A Village That Chose Progress; Chan Kom Revisited*. Chicago: University of Chicago Press.
- Redfield, Robert, and Margaret P. Redfield. 1940. Disease and its treatment in Dzitas, Yucatan. *Carnegie*

- Institution of Washington, Contributions to American Anthropology and History* 6(32):49–82.
- Redfield, Robert, and Alfonso Villa Rojas. 1934. *Chan Kom: A Maya Village*. Carnegie Institution of Washington, Publication 448. Washington, DC.
- Redfield, Robert, and Alfonso Villa Rojas. 1962. *Chan Kom: A Maya Village*, rev. ed. Chicago: University of Chicago Press.
- Relación de la ciudad de Valladolid. 1900. In *Colección de documentos ineditos relativos al descubrimiento conquista y organización de las antiguas posesiones Españolas de Ultramar*, 13:3–40. Madrid: Est. Tip. Sucesores de Rivadeneyra.
- Reports. 1913. *Reports Upon The Present Condition and Future Needs of the Science of Anthropology; Presented by W. H. R. Rivers, A. E. Jenks, and S. G. Morley; at the Request of the Carnegie Institution of Washington*. Carnegie Institution of Washington, Publication 200. Washington, DC.
- Reyman, Jonathan E. 1999. Walter W. Taylor (1913–1997). In *Encyclopedia of Archaeology: The Great Archaeologists*, ed. Tim Murray, 2:681–700. Santa Barbara, CA: ABC-CLIO.
- Rhoads, Dorothy. 1955. Frances Rhoads Morley, 1898–1955. *El Palacio* 62:120–122.
- Ricketson, Oliver G. 1929. Report on the Excavations at Uaxactún. *Carnegie Institution of Washington, Year Book* 28:316–322.
- Ricketson, Oliver G. 1936. *La Institución Carnegie de Washington en Guatemala*. Guatemala: Union Tipográfica.
- Ricketson, Oliver G. 1937. *Uaxactún, Guatemala: Group E, 1926–1931*. Carnegie Institution of Washington, Publication 477. Washington, DC.
- Riese, Berthold. 1988. Heinrich Berlin [Neubart] (1915–1988). *Journal de la Société des Americanistes* 74:213–223.
- Riese, Berthold. 1989. A la memoria de Heinrich Berlin. *Antropología* 27:2–6.
- Rio, Antonio del. 1822. *Description of the Ruins of an Ancient City, Uncovered Near Palenque, In the Kingdom of Guatemala in Central America*. London: H. Berthoud.
- Rivera, Miguel. 1987. Tatiana Proskouriakoff (1909–1985). *Revista Española de Antropología Americana* 17:306–307.
- Robertson, William. 1777. *The History of America*. 2 v. London: W. Strahan.
- Rosaire, Charles. 1956. George Walton Brainerd. 1909–1956. *Masterkey* 30:72–75.
- Rosas, Mauricio. 1988. Tatiana Proskouriakoff (1909–1985). *Estudios de cultura maya* 17:473–474.
- Rosny, León de. 1876. Essai sur le déchiffrement de l'écriture hiératique maya. *Archives de la Société Américaine de France* 2:5–108, 129–279.
- Rouse, Irving. 1953. The strategy of culture history. In *Anthropology Today*, ed. Alfred L. Kroeber, 57–76. Chicago: University of Chicago Press.
- Roys, Ralph L. 1939. *The Titles of Ebtún*. Carnegie Institution of Washington, Publication 505. Washington, DC.
- Roys, Ralph L. 1940. Personal names of the Maya of Yucatan. *Carnegie Institution of Washington, Contributions to American Anthropology and History* 6(31):31–48.
- Roys, Ralph L. 1943. *The Indian Background of Colonial Yucatan*. Carnegie Institution of Washington, Publication 548. Washington, DC.
- Roys, Ralph L. 1949a. Guide to the Codex Pérez. *Carnegie Institution of Washington, Contributions to American Archaeology* 10(49):87–106.
- Roys, Ralph L. 1949b. The Prophecies for the Maya tun or years in the Books of Chilam Balam of Tizimin and Mani. *Carnegie Institution of Washington, Contributions to American Archaeology* 10(51):153–186.
- Roys, Ralph L. 1957. *The Political Geography of the Yucatan Maya*. Carnegie Institution of Washington, Publication 613. Washington, DC.
- Roys, Ralph L. 1965. *Ritual of the Bacabs: A Book of Maya Incantations*. Norman: University of Oklahoma Press.
- Roys, Ralph L. 1972. *The Indian Background of Colonial Yucatan*. Norman: University of Oklahoma Press.
- Roys, Ralph L. 1973. *Book of Chilam Balam of Chumayel*. Norman: University of Oklahoma Press.
- Roys, Ralph L., and Margaret W. Harrison. 1949. Sylvanus Griswold Morley, 1883–1948. *American Antiquity* 14:215–221.
- Roys, Ralph L., France V. Scholes, and Eleanor B. Adams. 1940. Report and census of the Indians of Cozumel, 1570. *Carnegie Institution of Washington, Contributions to American Anthropology and History* 6(30):1–30.
- Rubinstein, Robert A., ed. 1991. *Fieldwork: The Correspondence of Robert Redfield and Sol Tax*. Boulder, CO: Westview Press.
- Rubinstein, Robert A., ed. 2002. *Fieldwork: The Correspondence of Robert Redfield and Sol Tax*, 2nd ed. New Brunswick, NJ: Transaction Publishers.
- Ruppert, Karl, J. Eric S. Thompson, and Tatiana Proskouriakoff. 1955. *Bonampak, Chiapas, Mexico*. Carnegie Institution of Washington, Publication 602.
- Ruz Lhuillier, Alberto. 1948. *The Ancient Maya*, de Silvanus G. Morley. *Acta Americana* 6:78–88.
- Ruz Lhuillier, Alberto. 1950. The likeness of Sylvanus Griswold Morley. In *Morleyana*, 106–116. Santa Fé, NM: School of American Research and the Museum of New Mexico.
- Ruz Lhuillier, Alberto. 1963. Alfred Vincent Kidder (1885–1963). *Estudios de Cultura Maya* 3:295–306.
- Ruz Lhuillier, Alberto. 1973. Edward Wyllys Andrews IV (1916–1971). *Estudios de Cultura Maya* 9:371–379.
- Ruz Lhuillier, Alberto. 1976–1977. Semblanza de John Eric Sidney Thompson (1898–1975). *Estudios de Cultura Maya* 10:317–335.
- Sabloff, Jeremy A. 1990. *The New Archaeology and the Ancient Maya*. New York: Scientific American Library; W. H. Freeman.
- Sabloff, Jeremy A. 1991. Turning points: Maya archaeology comes of age. *Natural History* 100(1):6–13.
- Samayoa Chinchilla, Carlos. 1965. Evocación del ilustre arqueólogo Alfredo V. Kidder. *Anales de la Sociedad de Geografía e Historia de Guatemala* 36:501–504.

- Sapper, Karl T. 1895. Altindianische Ansiedlungen in Guatemala und Chiapas. *Veröffentlichungen aus dem Königlichen Museum für Völkerkunde* 4:13–20.
- Satterthwaite, Linton. 1975. Sir Eric Thompson (J. Eric S. Thompson): 1893–1975. *Teocentli* 79:1.
- Satterthwaite, Linton, J. Alden Mason, and Mary Butler. 2004. *Piedras Negras Archaeology, 1931–1939*, ed. John M. Weeks, Jane A. Hill, and Charles W. Golden. Philadelphia: University of Pennsylvania Museum of Archaeology and Anthropology.
- Saville, Marshall H. 1892. Explorations on the main structure of Copán, Honduras. *Proceedings of the American Association for the Advancement of Science* 41:271–275.
- Saville, Marshall H. 1921. Reports on the Maya Indians of Yucatan, by Santiago Mendez, Antonio García y Cubas, Pedro Sánchez de Aguilar, and Francisco Herández. *Museum of the American Indian/Heye Foundation, Indian Notes and Monographs* 9:133–326.
- Schellhas, Paul. 1904. *Representation of Deities of the Maya Manuscripts*, rev. ed. Trans. Miss Selma Wesselhöft and Miss A. M. Parker. Peabody Museum of American Archaeology and Ethnology, Papers 4(1):7–47. Cambridge, MA.
- Schevill, Margot B. 1986. Lila Morris O'Neale. *Papers of the Kroeber Anthropological Society* 65–66:129–137.
- Schevill, Margot B. 1988. Lila Morris O'Neale. In *Women Anthropologists: A Biographical Dictionary*, ed. Ute Gacs, Aisha Khan, Jerrie McIntyre, and Ruth Weinberg, 275–81. Westport, CT: Greenwood Press.
- Scholes, France V., and Eleanor B. Adams, eds. 1938. *Don Diego Quijada, alcalde mayor de Yucatán, 1561–1565*. Biblioteca histórica mexicana de obras inéditas, 14–15. 2 v. México: Antigua librería Robredo, de J. Porrúa e hijos.
- Scholes, France V., and Carlos R. Menéndez. 1936–1938. *Documentos para la historia de Yucatán*. 3 v. Mérida: Compañía Tipográfica Yucateca.
- Scholes, France V., and Ralph L. Roys. 1948. *The Maya Chontal Indians of Acalan-Tixchel: A Contribution to the History and Ethnography of the Yucatan Peninsula*. Carnegie Institution of Washington, Publication 560. Washington, DC.
- Scholes, France V., and Ralph L. Roys. 1966. *Los chontales de Acalan-Tixchel*. México: Centro de Estudios Mayas, Instituto de Investigaciones Filológicas, Universidad Nacional Autónoma de México; Centro de Investigaciones y Estudios Superiores en Antropología Social.
- Scholes, France V., and Ralph L. Roys. 1968. *The Maya Chontal Indians of Acalan-Tixchel: A Contribution to the History and Ethnography of the Yucatan Peninsula*, 2nd ed. Norman: University of Oklahoma Press.
- Seler, Eduard. 1901. *Die alten Ansiedlungen von Chaculá im Distrikte Nentón des Departements Huehuetenango der Republik Guatemala*. Berlin: Dietrich Reimer.
- Seler, Eduard. 1908. Ruinen von Chich'en Itzá in Yucatan. *Proceedings of the International Congress of Americanists* (16 session, Vienna), 151–239.
- Seler, Eduard. 2003. *The Ancient Settlements of Chacula in the Nentón District of the Department of Huehuetenango, Republic of Guatemala*, ed. John M. Weeks. Lancaster, CA: Labyrinthos.
- Sharer, Robert J. 1994. *The Ancient Maya*. Stanford: Stanford University Press.
- Shattuck, George C. 1933. *The Peninsula of Yucatan: Medical, Biological, Meteorological, and Sociological Studies*. Carnegie Institution of Washington, Publication 431. Washington, DC.
- Shepard, Anna O. 1948. *Plumbate: A Mesoamerican Trade Ware*. Carnegie Institution of Washington, Publication 573. Washington, DC.
- Shook, Edwin M. 1990. Recollections of a Carnegie archaeologist. *Ancient Mesoamerica* 1(2):247–252.
- Shook, Edwin M. 1998. *Incidents in the Life of a Maya Archaeologist; As Told to Winifred Veronda*. San Marino, CA: Southwestern Academy Press; Guatemala: Asociación de Amigos del País y Fundación para la Cultura y el Desarrollo.
- Singer, Milton B. 1959a. Robert Redfield, anthropologist (1897–1958). *Man in India* 39:81–91.
- Singer, Milton B. 1959b. Robert Redfield, anthropologist. *Science* 130:609–610.
- Singer, Milton B. 1976. Robert Redfield's development of a social anthropology of civilizations. *Proceedings of the American Ethnological Society*, 187–200. Seattle.
- Sledzik, Paul S. 2002. The Morris Steggerda Human Biology Collection. In *An Aleutian Journey: A Collection of Essays in Honor of William S. Laughlin*, ed. B. Frohlich, A. Harper, and R. Gilberg, 281–286. Publications of the National Museum Ethnographic Series, 20. Copenhagen: National Museum of Denmark, Department of Ethnography.
- Smisor, George T. 1952. R. H. Barlow and "Tlalocan." *Tlalocan* 3:97–102.
- Smith, A. Ledyard. 1978. Of Robert Wauchope and Maya dwellings. *Human Mosaic* 12:83–87.
- Smith, Robert E. 1949. Sylvanus Griswold Morley, 1883–1948. *Antropología e Historia de Guatemala* 1:71–76.
- Smith, Robert E. 1955. *Ceramic Sequence at Uxactun, Guatemala*. Middle American Research Institute, Tulane University, Publication 20. New Orleans. 2 v.
- Smith, Robert E. 1971. *The Pottery of Mayapan; Including Studies of Ceramic Material From Uxmal, Kabah, and Chichen Itza*. Peabody Museum of Archaeology and Ethnology, Harvard University, Papers 66. Cambridge, MA.
- Smith, Watson. 1956. George Walton Brainerd, 1909–1956. *American Antiquity* 22:165–168.
- Solís Acala, Ermilio, and Ralph L. Roys. 1949. *Códice Pérez; traducción libre del maya al castellano*. Mérida: Liga de Acción Social.
- Solomon, Char. 2002. *Tatiana Proskouriakoff: Interpreting the Ancient Maya*. Norman: University of Oklahoma Press.
- Spinden, Herbert J. 1913. *A Study of Maya Art: Its Subject-Matter and Historical Development*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoir, 6. Cambridge, MA.
- Spinden, Herbert J. 1924. *The Reduction of Maya*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Papers 6(4). Cambridge, MA.

- Squier, E. G. 1883. Ancient laborers and princes of Great Chimú and New Granada. *Frank Leslie's Magazine* 15(4):468–480.
- Stadelman, Raymond. 1940. Maize Cultivation in Northwestern Guatemala. *Carnegie Institution of Washington, Contributions to American Anthropology and History* 6(33):83–26.
- Stanley, Sam. 1996. Community, action, and continuity: a narrative vita of Sol Tax. *Current Anthropology* 37:S131–S137.
- Stephens, John L. 1841. *Incidents of Travel in Central America, Chiapas and Yucatan*. 2 v. New York: Harper.
- Stephens, John L. 1843. *Incidents of Travel in Yucatan*. 2 v. New York: Harper.
- Stirling, Matthew W. 1973. E. Wyllys Andrews IV, 1916–1971. *American Anthropologist* 75(1):295–298.
- Strong, W. Duncan. 1945. George Clapp Vaillant, 1901–1945. *American Antiquity* 11:113–116.
- Stuart, George E. 1992. Quest for decipherment: a historical and biographical survey of Maya hieroglyphic investigation. In *New Theories on the Ancient Maya*, ed. Elin C. Danien and Robert J. Sharer, 1–63. Philadelphia: University Museum, University of Pennsylvania.
- Sverdlow, Victoria H., and Sarah R. Demb, eds. 2000. Carnegie Institution of Washington (CIW) Department of Archaeology Records, 1914–1955. Archival collection description, Peabody Museum of Archaeology and Ethnology, Harvard University.
- Sywulka, Edward. 1948. The Morphology of the Mam Language of Guatemala, Central America. M.A. thesis, University of Oklahoma. 42 leaves.
- Tax, Sol. 1953. *Penny Capitalism: A Guatemalan Indian Economy*. Smithsonian Institution, Institute of Social Anthropology. Publication, 16. Washington, DC.
- Tax, Sol. 1963. *Penny Capitalism: A Guatemalan Indian Economy*. Chicago: University of Chicago Press.
- Tax, Sol. 1964. *El capitalismo del centavo; una economía indígena de Guatemala*. Seminario de Integración Social Guatemalteca, Publicación 12, 15. Guatemala.
- Taylor, Walter W. 1943. The Study of Archaeology: A Dialectic, Practical, and Critical Discussion With Special Reference to American Archaeology and the Conjunctive Approach. Doctoral dissertation, Department of Anthropology, Harvard University.
- Taylor, Walter W. 1948. *A Study of Archeology*. American Anthropological Association, Memoir 69. Washington, DC.
- Taylor, Walter W. 1950. Rejoinder [to Robert F. Burgh's Comment on Taylor's *A Study of Archeology*]. *American Anthropologist* 52(1):117–119.
- Taylor, Walter W. 1973. Clyde Kluckhohn and American archaeology. In *Culture and Life*, ed. Walter W. Taylor, John L. Fischer, and Evon Z. Vogt, 14–29. Carbondale, IL: Southern Illinois University Press.
- Termer, Franz. 1964a. Alfred Vincent Kidder (1885–1963). *Zeitschrift für Ethnologie* 89(1):6–9.
- Termer, Franz. 1964b. Franz Blom (1893–1963). *Antropología e historia de Guatemala* 16(1):82–86.
- Termer, Franz. 1964c. Franz Blom (1893–1963). *Zeitschrift für Ethnologie* 89(1):1–5.
- Termer, Franz. 1965. Franz Blom (1893–1963). *Anales de la Sociedad de Geografía e Historia de Guatemala* 36(1–4):577–583.
- Ternaux-Compans, Henri. 1838. *Recueil de pieces relatives à la conquete du Mexique*. Voyages, Relations et Mémoires Originaux pour Servir à l'Histoire de la Découverte de l'Amérique, 10. Paris: A. Bertrand.
- Thomas, Cyrus. 1882. A study of the Manuscript Troano. *U.S. Geographical and Geological Survey of the Rocky Mountain Region, Contributions to American Ethnology* 5:1–224. Washington, DC.
- Thomas, Cyrus. 1894–1895. Day symbols of the Maya year. *Annual Report of the Bureau of American Ethnology* 16:205–265. Washington, DC.
- Thomas, Cyrus. 1897–1898. Mayan calendar systems. *Annual Report of the Bureau of American Ethnology* 19:693–819. Washington, DC.
- Thompson, Edward H. 1897a. *Cave of Loltún, Yucatan. Report of Explorations by the Museum, 1888–1889 and 1890–1891*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoir 1(2). Cambridge, MA.
- Thompson, Edward H. 1897b. *The Chultunes of Labná, Yucatan. Report of Explorations by the Museum, 1888–1889, and 1890–1891*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoir 1(3). Cambridge, MA.
- Thompson, Edward H. 1898. *Ruins of Xkichmook, Yucatan*. Field Columbian Museum, Anthropology Series 2:211–223. Chicago.
- Thompson, Edward H. 1904. *Archaeological Researches in Yucatan. Report of Explorations for the Museum*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoir 3(1):3–20. Cambridge, MA.
- Thompson, J. Eric S. 1938. Sixteenth and seventeenth century reports on the Chol Mayas. *American Anthropologist* 40(4):584–604.
- Thompson, J. Eric S. 1945. A survey of the northern Maya area. *American Antiquity* 11:2–24.
- Thompson, J. Eric S. 1949. Sylvanus Griswold Morley, 1883–1948. *American Anthropologist* 51:293–297.
- Thompson, J. Eric S. 1950. *Maya Hieroglyphic Writing: Introduction*. Carnegie Institution of Washington, Publication, 589. Washington, DC.
- Thompson, J. Eric S. 1954. *The Rise and Fall of Maya Civilization*. Norman: University of Oklahoma Press.
- Thompson, J. Eric S. 1962. *A Catalog of Maya Hieroglyphs*. Norman: University of Oklahoma Press.
- Thompson, J. Eric S. 1963. *Maya Archaeologist*. Norman: University of Oklahoma Press.
- Thompson, J. Eric S. 1964. 1914: La Carnegie Institution of Washington ingresa al campo maya. *Estudios de Cultura Maya* 4:167–175.
- Thompson, J. Eric S. 1967. Ralph L. Roys, 1879–1965. In *The Book of Chilam Balam of Chumayel*, by Ralph L. Roys. Norman: University of Oklahoma Press.
- Thompson, J. Eric S., Harry E.D. Pollock, and Jean Charlot. 1932. *A Preliminary Study of the Ruins of*

- Coba, Quintana Roo, Mexico. Carnegie Institution of Washington, Publication, 424. Washington, DC.
- Thompson, Raymond H. 1958. *Modern Yucatecan Maya Pottery Making*. Society for American Archaeology, Memoir 15. Washington, DC.
- Thompson, Raymond H. 1991. Shepard, Kidder, and Carnegie. In *Ceramic Legacy of Anna O. Shepard*, ed. Ronald L. Bishop and Frederick W. Lange, 11–41. Niwot: University Press of Colorado.
- Tisdale, Shelby J. 1993. Women on the periphery of the ivory tower. In *Hidden Scholars: Women Anthropologists and the Native American Southwest*, ed. Nancy J. Parezo, 311–333. Albuquerque: University of New Mexico Press.
- Tovilla, Martín A. 1960. *Relaciones histórico-descriptivas de la Verapaz, el Manché y Lacandón en Guatemala*, ed. France V. Scholes and Eleanor B. Adams. Colección Editorial Universitaria, Universidad de San Carlos de Guatemala, 35. Guatemala.
- Toynbee, Arnold. 1934. *A Study of History*. 12 v. London, Oxford University Press, H. Milford.
- Tozzer, Alfred M. 1907. *A Comparative Study of the Mayas and Lacandones*. New York: Archaeological Institute of America.
- Tozzer, Alfred M. 1911. *Preliminary Study of the Ruins of Tikal*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoir 5(1–2). Cambridge, MA.
- Tozzer, Alfred M. 1913. *A Preliminary Study of the Prehistoric Ruins of Nakum, Guatemala: A Report of the Peabody Museum Expedition, 1909–1910*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoir 5(3). Cambridge, MA.
- Tozzer, Alfred M. 1921. *A Maya Grammar; With Bibliography and Appraisal of the Works Noted*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Papers 9. Cambridge, MA.
- Tozzer, Alfred M. 1933. Introduction. In *The Phonetic Value of Certain Characters in Maya Writing*, by Benjamin L. Whorf. Peabody Museum of American Archaeology and Ethnology, Harvard University, Papers 13(2). Cambridge, MA.
- Tozzer, Alfred M., and G. M. Allen. 1910. *Animal Figures in the Maya Codices*. Papers of the Peabody Museum of American Archaeology and Ethnology, Harvard University, Papers 4(3). Cambridge, MA.
- Trefil, James, and Margaret H. Hazen. 2002. *Good Seeing: A Century of Science at the Carnegie Institution of Washington*. Washington, DC: Joseph Henry Press.
- Vaillant, George C. 1927. The Chronological Significance of Maya Ceramics. Doctoral dissertation, Department of Anthropology, Harvard University.
- Valentini, P.J.J. 1879. The *katunes* of Maya history. *Proceedings of the American Antiquarian Society*, October, 71–117.
- Ventur, Pierre. 1978. *Maya Ethnohistorian: the Ralph L. Roys Papers*. Vanderbilt University Publications in Anthropology, 22. Nashville, TN.
- Villacorta Calderon, José Antonio. 1932. La Institución Carnegie de Washington y la Sociedad de Geografía e Historia de Guatemala. *Anales de la Sociedad de Geografía e Historia de Guatemala* 9:135–157.
- Villacorta Calderon, José Antonio. 1939. Bibliografía patria; la obra monumental del Dr. Sylvanus G. Morley, “Inscripciones del Petén”; editada por la Institución Carnegie de Washington. *Anales de la Sociedad de geografía e historia de Guatemala* 16:8–21.
- Villa Rojas, Alfonso. 1945. *The Maya of East Central Quintana Roo*. Carnegie Institution of Washington, Publication 559. Washington, DC.
- Villa Rojas, Alfonso. 1990. *Etnografía tzeltal de Chiapas: modalidades de una cosmovisión prehispánica*. México: Gobierno del Estado de Chiapas, Consejo Estatal para el Fomento a la Investigación Difusión de la Cultura.
- Villela, Khristaan D. 2000. Morley hires Tatiana Proskouriakoff. *PARI Journal: Quarterly Publication of the Pre-Columbian Art Research Institute* 1(2):10–18.
- Waldeck, J. F. de. 1866. *Monuments anciens du Mexique; Palenque et autres ruins de ancienne civilization du Mexique*. Paris: A. Bertrand.
- Ward, William H. 1910. *The Seal Cylinders of Western Asia*. Carnegie Institution of Washington, Publication 100. Washington, DC.
- Watson, Patty Jo. 1983. Foreword. In *A Study of Archaeology*, by Walter W. Taylor, ix–xvi. Carbondale: Southern Illinois University Press.
- Wauchope, Robert. 1938. *Modern Maya Houses: A Study of Their Archaeological Significance*. Carnegie Institution of Washington, Publication 502.
- Wauchope, Robert. 1948. *Excavations at Zacualpa, Guatemala; Based on Field Work for the Carnegie Institution of Washington*. Middle American Research Institute, Tulane University, Publication 14. New Orleans.
- Wauchope, Robert. 1965a. Alfred Vincent Kidder, 1885–1963. *American Antiquity* 31(2):149–171.
- Wauchope, Robert. 1965b. The initiation of an archaeologist. In *They Found the Buried Cities: Exploration and Excavation in the American Tropics*, ed. Robert Wauchope, 1–69. Chicago: University of Chicago Press.
- Wauchope, Robert. 1975. *Zacualpa, El Quiche, Guatemala: An Ancient Provincial Center of the Highland Maya*. Middle American Research Institute, Tulane University, Publication 39. New Orleans.
- Webster, David. 1978. Three walled sites of the northern Maya lowlands. *Journal of Field Archaeology* 5(4):375–390.
- Webster, David. 1979. *Cuca, Chacchob, Dzonot Ake: Three Walled Northern Maya Centers*. Pennsylvania State University, Occasional Papers in Anthropology, 11. University Park.
- Weeks, John M. 1987. *Maya Ethnohistory: A Guide to Spanish Colonial Documents at Tozzer Library, Harvard University*. Vanderbilt University Publications in Anthropology, 34. Nashville.
- Weeks, John M. 1990. *Mesoamerican Ethnohistory in United States Libraries: Reconstruction of the William E. Gates Collection of Historical and Linguistic Manuscripts*. Culver City, CA: Labyrinthos.

- Willey, Gordon R. 1973. William Rotch Bullard, Jr., 1926–1972. *American Antiquity* 38(1):80–83.
- Willey, Gordon R. 1979. John Eric Sidney Thompson, 1898–1975. *Proceedings of the British Academy* 65:783–798.
- Willey, Gordon R. 1983. Harry Evelyn Dorr Pollock, 1901–1982. *American Antiquity* 48(4):782–784.
- Willey, Gordon R. 1988a. Alfred V. Kidder (1885–1963). In *Portraits in American Archaeology: Remembrances of Some Distinguished Americanists*, by Gordon R. Willey, 292–316. Albuquerque: University of New Mexico Press.
- Willey, Gordon R. 1988b. Augustus Ledyard Smith (1901–1985). In *Portraits in American Archaeology: Remembrances of Some Distinguished Americanists*, by Gordon R. Willey, 365–386. Albuquerque: University of New Mexico Press.
- Willey, Gordon R. 1988c. Augustus Ledyard Smith, 1901–1985. *American Antiquity* 53(4):683–685.
- Willey, Gordon R. 1988d. George Clapp Vaillant (1901–1945). In *Portraits in American Archaeology: Remembrances of Some Distinguished Americanists*, by Gordon R. Willey, 99–122. Albuquerque: University of New Mexico Press.
- Willey, Gordon R. 1988e. Harry Evelyn Dorr Pollock (1900–1982). In *Portraits in American Archaeology: Remembrances of Some Distinguished Americanists*, by Gordon R. Willey, 341–360. Albuquerque: University of New Mexico Press.
- Willey, Gordon R. 1988f. *Portraits in American Archaeology: Remembrances of Some Distinguished Americanists*. Albuquerque: University of New Mexico Press.
- Willey, Gordon R. 1988h. William Rotch Bullard, Jr. (1926–1972). In *Portraits in American Archaeology: Remembrances of Some Distinguished Americanists*, by Gordon R. Willey, 317–340. Albuquerque: University of New Mexico Press.
- Willey, Gordon R., William R. Bullard, John B. Glass, and James C. Gifford. 1965. *Prehistoric Maya Settlements in the Belize Valley*. Peabody Museum of Archaeology and Ethnology, Harvard University, Papers 54. Cambridge, MA.
- Willey, Gordon R., and Jeremy A. Sabloff. 1980. *A History of American Archaeology*, 2nd ed. San Francisco, CA: W. H. Freeman and Company.
- Williams, George D. 1931. *Maya-Spanish Crosses in Yucatan*. Peabody Museum of Archaeology and Ethnology, Harvard University, Papers, 13. Cambridge, MA.
- Wisdom, Charles. 1940. *The Chorti Indians of Guatemala*. Chicago: University of Chicago Press.
- Woodbury, Richard B. 1954. An appraisal: A Study of Archeology. *American Antiquity* 19(3):292–296.
- Woodbury, Richard B. 1973. *Alfred V. Kidder*. New York: Columbia University Press.
- Woodbury, Richard B. 1993. *Sixty Years of Southwestern Archaeology: A History of the Pecos Conference*. Albuquerque: University of New Mexico Press.
- Ximénez, Francisco. 1929–1931. *Historia de la Provincia de San Vicente de Chiapa y Guatemala de la Orden de Predicadores; Compuesta por el R.P. Pred. Gen. fray Francisco Ximénez, hijo de la misma provincia, de Orden de N. Rmo. P.M.G.Fr. Antonio Cloché*. Biblioteca “Goathemala” de la Sociedad de Geografía e Historia, 1–3. Guatemala: Tipografía Nacional.

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THE CARNEGIE INSTITUTION OF WASHINGTON
CURRENT REPORTS, 1952-1957



COMPILED AND WITH AN INTRODUCTION BY

JOHN M. WEEKS



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FOREWORD

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Mayapán was the largest, most significant political capital of the Maya world of its time. Its stature as one of the great cities of the ancient world and as a historical landmark site within Mesoamerica is gaining more recognition, particularly with renewed archaeological research at this center over the past two decades. Once characterized as a civilization in ruins that was devoid of great art, Postclassic period Mayapán was naively referred to as “decadent.” Professionals now acknowledge that the significance, success, and regional impact of this (or any other) major city cannot be judged by the types of ruins its builders created, a point made by Malcolm Webb many years ago in his 1964 doctoral dissertation, “The Peten Maya Decline Viewed in the Perspective of State Formation.” The efficient builders at Mayapán and its contemporary centers constructed narrower walls and decorated them with resplendent plaster sculptures and murals that were not necessarily designed to last for five centuries and future appreciation.

Fortunately, some of these works have been partly preserved and hint at what has been lost to the erosional forces of sun and moisture on the hot plains of the northern Yucatán peninsula. Mexico’s Instituto Nacional de Antropología e Historia (INAH) has discovered many of these masterpieces in the site center and has restored that locality for tourism under the direction of archaeologist Carlos Alberto Peraza Lope and his team, led by Pedro Delgado Ku and Barbara Escamilla Ojeda. This work began in 1996 and continues each year. Renewed interest in Mayapán is largely due to these restoration efforts; by receiving an architectural facelift, the site center now reflects more of its former significance and glory.

Among the highlights of new discoveries made by Carlos Peraza Lope’s project include the Hall of Kings, which had life-size anthropomorphic stucco column sculptures of important humans and gods in Mayapán’s history, a stucco facade on the site’s

central Temple of Kukulkan that reflects themes of warfare and sacrifice, a mural on the Hall of the Sun Disks that features panels of priests conjuring figures descending from the heavens, and a mural on the Temple of the Fisherman that depicts a deity figure in the watery underworld surrounded by a water serpent as well as a crocodile and fish impaled by spears. Many ceramic sculptures have also been recovered, most famously, the codaical “monkey scribe” effigy found behind the burial shaft temple known as the “Crematory” (Str. Q-58). Carlos Peraza Lope has published many of these findings in collaboration with Alfredo Barrera Rubio (2001) and with art historian Susan Milbrath of the Florida State Museum, who is engaged in ongoing studies of the city’s art (Aveni, Milbrath, and Peraza Lope 2004; Escamilla, Peraza Lope, and Delgado 1994; Milbrath 2005, 2007; Milbrath and Peraza Lope 2003a, 2003b).

The history of research at Mayapán is outlined by John M. Weeks in the introduction to this volume; another great source is Clifford T. Brown’s Tulane University doctoral dissertation, “Mayapán Society and Ancient Maya Social Organization” (1999:86–109). Brown provides an abridged version of this history online at <http://wise.fau.edu/~ctbrown/Mayapan.html>. The Carnegie Mayapán Project represented an important turning point in Mesoamerican archaeology because of its emphasis on settlement and the study of households in addition to public buildings. The complete map of the city made by Morris Jones (*Current Reports* no. 1) and his team of surveyors was a major investment, and Mayapán still stands as one of the best-mapped ancient cities of Mesoamerica.

In the past eighteen years, research at Mayapán beyond the site center has undergone a resurgence. Clifford Brown’s doctoral studies in the 1990s represented an important return to Mayapán that followed the household-scale investigations there for which A. L. Smith and Karl Ruppert were famous. His work considers the organization of domestic architecture and kin groups as well as the importance of key settlement features, such as cenotes, and he offers innovative statistical studies of artifact types, modes, and distributions (Brown 1991, 1999, 2001, 2005; Brown et al. 2006). These analyses identify key patterns of social and economic organization among clusters of households within the city’s neighborhoods.

From 2001 to 2004, Carlos Peraza Lope, Timothy Hare (Morehead State University), and I began our collaborative research under the auspices of the NSF-supported (SBR-1018919, 1069128) Economic Foundations of Mayapán Project; we returned in 2008 for two more years of fieldwork. This research in the settlement zone has revealed even greater

complexity at Mayapán than previously suspected (Masson 2003; Masson, Hare, and Peraza Lope 2006; Masson and Peraza Lope 2004, 2005, 2007; Masson, Peraza Lope, and Hare 2003; Peraza Lope, Masson, Hare, and Delgado 2006; Peraza Lope, Masson, and Russell 2007; Russell and Dahlin 2007). The results of other collaborative studies are available as well (Galindo Trejo 2007; Gregory 2006; Paris 2008; Serafin 2007; Serafin and Peraza Lope 2007; Uc González 2000; Wright 2007). We have learned that the city comprised a diverse landscape that included a major marketplace, pedestrian pathways leading from the major gates toward the center, and other key landmarks, such as outlying temples, cenotes, public spaces, craft specialist districts, and neighborhoods defined by public buildings (halls and temples) and upper status administrators. Two additional anomalous buildings may represent a school for the nobility (*calmecac*) and a house of commerce. The city’s neighborhoods were provisioned by neighborhood artisans who made pottery and shell and stone tools; other households specialized in animal production, particularly white-tailed deer, which were probably bred and raised in captivity. Occupations of residents were diverse, and craftspeople, domestic servants, religious specialists, warriors, slaves, and farmers have been identified. Despite these diverse productive capacities, Mayapán was dependent on the outside world within and beyond northern Yucatán for raw materials vital to craft industries and also salt, obsidian, and valuables, such as cacao beans and cotton textiles, which were used as currencies in the city’s market. Although the importance of mercantile exchange has long been known for the Postclassic period on a general level, we can now reconstruct the significance and direction of economic dependencies and the effects that these relationships had on the daily lives of members of the commoner and noble classes. Our work also documents a high level of militarism for the city; projectile points and lances are the most common tools at every dwelling and new mass graves and radiocarbon dates point to violence and strife at least a half-century prior to the final collapse around AD 1441. Bradley Russell’s 2008 dissertation, “Postclassic Maya Settlement on the Rural-Urban Fringe of Mayapán, Yucatán, Mexico,” explored settlement beyond the city wall and raises the population estimate for Mayapán from the former figure of 12,000 to up to 17,000 people (<http://Mayapanperiphery.net/>).

Residents of the pueblo of Telchaquillo, located one kilometer north of the site center, have provided the skilled labor for excavating and restoring their monumental center and other archaeological proj-

ects at the city. The site center, owned by INAH, represents less than $\frac{1}{26}$ of the walled portion of the city. Local residents have served as conscientious custodians for the remainder of the settlement zone; more than 96 percent of the city's area is owned privately by dozens of small-scale milpa farmers and ranchers. The settlement zone spans 4.2 square kilometers within the walled portion of the site and up to 500 meters beyond the wall, as Bradley Russell recently determined. Mayapán is unlike many major Maya sites because it is largely unlooted, thanks to a widely shared ethic of conservation that dates at least to the era of the Carnegie investigations, if not before.

Two seminal publications emerged from the Carnegie work at this city: *Mayapán, Yucatán, Mexico* by Harry E.D. Pollock, Ralph L. Roys, Tatiana Proskouriakoff, and A. L. Smith (1962) and *The Pottery of Mayapán* by Robert E. Smith (1971). The 1962 volume by Pollock and colleagues provides an overview of the work performed during this period. This compilation of the Carnegie Institution's *Current Reports* on work at Mayapán represents, in essence, a fairly complete data monograph of investigations performed by Carnegie scholars at that site with information that is simply not available in later publications. These chapters represent a treasure trove of data that has scarcely been mined, containing all of the important details, maps, photographs, and lists of materials recovered from excavations of specific buildings.

Thanks to the efforts of John M. Weeks in assembling this volume of *Current Reports*, scholars no longer have to search libraries' rare books collections (or utilize poorly reproduced photocopies) to find the individual chapters on Mayapán published from 1952 to 1957. The inclusion of a searchable compact-disc version of these publications makes them extremely user-friendly and catapults them into twenty-first-century technology. In the summer of 2003, I spent six weeks going through each report, taking detailed notes on each of the Mayapán *Current Reports* and compiling a database of the lot inventories published within each chapter. Fortunately, with the enclosed electronic version that kind of effort is no longer necessary to access this information. Perhaps one of the most remarkable aspects of the *Current Reports* is the diligence with which excavation lots were reported, described, and inventoried. Although the recovery of materials did not employ the use of screens according to modern conventions, artifacts were collected and reported quite systematically and thus represent a data archive of considerable value. For many lots, the exact number of different kinds of pottery sherds was analyzed

and presented, and many significant photographs of whole vessels, offerings, and non-ceramic artifacts were presented. The lot inventory that I compiled from these reports in 2003 is presented in this volume as an appendix.

Many poorly known but important findings of the Carnegie Project have been long buried in the *Current Reports*. For example, Edwin Shook suggests in *Current Reports* no. 2 that spectators may have witnessed large-scale processions entering the city from Gate O on the west side of the city wall, which was lined with broad stairs. He also noted that the site's principal temple, the Temple of Kukulcan, was clearly visible from this gate when the forest was relatively clear. On the far eastern side of Mayapán, one can also see the Temple of Kukulcan from the Itzmal Ch'en temple (Str. H-17). Donald Thompson's investigations at this outlying temple (H-17) revealed a stone slab altar supported by "Atlantean"-type figures that are reminiscent of Mayapán's predecessor, Chichén Itzá (*Current Reports* no. 28). Other gems in the *Current Reports* include Robert Adams's (*Current Reports* no. 9) initial discovery of a shallow mass grave by the Main Plaza next to Temple Q-80 and the existence of two major palace groups (Groups R-95-99 and R-85-90) with vaulted tunnels running beneath their platforms. Tatiana Proskouriakoff and Charles Temple (*Current Reports* no. 29) conducted a full investigation of R-85-90, providing the best documentation of a Postclassic Maya palace ever undertaken. Other key features at Mayapán that were studied include burial shaft temples Q-58 and Q-95, investigated by Edwin Shook in the site center (no. 14), and their analogs at outlying temple-cenote groups Itzmal Ch'en (no. 34, Ann Chowning) and X-Coton (no. 11, Edwin Shook), as well as a portal vault entrance on the east side of the monumental center (no. 8, Gustav Strömsvik). Many details regarding stratigraphy and variation in architectural and mortuary features are provided in the other *Current Reports*. Although the significance of investigating dwellings ranging from noble residences to modest houses has long been recognized at Mayapán, there is great potential to study them further using the baseline data of this volume.

This compilation of *Current Reports* provides an important supplement to a prior University Press of Colorado publication, *The Carnegie Maya: The Carnegie Institution of Washington Maya Research Program, 1913-1957*, edited by John M. Weeks and Jane A. Hill (2006). This prior work makes available a separate series, that of the Carnegie *Year Book* reports. The *Year Book* entries are short, newsletter-like research reports that provide important summaries of research activities but lack the detailed and

lengthy reporting of architecture, features, and artifacts found in the *Current Reports*. When *Year Book* and *Current Reports* entries overlap, details can differ and the latter series provides a more expansive treatment. The full publication of the Carnegie work at Mayapán is now complete with this publication of the *Current Reports* series.

REFERENCES

- Aveni, Anthony F., Susan Milbrath, and Carlos Peraza Lope. 2004. Chichen Itza's Legacy in the Astronomically Oriented Architecture of Mayapan. *RES: Anthropology and Aesthetics* 45:123–144.
- Barrera Rubio, Alfredo, and Carlos Peraza Lope. 2001. La pintura mural de Mayapán. In *La Pintura mural prehispánica en México: Área maya*, ed. L. Staines C. and B. de la Fuente, 419–446. Mexico, Universidad Nacional Autónoma de México.
- Brown, Clifford T. 1991. Ich Noh Cah Mayapán: Organización social yucateca del Postclásico tardío. *Boletín del Consejo de Arqueología, Instituto Nacional de Antropología e Historia* 1990:19–23.
- Brown, Clifford T. 1999. Mayapán Society and Ancient Maya Social Organization. Doctoral dissertation, Department of Anthropology, Tulane University, New Orleans. 1207 leaves.
- Brown, Clifford T. 2001. Mayapán. In *The Oxford Encyclopedia of Mesoamerican Cultures: The Civilizations of Mexico and Central America*, ed. David Carrasco, 2:93–196. Oxford, England, Oxford University Press.
- Brown, Clifford T. 2005. Caves, Karst, and Settlement at Mayapan, Yucatan. In *In the Maw of the Earth Monster: Mesoamerican Ritual Cave Use*, ed. James E. Brady and Keith M. Prufer, 373–402. Austin, University of Texas Press.
- Brown, Clifford T., Carlos Peraza Lope, Walter Witschey, and Rhianna Rogers. 2006. Results of Survey in Central Yucatan, Mexico. <http://research.famsi.org/reports/index.php>.
- Escamilla, Barbara, Carlos Peraza Lope, and Pedro Delgado. 1994. La obsidiana y el pedernal de Mayapan, Yucatan. *Los Investigadores de la Cultura Maya* 1:234–247.
- Galindo Trejo, Jesus. 2007. Un analisis arqueoastronomico del edificio circular Q152 de Mayapan. *Estudios de cultura maya* 29:63–82.
- Gregory, Katherine W. 2006. Analysis of Chert Artifacts from Residential Households at Mayapan, Yucatan, Mexico. M.A. thesis, Department of Anthropology, Florida Atlantic University. 453 leaves.
- Masson, Marilyn A. 2003. Proyecto fundamentos economicos de Mayapan: Resultados de la temporada 2001. <http://research.famsi.org/reports/index.php>.
- Masson, Marilyn A., Timothy S. Hare, and Carlos Peraza Lope. 2006. Postclassic Maya Society Regenerated at Mayapán. In *After Collapse: The Regeneration of Complex Societies*, ed. Glenn M. Schwartz and John J. Nichols, 188–207. Tucson, University of Arizona Press.
- Masson, Marilyn A., and Carlos Peraza Lope. 2004. Commoners in Postclassic Maya Society. In *Ancient Maya Commoners*, ed. Jon Lohse and Fred Valdez, 197–224. Austin, University of Texas Press.
- Masson, Marilyn A., and Carlos Peraza Lope. 2005. Investigaciones en tres unidades residenciales fuera del area monumental de Mayapán. *Investigadores de la cultura maya* 2:411–424.
- Masson, Marilyn A., and Carlos Peraza Lope. 2007. Kulkulkan/Quetzalcoatl, Death God, and Creation Mythology of Burial Shaft Temples at Mayapan. *Mexicon* 29(3):77–85.
- Masson, Marilyn A., Carlos Peraza Lope, and Timothy S. Hare. 2003. Economic Foundations of Mayapan Project: Results of the 2001 Season. <http://research.famsi.org/reports/index.php>.
- Milbrath, Susan. 2005. Last Great Capital of the Maya. *Archaeology* 58(2):27–29.
- Milbrath, Susan. 2007. Mayapán s Effigy Censers: Iconography, Context, and External Connections. <http://research.famsi.org/reports/index.php>.
- Milbrath, Susan, and Carlos Peraza Lope. 2003a. Mayapan's Scribe: A Link with Classic Maya Artists. *Mexicon* 25(5):120–123.
- Milbrath, Susan, and Carlos Peraza Lope. 2003b. Revisiting Mayapan: Mexico's Last Maya Capital. *Ancient Mesoamerica* 14(1):1–46.
- Paris, Elizabeth H. 2008. Metallurgy, Mayapan, and the Postclassic Mesoamerican World System. *Ancient Mesoamerica* 19(1):43–66.
- Peraza Lope, Carlos, Marilyn A. Masson, Timothy S. Hare, and Pedro Delgado. 2006. The Chronology of Mayapan: New Radiocarbon Evidence. *Ancient Mesoamerica* 17(2):153–176.
- Peraza Lope, Carlos, Marilyn A. Masson, and Bradley Russell. 2007. Colonnaded Hall Group Discovered outside Mayapan City Walls. *Mexicon* 29:93–94.
- Pollock, H.E.D., Ralph L. Roys, Tatiana Proskouriakoff, and A. L. Smith. 1962. *Mayapán, Yucatán, Mexico*. Carnegie Institution of Washington, Publication 30.
- Russell, Bradley W. 2008. Postclassic Maya Settlement on the Rural-Urban Fringe of Mayapán, Yucatán, Mexico. Doctoral dissertation, Department of Anthropology, State University of New York at Albany. 1,138 leaves.
- Russell, Bradley W., and Bruce H. Dahlin. 2007. Traditional Burnt-Lime Production at Mayapán, Mexico. *Journal of Field Archaeology* 32(4):407–424.
- Serafin, Stanley. 2007. Bioarchaeological Investigation of the Ancient Population Structure of Mayapán. <http://research.famsi.org/reports/index.php>.
- Serafin, Stanley, and Carlos Peraza Lope. 2007. Human Sacrificial Rites among the Maya of Mayapan: A Bioarchaeological Perspective. In *New Perspectives on Human Sacrifice and Ritual Body Treatments in Ancient Maya Society*, ed. Vera Tiesler and Andrea Cucina, 232–250. New York, Springer.
- Smith, Robert E. 1971. *Pottery of Mayapán, Including Studies of Ceramic Material from Uxmal, Kabah, and Chichen Itza*. Peabody Museum of Archaeology and Ethnology, Harvard University, Papers, 66. Cambridge, MA. 2 vols.
- Uc González, Eunice. 2000. Registro de evidencias culturales prehispánicas en cenotes de la amurallada Maya

- pan: Primera temporada de campo. *Los investigadores de la cultura maya* 7(2):286–293.
- Webb, Malcolm. 1964. The Peten Maya Decline Viewed in the Perspective of State Formation. Doctoral dissertation, Department of Anthropology, University of Michigan, Ann Arbor.
- Weeks, John M., and Jane A. Hill. 2006. *The Carnegie Maya: The Carnegie Institution of Washington Maya Research Program, 1913–1957*. Boulder, University Press of Colorado.
- Wright, Lori E. 2007. Ethnicity and Isotopes at Mayapán. <http://research.famsi.org/reports/index.php>.

INTRODUCTION

Between 1914 and 1958 the Carnegie Institution of Washington (CIW) sponsored extensive archaeological, ethnographic, linguistic, historical, and other related investigations in the Maya region of southern Mexico and northern Central America. During these four decades, the CIW was the leader in the field, with monetary and human resources that no university or other research program could match, then or since. The more than 300 publications produced by CIW researchers remain important, indeed essential, resources for modern scholars.

A summary of the development and accomplishments of the CIW program in the Maya region is available elsewhere (Weeks and Hill 2006:1–26) and need not be repeated here. However, some historical background is necessary to properly contextualize the CIW *Current Reports*.

The administration of the Carnegie Institution of Washington supported archaeological research in southern Mexico and northern Central America

for some four decades following its initial approval of a proposal submitted by Sylvanus G. Morley. In 1937 Vannevar Bush replaced John C. Merriam as president of Carnegie Institution of Washington. Bush was a distinguished physicist and dean of the School of Engineering at the Massachusetts Institute of Technology. He was President Franklin D. Roosevelt's primary science advisor during World War II. He also served as chairman of the National Advisory Committee for Aeronautics (1939–1941), chairman of Roosevelt's National Defense Research Committee (1940), and director of the Office of Scientific Research and Development (1941–1947). He provided oversight for some 200 defense-related ventures, including the development of nuclear fission and the Manhattan Project. Under his direction, CIW scientists became heavily involved in war work, and it was Bush's idea of federally funding science that led to the creation of the National Science Foundation in 1950. Not surprisingly, Bush was no

supporter of more humanistic disciplines, including anthropology and archaeology.

As Bush implemented his plan to close the CIW Department of Archaeology, department director Alfred V. Kidder proposed a number of potential final projects. One proposal asked the CIW to underwrite the cost of developing the use of radiocarbon dating for archaeology. This was followed by proposals to undertake a large longitudinal project at the Classic period Maya metropolis of Tikal, as well as a program that would divert attention from the Maya to relationships between the two major centers of civilization in the Americas, Mesoamerica and the Andes. None of these were accepted by the CIW, although excavations at Tikal were soon initiated by the University of Pennsylvania Museum with Edwin M. Shook, a CIW archaeologist, as Field Director. Despite these disappointments, however, Kidder was able to negotiate a final CIW field project in the Maya region of Mayapán.

MAYAPÁN: AN ARCHAEOLOGICAL SITE

Mayapán is one of the largest Mayan archaeological sites dating to the Late Postclassic period (ca. AD 1200–1542), the period immediately preceding the Spanish conquest of the area. The site is located about fifty kilometers southeast of Mérida, the capital of the southern Mexican State of Yucatán, and includes a nine-kilometer-long defensive wall enclosing an area of approximately 4.2 square kilometers. Within this area, the Maya constructed more than 4,000 buildings, most of which are residential. The site was densely populated with an estimated population of 10,000 to 15,000 people.

The site appears to have been constructed and occupied during the 300 years before the arrival of the Spaniards. Mayapán figures prominently in the various Maya chronicles that were written shortly before the conquest. Together with Uxmal and Chichén Itzá, it was thought to have formed a confederacy that exercised control over most of the Yucatán peninsula following the period of Mexican invasion. This assessment is no longer tenable as Uxmal is known to have been abandoned about 300 years before Mayapán was founded, and Chichén Itzá was reduced to the status of a minor center during the time Mayapán flourished. Bishop Diego de Landa, in *Relacion de las Cosas de Yucatán*, gives a lengthy description of a Maya capital and describes it as concentrically having temples and plazas in the center, the houses of lords and priests around this center, then the houses of the most important people, and finally the houses of the lowest classes.

Because the residential architecture corresponds to Bishop Diego de Landa's sixteenth-century description of Maya houses, the identification of the residential structures is comparatively definite and precise. According to historical accounts, Mayapán was abandoned about a century before the conquest of Yucatán, in about 1441 after conflict between competing ruling lineages.

Modern exploration of the ruins of Mayapán began with John Lloyd Stephens and Frederick Catherwood. They spent a day at the ruins and provided clear descriptions and illustrations of the two principal temples in the ceremonial center, the "Castillo" (Str. Q-162) and the "Caracol" (Str. Q-152). Stephens's observations were astute and he rightly assessed Mayapán as the ruin of a Maya city, in spite of the obvious differences between it and the other cities with which he was more familiar, like Copán and Uxmal. Moreover, he recognized that Mayapán was the same city described by the Spanish chroniclers as having been abandoned shortly before the Conquest. This fact was an important link in his argument that the Maya ruins "were not the works of people who have passed away, and whose history is lost, but of the same races that inhabited the country at the time of the Spanish conquest, or of some not very distant progenitors" (Stephens 1843, 2:307). This observation, so simple, clear, and obvious to this Emersonian New Yorker, was dismissed by his continental successors, not to mention most North Americans and even the Yucatecan intelligentsia.

Approximately two decades later, the French abbé Charles Etienne Brasseur de Bourbourg visited the site and provided a few additional details. He attempted to correlate some of his observations with Landa's description of the site. In general, however, "all of Brasseur's work is a weird pot-pourri of sound sense, great learning, absurd theories, groundless fantasies, and proof that is no proof, the whole in a spirit as remote as possible from the scientific" (Bernal 1980:108). Brasseur de Bourbourg was followed by the colorful Augustus Le Plongeon, in 1881, whose theories were even more removed from reality than were Brasseur's. It has also been reported that Teobert Maler drew Stela 1, but there is no published mention of a trip by him to the site.

EARLY CARNEGIE WORK AT MAYAPÁN

In the earliest decades of the twentieth century, no substantive work was done at Mayapán. It was not until the 1930s that more modern and scientific archaeologists took a look at the site. Not surprisingly, most of those archaeologists were affiliated with the Carnegie Institution of Washington and

its hydra-like program of Maya research. Lawrence Roys visited the site in 1936 (Pollock 1962:3) and wrote an article that attempted to trace the evolution of Maya architecture (Roys 1941). T. A. Willard visited the site in these years as well and provided an entertaining account of his trip (1941:221–233).

The first serious and detailed work at Mayapán was a survey undertaken by Ralph T. Patton, partly at his own expense but under the auspices of the Carnegie Institution. The survey was conducted because “the archaeological importance of Mayapán . . . appeared to be far less than its political preeminence in the thirteenth, fourteenth, and fifteenth centuries . . . would have demanded” (Morley 1938c:141).

Patton’s survey followed the Great Wall in its circuit around the site and also included the ceremonial center. He traced the circuit of the Great Wall and briefly described its construction. He showed that the masonry was dry-laid of large irregular blocks. It measured about nine kilometers long, three to four meters in thickness, and about two meters in height on the exterior. The parapet along the outer edge, the interior stairways, and nine of the portals were identified. The survey of ceremonial center revealed the presence of colonnades and four round structures, both rare forms of architecture in the Maya canon. The survey also located a number of stelae with short-count dates that Morley interpreted (Morley 1938c:142). It is apparent from other evidence, described below, that Patton located and mapped the main sacbe at the site and the large residential groups associated with it. Morley concluded that “although Mayapán reached a position of first importance only at the close of Maya history when architectural decadence was well under way, its size satisfactorily agrees with the political preeminence ascribed to it by both the native and the Spanish chroniclers” (1938c:142). Although Pollock later avowed that Patton’s map was of great help to Morris Jones in making the final site map (Pollock 1962:3) and Brainerd used part of his map of the ceremonial center as an illustration (Brainerd 1958:347), Patton’s work was never published.

Not long thereafter, in 1942, George Brainerd undertook the first intensive excavations at Mayapán, again under the auspices of the Carnegie (Brainerd 1942, 1948:21–23). Thirteen trenches were excavated, yielding a collection of more than 32,000 sherds. Brainerd was able to identify limited stratigraphic change in pottery types, notably the succession from Coarse Slateware (now Peto Cream ware) to Coarse Redware (now Mayapán Red ware), and the increasing frequencies of effigy censer fragments through time. In these observations, he anticipated

the findings of Robert Smith (1971) and established the main features of the Mayapán ceramic sequence. Brainerd’s analysis and conclusions were not published, regrettably, until the later and much more detailed investigations of the Carnegie Institution at Mayapán were almost complete.

Toward the end of Brainerd’s work at the site, E. Wyllys Andrews IV arrived and spent a month studying the architecture. He cleared, partially or completely, eight buildings, in addition to performing a number of other small excavations (Andrews 1942:261). He noted the reuse of Puuc-style stones in the Mayapán-period architecture but observed no standing Puuc architecture. He recognized the Temple of Kukulcan as a slightly reduced copy of the Castillo of Chichén Itzá and noted the resemblance of the largest of the round temples at Mayapán to the Caracol at Chichén Itzá. He described the Mayapán masonry in some detail, including the salient differences between it and the masonry at Chichén Itzá (1942:262). He also commented on the remarkable similarity between the Mayapán architectural style and masonry and that of the east coast of Yucatán. Based on his excavations at a number of sites in northern Yucatán, Mayapán included, he was able to sketch an outline of architectural evolution in Yucatán that stands to this day: Early Classic and early Late Classic block masonry was succeeded by Puuc masonry, followed by Mayapán-style masonry (1942:262–263).

CARNEGIE INSTITUTION WORK AT MAYAPÁN

By 1950 the work of CIW in Guatemala and the Petén lowlands was closed down, and the Late Postclassic period site of Mayapán was selected for extensive historical and archaeological investigation under the direction of Pollock. This research was to examine the final expression of pre-Hispanic Maya culture.

A meeting of the permanent Carnegie archaeologists was convened in Cambridge, Massachusetts, in July 1950 to discuss the upcoming field season. It was determined that the office, laboratory, and storage facilities were to be located in Merida and the field quarters in Telchaquillo, a small village a few kilometers distant from Mayapán. A five-year contract was executed at the end of October between the Carnegie Institution of Washington and the Secretariat of Public Education of the Government of Mexico through the Instituto Nacional de Antropología e Historia.

The operational goals and objectives of the research were summarized succinctly by H.E.D. Pollock (1958:446):

The program was designed to be compact and to reach the stage of drawing conclusions in a predictable number of years. It was, of course, based primarily on archaeology but with considerable reliance on the results of previously performed historical research. The locus of the research was the Yucatán peninsula, and the period under consideration was the approximately five centuries preceding the Spanish conquest. The focal point of field operations was the last important center of aboriginal Maya civilization, the ruins of Mayapán. Subsidiary operations were archaeological surveys and exploration in outlying areas thought to be important in the period under study, and an examination of certain known centers of Maya rule after the fall of Mayapán and during the final hundred years before the Spanish completed the conquest of Yucatán. The essence of the program, aside from the more usual archaeological objectives, was an experiment in linking the results of archaeological research with the knowledge derived from aboriginal and early Spanish written records in an effort to discover how much of the intellectual, or at least nonmaterial, content of a bygone civilization could be recaptured.

Extensive and detailed investigations were conducted at the site by a large team of experienced archaeologists over a period of five years (1951–1955) under the auspices of the Carnegie Institution of Washington. The staff of the project included many prominent Mayanists of the day, such as Edwin Shook, Tatiana Proskouriakoff, Robert Smith, A. L. Smith, J. Eric S. Thompson, H.E.D. Pollock, and Karl Ruppert, not to mention a group of graduate students and others who directed the daily work and wrote the field reports.

Anticipating modern trends in graduate student training, Mayapán included the first training program in the Maya region to actively employ groups of graduate students from various universities. Many of these students went on to productive careers as archaeologists and anthropologists. These included Robert McC. Adams and Howard Winters from the University of Chicago; William R. Bullard, David de Harport, Edward I. Fry, William N. Irving, William T. Sanders, Philip E. Smith, Donald E. Thompson, and Raymond H. Thompson from Harvard University; Ann Chowning from the University of Pennsylvania; Joseph A. Hester from the University of California, Los Angeles; and Charles R. Temple from Yale University.

This final CIW archaeological project was the first attempt at an extensive field investigation and typological and functional analysis of domestic structures, the first attempt to excavate a sample of the entire range of structural types at a single

Maya site, and the first systematic attempt to view a single Maya site within a regional framework. In addition, functional analyses were conducted on the larger civic and religious structures, and there was extensive use of the direct historical approach made possible by ethnohistorian Ralph L. Roys's historical research.

As early as the 1930s department director Alfred V. Kidder was concerned about the inability of fieldworkers to publish the results of their investigations in a timely manner. This problem was certainly not unique to the CIW program and continues to be a persistent problem today for a variety of reasons, such as the difficulty in raising funds for publication, the lack of time available to the average archaeologist for writing, and the casual attitude toward the "issuance of reports as an essential and immediate sequel" (Wauchope 1965:159). As possible solutions Kidder advocated shorter field seasons, the use of fewer workers, the preparation of annual publications, and the completion of up-to-date finished manuscripts before the start of a new field season or project. In 1940 a new publication series, *Notes on Middle American Archaeology and Ethnology*, began under the editorship of J. Eric S. Thompson. This series was a minor, albeit highly valuable, device for making available important information not likely to appear elsewhere. The papers included were brief notes on specific specimens or topics, and when the series ended in 1957, 131 short, but useful, papers had been published.

To ensure the rapid dissemination of the Mayapán Project's results two series of papers described the work being undertaken and reported the preliminary findings. These were volumes 50 through 57 of the *Year Books* and numbers 1 through 41 of the *Current Reports*. A total of forty-one *Current Reports* were published by the Carnegie Institution of Washington from 1952 to 1957. These publications were intended to be part of the reporting of the results of a program of archaeological and historical researches concerned with Yucatán and adjacent areas begun in 1949 and completed in 1956 (Table 1). Research reported in the *Current Reports* (CR) series included compilation of a site plan for Mayapán (CR no. 1), excavation of the wall enclosing the site (CR no. 2), excavation of specific structural types within the site core including temples (CR nos. 8, 14, 16, 20, 27, 30, 32, 34), excavation of ceremonial buildings (CR nos. 9, 21, 28), and excavation of residential and administrative buildings (CR nos. 19, 22, 25, 29, 31, 33). Beyond the site core, investigations were made of house mounds and domestic buildings (CR nos. 4, 10, 36, 39), boundary walls between these units (CR nos. 3, 13), and more peripheral sites (CR nos. 6,

7, 18, 23, 24). Other investigations reported include sacbes or "roads" (CR nos. 15, 37), cenotes (CR nos. 5, 11, 12), caves (CR no. 35), pottery (CR nos. 26, 40), and human (CR no. 38) and animal (CR no. 41) skeletal remains.

The *Current Reports* series was intended as a means of rapid but preliminary publication of field results (Coe 1956). A synthesis of the project's accomplishments was later published by Pollock, Roys, Proskouriakoff, and Smith (1962). A formal type-variety analysis of the Mayapán ceramics was issued in 1971 by Robert E. Smith in his monumental *The Pottery of Mayapán: Including Studies of Ceramic Material from Uxmal, Kabah, and Chichén Itzá*. By this time the Department of Archaeology at the Carnegie Institution of Washington had ceased to exist and Smith's study was published by the Peabody Museum of Archaeology and Ethnology at Harvard University. The original field notes are available at the Peabody Museum.

The formal closing of the department's offices and laboratory in Merida took place on January 1, 1958. In March and April field equipment was moved to Merida and eventually most field and office equipment was presented to Instituto Nacional de Antropología e Historia. The property of the field house in Telchaquillo was returned to its owners. Remaining scientific equipment, office equipment, and all scientific records were given to the Peabody Museum. Additional gifts of scientific interest were made to the University Museum of the University of Pennsylvania, the Middle American Research Institute at Tulane University, and to the R. S. Peabody Foundation for Archaeology in Andover, Massachusetts.

The permanent staff of the Department of Archaeology continued active careers as scholars and researchers. Harry E.D. Pollock (1901–1982), the department's director, joined the Peabody Museum as Curator of Maya Archaeology until 1968 when he retired with the title Honorary Curator. Tatiana Proskouriakoff (1909–1985) was appointed Research Fellow in Maya Art at the Peabody Museum and maintained a productive career as a scholar. Karl Ruppert (1895–1960) resigned from the Carnegie Institution in October 1956 after thirty-two years of service and retired to Santa Fe, New Mexico. Edwin M. Shook (1911–2000) accepted a position with the University of Pennsylvania in 1955 as director of the Tikal Project, at that time the largest archaeological project in the New World. He later continued his archaeological work on the Pacific Coast and in the highlands of Guatemala. A. Ledyard Smith (1901–1985) joined the staff of the Peabody Museum in 1958 and participated in excavations at

Altar de Sacrificios and Seibal in the Maya lowlands. His brother, Robert E. Smith (1899–1983), served as Research Associate of Middle American Ceramics at the Peabody Museum from 1965 to 1968 and then as an honorary research associate until his death in 1983. Gustav Strömsvik (1901–) retired to Norway after thirty-one years in the department. J.E.S. Thompson (1898–1975) was elected a member of the Faculty Board of Archaeology and Anthropology, Cambridge University, and was later knighted by Queen Elizabeth II in 1975.

POST-CARNEGIE INSTITUTION WORK AT MAYAPÁN

Clifford T. Brown, now a professor at Florida Atlantic University, conducted excavations in the residential zone of Mayapán starting in the early 1990s. These were the first excavations at the site in more than forty years. Brown discovered patterns of artifact style and function at the site, finding that the types of artifacts differed among households and groups of households in different parts of the site.

Carlos Peraza Lope, an archaeologist affiliated with the Yucatán office of the Instituto Nacional de Antropología e Historia, has been excavating and consolidating the major buildings in the ceremonial center since 1996. He has uncovered remarkable murals on several buildings. He also excavated a scatter of human bones that may date to the destruction of the site, a deposit originally found by Robert Adams (CR no. 9).

Almost fifty years after the Carnegie Institution of Washington investigations at Mayapán, the site was again the focus of a major archaeological study. The State University of New York at Albany's NSF-Supported Economic Foundations of Mayapán Project, directed by Carlos Peraza Lope, Marilyn Masson, and Timothy Hare, had as its primary goal the reconstruction of the production and consumption patterns of the various social sectors of the site. From 2001 to 2004 the project completed a surface survey of thirty-six milpas (encompassing 52.99 hectares) across the site area, representing 131 systematic surface collections from domestic refuse deposits. In addition, 189 test pits, 63 of which were near structures outside the city wall, were excavated. This team also completely excavated three domestic structures outside the monumental zone. Results of the field project are being formulated and a project bibliography is available at <http://www.albany.edu/ims/mp-bib.html>. Fieldwork has resumed under NSF support, and in 2008 the Economic Foundations project concentrated on the outlying ceremonial group of Itzmal Ch'en by the far east gate, excavat-

ing a large colonnaded hall, a mass grave, and a small house next to the group's cenote. The project also surveyed eight 1 km by 250 m transects extending in four cardinal directions outside the city wall, locating 347 previously unknown structures linked to Mayapán, its nearby contemporary settlements, and earlier sites. This important work, the subject of Bradley Russell's completed 2008 University of Albany dissertation, expands the known geographic extent of the Mayapán settlement zone to a distance of around 500 meters in all directions, with interesting variation in settlement density.

PRESENT VOLUME

In 2006 the University Press of Colorado published *The Carnegie Maya: The Carnegie Institution of Washington Maya Research Program, 1913–1957*. This volume made available to scholars once again the extensive data published in the CIW *Year Book* series. The present volume continues this project by republishing the CIW *Current Reports* series. The *Current Reports* are published as they appeared originally with a few exceptions. Obvious typographical errors have been corrected, and some place-names have been modernized. The content has not been changed.

Table 1. Contents of *CIW Current Reports*, vol. 1 (nos. 1–14), and vol. 2 (nos. 15–41), 1952–1957.

<i>Vol.</i>	<i>No.</i>	<i>Original pages</i>	<i>Date</i>	<i>Author</i>	<i>Title</i>
1					
	1	1	1952	Pollock, H.E.D.	Preface
	2	2–6		Jones, M. R.	Map of the Ruins of Mayapán, Yucatán, Mexico
	3	7–35		Shook, E. M.	The Great Wall of Mayapán
	4	36–44		Bullard, W. R., Jr.	Residential Property Walls at Mayapán
	5	45–66		Ruppert, K., and A. L. Smith	Excavations in House Mounds at Mayapán
	6	67–81	1953	Smith, R. E.	Cenote X-Coton at Mayapán
	7	82–101		Pollock, H.E.D., and G. Strömsvik	Chachob, Yucatán
	8	102–135		Berlin, H.	Archaeological Reconnaissance in Tabasco
	9	136–143		Strömsvik, G.	Portal Vault and Temple at Mayapán
	10	144–179		Adams, R. M., Jr.	Some Small Ceremonial Structures of Mayapán
	11	180–206		Smith, A. L., and K. Ruppert	Excavations in House Mounds at Mayapán II
	12	207–221		Shook, E. M.	The X-Coton Temples at Mayapán
	13	222–233	1954	Smith, R. E.	Cenote Exploration at Mayapán and Telchaquillo
	14	234–253		Bullard, W. R., Jr.	Boundary Walls and House Lots at Mayapán
	15	254–285		Shook, E. M.	Three Temples and Their Associated Structures at Mayapán
2	16	1–14		Pollock, H.E.D.	The Northern Terminus of the Principal Sacbe at Mayapán
	17	15–26		Shook, E. M.	A Round Temple at Mayapán, Yucatán
	18	27–52		Ruppert, K., and A. L. Smith	Excavations in House Mounds at Mayapán III
	19	53–70		Smith, R. E.	Exploration on the Outskirts of Mayapán
	20	71–88		Thompson, J.E.S.	A Presumed Residence of the Nobility at Mayapán
	21	89–108	1955	Shook, E. M.	The Temple of Kukulcan at Mayapán
	22	109–126		Smith, P. E.	Excavations in Three Ceremonial Structures at Mayapán
	23	127–168		Shook, E. M., and W. N. Irving	Colonnaded Buildings at Mayapán
	24	169–178		Strömsvik, G., H.E.D. Pollock, and H. Berlin	Exploration in Quintana Roo
	25	179–224		Sanders, W. T.	An Archaeological Reconnaissance of Northern Quintana Roo
	26	225–252		Thompson, D. E., and J.E.S. Thompson	A Noble's Residence and Its Dependencies at Mayapán
	27	253–266		Smith, R. E.	Early Ceramic Horizons at Mayapán and Santa Cruz
	28	267–280		Shook, E. M.	Another Round Temple at Mayapán, Yucatán
	29	281–288		Thompson, D. E.	An Altar and Platform at Mayapán
	30	289–362		Proskouriakoff, T., and C. R. Temple	A Residential Quadrangle: Structures R-85 to R-90
	31	363–380		Winters, H. D.	A Vaulted Temple at Mayapán
	32	381–396		Winters, H. D.	Excavation of a Colonnaded Hall at Mayapán
	33	397–424	1956	Winters, H. D.	Three Serpent Column Temples and Associated Platforms at Mayapán
	34	425–442		Chowning, A., and D. E. Thompson	A Dwelling and Shrine at Mayapán
	35	443–462		Chowning, A.	A Round Temple and Its Shrine at Mayapán
	36	463–470		Strömsvik, G.	Exploration of the Cave of Dzab-Na, Tecoh, Yucatán
	37	471–528		Smith, A. L., and K. Ruppert	Excavations in House Mounds at Mayapán IV
	38	529–550		Pollock, H.E.D.	The Southern Terminus of the Principal Sacbe at Mayapán
	39	551–572		Fry, E. I.	Skeletal Remains from Mayapán
	40	573–598	1957	Ruppert, K., and A. L. Smith	House Types in the Environs of Mayapán and at Uxmal, Kabah, Sayil, Chichén Itzá, and Chachob
	41	599–632		Thompson, J.E.S.	Deities Portrayed on Censers at Mayapán
		633–656		Pollock, H.E.D., and C. E. Ray	Notes on Vertebrate Animal Remains from Mayapán
		657–659		Pollock, H.E.D.	Editor's Note

THE CARNEGIE MAYA II

December 1952

PREFACE

H.E.D. POLLOCK, EDITOR

The purpose of the present series is to make available as promptly as possible the results of work in progress. The advantages of prompt reporting seem almost too obvious to need comment. A fact sometimes forgotten, however, is that, aside from the information provided to others than our own staff, the task of ordering material for publication, no matter how simple or preliminary in nature, will often point to gaps in our knowledge and may lead to promising avenues of future endeavor. It is hoped, then, that these reports will serve the dual purpose of keeping archaeologists informed of our work, and of producing better and more profitable research on our part.

As in the case of any new series of publications, we are making something of an experiment. It is natural to assume that most of the reports will deal with field work, although there is no reason why occasional statements on the progress of library or documentary research should not appear. If pub-

lication is to keep current, each author must have his manuscript in the hands of the editor before returning to the field for a succeeding season. This means that presentation must be brief and rather strictly factual. As we shall usually be dealing with fragmentary bodies of material, a minimum of speculation is probably just as well, quite aside from the exigencies of a rigid time schedule. Just how complete any statement is will depend on the nature and stage of the project and on the amount of time available to the author from other duties. Indeed, some work will not be subject to annual reporting, but will have to await a certain stage of progress before any worthwhile information can be presented. It follows that individual reports may vary considerably in length and in completeness. Our aim will be one of practicability rather than of uniformity.

H.E.D. POLLOCK, EDITOR

CURRENT REPORTS
Carnegie Institution of Washington
Department of Archaeology

No. 1

December 1952 [First issued December 4, 1951]

MAP OF THE RUINS OF MAYAPÁN, YUCATÁN, MEXICO

MORRIS R. JONES

Carnegie Institution of Washington is deeply indebted to the United States Geological Survey for its fine co-operation in the work described below. Not only were the services of Mr. Jones made available for a considerable period of time in two successive seasons, but all necessary surveying equipment was provided. We should like most sincerely to thank Dr. W. E. Wrather, Director, and Col. Gerald FitzGerald, Chief Topographic Engineer, for their advice and assistance. Particular thanks go to Mr. J. O. Kilmartin, who acted in a liaison capacity between this Department and the Geological Survey in the original planning of the project and who later assisted in arranging for reproduction of the map.

The map of Mayapán discloses a pattern of remains quite distinct from that of any other Maya center so far mapped. Not only is the concentration of structures greater than is known for any comparable area, but the great majority appears to have

been dwellings. Because of these apparent differences, it seems advisable to sound a note of caution in making comparisons with other maps. The survey of Mayapán made a particular effort to include all building remains, no matter how small or insignificant. This has been done at no other Maya site, the more imposing ceremonial and civic structures, courts, and plazas having received the lion's share of attention. Although it is entirely possible, indeed probable, that comparable mapping operations at other ruins would not reveal any such concentration of dwellings as that which occurs at Mayapán, there is nevertheless the chance that remains of this sort would be found in considerable numbers and that the appearance of other maps would thus be altered. Only additional surveys will resolve this uncertainty.

H.E.D. POLLOCK, DIRECTOR,
DEPARTMENT OF ARCHAEOLOGY

The field work that resulted in the present map covered the periods from November 1949 to June 1950 and from November 1950 to February 1951. Drafting, lettering, and general preparation of copy for reproduction were completed during the summer and autumn of 1951. It was not possible for me to supervise or check the latter phase of the work. I should like to thank Mr. E. M. Shook and Mr. Gustav Strömsvik for their valuable assistance in establishing facilities for operation at the beginning of the project and for their advice in respect to procedures. I should also like to thank Mr. R. L. Roys for his help in the spelling of local Maya names, mainly those dealing with cenotes. The whole-hearted co-operation extended to me by Mr. H.E.D. Pollock was a major contribution to the completion of the project.

Telchaquillo, a small village 2 km north of Mayapán, was selected as a base of operations. The village is accessible from Merida by road, and proved to be a good location, mainly because of proximity to the ruins and the fact that the native labor supply in the village was both adequate and of good quality, the natives being interested in, and sympathetic with, the project as work progressed.

Reconnaissance and survey at Mayapán during 1938 by Mr. R. T. Patton (*CIW Year Book* 37:141-142) proved valuable in planning operations. Several facts were known about the site. The ancient city is surrounded by a wall, roughly oval, extending approximately 3,200 m east-west and 2,000 m north-south, the area outlined being 4.2 sq km. Ancient gateways are to be found at intervals along the wall. A large pyramid, many closely spaced colonnades, small pyramids, and three round towers form a main group a little west of the center of the walled area. Another rather small ceremonial center is just inside the eastern limit of the area.

The wall presented a distinct advantage in the making of the map because it forms a definite boundary, and during the course of the work exploration and mapping were limited to about 75 m outside the wall. Ruins were found within this outer fringe, and it is known that more are beyond it, but they are sparse and hardly worth the effort of mapping when so much lies within the primary area.

A scale of 1:2,500 had previously been decided on; the contour interval selected was 1 m. As there is no vertical control in the immediate area, an elevation of 25 m above sea level was assumed for point 0, so that all elevations and contours are based on this datum. At the end of the second season, in order to determine the error between the assumed datum and the true elevation, a line of levels was run from a known point at Hacienda Xcanchakan to the ruin

area. Elevations as shown on the Mayapán map were found to be about 8 m higher than their true vertical position. This error is of little consequence since the map is an isolated unit and all elevations on it are relative to one another.

Actual work was begun with the selection of a point of origin as close to the center of the city as could be determined from information available. This point, a triangle cut in bedrock, is located along the trail which connects Rancho San Joaquin with the main road running south out of Telchaquillo. It is 31 m northeast along the trail from the gateway into the ranch. In beginning the survey, point 0 was occupied with transit, and Polaris observations were taken at night in order to determine true north. As an azimuth mark, a cross was cut in the top of the southernmost pillar of the gateway into Rancho San Joaquin. The dense growth which covers the area, the low relief, and the absence of any high cultural features in the vicinity prevented picking a more distant mark. The south azimuth from point 0 to the mark was computed to be 28 degrees 54'24", and the approximate magnetic declination for the area is 6 degrees 30' east.

With the true cardinal directions determined, a plane-grid system was laid out over the area, the net, when completed, giving squares 500 m on a side with 100 m stations established along all lines. Each 500 m station was marked by a triangle chiseled in bedrock where possible or by a large hub where the point fell on soil. Hundred-meter stations were marked with hubs surrounded by piles of stone.

All lines had to be cut, and four men were kept ahead of the instrument party, clearing a path through the dense growth. Native workmen were trained to plumb-chain and to set stations exactly on line, work which they learned quickly and performed accurately. Grid lines were carried as far as the wall, where they were discontinued after explorations just beyond. While this work was being done, two men were employed cleaning brush from the wall to provide easier passage when the time came to do plane-table mapping along it. Establishment of the plane grid network, which includes about 20 km of line, was completed in seven weeks, the density of the bush slowing the rate of progress.

A system of numbering stations was established, and the squares formed by the projection lines were given letters. It was thought that these 500 m squares would provide convenient units for separate archaeological investigation should such prove desirable, and an attempt was made to locate the grid lines so as to include the Main Group within one square. The cutting of these lines afforded a clue to the density

of remains within the wall, and the first part of the survey showed that there are many more ruins at Mayapán than had hitherto been supposed.

Plane-table topography and culture were mapped by working first along already cleared projection lines. An area of approximately 50 m on either side of the line was included. After a square had been surrounded, the interior was mapped by cutting four lines southward from the four 100 m stations along the north edge of the square. By covering the area 50 m on either side of each interior line, the square was completely explored. Each square was treated similarly.

At the close of the 1949–1950 season a transit station was established atop the main pyramid in order to triangulate on three known positions which are part of a third-order closed triangulation net of the Mexican Government. The geodetic co-ordinates of the main pyramid were determined by this method to be latitude 20 degrees 37'47.88" north, longitude 89 degrees 27' 41.40" west.

The density of remains found within the wall is high. A rough estimate would set the number at 3,500 individual ruins which still can be detected, plus many terraces, all within an area of about 4.2 sq km. Many more, of course, have been erased by the constant stone-robbing that has gone on since the beginning of the Spanish occupation. Rancho San Joaquin, within the walled area, and Hacienda Xcanchakan, 4 km to the west, were constructed wholly or partially of stone from the ruins.

Only a small percentage of the remains appear to have been ceremonial structures or the like. Most of the ruins are small, averaging 10 by 5 m, and have a typical floor plan. It seems logical to assume that these small structures were dwellings. More often than not, two or three are so situated as to form an obvious unit, the remains being close together and on the same terrace. Metates occur frequently, and in many cases an altar is a definite part of the assemblage. It was noted that some of these units are made up of ruins slightly larger, better terraced, and in choicer topographical locations than the average. In

a few cases stone columns supplement what seems to have been the standard floor plan.

In summary, the remains found at Mayapán are numerous but the architecture appears to be far inferior to that of the other great cities of northern Yucatán. As has been mentioned, the ruins are in an extreme state of disrepair.

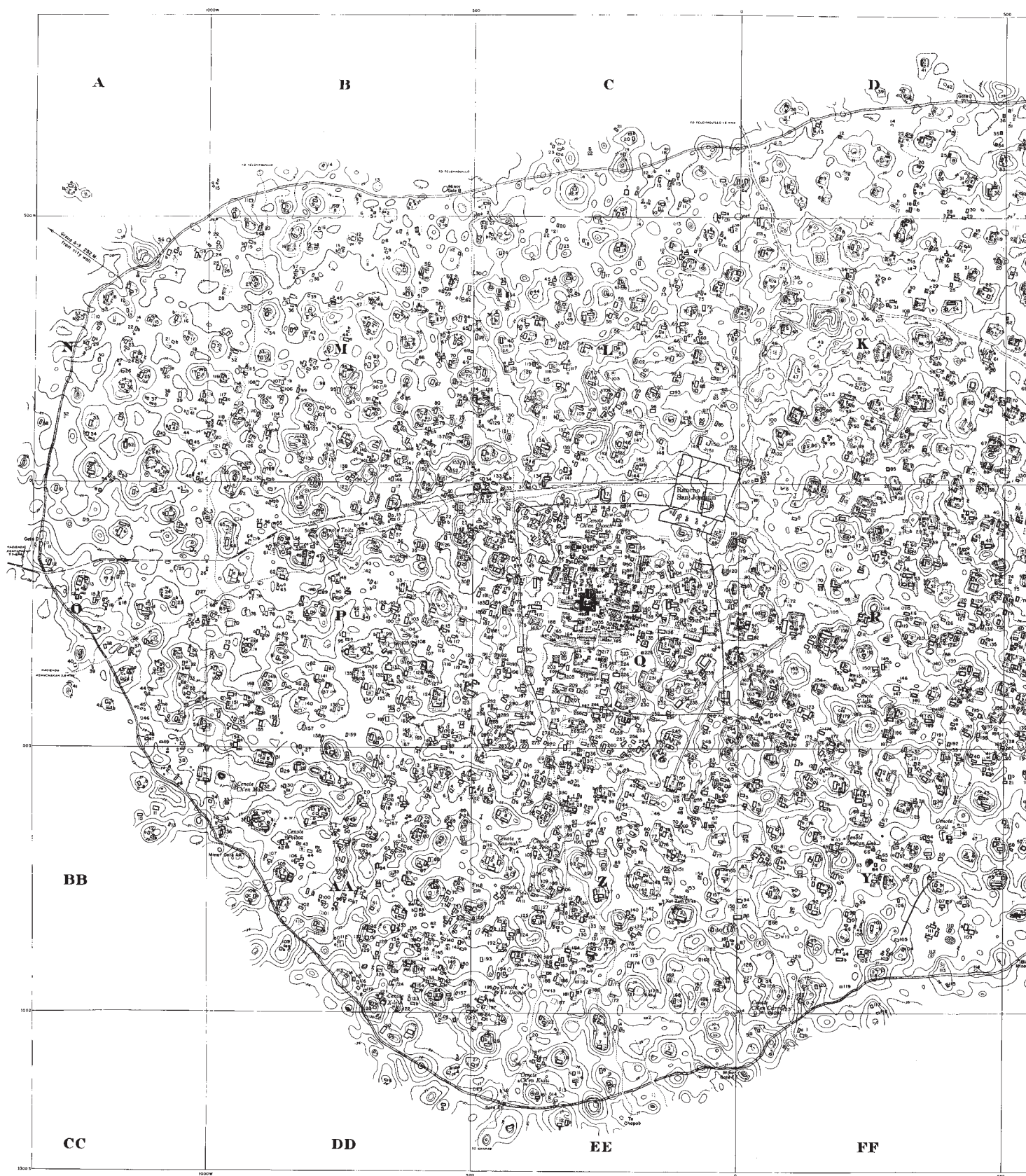
ROLLA, MISSOURI

EDITOR'S NOTE

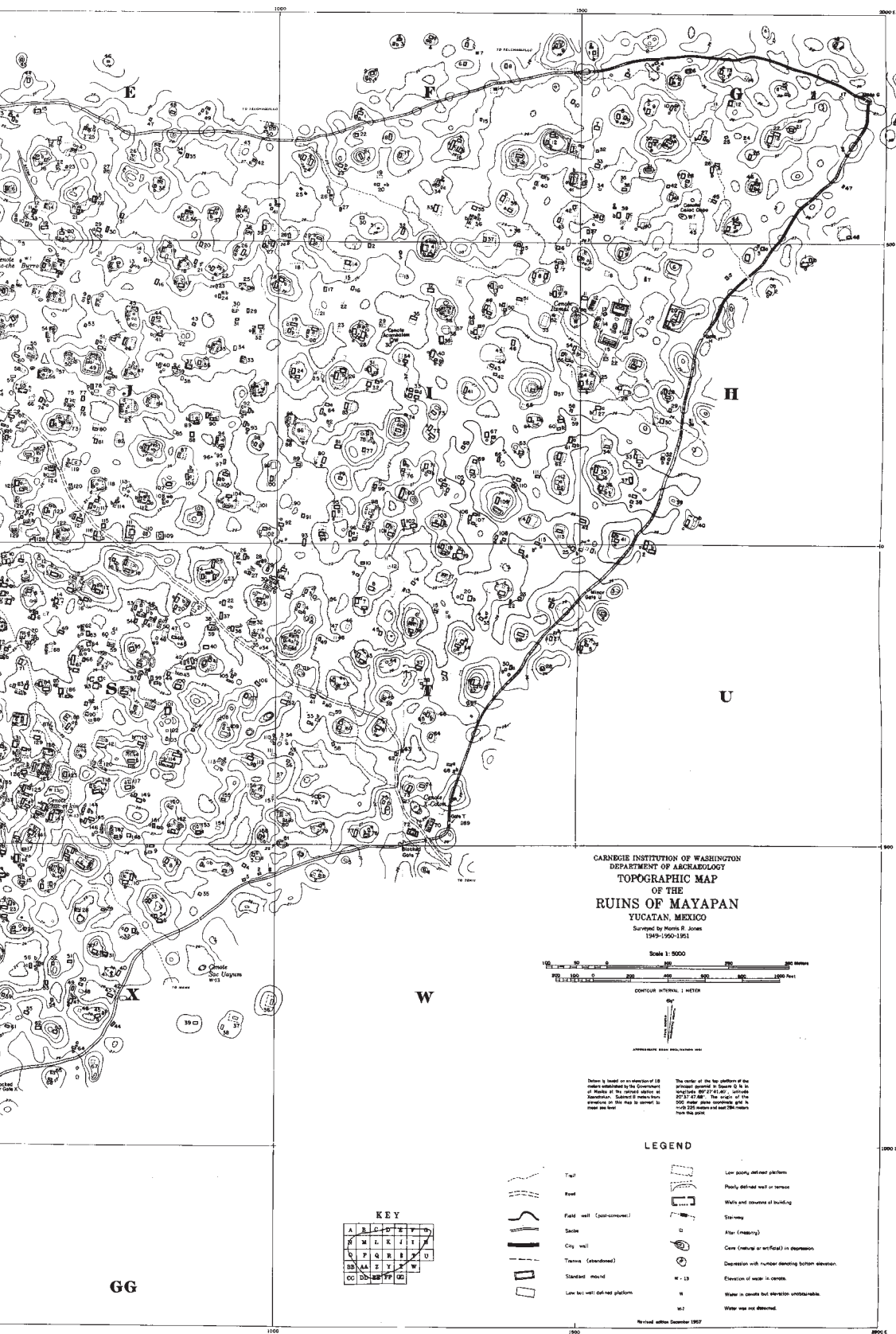
The preliminary edition of the accompanying map of the ruins of Mayapán carries no numbering or other designation of the numerous buildings, platforms, and terraces shown there. It was thought that the numbering of structures or any labeling of ancient cultural remains had better proceed with the archaeological survey that has followed the making of the base map. In this connection it is assumed that at some future date a new edition of the map will be published, showing the number of each building and incorporating all changes and additional features developed by excavation and detailed surface study.

Numbering of structures is now in progress and reference to such designations will be found in succeeding *Reports*. As there is no key for locating the buildings on the published map, other than placing them in one of the lettered 500 m squares, some correlative system is needed. This is easily done by the simple use of co-ordinates measured north or south and east or west from the zero point of the map.

It will be noted that the distance in meters of each grid line from the zero point of the map is shown at the margin. The zero point is thus found to be the common corner of Squares K, L, Q, and R. Should we, for example, wish to pinpoint the center of Square K, it may be located as 250 N, 250 E, it being understood that distances are in meters from the zero point. The largest pyramid at the site, the so-called Castillo, is 225 S, 285 W. There is a sink hole at 45 N, 0 E, and another at 0 N, 1525 E. This system of co-ordinates will be used to locate any feature on the present edition of the map.



1.1. Map of the ruins of Mayapán, Yucatán, Mexico



CARNEGIE INSTITUTION OF WASHINGTON
DEPARTMENT OF ARCHAEOLOGY
TOPOGRAPHIC MAP
OF THE
RUINS OF MAYAPAN
YUCATAN, MEXICO
Surveyed by Morris B. Jones
1949-1950-1951

Scale 1:5000
CONTOUR INTERVAL: 1 METER

APPROXIMATE WATER DIVISION LINE

This map is based on a collection of 18 maps submitted to the Government of Mexico by the United States of America. The maps were prepared by the United States of America. The maps were prepared by the United States of America. The maps were prepared by the United States of America.

The center of the low platform of the pyramid is located at 20° 12' 30" N. and 86° 51' 30" W. The center of the pyramid is located at 20° 12' 30" N. and 86° 51' 30" W. The center of the pyramid is located at 20° 12' 30" N. and 86° 51' 30" W.

LEGEND

- | | | | |
|--|----------------------------|--|--|
| | Wall | | Low platform and/or platform |
| | Field wall (post-conquest) | | Platform with wall or terrace |
| | Ditch | | Wall and corner of building |
| | City wall | | Chimney |
| | Terrace (abandoned) | | Star (missing) |
| | Standard mound | | Cave (natural or artificial) in depression |
| | Low wall and/or platform | | Depression with number denoting bottom elevation |
| | | | Elevation of water in canal |
| | | | Water in canal but direction undeterminable |
| | | | Water not detected |

KEY

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
22	23	24	25	26	27	28	29	30												

GG

Revised edition December 1957

THE GREAT WALL OF MAYAPÁN

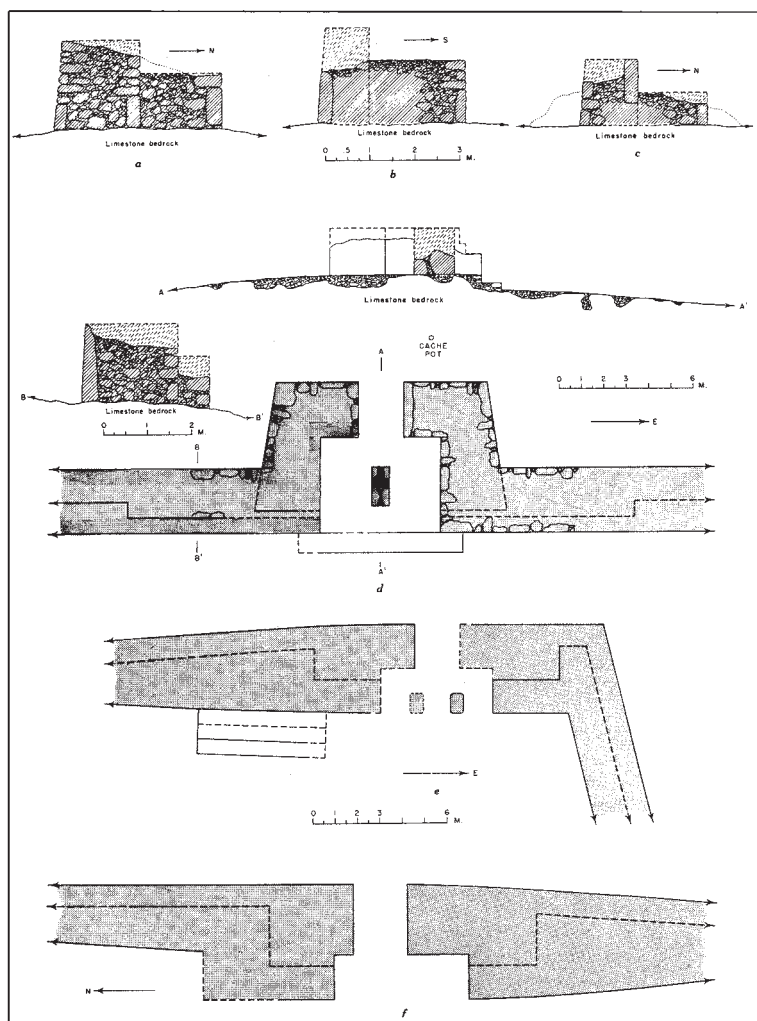
EDWIN M. SHOOK

INTRODUCTION

There are numerous references in the Maya chronicles and early Spanish colonial historical accounts of Yucatán relating to Mayapán. Few, however, give specific information concerning the Great Wall surrounding the ancient city. Nevertheless, statements in two sources are pertinent to this study, one in *Relación de "Quinacama" and Muxuppipp* and the other in Landa's *Relación de las Cosas de Yucatán*. The first, speaking of Mayapán, says (Tozzer 1941:24, no. 131): "This city conquered all these provinces, for it was very strongly built, walled in like those of our Spain, and within the walls there are reckoned to have been more than sixty thousand dwellings, not counting the environs." Landa writes (Tozzer 1941:23–26):

This Kukulcan established another city after arranging with the native lords of the country that he and they should live there and that all their affairs and business should be brought

there; and for this purpose they chose a very good situation, eight leagues further in the interior than Merida is now, and fifteen or sixteen leagues from the sea. They surrounded it with a very broad stone wall, laid dry, of about an eighth of a league leaving in it only two narrow gates. The wall was not very high and in the centre of this enclosure they built their temples, naming the largest, which is like that of Chichén Itzá, the name of Kukulcan, and they built another building of a round form, with four doors, entirely different from all the others in that land; as well as a great number of others round about joined together. In this enclosure they built houses for the lords only, dividing all the land among them, giving towns to each one, according to the antiquity of his lineage and his personal value. And Kukulcan gave a name to this city—not his own as the Ah Itzas had done in Chichén Itzá, which means the well of the Ah Itzas, but he called it Mayapán, which means 'the standard of the Maya,' because they



2.1. The Great Wall and Gates D, G, and H.

a. Detailed section of the Great Wall at 1150 S, 200 W. The higher outer half was built first and the lower part added later to form a bench against the inner face of the primary wall. The whole rests on limestone bedrock. b. Section of the wall at 500 N, 1000 W. c. Section at 555 S, 980 E. d. Plan and sections of Gate D. e. Plan of Gate G. f. Plan of Gate H.

called the language of the country *Maya* and the Indians (say) *Ichpa* which means "within the enclosure."

Therefore, the existence of an enclosing wall at Mayapán has been known since colonial times. When Stephens (1843:1:131,143) briefly visited the site in 1841, he saw part of it and learned from the majordomo of the nearby Hacienda Xcanchakan that this strong wall, 4.8 km in extent, encompassed the ruins.

Modern investigations were first undertaken in 1938 by Ralph T. Patton (Morley 1938:5-6), who traversed and mapped the entire wall, established its

circumference to be 9.1 km, and identified nine entrances. As a result of Patton's survey, Tozzer (1941:24, no. 131) subsequently pointed out for the first time the probability that there were two walls at Mayapán, the larger one explored by Patton capable of having "within the walls . . . more than sixty thousand dwellings," and a smaller, inner walled enclosure to which Landa apparently refers, inside of which were "built the temples and . . . houses for the lords only."

The next field work producing significant information concerning the Great Wall was done by Morris Jones (1952) who mapped in detail the area within and for a short distance outside the enclosure. His map provided the basis for my further investigations during the 1952 field season.

This report is limited to the results of a complete reconnaissance of the Great Wall and the excavation of certain of its major and minor gateways. Preliminary search to date for traces of a small inner enclosure around the tightly grouped ceremonial precinct has been unsuccessful.

WALL

The Great Wall of Mayapán for the most part now appears as a white ribbon of stone rubble meandering more than 9 km through the low, dry, and exceedingly thorny Yucatán bush. This secondary growth, typical of the north-central and western portions of the peninsula of Yucatán, covers a seemingly soil-less and deceptively flat plain. The terrain actually is incredibly rough, as small, low hillocks of limestone bedrock follow one after another. What meager soil there is collects in the pot holes, crevices, and shallow depressions between these rocky knolls. The Great Wall undulates with the terrain, usually passing over the crests of the elevations but occasionally crossing the slope of a hill without regard to the natural contour of the ground. It encloses an area of 4.2 m² which extends approximately 3,200 m east-west and 2,000 m north-south. A glimpse at the Mayapán map (Jones 1952) will show that the wall around the western half of the site forms a fairly even arc about 1 km in radius from the central ceremonial group. Its generally circular shape is broken on the east side, however, by an extension which culminates in a sharp apex more than 2 km from the central ruins.

Even for such prodigious builders as the Maya the construction of this wall and its many gateways was an enormous expenditure of manpower. The builders first erected an outer primary wall rising on a slight batter to an average height of 1.5 m around the eastern half of the site, and in some places to 2 m around the western end. Against the inner face of the primary wall another lower one was built. The two together made a single wall very thick at the base and stepped at the top, the lower step on the inside forming a bench and the higher a parapet.

The stone for this great undertaking was quarried from nearby ledges and outcrops of bedrock. Huge blocks were broken and pried, hauled into place, and utilized without further shaping or dressing. Frequently some of the larger blocks were cut from the surface rock along the line of the wall and simply turned up on edge to form the lower facing (Fig. 2.4i). The wall facing of rough, uncut, and undressed limestone blocks retained a core fill of dry rubble, and the whole was built without mortar. Generally, smaller stones were employed both in the top facing and fill, with crushed rock composing the uppermost fill of the bench and parapet. This appeared to be the remains of a lime concrete surface, though nowhere along the entire wall was the latter preserved. Despite the lack of evidence, it is probable that originally the bench and parapet had been capped with a thin surface of lime mortar.

It may be stated here that the ruinous condition of the Great Wall and its portals appears to have been caused mainly by natural agencies. Minor damage, it is true, has occurred where the wall has been broken through for a modern trail or where the local people have removed stones to fence their cornfields. Nevertheless, the major damage has resulted from centuries of exposure to the elements, and from fast-growing roots of large trees which have penetrated the loose stones, gradually dislocated them, and caused the wall to crumble.

GATES

In this report each gateway is designated by the capital letter of the grid square in which it is located; e.g. Gate H is found within Square H on the Mayapán map. Their description begins with the principal north entrance, Gate D, and continues clockwise around the site. Prior to excavation it was decided to clear only one-half of each gate investigated, so as to keep undisturbed evidence for any future study.

Altogether, 12 ancient portals through the Great Wall were recognized during the 1952 season. These were classified on the basis of their plan as seven major and five minor gates. The latter are straight,

narrow passages; the former have a more elaborate ground plan. The entrances are wider in major than in minor gateways and lead into an amplified rectangular space suggesting a portico, but still set within the wall. The "portico" faces the interior of the enclosure and may have one or two stone columns or masonry piers. Besides the 12 gates identified, there may have been others, particularly minor ones. The original number is uncertain because of breaches made in the wall in postconquest times for roads and trails crossing the site. About 25 of these were noted, some wide enough to accommodate carts or trucks. Had there existed a minor gate where any of these modern breaches occur, all traces have been obliterated. Of the 12 known gates, one major and one minor had been blocked with masonry during the occupation of Mayapán. Presumably the others were in use simultaneously.

The study of gates was undertaken with specific problems in mind: Would we find pottery dumps in the vicinity of the gates indicating rites involving annual breaking of domestic and religious pottery and the deposition of idols? Would we obtain evidence of armories, guard houses, and of warfare? Special attention was therefore directed not only to the gateways and their immediate approaches but to the surrounding areas as well.

Intensive field work began at Gate D with the clearing away of the low scrubby bush and accumulated leaf mold from a circular area some 40 m. in diameter around the entranceway (Fig. 2.5a). Several of the larger trees were left standing where these did not interfere with the proposed work. Once the preliminary cleaning was accomplished, it became evident that Gate D had been built on a slightly elevated, natural hillock with the bedrock visible almost up to the entrance on each side. To be certain, however, that no offerings or ceremonial pottery dumps would be missed, we explored all the pot holes and crevices in the limestone and turned the thin mantle of topsoil from a distance of 20 m on both sides towards the portal (Fig. 2.1d). This was tedious and for the most part unproductive work, but it permitted certain conclusions; namely, that the surrounding limestone outcrop had been utilized as a stone quarry, and that no ceremonial dumps had accumulated in the immediate vicinity of the gate. Only one cache, a few broken artifacts, and a small amount of badly weathered pottery fragments were recovered from these excavations. The cache (Fig. 2.18c), a single miniature effigy vessel filled with ashes and covered with a tiny pottery lid, had been deposited as an offering in a shallow hole in the bedrock just north of and outside the portal (Fig. 2.1d).

Within the gateway fallen debris from the sides had covered and partially protected the thin, lime concrete floor of the passageway (Fig. 2.6c). Above this floor there was no indication of fallen roof material; hence, had Gate D been roofed, it could only have been with pole and thatch. After the clearing of the floor, a north-south trench following bedrock was dug through the gateway (Fig. 2.1d). The bedrock in many places was flush with the floor surface and only the slight depressions in the hill had been filled with loose stone and dirt.

The construction of this gate and all the others was the same as that used in the Great Wall, large, rough blocks laid without mortar (Fig. 2.5c–e). Even the interiors of the major as well as the minor gates were left unplastered except for the floors (Figs. 2.5b; 2.6c). The plan of Gate D is unusual in that the wall approaching either side thickens only slightly to join the north portion of the gateway which projects several meters beyond the exterior line of the Great Wall (Fig. 2.1d). A narrow passage was left in the center of this northern projection, which gave access to an enlarged rectangular space still set within the wall and herein termed a portico. This faced south toward the city, with a single masonry column placed on the central axis of the gateway. The column (Figs. 2.5b; 2.6b), like the wall and gates, was built of large rough block without mortar. Its purpose is uncertain but it may have served as a support for timbers had the gateway been roofed. The excavations below the column disclosed no cache or ceremonial offering.

The ruinous condition of Gate D was such that we were unable to determine if stairways led to the top of the wall from each side of the portico. Later, we noted stairways associated with several other gates.

Test cuts were made within a 100 m radius of Gate D wherever depressions showed an accumulation of earth. Despite the intensity of the search, no evidence (except the single cache vessel previously mentioned) indicating ceremonial deposition of pottery, battles, guard houses, or armories was recovered.

Following the investigation of Gate D, all trenches and pits were filled and stones replaced against the walls we had uncovered to prevent any future deterioration from our excavations.

East of Gate D no other ancient gateway was encountered until we reached the extreme northeast corner of the city, where the Great Wall sharply turns and continues in a southwest direction. In this distance of over 1.5 km two modern breaches occur where *milpa* trails crossed the wall. At the northeast corner the major Gate G was studied briefly but not excavated (Fig. 2.1e). Here the wall thickens from its

average of 2.5 m to 4 m, this extra width accommodating the passage and the portico. The entry, 2 m wide, in the outer half of the wall, leads into the portico which differs from Gate D only in that it probably has two masonry columns instead of one. Only the east column stands above the debris, but its off-center position suggests that another may be found buried just west of it. A broad stairway projects from the interior face of the wall, west of the portico, and leads to its summit.

As previously mentioned, the direction of the Great Wall at Gate G changes abruptly with almost a right angle (Fig. 2.1e) and meanders in a southwesterly course to another major entrance, Gate H, opposite an important group of ceremonial structures at Cenote Itzmal Ch'en. The wall widens rapidly as it approaches Gate H and, like G, the entrance and portico are built within the wall (Fig. 2.1f). The portico is not balanced in relation to the central axis of the passage, and no columns remain in place. A very large stone which may have been a column now lies above floor level where the outer passage enters the portico. No excavation was undertaken here because the exposed bedrock gave little hope of recovering additional information.

Continuing in the same southwesterly direction from Gate H, we found the next ingress, Gate U, a minor one. It consists of a simple passage, 1 m wide, resembling the excavated minor Gate AA, to be described later.

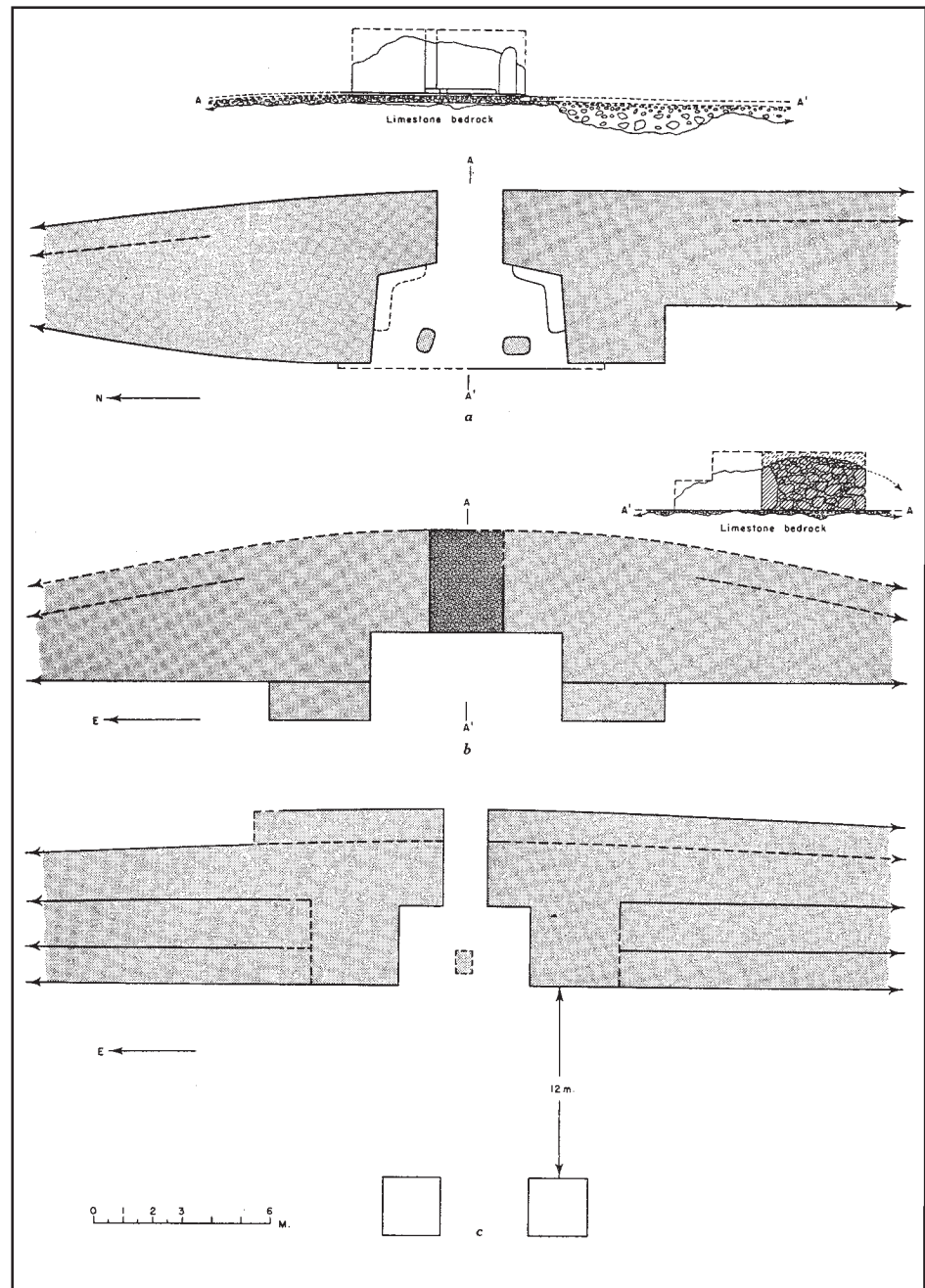
The next ancient opening, Gate T occurs at the extreme southeast edge of the site and is closely associated with two temples and Cenote X-Coton, located just inside the enclosure. This gate (Figs. 2.2a; 2.7; 2.8), a major one, was excavated in the same manner as Gate D. The southern half of the portal was thoroughly investigated. Also, owing to a fairly deep deposit of soil, a long stratigraphic trench was dug to bedrock for a considerable distance in both directions (Figs. 2.2a; 2.8d).

The plan of Gate T differed in minor details from D. The Great Wall approaching it spreads from the normal 2.5 m thickness to 6 m. A wide passage through the wall's outer portion gave access to the inner portico containing two large stone columns (Fig. 2.8a, b). In the interior corner of the portico was a low masonry bench, a feature not found at Gate D. The trench along the central axis of Gate T disclosed that the builders first leveled the general area, then added a layer of crushed rock to raise the floor of the gateway one step above the surrounding level (Figs. 2.2a; 2.8c). This dry crushed rock formed the base for an excellent lime concrete floor which remained unbroken, thus providing a sealed stratigraphic condition for the few pottery fragments found below

it. A later floor was constructed a few centimeters above and served to protect the earlier one. A small amount of pottery and artifacts recovered in the debris above the second floor included several fragments of a thin gold ornament and a pellet from a copper bell. As at Gate D, no evidence was brought to light indicating nonperishable roof material.

Just beyond Gate T the Great Wall turns west; only a short distance from the bend was discovered another major gateway, Blocked Gate T, which had been sealed with masonry during the occupation of Mayapán (Figs. 2.2b; 2.9). We excavated this gateway and found it to be the same as the other major ones except that the portico projected from the inner face of the wall instead of being set entirely within it or of being like Gate D. Also, no masonry or large stone columns were in the portico, but these may have been removed when the portal was blocked. That this entrance had been sealed while Mayapán still flourished was evident from the pottery fragments recovered on its floor beneath the secondary fill.

There is no obvious explanation why there should be two major gateways so close together at the southeast edge of the city. Although the nearby Cenote X-Coton and associated temples suggest the importance of the locality, one gateway seemingly would have sufficed, as apparently it did after the other was blocked. An attempt was made to determine if the sealed gate had been built prior to Gate T, but both appear to be contemporary with the walled construction.



2.2. Gate T, Blocked Gate T, and Gate EE.

a. Plan and east-west section of Gate T. b. Plan and section of Blocked Gate T, which was closed with masonry during the occupation of Mayapán. c. Plan of Gate EE.

From Cenote X-Coton the Great Wall continues west with some southward trend. A number of breaches occur along this stretch but in each case they are obviously for modern roads or *milpa* trails. As has been said, some of these breaches may have destroyed ancient minor passages. The first old one we were able to identify after Blocked Gate T was a

minor gate, almost 1 km. away at 890 S, 530 E. It does not show on the published map of Mayapán, and discovery of Blocked Gate X was accidental as it, too, had been sealed with masonry in ancient times. The stones used to close the 1.5 m wide passage had the same rough appearance as those in the wall, and the entrance was recognized only by the vertical lines of the exterior corners. No excavation was done on this previously unknown minor gate.

Farther southwest and just within Square EE at 1100 S, 10 W, is another minor gate. It is a straight, narrow passage, 1.3 m wide, now partially choked with debris fallen from each side. Minor Gate EE shows no unusual features and no excavations were attempted.

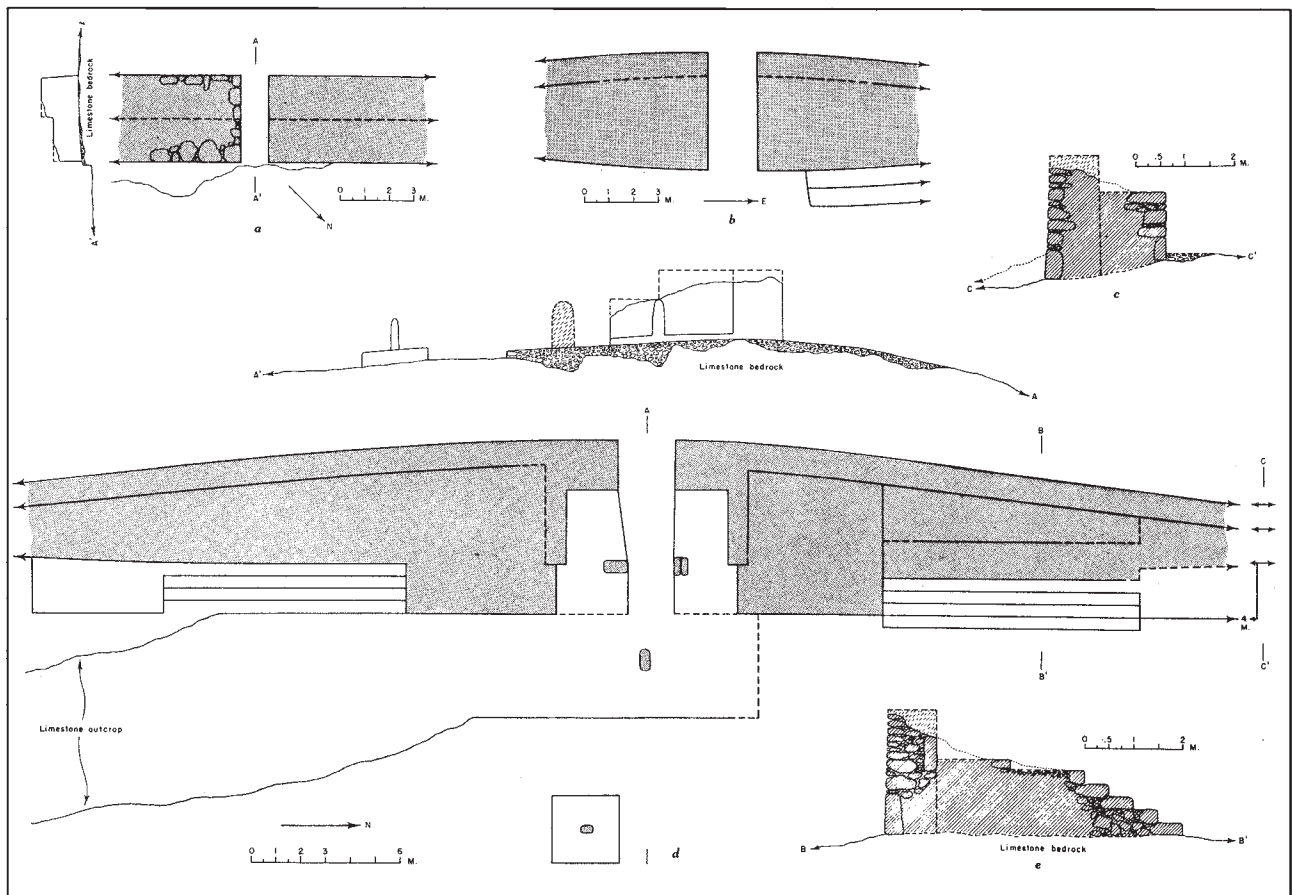
Also in this square, near its western edge, is the principal south gate in the Mayapán wall. This major entrance, Gate EE, still serves as a passage for a modern trail from Telchaquillo to the town of Chapab. The work at Gate EE consisted of clearing away the undergrowth in order to obtain photographs and a ground plan (Figs. 2.2c; 2.10), and the excavation of two small platforms directly inside the enclosure. These platforms, square in plan and each about 40 cm high, had been built of a single facing course of rough stones and filled with dry rubble. They rested on bedrock and presumably were surfaced with plaster, although none remained. We removed the stone fill of both platforms, subsequently replacing it, to determine if offerings had been put inside them. The east platform yielded nothing but the west one contained fragments of a porous gray ware vessel (Fig. 2.18a) which may have been deposited as an offering.

There were two periods of construction on Gate EE. Originally the portal was similar to Gates G, H, and T, built within a considerably thickened section of the Great Wall with a passage through the outer half leading into a portico. In this case the portico, though clearly definable without excavation, had no masonry or stone column. Probably one had existed and was removed in postconquest times to clear the passage for the modern trail. Secondly, a wall had been added against the outer face of the Great Wall extending for some distance east and west from the entranceway (Fig. 2.2c). This addition, 1.1 m thick, apparently reached the same height as the primary wall. Without increasing the latter's original height the extra thickness would not have made the Great Wall more effective for defense, but it would have helped retain or buttress those parts that may have shown signs of crumbling. Another example of this buttressing was noted at 1125 S, 125 W, where a section 20 m long and 1 m, thick was laid against the outer facing.

From Gate EE the Great Wall curves in a low arc to another major gate in Square O. About half-way between, at 700 S, 935 W, is a minor passage, Gate AA, which was completely choked with fallen debris. On investigation, this gateway, the only minor one excavated, proved to be a straight, narrow passage through the wall with a lime plaster floor (Figs. 2.3a; 11). The floor continued beyond the entranceway and merged with the natural limestone outcrop. The wall, as elsewhere, had been built on bedrock with its surfaces on the exterior and in the passageway faced with rough blocks laid without mortar or plaster. This gate, as well as other minor ones, probably had not been roofed as no roof material was noted in the debris.

Gate O (Fig. 2.3d,e), the main western entrance to the city, was not only the best preserved but the largest and most elaborate in the Mayapán wall. We investigated this major portal more thoroughly than any of the others. An area roughly 50 m in radius was completely cleared of vegetation to permit study of the terrain and detailed excavations (Figs. 2.12, 2.13). Gate O was built on the north slope of a hillock rather than on the crest. The orientation of the entrance was such that as one entered the narrow outer passage he faced the temple of Kukulcan, the largest pyramid at the site, situated 1 km away in the heart of the city (Fig. 2.12b). The narrow entrance led to an inner portico with two columns, one of which was built of many irregular blocks, the other of a single large stone. The portico gave on a low terrace where a plain stela once stood on the center axis of the gateway (Fig. 2.13b). Beyond the terrace and slightly off the gate's axis was a square masonry platform, 50 cm high, supporting another unsculptured stela. These two monuments were examined carefully and, although severely burned by *milpa* fires, quite certainly bore no carving. Their surfaces originally may have been plastered and painted, but no evidence of this was found. We exposed the exterior of the square platform (Fig. 2.13a,d), then cut a north-south trench through it on the level of bedrock. There was no offering below the stela or in the fill of the platform. Also, no chronological difference could be observed between the few sherds recovered from the exterior and those from the interior.

A trench dug through Gate O following bedrock exposed in section the lime concrete floor which surfaced the terrace, the interior of the gateway, and the outside for some distance west where all trace of the floor was lost because of the destructive action of tree roots. It probably merged with the limestone outcrops about 10 m from the gateway (Fig. 2.3d). Within the portico low benches had been added later



2.3. Gates AA, B, and O.

a. Plan and section of minor Gate AA. b. Plan of minor Gate B. c. Gate O, Section y. d. Plan of Gate O and east-west section through the center of the portal. e. Gate O, Section x.

on each side of the passageway. These benches bore a finishing coat of plaster which smoothly joined the base of the portico walls but did not cover their rough block facing (Fig. 2.13f).

On the inside of the enclosure, north and south of the portal, were broad stairways leading to the top of the Great Wall (Figs. 2.3d,e; 2.13c). Such extensive stairways suggest a use other than the convenience of guards patrolling the gateway. Their purpose may have been to accommodate a large number of spectators observing pageants or ceremonies in the vicinity of the gate.

From Gate O the Great Wall continues northward for some distance and slowly turns east. About halfway between Gates O and D, at 540 N, 550 W, is a clearly defined minor passage, Gate B (Fig. 2.3b). It is wider than the normal minor entrances and here the wall thickens considerably approaching the ingress. Also, on one side of the passage there is a stairway leading from within the enclosure to

the top of the wall. Nevertheless, Gate B is a minor one because it lacks the interior portico and accompanying columns. From here to Gate D there are no further ancient passages through the wall.

MATERIAL CULTURE

A scant quantity of artifacts and potsherds was recovered from the intensive investigations of three major gateways, D, T, and O, and the lesser excavations at Gate EE, Blocked Gate T, and minor Gate AA. Especially difficult to explain was the absence of any artifacts, especially stone tools, in and around the quarries near the Great Wall and gates. Here one might expect to find whole or broken stone implements utilized in the quarrying operations. The few artifacts and weathered fragments of pottery we did recover were found mostly in the thin topsoil and were widely scattered inside and outside the portals. An inventory follows:



a



b



c



d



e



f



g



h



i

2.4. The Great Wall of Mayapán.

a. Looking east from Gate EE along the top of the Great Wall, showing its present crumbled state. It appears as a white line of rubble as it meanders through the thorny bush. b. The same, looking west over Gate EE. c. A stretch of wall at 1120 S, 125 W. The Maya workman stands on a well-preserved section of the outer parapet. d. The exterior of the wall just north of Gate O. e. Detail of the outer facing of the Great Wall where it stands to its maximum height just north of Gate O. f,g. Two views of the exterior facing at 970 S, 725 W. This section of the wall still stands almost to its original height of 1.5 m, as is evidenced by the lack of fallen stone along the base. h. Exterior facing of the wall at 350 S, 1175 W. i. Enormous limestone slabs quarried from the natural outcrop in the foreground and tilted on edge to form the inner facing of the bench.



a



b



c



d



e



f

2.5. Gate D.

a. View from the interior looking north after clearing but before excavation. The two larger trees in the center grow within the portico, and the Great Wall approaches it from either side. Note the low hillock on which the gate is built and the exposed bedrock in the foreground extending almost to the portico. b. Close-up of the east half of the excavated portico. The workman stands on the lower of two steps which lead into the portico. Note [x], one large stone on edge forming the east jamb of the narrow entranceway, and [y], the single masonry column within the portico. c,d. The northwest exterior corner of the gateway before and after excavation. e. Looking east to the northern projection of the gate, and showing in the lower right-hand corner its junction with the Great Wall. f. The entrance showing the single huge stone (designated [x] in b) quarried from bedrock and simply turned on edge to form the east jamb of the passage.



a



b



c

2.6. Gate D.

a. The exterior of the northern projection after excavation. Note the bedrock on which the gateway was constructed. b. Looking south through the passage to masonry column (designated [y] in Fig. 2.5b) in the center of the portico. c. The northeast interior corner of the portico showing the same masonry as that used elsewhere in the Great Wall. The light patches in the foreground are remnants of the lime mortar floor.



a



b



c

2.7. Gate T.

a. View from the exterior before excavation. b. The interior before excavation, and the Great Wall extending northeast from the portal. c. View from the interior after the initial excavation of one-half of the gateway.



a



b



c



d

2.8. Gate T.

a. Detail of the portico with its stone columns [x-x]. b. The excavated interior of the portico showing one of its stone columns on the right, the lime floor, and the low masonry bench. c. The natural, pitted bedrock in the foreground was covered by a plaza floor of lime concrete. The floor terminated at the single low step [x] which led into the portico. [y] indicates the soil and debris above the portico floor accumulated since the abandonment of Mayapán. d. The exploratory trench along the central axis of the gate.



a



b

2.9. Blocked Gate T.

a. The blocked major gate at 500 S, 1220 E, from the interior portico, showing the east side of the passage through the outer wall. b. After removing part of the second masonry which sealed the passageway.

OBJECTS OF STONE

OBSIDIAN. All clear to slightly cloudy transparent black stone.

Flake blades. Total fragments 16; 9 from Gate D, 7 from Gate O. Blades 6.5–15 mm wide. Only complete one 52 mm long (Fig. 2.14a; Cat. no. 52-51).

Scraper thumbnail. One from Gate D (Fig. 2.14b; Cat. no. 52-521). A small obsidian flake secondarily chipped on one edge.

Chipped point. 1 from Gate D (Cat. no. 52-52), only a fragment of the stem recovered. Excellent workmanship.

Comment. All the obsidian objects appear to be the same quality stone, suggesting that the people of Mayapán obtained their material by trade from a single source in the Guatemalan or Mexican highlands.

FLINT OR FINE-GRAINED LIMESTONE. White, pink, or yellow to pale brown opaque stone.

Flake blades. 2: 1 from Gate D (Cat. no. 52-50), 1 from Gate O (Lot B-2; Fig. 2.15 right). Both incomplete, pressure-flaked from a flint core. Resultant blade short, wide, and with irregular edges.

Chipped points. 4: 3 from Gate D (Fig. 2.15, left and left center; Cat. nos. 52-23,-50), 1 from Gate O (Fig. 2.15, right center; Lot B-2). Workmanship mediocre.

Hammerstones (?). 3: 2 from Gate D (Fig. 2.16, right; Cat. nos. 52-49,-48), 1 from Gate AA (Fig. 2.16, left; Cat. no. 52-167).

Metate. 1 fragment (Fig. 2.17) re-used in the construction of the Great Wall at 55 S, 810 E. Prior to serving as a metate, this stone had primarily been

well cut, dressed, and used as wall facing in a building probably of Puuc-style architecture.

Comment. The artifacts of flint and limestone were derived most likely from stone obtained in the immediate environs of Mayapán. The workmanship is inferior.

OBJECTS OF METAL

GOLD. Six small fragments of a single ornament which lay on the upper floor of Gate T. The pieces are flat and extremely thin, approximately 0.1 mm in thickness. It is not gold leaf, as each piece is stiff and brittle. The six together cover an area about 1 cm square. All have traces of green enamel (?) on one side.

COPPER. One solid irregular pellet, 5 mm diameter, apparently from a copper bell. This was found with the fragments of gold.

Comment. Metal artifacts represent importations from an area outside the peninsula of Yucatán, possibly Honduras or Mexico.

OBJECTS OF POTTERY

During the excavations the pottery was kept in separate lots from locations inside and outside the gateways, within the portals, below floors, and in fill of platforms. Each lot was washed, analyzed, and recorded individually; then, if no statistical or chronological differences could be observed, all material from a single gateway was placed together and given one lot number. For example, all pottery from



2.10. Gate EE.

a. Unexcavated major gate from the interior, showing the modern trail which still passes through this ancient portal.



a



b

2.11. Gate AA.

a. The minor gate after excavation showing the narrow passage from inside the wall. The same from the exterior.



a



b

2.12. Gate O.

a. View from the outside before excavation.

b. Close-up of the same, showing one of the columns-portal still standing, and a fallen plain stela beyond. The Temple of Kukulcan, or the Castillo, in the just as it is known today, may be seen protruding above the vegetation 1 km in a direct line from the gateway.



a



b



c

2.13. Gate O.

a-c. Three views from the interior after the area had been thoroughly cleared but before excavation. a. In the immediate foreground are the remains of a square masonry platform on which stood a plain stela. Beyond and at the extreme right is the portal. b. A closer view of the portico with its two columns, 5-x, and the outer passage where a workman stands. [y] indicates a plain fallen monument, now resting on the low terrace seen in the immediate foreground. c. The men are standing on the broad stairway leading to the top of the wall north of the gateway. d. The masonry platform shown in a, looking northeast. e. The south half of the portico after excavation. f. The unplastered rough block masonry of the portico showing the lime concrete floor joining the base of the wall.



d



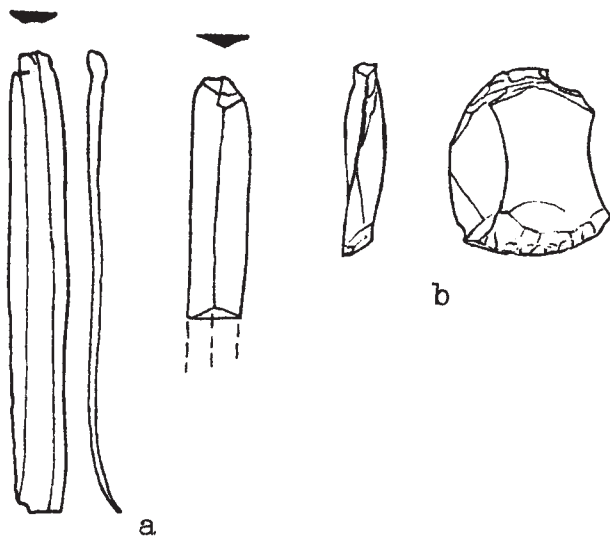
e



f

Gate D is marked B-1, from Gate O, B-2, Gate EE, B-3; whereas from Gate T there are two lots, B-4 from above the portico floor and outside the entranceway, and B-5, a small lot recovered below the unbroken

floor of the portico. These five ceramic lots total only 172 rim and 610 body sherds. Only a brief summary will be given in this report of the pottery from the Mayapán wall and gateways.

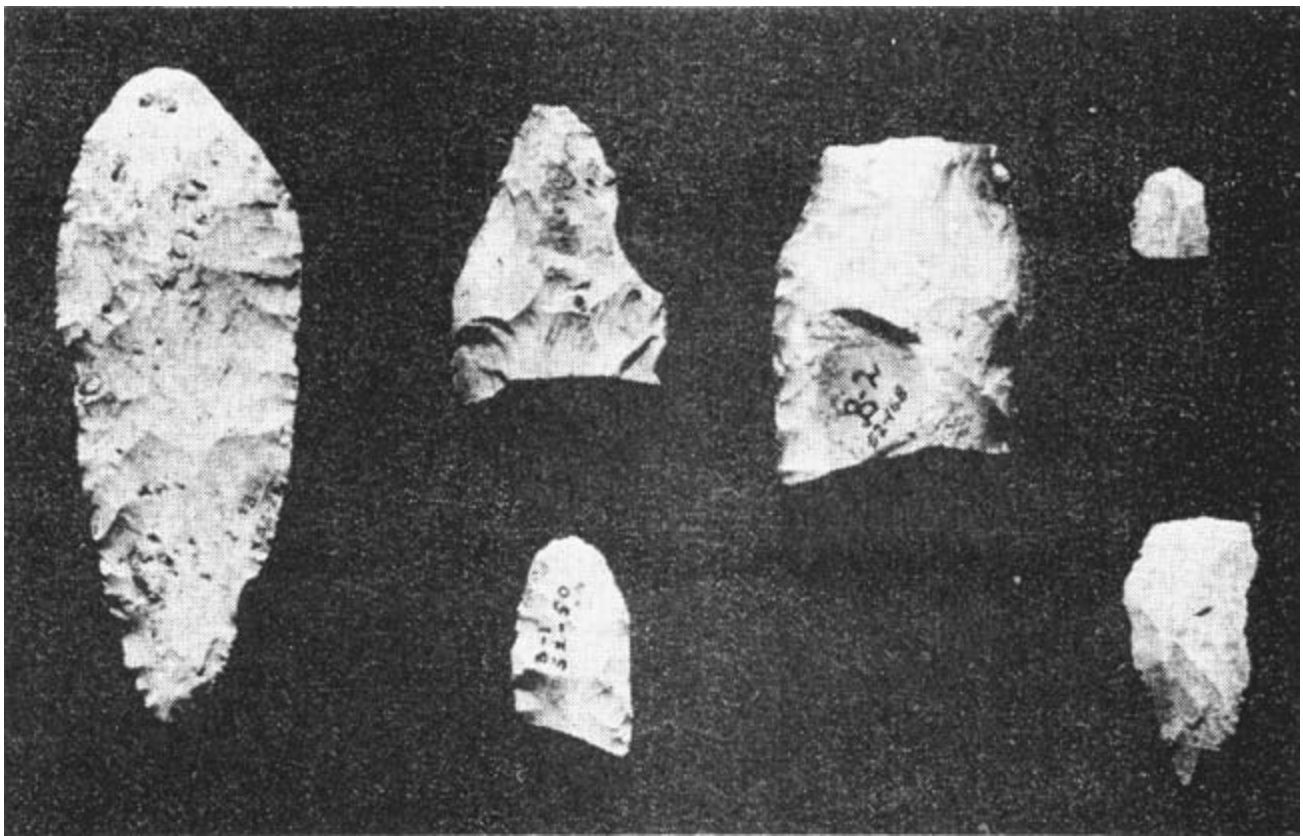


2.14. Obsidian Artifacts.

a. Flake blades. b. Small "thumbnail" scraper. Both drawings natural size.

Fifty percent of the rims and body sherds are from a single type bearing a red slip. This has been termed Mayapán Red Ware. Shapes include water jars, tripod bowls with straight flaring sides, and restricted-orifice vessels. The next most common pottery, contemporary with the Mayapán Red Ware, is a coarse, unslipped, light Gray Ware (Fig. 2.18a,c) of very poor quality. It is soft and may be crumbled easily in one's fingers. The use of such inferior pottery may have been restricted to ceremonial objects such as figurines, effigies, and containers for offerings. Gray Ware occurs most frequently in the form of a wide-mouth, low-neck jar (Fig. 2.18a), with light striations on the shoulder.

Another ceramic type, Puuc Slate Ware, which we believe to represent an occupation of the site predating the period when Mayapán became a walled political capital, was found in minor quantities everywhere except at Gate T (Lots B-4 and B-5). Here more than half of the total pottery excavated was slate ware. The high percentage of this ware at Gate T may be accounted for by the evidence of considerable architectural and ceremonial activ-



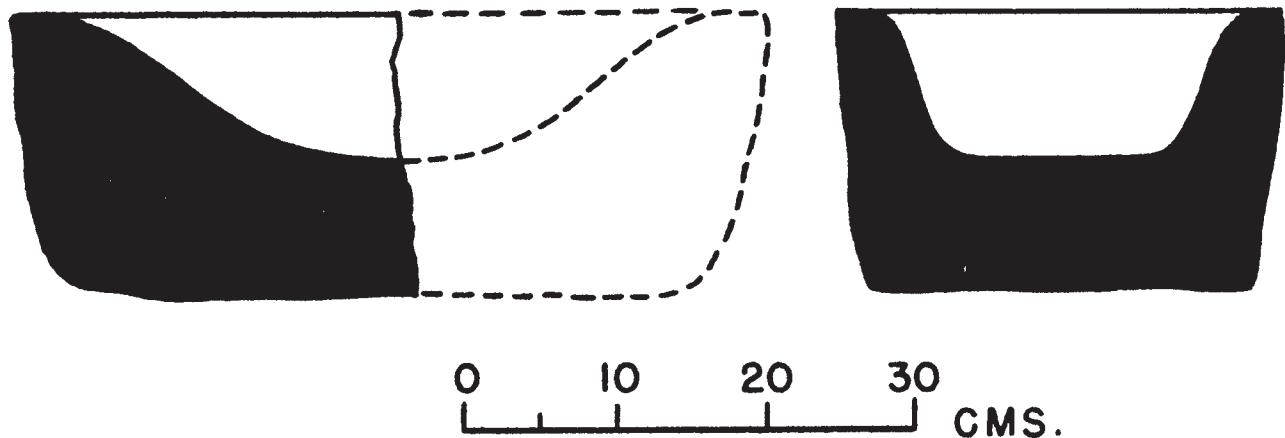
2.15. Obsidian Artifacts.

a. The two fragments on the right are flake blades, the others chipped points. The complete point from Gate D measures 12.5 cm long.



2.16. Hammerstones (2).

a. The stone on the left (Cat. no. 52-167) lay on the surface outside Gate AA. The other two (Cat. nos. 52-49, -48) came from Gate D. Height of stone at left, 9.5 cm.



2.17. Metate.

a. Fragment re-used in construction of the Great Wall.

ity around Cenote X-Coton prior to the Mayapán period. Despite the predominance of slate ware from Gate T, pottery from below the unbroken portico floor included the typical red and gray wares found at the other entrances.

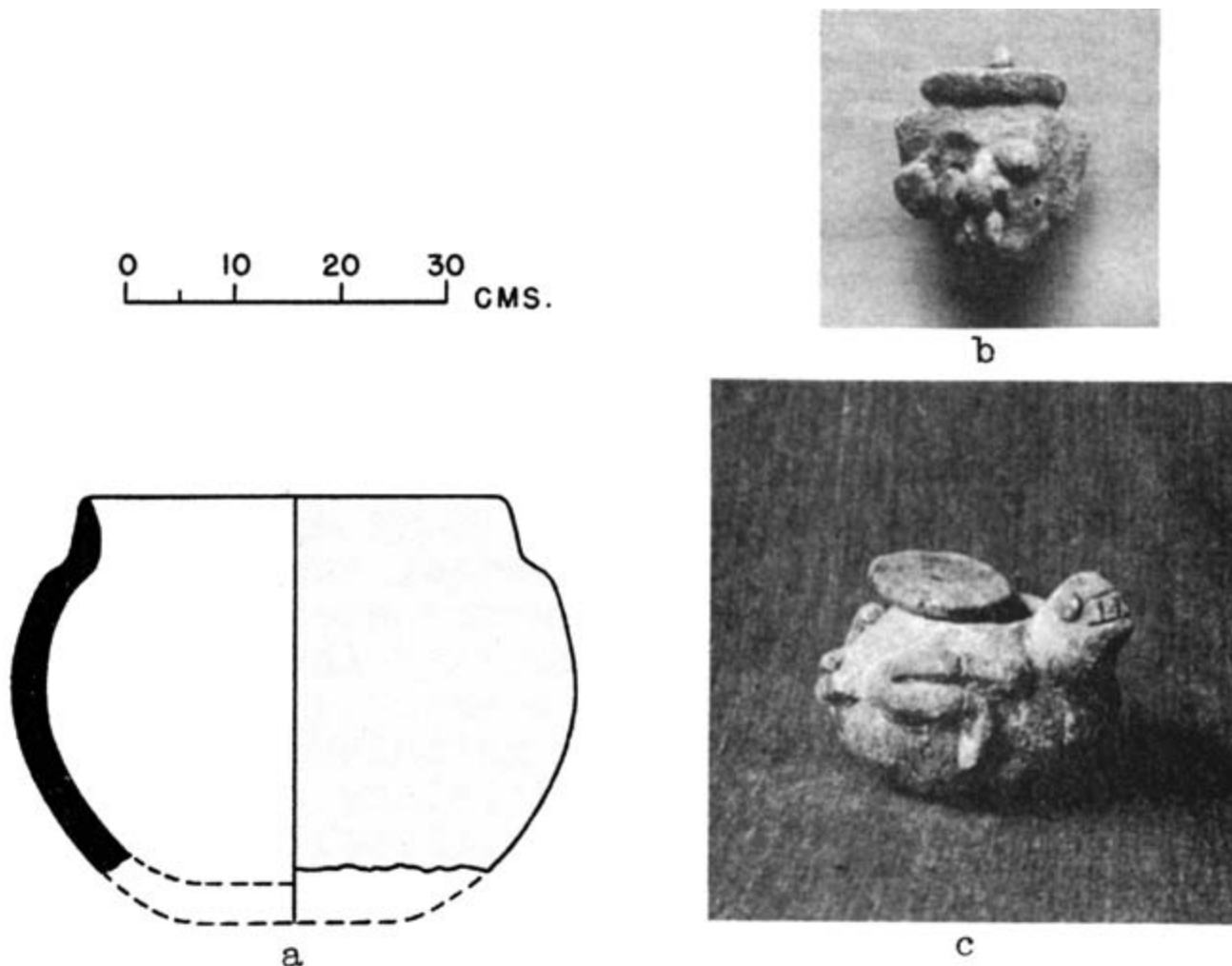
DISCUSSION

The Great Wall of Mayapán encloses not only the temples and houses of the lords but most of the general residential area as well. The wall was constructed, as evidenced by the style of masonry and associated cultural material, during the major occupation of this site as a political capital. The investigations herein reported did not disclose conclusive evidence of warfare, of guard houses or armories, or of religious rites involving the ceremonial break-

ing of pottery and the deposition of idols around the entrances to the city.

Special attention was given to the terrain adjacent to the portals for remains of formal roads or sacbes from the exits, or avenues leading toward the heart of the city. None was identified, and it seems evident that only unimproved trails led to and from the city portals. Today, the Maya living in the region have no tradition concerning the wall or its gateways. The only instance of an ancient ingress now being utilized is Gate EE, through which passes a modern trail from Telchaquillo to the village of Chapab.

Why was the Great Wall built? The first thought and perhaps the simplest explanation would be for defense. There is good reason to believe from Landa's account and other historical sources that the last few centuries before the Spanish conquest were turbu-



2.18. Pottery from the Excavations.

a. Unslipped, coarse, light gray vessel (Lot B-3) from the fill of the west platform at Gate EE. Scale 1:4. b. Hollow, moldmade figurine head (Cat. no. 52-47) from Gate D. Maximum width, 5.2 cm. c. Cache vessel (Cat. no. 52-46) containing ashes found outside Gate D. This miniature turtle effigy and the small flat cover were crudely wrought of coarse, light gray pottery like the vessel in [a], and left unslipped. Maximum diameter, 8 cm.

lent ones for the inhabitants of Yucatán and that there existed a real need for defense of their towns and cities. The Mayapán wall may have been erected to fortify the seat of government. It had a slightly higher parapet along the outer edge and a lower inner bench, or walk, which would have favored the defenders. It must be restated, however, that the wall's height ranged only from 1.5 to a maximum of 2.5 m at a few exceptional points where it crossed low ground. The average throughout the entire length was about the height of a normal man. Ralph L. Roys suggested to me that the existing wall may have been a stone base for a stockade of wood poles set close together and lashed with vines. This interesting hypothesis could not be verified in the field.

There are several other possible interpretations. The wall may have been constructed to delimit the city boundaries for administrative purposes. The site of Mayapán was selected as the national seat of religious and civic authority for a large part of the Yucatán peninsula and presumably the area necessary for this capital had to be requisitioned from land belonging to some individual state or states. The wall, then, could have marked the extent of the district under jurisdiction of the national government. It also may have been a means of control of commerce, taxation, or the liberty of a large number of inhabitants such as servants, laborers, and artisans employed by the priesthood and ruling class of Mayapán.

RESIDENTIAL PROPERTY WALLS AT MAYAPÁN

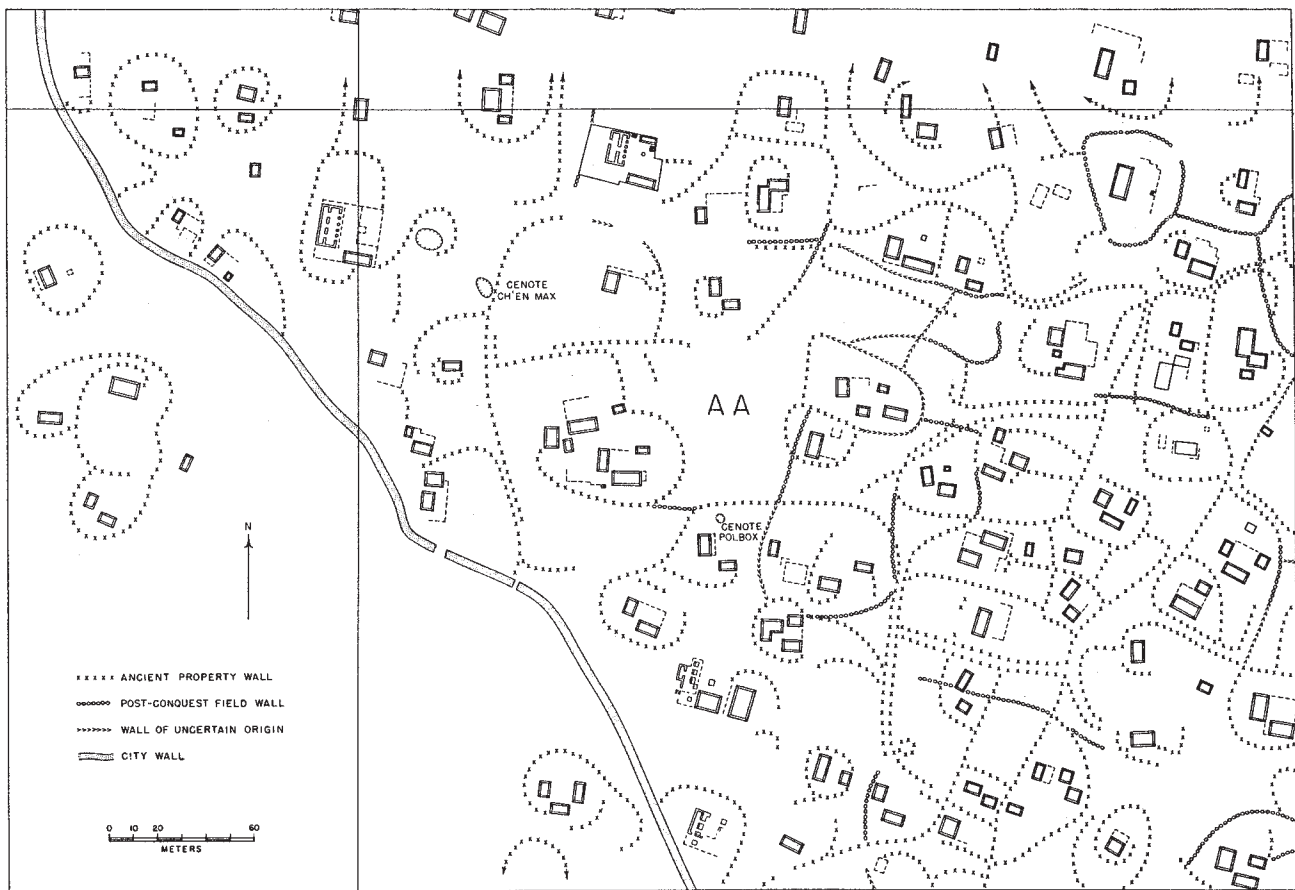
WILLIAM R. BULLARD JR.

The initial surveys of Mayapán disclosed the existence of a great number of field-stone walls running everywhere among the ruins (Pollock 1951:226; Ruppert and Smith 1951:232). While some walls were clearly *milpa* fences or cattle enclosures of post-conquest construction, others seemed contemporary with the occupation of the site. Many of the latter appeared to surround house structures and it was consequently thought that they might delimit property boundaries. During the season of 1952, we followed out and plotted on the Mayapán map all the walls in certain representative portions of the city. It was hoped that such a study might reveal the function of the walls and cast light on land tenure, city organization, and similar features. While stone fences around the houses are a regular feature of modern Yucatecan villages, they have not previously been reported from a preconquest Maya site.

The walls were completely plotted in roughly 1 sq km of the city, comprising specifically Squares D

and K in the north-central part and Squares 2, AA, BB, DD, and EE in the southwest part (Jones 1952, map). In addition, other areas of Mayapán were reconnoitered in order to determine the value of additional work.

The entire site is covered by what seems a maze of stone walls, ranging in age from the occupation of the city to the present day. For many years Mayapán was the site of a Spanish cattle ranch, and stone corals and enclosures were built throughout the central part of the ruins. Moreover, probably ever since the conquest there have been *milpas* within Mayapán, as there are today. Finding plentiful stone at hand in the ruined buildings and walls, the Maya farmers often erect stone fences around their fields, not hesitating to repair and reuse older walls when convenient. Centuries of such destruction and rebuilding have confused to a large extent the old wall patterns. Relatively few ancient walls are complete and in many instances only short sections could be followed. Although even



3.1.

Plot of Walls in Southwest Section of Mayapán (see map with *Current Report 1*).

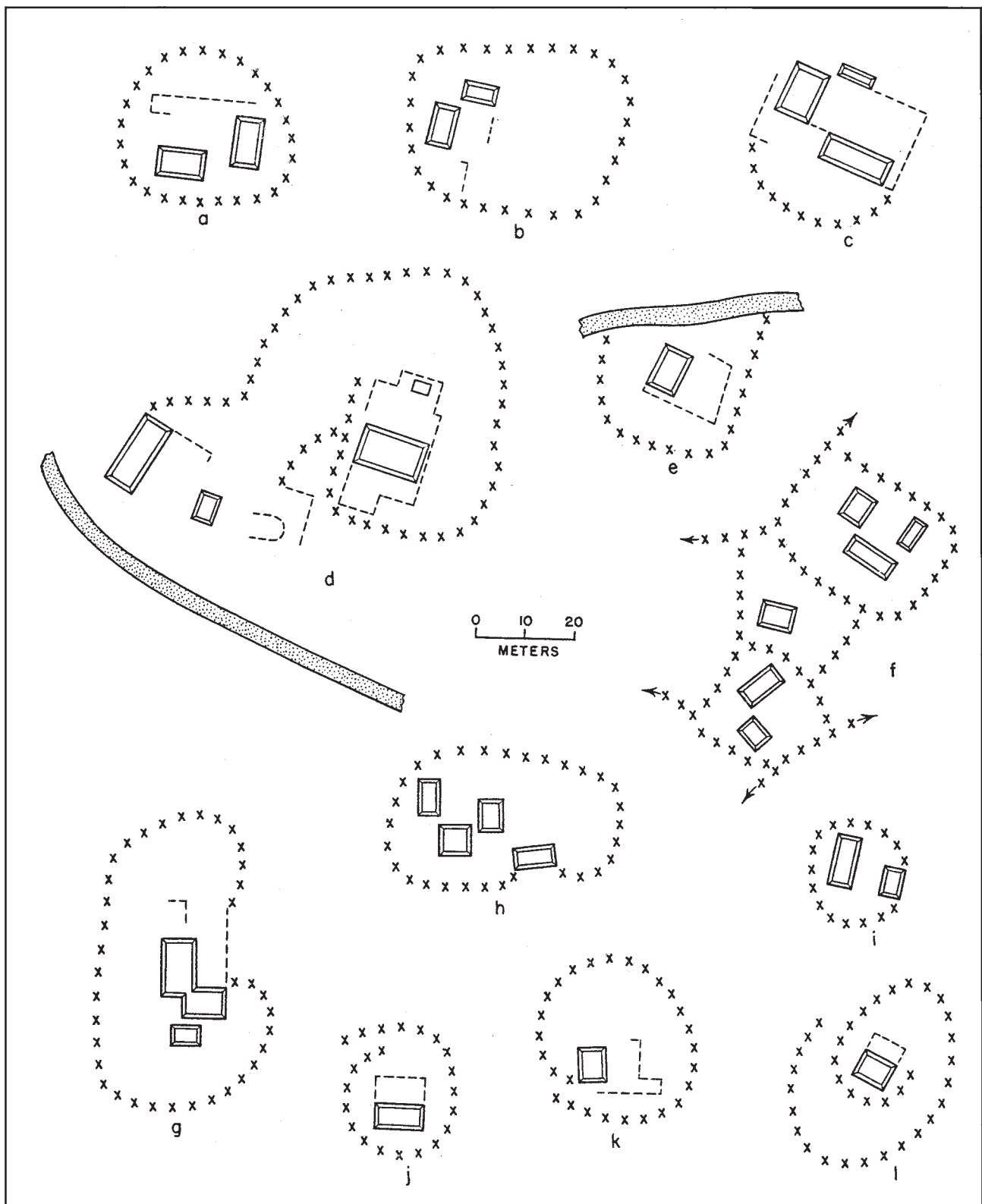
fragmentary walls could usually be related to house structures, the complete pattern of ancient walls over a large area was all too often obscured. In this respect, the walls plotted in the extreme southwestern part of the site proved most satisfactory since here disturbance had been relatively slight (Fig. 3.1).

Another perplexing problem was to distinguish ancient from postconquest walls. Technologically, there are few reliable criteria that can be applied to tell a postconquest wall from a rebuilt ancient wall, or an ancient wall from an old and much destroyed postconquest wall. Thus, although the majority could be identified without difficulty, many had to be marked as questionable.

The ancient walls themselves are essentially alignments of uncut stones, set on edge, either touching or placed a few centimeters apart (Fig. 3.3a,b). The average height of the standing stones is 50–70 cm, but some walls are composed of large slabs up to 1.5 m high. Walls in areas free of postconquest disturbance often have smaller stones and spalls lying near their base, suggesting that the spaces between

the slabs were chinked and filled so that the tops of the walls were level rather than jagged as they appear today. Occasionally chinking stones remain in place in a few walls. In no case, however, was sufficient debris found to warrant the belief that the walls rose substantially higher than the stones now standing. Many modern stone walls in Yucatán are similar in that they utilize large slabs set on end as a base, but today they must be built high enough to prevent cattle and horses from crossing, a problem the ancient Maya did not have to consider.

In nearly all instances the walls wholly or partly surround individual dwelling houses or individual house groups (Fig. 3.2). House groups, although there is considerable variation, generally consist of two or three dwelling-type structures in a quadrangular arrangement, often built on a single terrace. Only rarely is more than one such house group surrounded by the same wall. Although many walls are fragmentary, enough remains were found to indicate that almost every domestic house or group had a wall. In contrast, present evidence suggests that



3.2. Plans of Property Walls.

a,b. Simple enclosures (1200 S, 330 W; 940 S, 650 W). c. Enclosure on one side of house group (630 S, 440 W). d,e. City wall as one boundary of enclosure (1040 S, 620 W; 710 N, 360 E). f. Use of common walls by neighboring house groups (685 S, 700 W). g. Entrance over house terrace (600 S, 630 W). h,i. Entrance through house (700 S, 115 W; 770 S, 820 W). j,k. Entrance formed by overlapping ends of wall (980 S, 670 W; 940 S, 120 W). l. Spiral wall (800S, 690W).



a



b



c



d



e



f

3.3. Property Walls, Gateways, Lanes, Circle.

a. Typical wall (975 S, 535 W). b. Wall built of large slabs (1130 S, 315 W). c. Gateway (605S, 260 W). d. Gateway with lane leading to house platform (220 N, 265 E). e. Lane (730 S, 715 W). f. Stone circle (1000 S, 170 W)

temples and public buildings such as colonnades are not surrounded by walls.

The enclosures formed by the walls usually include only enough space for a small yard around the structures. Most enclosures are of fairly simple plan, tending to be roughly circular or rectangular with rounded corners. There are more complex examples, however, especially around some of the

larger houses (Fig. 3.2d). Unfortunately, few of these are at all complete.

The buildings may be surrounded completely or the walls may abut against a house or terrace corner so that the structures are only partly enclosed (Fig. 3.2a-c). Houses adjacent to the city wall used this as one boundary (Fig. 3.2d,e). It is not unlikely that the yards around some buildings were never completely

fenced and this may explain some of the many apparently incomplete walls that were found. In the more densely settled districts, where the houses are close together, the enclosures become more irregular and neighboring groups share common walls (Fig. 3.2f). The system of walls in such an area may become exceedingly complicated (Fig. 3.1).

In a few instances the walls join a structure in such manner as to suggest that the yard was reached by crossing the terrace or by passing through the house, as is common in modern Maya villages (Fig. 3.2g-i). In other instances the two ends of a wall overlap, forming an entrance passage between them (Fig. 3.2j,k). One example formed a spiral around the house (Fig. 3.2l).

A few gateways were identified. They consist of a gap about 1 m wide between two stones somewhat larger than the other wall stones and often set, like door jambs, at right angles to the course of the wall (Fig. 3.3c). From one gateway a short lane formed by two parallel walls led to the stairway of a house terrace (Fig. 3.3d). Probably most enclosures originally had gateways. Certainly the walls which completely encircle a house group, such as those illustrated in Figure 3.2a,b,e,f, must have had openings, but the collapse of wall stones or postconquest rebuilding has nearly always made it impossible to determine their location. Even so, it is surprising that more gateways were not encountered.

There seems little doubt that the walls mark property boundaries around the houses. Evidently each household or family group had its own fenced yard. This does not necessarily imply, however, that there was private ownership of land in the modern sense. Quite possibly property was held only by permission from higher authority. While many yards are sufficiently large and on suitable terrain for the raising of fruit trees and small gardens, others include only the tops of the rocky hillocks which were the preferred house sites but which seem unsuited for horticulture.

Present indications are that the properties surrounding the larger and more elaborate houses, where the wealthier and more important residents presumably lived, were not markedly larger than those of the more humble homes. Further work, however, will be necessary to solve this problem.

Nothing was found in the areas plotted resembling a formal arrangement of streets. The houses are distributed irregularly and passage through the city evidently was accomplished by winding through the gaps between neighboring walls. Sometimes, particularly where houses are close together, the parallel walls of adjacent enclosures form short, often winding lanes about 2 m in width (Fig. 3.3e). Figure 3.1

shows an area where the lane system is especially complex. As previously noted, postconquest disturbance is at a minimum in this part of the city.

While most lanes are passages between properties, a few seem to run independently of property walls. Unfortunately, most of the latter were found near the close of the season during reconnaissance of the eastern part of the site, and no detailed plotting was done. Additional work will be necessary to clarify their function and their position in the whole settlement pattern. One lane ran to a natural depression about 3 m in diameter, now mostly filled with soil. In another location, four lanes converged on a small cave with three or four steps leading into it, possibly a blocked cenote entrance. Two of the four lanes were part of a series of lanes which could be followed in an almost straight line for nearly 400 m through an area in which houses were rather sparse. The complete examination of this lane system would be a worthwhile study.

Another interesting feature is the small stone circles occasionally found near a house group. They average 2–5 m in diameter and are constructed in the same manner as the boundary walls (Fig. 3.3f). Some are almost perfectly circular; others are more oval. One was built against a high house terrace so that the terrace wall formed one side. Often there is no gap that could have served as an entrance. Some would make excellent pens for small animals, but identification of their purpose without further information can be only guesswork.

There are several cenotes in the squares examined. The ancient wall patterns around them are not always as clear as we should like, but the data indicate that cenotes were ordinarily in the areas between systems of boundary walls, and thus accessible to the general populace, as would be expected.

Additional work on the Mayapán walls will be necessary to pursue several problems. We need to know, for example, more about the long lanes found during exploration of the eastern part of Mayapán. Moreover, further work in areas where the ancient wall pattern is relatively complete can be expected to give fuller understanding of such questions as the correlation of size of property with size and elaborateness of the house groups.

The most important results of the present work, to summarize, are the following conclusions. Each and every household or family group seems to have had a fenced yard around its residence. Temples and public buildings, on the other hand, apparently were not fenced. There was no formal arrangement of dwellings or streets in the residential areas of Mayapán, although narrow, winding lanes afforded access to houses in crowded districts.

EXCAVATIONS IN HOUSE MOUNDS AT MAYAPÁN

KARL RUPPERT AND A. LEDYARD SMITH

The dwelling-type structures at Mayapán follow closely Landa's description of native houses in Yucatán in the sixteenth century. A large number of these structures are shown on the map of Mayapán (Jones 1952). Essentially they consist of a front and a back room but with considerable variation in detail of floor plan (see Ruppert and Smith 1951:231). Landa says, "... they build a wall in the middle dividing the house lengthwise, leaving several doors in the wall into the half which they call the back of the house ... and the other half ... has no doors, but is open the whole length of the house" (Tozzer 1941:85-86). Landa further writes of the commoners being buried in or behind their houses (Tozzer 1941:130). The presence of burials in the Mayapán structures, therefore, provides evidence to corroborate our identification of dwellings, as well as offering additional information on burial practices. It is also hoped that the grave furniture and other remains derived from excavation will throw

light upon the household economy of the aboriginal Maya.

During the 1951-1952 survey of dwelling-type structures likely places for excavation were noted. Such locations consisted of depressions in benches or any visible construction below bench level, such as exposed capstones or bared vaults or walls. Besides digging in places where definite subfloor constructions existed, we made exploratory pits in benches. These excavations revealed tombs, cists, and a refuse dump. Test pits were also made in the terraces supporting structures.

Our work clearly indicated that the tombs and cists were built at the time the structures were erected. In this paper a cist is considered as a stone-lined pit which may or may not have been built for burial purposes but in which there is no indication of human burial. A tomb is similar to a cist but contains evidence of human burial. Since such evidence was found in three instances, it is possible that all cists

were built in preparation for interment, presumably of the occupants of the house.

Material recovered from a single locality, such as a pit, tomb, cist, or stratified area, is designated by a lot number. Sherd material was turned over to R. E. Smith for examination (see R. Smith 1952, Table 1). It is significant that in all excavations pottery of the major, and supposedly latest, period of occupation of Mayapán was recovered. However, it is interesting to note that in one instance (Str. J-49a) the earlier, Puuc type of pottery predominated.

All material recovered from excavations is listed in the captions of the figures under the lot number to which it belongs. Two cow's teeth need some explanation. They were found in the midden under the east bench of Structure J-50a (Lot A-13). Here one of the capstones had fallen, leaving the pit unsealed, so the teeth may well be intrusive.

We wish to thank Drs. Robert T. Hatt, Josselyn Van Tyne, Robert W. Storer, Norman Hartweg, T. Edinger, and Miss Barbara Lawrence for identification of mammal, fish, and bird bones.

STRUCTURE J-131A

(50 N, 520 E)

STRUCTURE J-131A (Fig. 4.1) is located on the east side of a two-structure group. It shows the remains of two benches. The south bench is in better state of preservation than the north.

SOUTH BENCH. When first examined, capstones and some vaulting of what proved to be a tomb were exposed under the south end of the bench.

TOMB (Figs. 4.1, Lot A-1; 4.6a,b). Measures 1.25 by 2.00 m. Floor of well-packed lime mortar 1.30 m, below floor of J-131a. Walls rise 75 cm to offset of vault. Stepped vault rises 75 cm. Most of vault stones had fallen into tomb. Three capstones recovered, of which two were in position. At west end the wall rose vertically at least 1.10 m. The tomb was filled with debris to height of end walls. Plaster still remains on walls to height of vault offset. Masonry of medium-sized blocks. Vault stones not beveled. Bedrock lies 12 cm below floor.

Material found in the tomb is described under Figure 4.1, Lot A-1. The skeletal remains, mixed and scattered throughout the fill near the floor level, indicate the presence of two adults, one lying flexed on its left side facing south against the south wall, the other flexed lying on its right side facing the same wall. The remains of a third skeleton, an infant, were found under a large drum-shaped stone in center of the tomb (Fig. 4.1, Lot A-1,2).

NORTH BENCH. A sink in the south end of the bench suggested a tomb.

TOMB (Figs. 4.1, Lot A-2; 4.8b). Measures 1.15 by 1.60 m. Floor very uneven and 1.25 m below terrace floor on which Structure J-131a rests. Masonry much cruder than in tomb under south bench. Skeletal material concentrated near floor in north half of tomb. The two skulls in northeast corner, placed with top of head downward resting on the floor, suggest secondary burial.

PIT (Fig. 4.1, Lots A-3,-4). Pit beneath north bench to north of tomb showed fill of small stones with much lime mortar.

GROUP J-49

(300 N, 690 E)

STRUCTURE J-49A (Fig. 4.2a), a single-bench building, is located on the west side of a two-structure group. Walls of a cist were exposed when first examined.

CIST (Figs. 4.2a, Lot A-8; 4.7a). Measures 1.25 by 1.95 m. The floor of rough lime plaster 2 cm thick lies on bedrock 1.05 m below top of bench. Cist filled with loose earth and stone to within 45 cm of top of bench. No capstones recovered. Block-type masonry. No plaster on walls. A few sherds and some obsidian and flint chips recovered (Lot A-8).

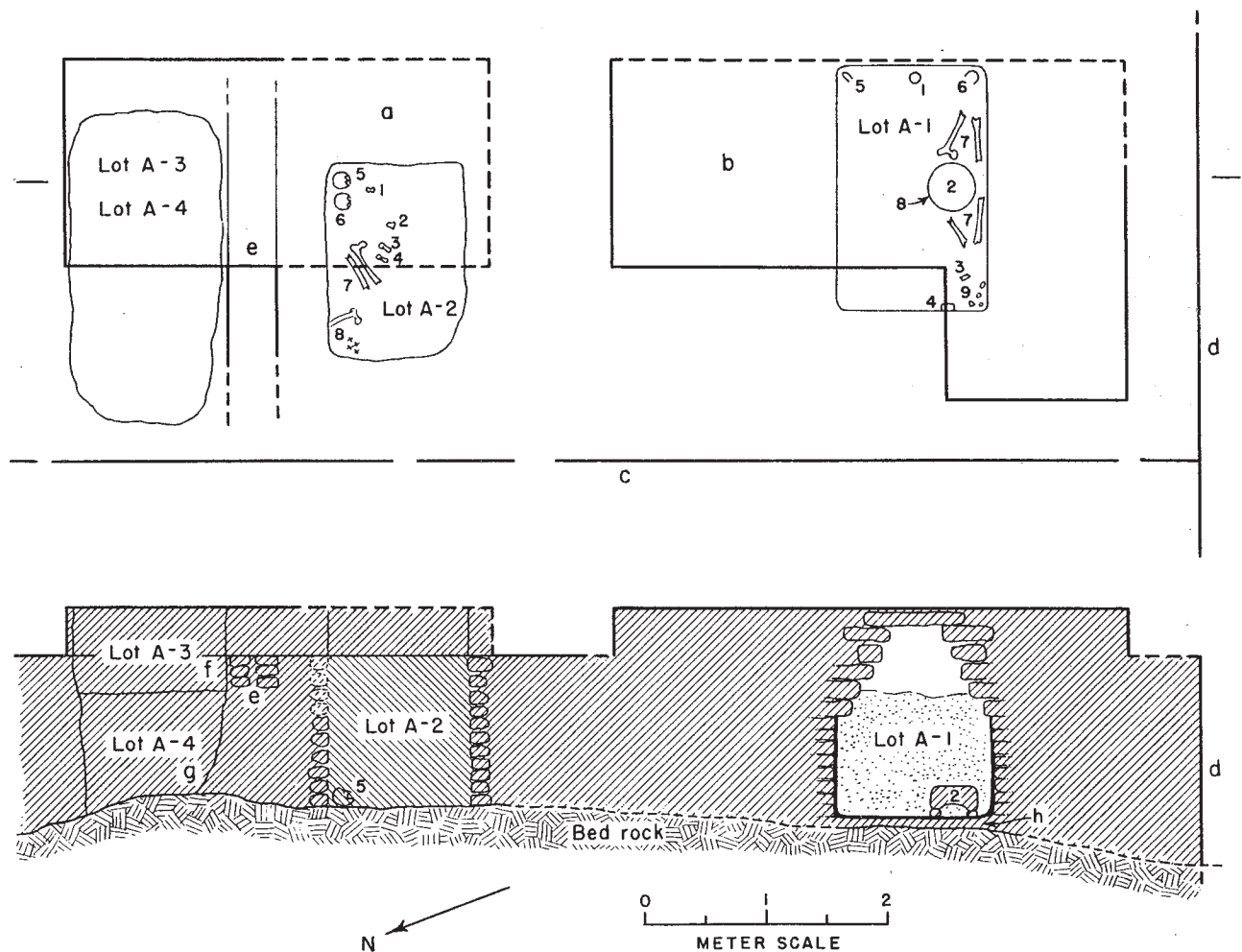
PIT (Figs. 4.2a; 4.8e, Lot A-22). Measures 1.40 by 1.60 m, depth 1.40 m from top of bench to bedrock. Sherds and an obsidian core, 9.3 cm long, recovered.

PIT (Figs. 4.2a; 4.8c, Lots A-10; -12). Measures 1 by 1.50 m. A floor or plaster work-level encountered 60 cm below top of bench. Area above that level designated as Lot A-10. Pit extended 1.15 m below plaster line to bedrock (Lot A-12). All fill of stone and mortar tightly packed.

STRUCTURE J-49B (Fig. 4.2b). A two-bench structure with the west bench L-shaped.

EAST BENCH. In good state of preservation. No indication of cist before excavation was undertaken. Lot A-6 from bench above the stone-lined cist.

CIST (Figs. 4.2b, Lot A-7; 4.7b). Measures 1.10 by 1.95 m. and 82 cm deep. Masonry very rough but covered with heavy layer of lime plaster. Floor of smoothly troweled plaster. In south wall 55 cm above

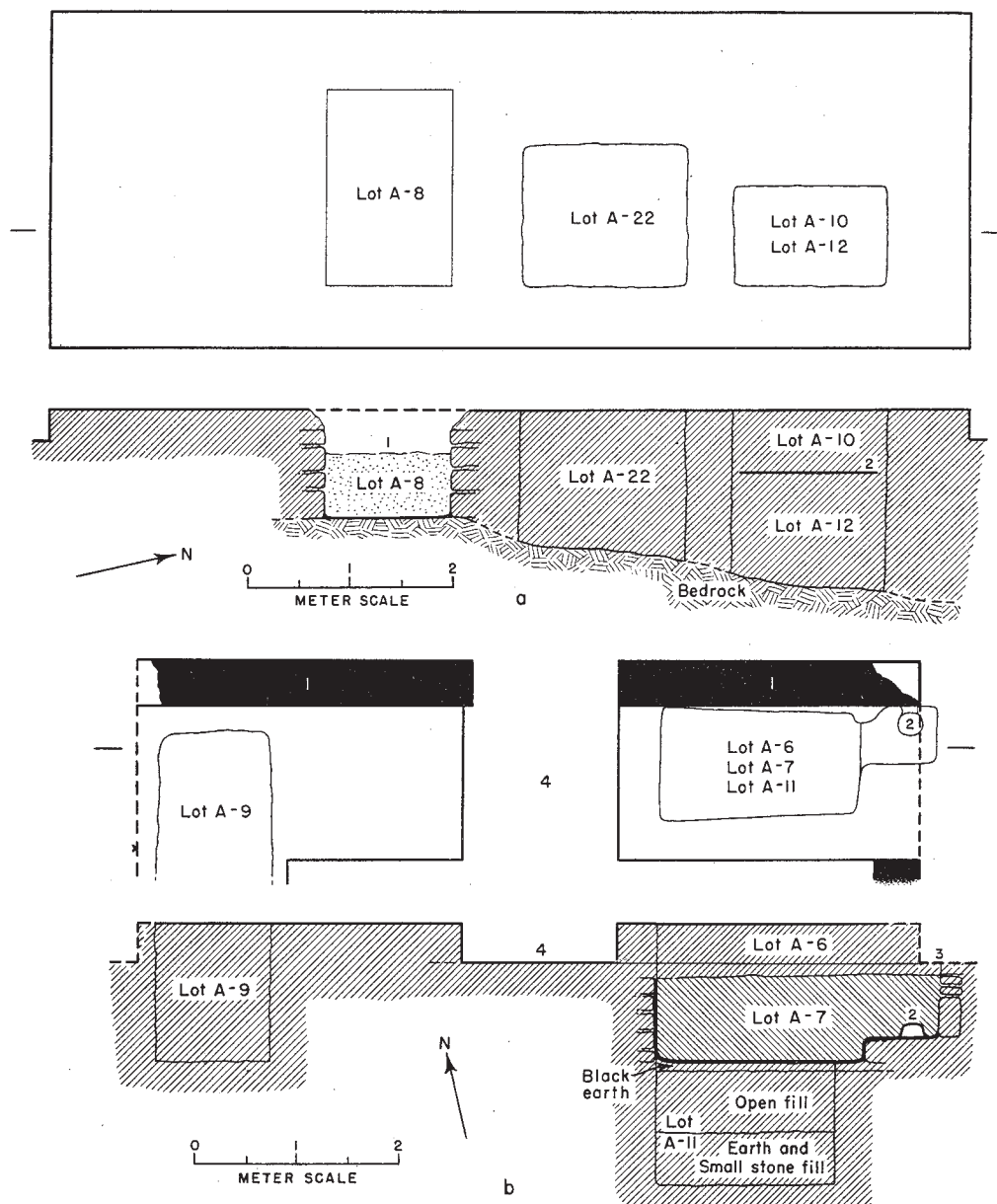


4.1. Excavations in Structure J-131a, Plan and Section.

Lot A-1. Contents of tomb under south bench: 1. Shell ornament, 6.1 cm greatest diam., Cat. no. 52-61 (Fig. 4.8d). 2. Drum-shaped stone, 22 cm high, 40 cm diam., slightly hollowed out on under surface. 3. Pottery whistle seated monkey (?), 4.2 cm long, Cat. no. 52-60 (Fig. 4.8d). 4. Flint blade, 9.5 cm long, Cat. no. 52-62 (Fig. 4.8d). 5. Adult mandible. 6. Adult skull, some infant long bones nearby. 7. Adult leg bones. 8. Infant skull under 2. 9. Adult jaw bones and skull fragments. Miscellaneous objects: fragment of obsidian blade, 3.8 cm long, Cat. no. 52-63 (Fig. 4.8d); broken piece of obsidian; sherds; animal bones, opossum, gopher. Lot A-2. Contents of tomb under south end of north bench. 1. Hexagonal shell ornament, 3.7 cm greatest width, Cat. no. 52-67 (Fig. 4.8b). 2. Shell ornament perforated for suspension, 3.2 cm long, Cat. nos. 52-66 (Fig. 4.8b). 3. Pottery figurine of a man, 10.2 cm long, Cat. nos. 52-65 (Fig. 4.8b). 4. Pottery figurine of a woman, 8.6 cm long, Cat. nos. 52-64 (Fig. 4.8b). 5. Adult skull. 6. Adult skull. 7. Human leg bones. 8. Human leg bone and foot bones. Miscellaneous objects: two small pieces of charcoal and a deer antler, 9.9 cm long, Cat. no. 52-68 (Fig. 4.8b); filed human tooth, Cat. no. 52-226 (Fig. 4.8b). Lot A-3. Contents of top 30 cm of pit under north half of north bench: sherds. Lot A-4: Contents of bottom meter of pit under north half of North Bench: sherds. a. North bench. b. South bench. c. Low terrace wall on west side of Str. J-131a. d. South wall of main terrace supporting group. e. Line of stones at terrace level. f. Fill of small stones and lime mortar. g. Open fill. h. Coarse *sascab* fill.

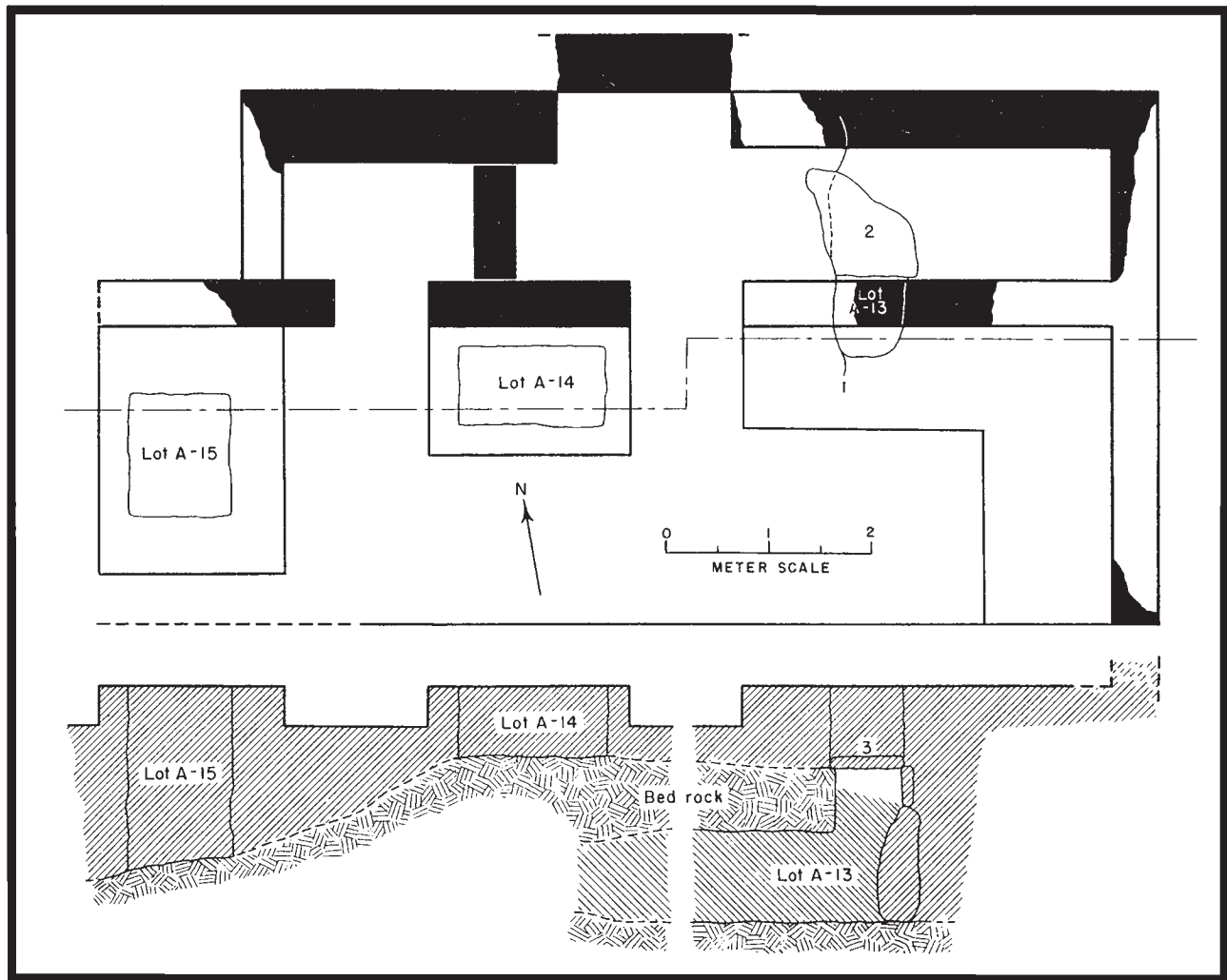
floor and 38 cm from the southwest corner is a stone plug projecting 6 cm. In east wall of cist is a recess roughly 56 cm wide by 75 cm deep. The opening has a width of 40 cm. Floor of recess 25 cm above floor of cist. Resting on the floor and projecting 25 cm from the north wall is a plaster-covered stone step 13 cm high.

PIT (Figs. 4.2b, Lot A-11; 4.8c). Beneath the plaster floor of the cist is a 7 cm layer of black earth. Lot A-11 is material from a pit 1.10 m deep and approximately the dimensions of the cist. The upper 60 cm of the pit are of open fill; the lower 50 cm, of earth and small stones.



4.2. Excavations in Group J-49, Plans and Sections.

a. Structure J-49a. Lot A-8. Contents of cist under south end of platform: broken chipped flint point, 4.7 cm long, Cat. no. 52-135; polished gray stone, 2.8 by 2.2 by 0.3 cm, Cat. no. 52-136; 6 fragments of obsidian chip blades, longest 3.8 cm, Cat. no. 52-137; sherds; Lot A-10: Contents of pit above floor (2) under north end of platform: 5 fragments of obsidian flake-blades, largest 4.3 cm long, Cat. no. 52-142 (Fig. 4.8c); 1 fragment of bone; sherds; Lot A-12: Contents of pit below floor (2) under north end of platform: flat pottery figurine or effigy head, greatest dimension 3 cm, Cat. no. 52-164 (Fig. 4.8c); obsidian flake-blade, 5.1 cm long, Cat. no. 52-144 (Fig. 4.8c); sherds; Lot A-22: Contents of pit under center of platform: objects not shown or described in Fig. 4.8e: 1 fragment of shell; sherds; 1. Debris line; 2. Plaster floor covering an area of 1 by 1.40 m. Tight fill of earth and stones below floor. b. Structure J-49b; Lot A-6: Contents of pit above cist under East Bench: fragment of obsidian flake-blade, 1.8 cm long, Cat. no. 52-143; bone fragment; sherds; Lot A-7: Contents of cist under east bench: fine-grained limestone mano, 14.4 cm long, Cat. no. 52-97; limestone rubbing stone, 7.2 cm across, Cat. no. 52-98; fragment of stone cylinder, 1.5 cm diam., 5.5 cm long, Cat. no. 52-99; fragment of shell; two flint chips; bone fragment; sherds; Lot A-9: Contents of pit under West Bench: shell bead, 1 cm diam; Cat. no. 52-133; flint tool (hatchet?), 5.5 cm long, Cat. no. 52-191; flint chip, greatest dimension 4.4 cm, Cat. no. 52-192; fragment of obsidian flake-blade, 2.6 cm long, Cat. no. 52-194; flint chip; shell fragment; sherds; Lot A-11: Contents of pit below cist under east bench A-7): 4 fragments of obsidian flake-blades, largest 2.8 cm long, Cat. no. 52-141; pieces of petrified shell; sherds; animal bones: ocellated turkey, iguana, cougar; 1. Bench; 2. Plastered stone step, floor turns up to it; 3. Plastered floor; 4. Passageway between benches.



4.3. Excavations in Structure J-50a, Plan and Section.

Lot A-13: Contents of midden under east bench and back room: objects not shown or described in Fig. 4.9: 7 miscellaneous seashells; 2 pieces of worked bone; 4 worked (?) pieces of deer antler, average 9 cm long, Cat. no. 52-110; 30 pieces of obsidian blades, Cat. no. 52-128; 12 pottery pellets; 3 branches of coral, Cat. no. 52-117; 45 flint chips; sherds; 2 fragments of human bone, animal bones: rabbit, dog, ocellated turkey, iguana, cougar, ocelot, cow's teeth, fish (tropical sea). The cow's teeth were presumably intrusive. Lot A-14: Contents of pit below center bench: fragment of worked stone, Cat. no. 52-150 (Fig. 4.8a); sherds. Lot A-15: Contents of tomb under west bench: limestone mano, 17.2 cm long, Cat. no. 52-157 (Fig. 4.8a); hammerstone, 6 cm diam., Cat. no. 52-165 (3) (Fig. 4.8a); fragment of obsidian flake-blade, 1.4 cm long, Cat. no. 52-147 (Fig. 4.8c); 37 large chips of gray flint; 2 fragments of shell; 2 flint chips; oval pebble; sherds; human maxilla; human long bone; 1. Upper edge of bedrock; 2. Capstone 25 cm thick; 3. Capstone 70 by 80 cm, found fallen.

WEST BENCH.

PIT (Fig. 4.2b, Lot A-9). Measures approximately 1 by 1.50 m by 1.50 m deep.

GROUP J-50

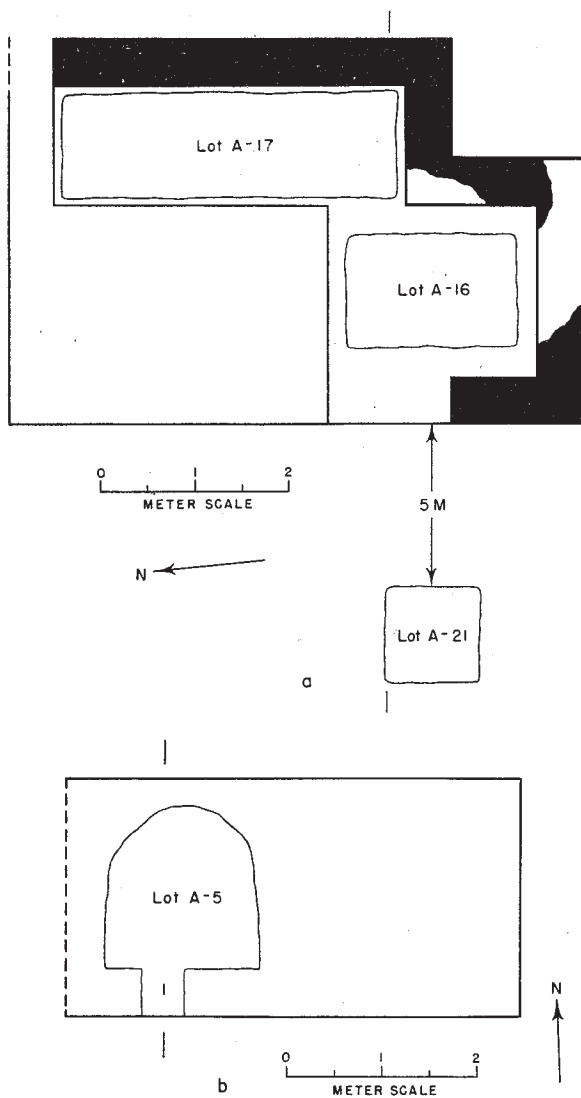
(305 N, 650 E)

STRUCTURE J-50A (Fig. 4.3), a well-preserved three-bench building with back room, is located

on the north edge of the terrace supporting two constructions.

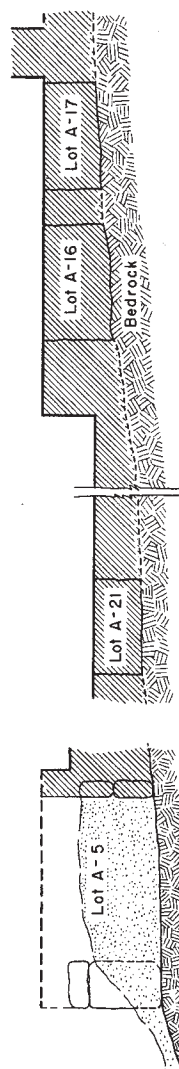
EAST BENCH. A sunken area in the bench suggested the possibility of a tomb. Excavation revealed a natural pit filled with midden material.

PIT (Figs. 4.3, Lot A-13; 4.7c; 4.9, Lot A-13). The opening of the pit was partly closed by two large stone slabs. The pit from the lower side of the slabs to bedrock has a depth of 1.45 m. The east side is



4.4. Excavations in Groups J-50 and J-122, Plans and Sections.

a. Structure J-50b. Lot A-16: Contents of pit under south bench: crude flint point, 4.2 cm long, Cat. no. 52-154 (Fig. 4.8c); pieces of worked limestone, 4.3 cm long, Cat. no. 52-151; bone fragment; pieces of shell; sherds. Lot A-17: Contents of pit under north bench: crudely shaped limestone sphere, 6 cm diam., Cat. no. 52-153 (Fig. 4.8a); sherds. Lot A-21: Contents of pit in main platform supporting Group J-50, 5 m west of Structure J-50b; sherds. b. Structure J-122c. Lot A-5: Contents of cist under west end of platform: hammerstone, 6 cm diam., Cat. no. 52-693; pottery whistle, animal, greatest dimension 4.9 cm, Cat. no. 52-70; 11 fragments of obsidian flake-blades, Cat. no. 52-71; flint blade, 8.4 cm long, Cat. no. 52-723 carved shell ornament, 6.5 cm long, Cat. no. 52-73; perforated shell tinkler, 2.5 cm long, Cat. no. 52-74, also 3 odd pieces of shell under same Cat. no.; perforated animal tooth, 5.7 cm long, Cat. no. 52-75; 7 flint chips; sherds (one Plumbate); fragment of human bone; animal bones, ocellated turkey, raccoon (?), turtle, tapir tooth. 1. Entrance into cist.



defined by large rough masonry; the west side extends under a limestone ledge and yielded most of the material. The pit was followed under the natural ledge for a distance of 1.60 m.

MIDDLE BENCH.

PIT (Figs. 4.3, Lot A-14; 4.8a). A trench within the bench was extended to a depth of 70 cm, where bedrock was encountered. Sherds from this area are included in Lot A-14.

WEST BENCH.

TOMB (Figs. 4.3, Lot A-15; 4.8a; 4.9c). Measures 1 by 1.20 m and has a depth of 1.80 m from top of bench. The uneven floor is formed of bedrock. The west and south sides of the tomb are fairly well indicated by rough masonry. The stones used in the south wall are larger and more irregular than those of the west. The east wall is poorly defined. Portions of human upper jaw and a leg bone were found on the floor. On the floor near the northwest corner was a cache of 38 large flint chips and a mano.

STRUCTURE J-50B (Fig. 4.4a) is somewhat L-shaped so that there is a section of bench to the south and a section to the north. In good state

of repair.

SOUTH SECTION OF BENCH.

PIT (Figs. 4.4a, Lot A-16; 4.8c): Measures 1.20 by 1.80 m. Bedrock encountered 70 cm below top of bench.

NORTH SECTION OF BENCH.

PIT (Figs. 4.4a, Lot A-17; 4.8a): Measures 1.20 by 3.00 m. Bedrock encountered 40–80 cm below top of bench. Rock slopes downward from east to west.

TERRACE SUPPORTING GROUP.

PIT (Fig. 4.4a, Lot A-21): Roughly 1m square and located 5 m west of structure J-50a. Pit had a depth of 50 cm to bedrock.

STRUCTURE J-122C**(7 N, 645 E)**

STRUCTURE J-122C (Fig. 4.4b) is a bench 2.50 m, wide by approximately 5 m long defining the south side of a three-structure group. A semicircular depressed area in the west end of the bench and two jamb stones on the south edge of the terrace suggested a likely place to excavate.

CIST (Figs. 4.4b, Lot A-5; 4.6d). Semicircular, with an average diameter of 1.70 m. Crude masonry walls rise to within 12 cm of the floor of the terrace. Opening on the south 45 cm wide defined by two large jamb stones 75 cm high by 45 cm wide. Door sill and floor of the tomb of bedrock, very uneven and rough.

STRUCTURE 1-94**(15 N, 1075 E)**

This structure (Fig. 4.5) made up of three benches, is located on the south edge of a poorly defined terrace.

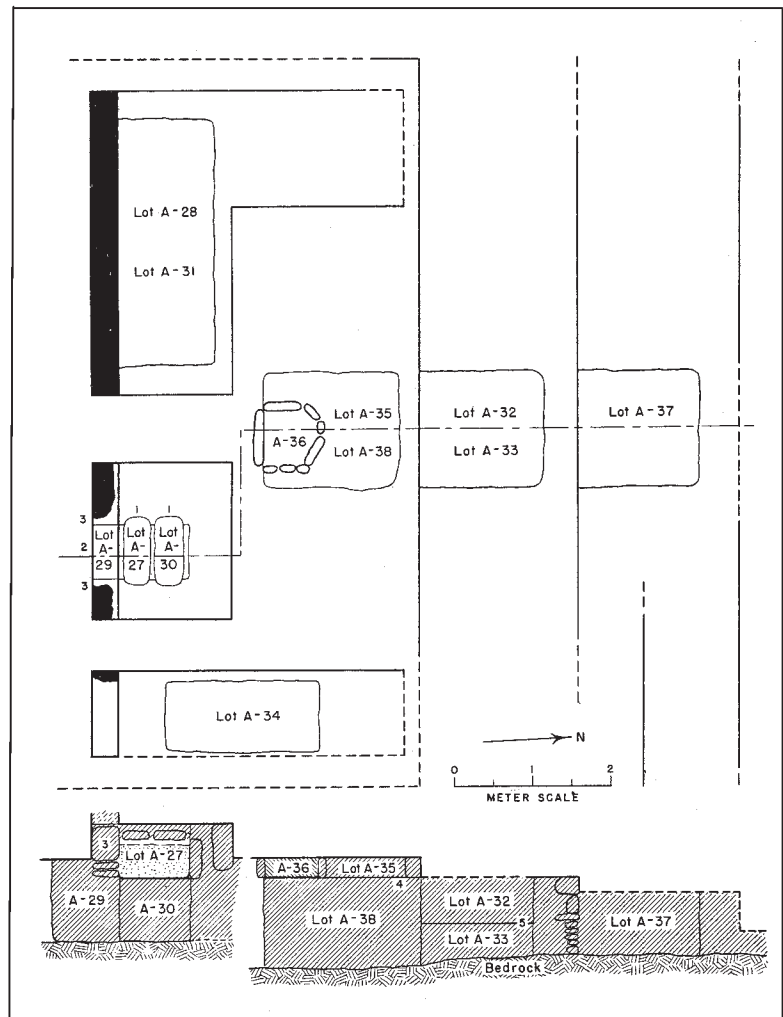
EAST BENCH. The east edge of the bench has collapsed and fallen down the slope of the terrace.

PIT (Fig. 4.5, Lot A-34). Measures 1 m wide by 2 m long by 1.80 m deep from top of bench to bedrock.

MIDDLE BENCH. Exposed capstone of a cist under the bench led to excavation.

CIST (Figs. 4.5, Lot A-27; 4.6c). Measures 70 by 90 cm. Walls 50 cm high formed of one and two courses of stones. Floor a 4 cm layer of plaster. No plaster on walls. Not vaulted. Two capstones rest on vertical walls. Underside of capstones 20 cm below top of bench. Entrance to cist through opening on south side where there are two large jamb stones. Trench to south of jambs showed no construction (Fig. 4.5, Lot A-29).

PIT (Fig. 4.5, Lot A-30). A pit beneath floor of cist, 80 cm deep to bedrock, showed fill of stones with small amount

**4.5. Excavations in Structure I-94, Plan and Section.**

No catalogue numbers have yet been given to objects recovered; sherd material has not yet been examined. Lot A-27: Contents of cist under center bench: shell fragment, obsidian fragment, sherds. Lot 8-28: Contents of top 60 cm in pit under west bench: worked flint 3.8 by 3 cm (Fig. 4.8f), sherds. Lot A-29: Contents of pit in terrace south of stone-lined cist in center bench (Lot A-27): piece of worked bone, piece of worked shell, piece of obsidian, sherds. Lot A-30: Contents of pit below floor of cist in center bench (Lot A-27): shell bead, flint chip, sherds. Lot A-31: Contents of pit below Lot A-28 in west bench: all objects but the sherds recovered are shown and listed in Fig. 4.8f; animal bones, ocellated turkey, turtle. Lot A-32: Contents of part of pit above floor (5) north of terrace supporting Structure 1-94: 5 pieces of obsidian, sherds. Lot A-33: Contents of pit below Lot A-32: 3 pieces of obsidian, sherds. Lot A-34: Contents of pit in east bench: 4 pieces of shell, 8 pieces of obsidian, sherds, fragment of human bone; animal bones, ocellated turkey, iguana. Lot A-35: Contents of pit between floors of terrace north of passageway between the center and west benches: piece of obsidian, sherds. Lot A-36: Contents of cist resting on floor (4) in pit north of passageway between center and west benches: sherds. Lot A-37: Contents of pit in lower terrace north of pit containing Lots A-32 and -35: sherds. Lot A-38: Contents of pit below Lot A-35: worked deer antler, 2 pieces of shell, 8 pieces of obsidian, sherds; 1. Capstones; 2. Entrance to cist; 3. Jamb of entrance; 4. Plaster floor; 5. Plaster floor.



a



b



c



d

4.6. Excavation in Structures J-131a, I-94, and J-122c.

a,b. Tomb under south bench of Structure J-131a, looking west. Cist under central bench of Structure I-94, looking north. d. Cist under west end of Structure J-122c, looking north.

of earth. Material recovered includes sherds, shell bead, and a flint chip.

WEST BENCH.

PIT (Figs. 4.5, Lots A-28,-31; 4.8f). Measures approximately 1.30 by 3 m high and had a depth of 60 cm from top of bench to work level on which facing stones of bench rested. Material from the area

(Lot A-28) includes sherds and a worked flint, ellipsoidal in shape, measuring 3 by 3.8 cm. Pit extended beneath work level to bedrock, a distance varying from 1.10 to 1.25 m (Lot A-31).

PITS ASSOCIATED WITH TERRACE OF STRUCTURE I-94. Various test pits were made in the terrace supporting the structure. For location of pits and description of the material recovered see Figure 4.5, Lots A-32, -33,



a



b



c

4.7. Excavations in Structures J-49a, J-49b, and J-50a.

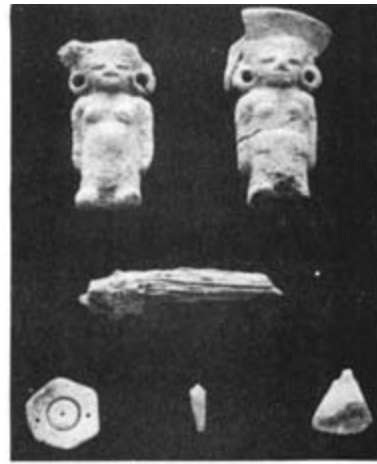
a. Cist under south end of Structure J-49a, looking south; b. Cist under east bench of Structure J-49b, looking east; c. Pit under east bench of Structure J-50a, looking north.

-35, -36, -37, -38. Sherds from Lot A-36 came from an irregularly shaped, stone-lined cist approximately 70 cm square and having a depth of 25 cm where

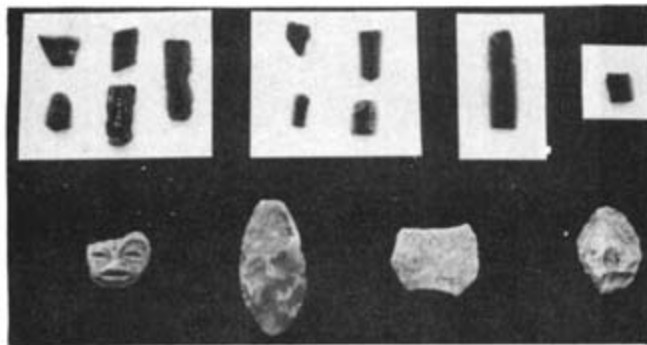
it rested on the plaster of an earlier terrace level. Lots A-33-37, and -38 are all from pits extended to bedrock.



a



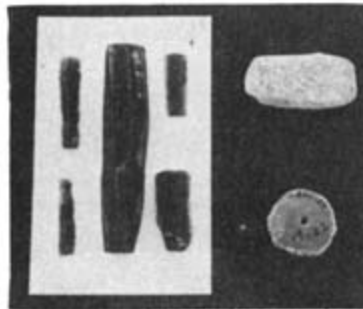
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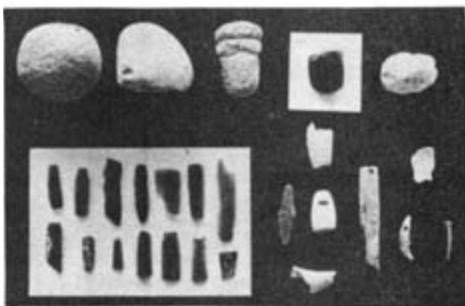
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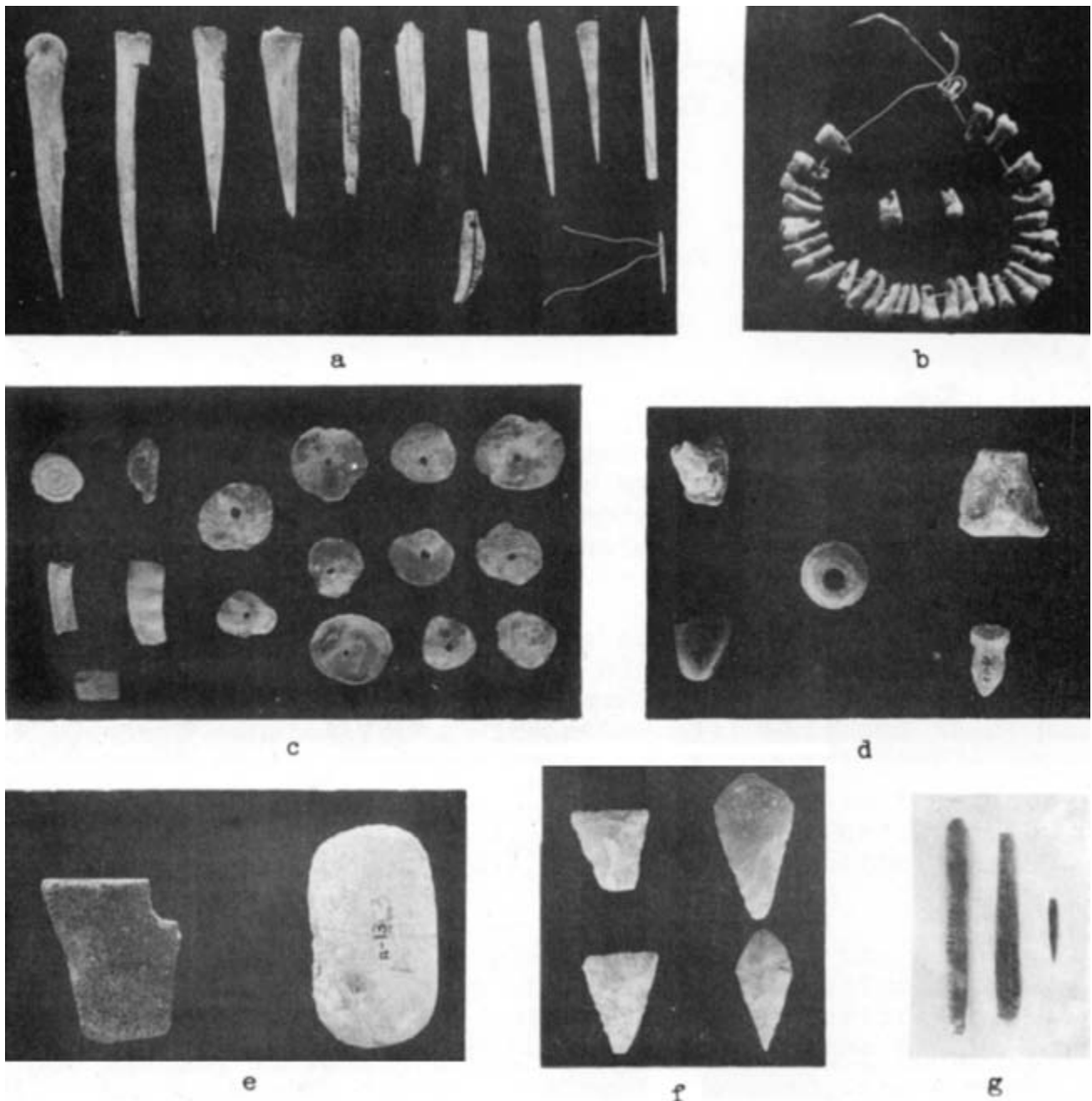
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f

4.8. Artifacts Recovered During Excavation in Groups J-49, J-50, J-131, and I-94.

a. Top: limestone mano, 17.2 cm long, Cat. no. 52-157, Lot A-15 (Fig. 4.3). Bottom, left to right, fragment of worked stone, Cat. no. 52-150, Lot A-14 (Fig. 4.3); hammerstone, 5.8 cm diam., Cat. no. 52-165 (3), Lot A-15 (Fig. 4.3); crudely shaped limestone sphere, 6 cm diam., Cat. no. 52-153, Lot A-17 (Fig. 4.4a). b. Lot A-2 (Fig. 4.1). Top, left to right, pottery figurine of a woman, 8.6 cm long, Cat. no. 52-64; pottery figurine of a man, 10.2 cm long, Cat. no. 52-65. Middle, deer antler, 9.9 cm long, Cat. no. 52-68. Bottom, left to right, shell ornament, 3.7 cm greatest breadth, Cat. no. 52-67; filed human tooth, Cat. no. 52-226; shell ornament perforated for suspension, 3.2 cm long, Cat. no. 52-66. c. Top, left to right, 5 obsidian flake-blades, largest blade 4.3 cm long, Cat. no. 52-142, Lot A-10 (Fig. 4.2a); 4 obsidian flake-blades, largest blade 2.8 cm long, Cat. no. 52-11 Lot A-11 (Fig. 4.2b); obsidian flake-blade, 5.1 cm long, Cat. no. 52-144, Lot A-12 (Fig. 4.2A); fragment of obsidian flake-blade, 1.4 cm long, Cat. no. 52-147, Lot A-15 (Fig. 4.3). Bottom, left to right, flat pottery figurine or effigy head, 3 cm greatest dimension, Cat. no. 52-164, Lot A-12 (Fig. 4.2a); chipped flint point, 7.4 cm long, Cat. no. 52-165 (1), Lot A-15 (Fig. 4.3); fragment of chipped flint point, 2.8 cm across, Cat. no. 52-165 (2), Lot A-15 (Fig. 4.3); crude flint point, 4.2 cm long, Cat. no. 52-154, Lot A-16 (Fig. 4.4a). d. Lot A-1 (Fig. 4.1). Top, left to right, flint blade 9.5 cm long, Cat. no. 52-62; shell ornament, 6.1 cm greatest diam., Cat. no. 52-61. Bottom, left to right, pottery whistle (seated monkey?), 4.2 cm long, Cat. no. 52-60; obsidian blade, 3.8 cm long, Cat. no. 52-63. e. Lot A-22 (Fig. 4.2a). Left: 4 obsidian flake-blades, longest blade 4 cm, Cat. no. 52-139; obsidian core, 9.3 cm long, Cat. no. 52-140. Upper right, worked limestone, 4.8 cm long, Cat. no. 52-152. Lower right, pottery spindle whorl, 3 cm diam., Cat. no. 52-149. f. All Lot A-31 except upper right which is Lot A-28 (Fig. 4.5). These artifacts have yet not been catalogued. Top, left to right, rubbing stone, one surface flat; fragment of rubbing stone; stone nose plug (?), 5.3 by 3.1 cm; fragment of green stone celt; worked flint. Lower left: 14 obsidian flake-blades. Lower right, flint arrow (?) point; 3 pieces of shell; perforated shell tinkler; worked bone; perforated animal tooth; fish bone.



4.9. Artifacts From Midden Under East Bench and Back Room of Structure J-50a, Lot A-13 (Fig. 4.3).

a. Top, left to right, 9 bone awls, awl at left is 12.8 cm long, Cat. nos. 52-106,-107; bone needle, 7.9 cm long, Cat. no. 52-108. Bottom: perforated animal tooth, 4.5 cm long, Cat. no. 52, one needle, point missing, 3 cm long, Cat. no. 52-127. b. 30 perforated human teeth, Cat. no. 52-121, appear to be 8 molars, 9 premolars, 3 canines, 8 incisors, 2 unidentified. c. Upper left corner: fragment of worked bone, 2.2 cm diam., Cat. no. 52-101. To right of Cat. no. 52-101: fragment of perforated mother-of-pearl shell, 3 cm long, Cat. no. 52-102. Below, Cat. nos. 52-101 and 52-102: 3 fragments of worked shell, Cat. nos. 52-103, -104, -105. To right of above: 10 perforated shells, 4 cm largest diam., Cat. no. 52-100; one unperforated shell. d. Upper left: pottery figurine head, 3 cm high, Cat. no. 52-120. Upper right, fragment of pottery whistle, 3.7 cm high, Cat. no. 52-123. Center: pottery spindle whorl, 3.2 cm diam., Cat. no. 52-118. Lower left: fragment of green stone celt, 2.9 cm long, Cat. no. 52-119. Lower right, pottery turtle or lizard head, 3.2 cm long, Cat. no. 52-122. e. Left: fragment of metate with leg, total height, 6.8 cm Cat. no. 52-111. Right: limestone rubbing stone, 10 cm long, Cat. no. 52-112. f. Top, left to right, broken chipped flint point or scraper, 4.1 cm long, Cat. no. 52-113; chipped flint point 7.5 cm long, Cat. no. 52-116. Bottom, left to right, chipped flint point or scraper, 5.3 cm long, Cat. no. 52-114; chipped flint point, 6.8 cm long, Cat. no. 52-115. g. Left to right, 2 large obsidian blades, largest 11.4 cm long, Cat. no. 52-125; obsidian point with very fine chipping on both sides of point, 3.7 cm long, Cat. no. 52-126.

CENOTE X-COTON AT MAYAPÁN

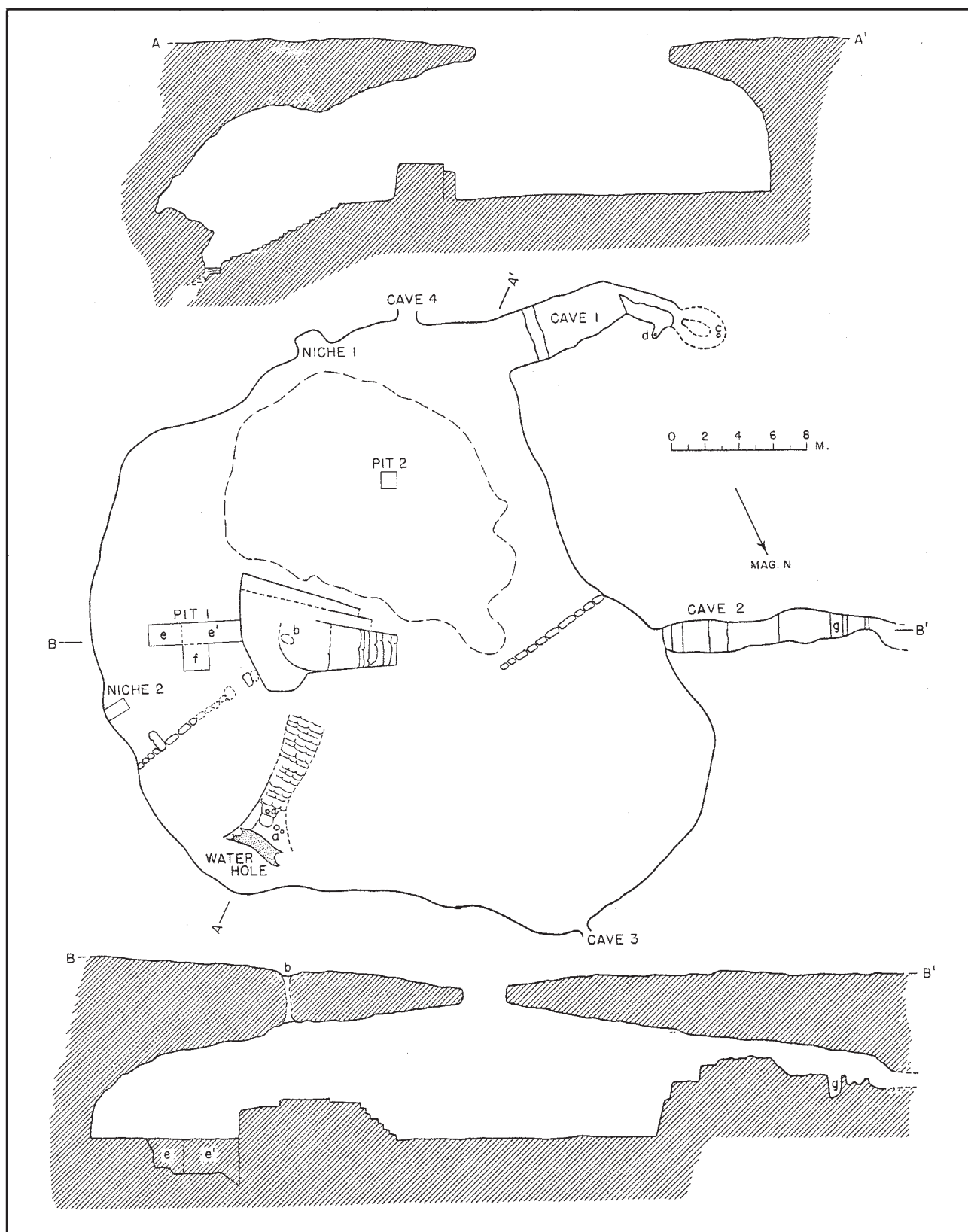
ROBERT E. SMITH

The cenotes of Yucatán have been studied by various people and institutions, notably H. C. Mercer (1896), L. J. Cole (1910), Carnegie Institution of Washington (see Pearse and others, 1936), Brainerd (1942), and Lothrop (1952). These studies have been primarily geological, hydrographic, and zoological, the archaeological aspect not being treated save by Mercer, Brainerd, and Lothrop. In this report I plan to emphasize the archaeological importance of one of the numerous cenotes at the ruins of Mayapán.

Cenote X-Coton is located in the southeastern section of Mayapán (Jones 1952, map, Square T) close to one of the seven main gates and a small group of ceremonial structures. It is one of 19 named cenotes found within the city wall and is of the type where much of the roof has fallen, but a considerable portion still remains (Figs. 5.1, 5.3; Cole 1910, Fig. 3; see also Pearse and others 1936:18, Fig. 3). The open southern part of the cenote is used to cultivate bananas. The local Indians get in and out by means

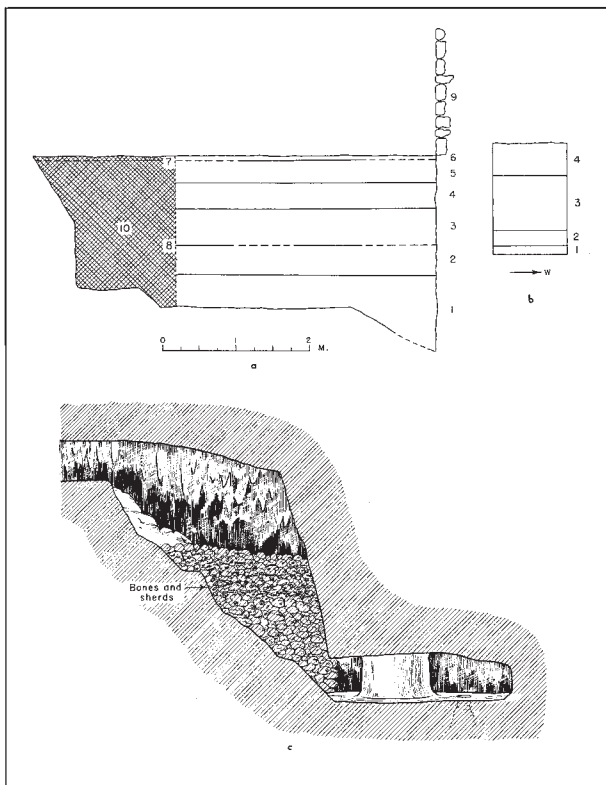
of tree roots which reach to the floor of the cenote. We used a 6 m ladder (Fig. 5.4b) for ourselves and employed ropes to lower equipment and remove pottery and other finds.

It will be noted from the plan (Fig. 5.1) that the cenote is roughly divided into a southern and a northern section by remains of stone walls and by a centrally located, artificial platform. The floor of the southern part, where the banana grove now stands, is fairly level and represents a good depth of soil. To the north, the floor slopes downward, the surface being covered for the most part by a thick deposit of bat dung. Indeed, deposits of bat dung occur in all areas sheltered by the overhanging roof of the cavern, only the banana grove and Cave 1 being free of this material. There were indications of much washing of surface debris from south to north, an observation amply verified by the results of a heavy rain while work was being carried on in this cenote. This readily accounts for the silting



5.1. Plan and Sections of Cenote X-Coton.

a. Depressions for resting water jars. b. Hole in roof of cenote above platform. c. Water hole in Cave 1. d. Puuc Medium Slate bowl; e,e'. Original Pit 1, and western extension. Northern extension of Pit 1. g. Burial in Cave 2.



5.2. Sections of Pits and Cave.

a. Section of Pit 1. 1, 2, 3. Stratum of dark brown dirt and rocks; 4, 5. Stratum of brown dirt, rocks, and a vein of red dirt; 6. Bat dung and surface soil; 7. Plaster floor; 8. *Sascab* (?) binding level; 9. East wall of platform; 10. Original Pit 1. b. Section of Pit 2. 1, 2. Stratum of rich red-dish brown soil, large rocks, and a few sherds; 3. Rich red-dish brown soil, large rocks, and no sherds; 4. Surface soil and sherds. c. Section of Cave 1.

up of the water hole, a feature discovered only by excavation.

Work at Cenote X-Coton began in March 1952, with the removal of the surface layer of bat dung that was distributed over the greater part of the floor of the cavern. This uncovered numerous sherds (40.8 percent of all sherds encountered) in a shallow stratum (5–8 cm) of dirt and pebbles and also revealed several of the upper steps of a stairway which we followed downward until water was reached (Figs. 5.1; 5.3; 5.5d). There were 18 steps (Fig. 5.5c): 15 of masonry, two cut from bedrock, and just above water a final bedrock ledge in which two hemispherical depressions had been made, presumably for water jars (Fig. 5.1a). A third depression was hollowed out of the lowest bedrock step. Originally masonry retaining walls had lined the stairway on either side. Much of the east wall remained but the west wall had mostly fallen. The pottery from the surface (R. Smith 1952, Table 1, D-2, surface soil; D-12, soil cov-

ering stairway), as was to be expected, consisted mostly of Mayapán period sherds (80 percent) plus a few Puuc, Regional Polychrome, and Fine Orange types, and a considerable number of fragments too weathered to be identified.

The water hole was deep but the opening small, measuring 90 cm by 3 m. Exact depth could not be ascertained because of the narrow, crooked shaft, but a pole was inserted to a depth of 369 cm. In an effort to find artifacts at the bottom of the pool, a steel jaw-like contrivance was attached to a pole. The opening and closing of the jaw could be controlled from the upper end of the handle. Many attempts were made but nothing but pebbles and dirt could be extracted with our curious scoop. However, a few sherds, either of the Mayapán period or too water worn to be identified (R. Smith 1952, Table 1, D-19), were removed from a ledge 30–40 cm below water. Not finding archaeological material deep in the water hole was disappointing, especially when one considers the importance given to it by steps leading down from a presumably ceremonial platform.

The most notable artificial feature of Cenote X-Coton is the centrally located platform. This structure is wedge-shaped with a stairway at the narrow western end (Figs. 5.1; 5.3; 5.4c; 5.5a). The bulging eastern end appears to have had a terrace 30 cm below the top level and roughly 2 m wide. The north and east sides were in excellent condition whereas the south side was covered with stones dislodged from the top. Apparently this was caused by falling sections of the cenote roof, or dome, the broken rim of which was approximately 4 m, above the southern half of the platform. A hole, probably natural, through the dome immediately above the eastern end of the structure (Fig. 5.1b) may have served some purpose in connection with the platform. The edge of the opening was examined for rope-marks but none was found.

The south side of the platform was cleared and the exterior wall traced (Fig. 5.5b). While trenching into the core of the structure from the center of the south side, we encountered an earlier wall about 60 cm inside the outer wall and a still earlier wall 80 cm further inside. The addition of the exterior walls may have been due to damage to the structure from stone falling from the dome in ancient times. The core consisted of small and large rocks piled in between walls made of crudely cut stones and possibly rough mortar. There was no evidence of plaster. It was ascertained that the platform rested on leveled ground.

The pottery, 1,392 sherds, associated with the platform came from the top and from narrow, shallow trenches on the west and south sides (R. Smith



5.3.
Sketch of Cenote X-Coton, Looking Northeast, by Tatiana Proskouriakoff.

1952, Table 1, D-13). Any sherds taken from within the structure presumably were intrusive. Pottery belonging to the Mayapán period amounted to 56.8 percent, of which 10 percent was from *incensarios*. Unidentified pottery was 24.6 percent, Puuc period 16.9 percent. A few sherds were of Classic period, including some Regional Polychromes. There were three Fine Orange specimens and a very handsome, highly polished, incised orange sherd (Fig. 5.6c) of a sort that had not previously been recognized, although it is very distinctive. Artifacts other than pottery consisted of a mano fragment, an obsidian lancet fragment, and a piece of shell.

The function of this platform seems to have been ceremonial. This is suggested by its central position in the cenote, by a leveled area covered by a plastered floor at the eastern end of the structure, and by the adjacent stairway leading down to water. The considerable proportion of *incensario* sherds from the structure should also be noted. In last analysis, possibly the most pertinent evidence, although

negative, is simply that in design and location the platform seems capable observing no other purpose than that of ceremony.

In addition to the previously mentioned excavations two pits were dug. Pit 1, east of the platform, started as an exploratory excavation (Figs. 5.1e; 5.2a,10; R. Smith 1952, Table 1, D-3). It was later extended west to the platform in order to determine what underlay that structure and in the search for stratigraphy (Fig. 5.1). Still later, a northern extension was dug (Fig. 5.1f). Although no presently understood chronological stratigraphy emerged from these excavations, a glance at the profile of the pit will show that there were man-made divisions; namely, the upper floor (Fig. 5.2a,7) and the lower sascab (?) binding level (Fig. 5.2a,8). The platform rested on the upper level, although apparently the floor did not extend under the structure.

The area between the floor and the binding level included large and medium-sized rocks plus a fair amount of pottery (Fig. 5.2a, Strata 5-3; R. Smith



a



b



c



d

5.4. Views of Cenote X-Coton from Exterior.

a. From southeast. b. From north, showing ladder on left and a ceremonial structure in distance. c. From west, showing platform top and stairway. d. From south, showing banana trees, other vegetation, and north interior wall of the cenote.

1952, Table 1, D-4, D-5, D-6, respectively). The three strata from this area were taken out as a unit from the northern extension of the pit, the pottery forming a single lot (R. Smith 1952, D-18). Predominant were Mayapán period sherds, Puuc period and Regional Polychrome forming a lesser part. Below the binding level to bedrock (Fig. 5.2a, Strata 2-1) there was a leveled fill of dark brown dirt and a few rocks nearly 1 m deep that also contained a few sherds (R. Smith 1952, D-8, D-11, respectively). In the northern extension, Stratum 2 was removed in two cuts of approximately equal depth and the pottery from the upper and the lower cut kept in separate lots (R. Smith 1952, D-15, D-16, respectively). Pottery from Stratum 1 in the northern extension forms a single lot (R. Smith 1952, D-17). The most numerous sherds from these strata below the binding level were of the

unidentifiable category, than those of the Mayapán period, Regional Polychromes, and Puuc period in that order. The fact that Mayapán period pottery occurred in quantity at the bottom as well as at all other levels of the fill suggests that the platform foundations and presumably the platform were constructed in the Mayapán period.

Other phenomena noted in Pit 1 included tiny fragments of charcoal found in a reddish vein beginning about 30 cm below the floor near the east end of the pit and sloping westward towards bedrock. The vein varied in thickness from 12 to 43 cm, but was difficult to trace because of many interspersed large rocks. Artifacts other than pottery consisted of a few fragments of obsidian flake-blades found in Strata 3 and 4 (Fig. 5.2a). Bones, both human and animal, occurred throughout. One animal long bone



a



b



c



d

5.5. Views of Interior of Cenote X-Coton.

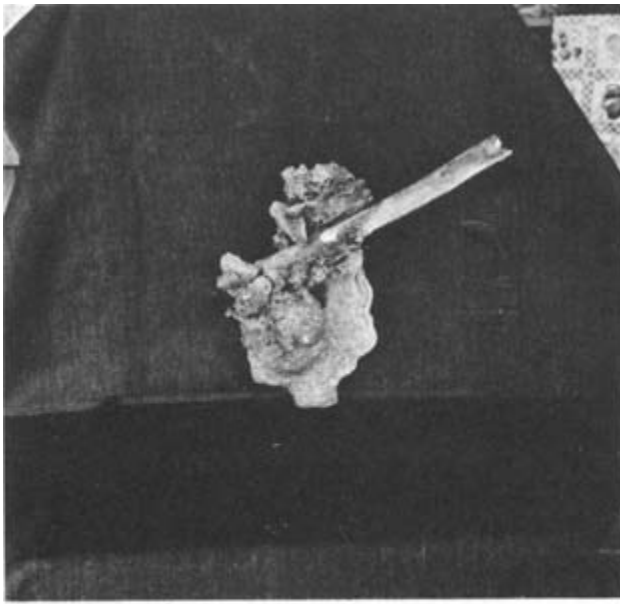
a. Platform from north, showing stairway in foreground. b. Platform from south. c. Stairway down to water hole, looking southwest. d. Water hole (central dark spot) and lower part of stairway, looking northeast.

from Stratum 1 had been cut. A fragment of a spindle whorl made from a sherd was encountered in the original exploratory pit (Fig. 5.2a,10).

Pit 2 (Figs. 5.1; 5.2b) was sunk to a depth of 152 cm without reaching bedrock. The excavation was made to see whether this section of the cenote had been filled artificially, as was the area east of the platform, and in the further search for stratigraphy. No floor was encountered, but this was not surprising considering that the area had reputedly been under cultivation for many years. Possibly for this reason also the surface soil was much deeper. No lower binding level was found, but the character of the deposit nevertheless suggested that the area had been filled and leveled off in the same manner as the area under, and to the east of, the platform. The pottery from the several strata in this pit (R. Smith 1952, Table 1, D-10) was unfortunately mixed by the laborers before a detailed analysis had been made. It

is possible to say, however, that Stratum 4 yielded 59 sherds mostly of the Mayapán period, Stratum 3 no sherds, Stratum 2 produced 24 sherds of Mayapán and Puuc periods, and Stratum 1 yielded 15 sherds of both periods. Save for the fragment of a human head, probably from an *incensario*, found in Stratum 4, the pottery presented the same picture as in Pit 1. In other words, Mayapán period pottery occurred throughout. Along with the sherds a flint chip and some animal bones were removed.

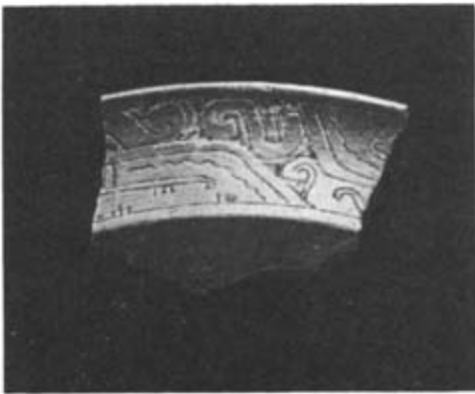
While investigating the surface soil of the cenote two niches in the peripheral wall (Fig. 5.1) were encountered and explored to bedrock. Niche 1 contained 478 fragments of *incensario* ware of the Mayapán period, many sherds of other Mayapán period types, and some Puuc period sherds (R. Smith 1952, Table 1, D-9). Bedrock appeared at a depth of 60 cm. On the surface, covered with green mold and resting against the cenote wall, lay a stone idol (Fig.



a



b



c



d



e



f

5.6. Bones, Pottery, and Sculpture.

a,b. Bones cemented to rocks. c. Incised orange sherd from platform (1:2 scale). d. Sculptured stone idol from Niche 1 (ca. 1:10 scale). e. Sculptured stone dog from Niche 2, side view (ca. 1:3 scale). f. Puuc Medium Slate incurved-rim bowl found in Cave 1 (1:4 scale).

5.6d). It appears to represent a seated human figure wearing an animal skin with the head of the animal used as headdress and the body draped down the back. The figure seems to be offering something with his two hands.

Niche 2 produced the usual run of pottery (R. Smith 1952, Table 1, D-20), but only one *incensario* fragment. Bedrock was encountered at depths of 30 and 40 cm. Near the bottom a carved stone dog (Fig. 5.6e) was discovered. It lacks eyes, mouth, and other details which may have been painted on originally. Other items found consisted of two small pieces of charcoal and 29 bird and animal bones.

Among the most interesting features of Cenote X-Coton are the caves in the peripheral wall (Fig. 5.1). Caves 3 and 4 are too small for a man to enter, but the two larger caves proved easily accessible. Cave 1 is the only part of the cenote not frequented by bats. The cave had been filled to a depth of about 2 m with rocks (Fig. 5.2c), upon which were deposited the bones of more than a dozen people, including an infant, a child of six or seven (determined by baby teeth being pushed out by secondary teeth), and adults. The bones, scattered promiscuously and mixed with potsherds, dirt and rocks, appeared to have been secondarily buried save for one seemingly articulated arm found near the surface. Many of the bones were cemented to one another and to rocks owing to lime deposit (Fig. 5.6a,b). The debris containing the bones was approximately 1 m deep and was covered with a layer of stones. When the stones, bones, and underlying rock fill had been removed, a narrow entrance to an extension of the cave to the north became visible. Crawling through this opening and following either to the east or west around a central pillar of bedrock, we found a small bowl-size water hole (Figs. 5.1c; 5.2c). This northern extension contained no debris, the entrance having been blocked with large rocks at the base of the fill mentioned above.

One fine example of a Puuc Medium Slate incurved-rim bowl with ring-stand base (Fig. 5.6f) was located in the extreme eastern part of the cave (Fig. 5.1d) on top of the rock fill, but covered with dirt and rocks. The great majority of the 1,293 sherds taken from Cave 1 (R. Smith 1952, Table 1, D-7) were earlier than the Mayapán period, which had a small representation 3.8 percent, as compared to 81.1 percent of the Puuc period, 12.8 percent of the Classic period including Regional Polychrome, and 2.3 percent unidentified. Nearly 90 percent of these sherds belonged to jars. This is true of all the pottery from the cenote if one eliminates the sherds from Niche 1 and from the platform, where large proportions of *incensarios* were found. No artifacts other than pottery were discovered in Cave 1.

Cave 2 was notable for the quantity of bats it harbored. The floor had an 8–10 cm covering of bat dung. That this cave had long been a home for these creatures, therefore, is assured, curious since neither bats nor bat dung were encountered in Cave 1. Most of the floor space in Cave 2 was excavated to bedrock, the depth depending upon the uneven formation. Only in the western end did we descend more than 30 cm, and there into a pocket which contained an adult burial (Fig. 5.1g) covered with rocks. The 147 potsherds that were removed from the cave constituted the only artifacts. These sherds belonged preponderantly to the Mayapán period (R. Smith 1952, Table 1, D-14).

Only a few of the bird and animal bones discovered in the cenote were sufficiently well preserved to be identified. These identifications by Drs. R. T. Hatt, J. van Tyne, R. U. Storer, and N. Hartweg include mammals (*Homo sapiens*, or man, *Didelphis marsupialis*, or opossum, *Sylvilagus floridanus*, or rabbit, *Urocyon cinereoargenteus*, or gray fox, *Felis concolor*, or cougar, *Equus*, or horse, *Nasua*, or pishote), birds (*Ortalis vetula*, or chachalaca, *Agriocharis ocellata*, or ocellated turkey), and reptiles (*Ctenosaura* sp., or iguana, *Pseudemys scripta*, or turtle). All of these were found associated with the platform, save the rabbit and the turtle, unearthed from an upper level of Pit 1 (Fig. 5.2a, Stratum 5) plus bones of man, chachalaca, and ocellated turkey found in both the platform and Pit 1.

The pottery from Cenote X-Coton, except for the *incensario* cache in Niche 1, a good proportion of *incensario* sherds from the platform, and a few rare items, is utilitarian. This is true of all the pottery so far found at Mayapán, with the exception of many *incensario* fragments from the ceremonial structure southeast of the cenote (see Shook 1952:249). It should be pointed out, however, that there has as yet been little work in connection with ceremonial structures. Even the majority or the Fine Orange sherds recovered belong to simply shaped, undecorated vessels. Jars, both water and storage, predominate over all other vessel types encountered in the cenote, a condition true of all Mayapán ceramics according to present findings. In regard to chronology, all that can be said at the moment is that there is evidence of Early Classic and Late Classic, Peten-like pottery types, including dichromes and polychromes, Puuc period pottery which may include early post-Classic (Early Mexican or Toltec Chichén Itzá) specimens, and a quantity of material allocated to the Mayapán period, part of which may eventually separate out to bridge the gap between the Late Classic and late post-Classic or Mayapán period (see Pollock 1952).

In spite of the utilitarian character of much of the pottery, there is little reason to doubt that Cenote X-Coton was used ceremonially as well as simply for water. The principal indications of its ceremonial use are the platform, the leveled eastern section with its plaster floor, the possibility that a considerable part of the cenote floor at the south was leveled, the masonry stairway leading to water, the presence of carved stone objects, especially an idol, and the use of caves for burial. It is impossible to be certain of the age or function of the rough stone walls that run east and west from the sides of the cenote toward the platform. The association of the eastern wall with the platform suggests it is of the same period. The western wall may also be of that period, or may have been

built at any time in recent centuries, possibly in the effort to prevent the erosion of soil from the area that now supports the banana grove. Should these walls be ancient, they suggest the division of the cenote into ceremonial precincts, the platform being associated with the southern area. Lastly, one may mention the ceremonial nature of the group of structures just outside of, and presumably associated with, the cenote. The quantity of pottery of the Mayapán period and its association with the ceremonial features leave little question that the "cenote rites" as practiced at X-Coton were carried on most intensively, as might be expected, during the principal period of occupation of the city. It is entirely possible, however, that the burials in Cave 1 date from earlier times.

CHACCHOB, YUCATÁN

H.E.D. POLLOCK AND GUSTAV STRÖMSVIK

The ruins of Chacchob are in the District of Tekax, some 13 km by road and 10 or 11 km airline southeast of the town of Teabo. The site was first brought to the attention of the public over 100 years ago in an anonymous article, signed in *Curioso*, that appeared in a Merida periodical of the time (Anonymous 1845a). The part of the account that particularly has caught the attention of archaeologists is the statement that the ruins are surrounded by the remains of an ancient wall. Walled sites in the lowland Maya area are rare, and their occurrence is important because of certain implications as to the social structure and the general character of the civilization of the builders (see Armillas 1948 and 1951).

It is of passing interest to note that the author of the above-mentioned article probably was Estanislao Carrillo, who wrote in a later volume of the same periodical under the name of P. Carrillo (see Castillo 1866:239, 253). This was none other than the exemplary cura Carrillo of Ticul, who a few years earlier

had been so helpful to John L. Stephens and whom the latter remarked as one of the few people in Yucatán to show any interest in the antiquities of the country (Stephens 1843:1:265–267).

Although the information provided by this antiquarian of a century ago has from time to time been made use of by modern authors, the truth of his assertions concerning Chacchob, so far as is known to the present writers, had never been confirmed by competent archaeological opinion. The work of Carnegie Institution at Mayapán, the largest and most important walled city known in Yucatán, made it of peculiar importance not only to verify the existence of a possibly similar, nearby site, but to know something of the character of the remains.

EXPLORATION

In May 1951, Eugenio May, a Yucatecan employee who has worked for many years with the Institution,

was commissioned to visit Chacchob and to report his observations, particularly with reference to any indications of a wall surrounding the ruins. May spent two days at the site, and his report left little doubt that the ancient settlement had in fact been walled. It was consequently planned that further reconnaissance should take place during the 1952 field season.

Pollock and Strömsvik, traveling by truck, left the Institution's base camp at Telchaquillo February 27, 1952. The road, the old highway to Tekit, ran southeast through the ruins of Mayapán. Just short of Km 12, and approximately 10 km from the center of Mayapán, the site of Chumul was noted at the left of the road. This moderate-sized group of ruins, which was visited on our return journey, rests on a hill. The principal pyramid is clearly seen from Mayapán, and because of its natural elevation gives the impression at that distance of being a much larger structure than it is. This pyramid is flanked by lesser pyramidal structures, one on each side, and several mounds of indeterminate character complete the group. Although all buildings are fallen, the character of the masonry and the stone cutting, the architectural decoration, and certain monoliths mark the ruins as of the Puuc period. Features observed include finely cut lintels and full-width jamb stones, colonette façade elements, tapered columnar (*picote*) altars, and a rectangular altar.

Passing through Tekit (Km 21), a sizable town, our road continued south-southeast toward Chumayel and Teabo. At Km 25 we reached Hacienda Ukum, where there are ruins and where May in the previous year had discovered a sculptured stone built into the floor of the abandoned machine house of the hacienda. This stone, which was photographed on our return trip, appears to have been a door jamb (Fig. 6.6h). It carries a rather typical Maya figure, erect and with plumed headdress, facing a vertical row of glyph blocks and standing above two horizontal rows of glyph blocks. The 13 or 14 hieroglyphs represented have not been deciphered. The sculpture and the character of the jamb stone suggest this to be a work of the Puuc period, an impression strengthened by the presence of certain architectural elements (spools) typical of that period. A superficial view of the nearby ruins disclosed them to be no more than mounds of stone, but better-preserved structures may lie hidden in the forest.

Chumayel was passed at Km 34; Teabo, a town of about the same size as Tekit, at Km 38. Teabo clearly was once an aboriginal settlement. A huge mound of rock, a large city block in area, from which much of the present town probably was built, gives ample testimony to the size of the structure that has with-

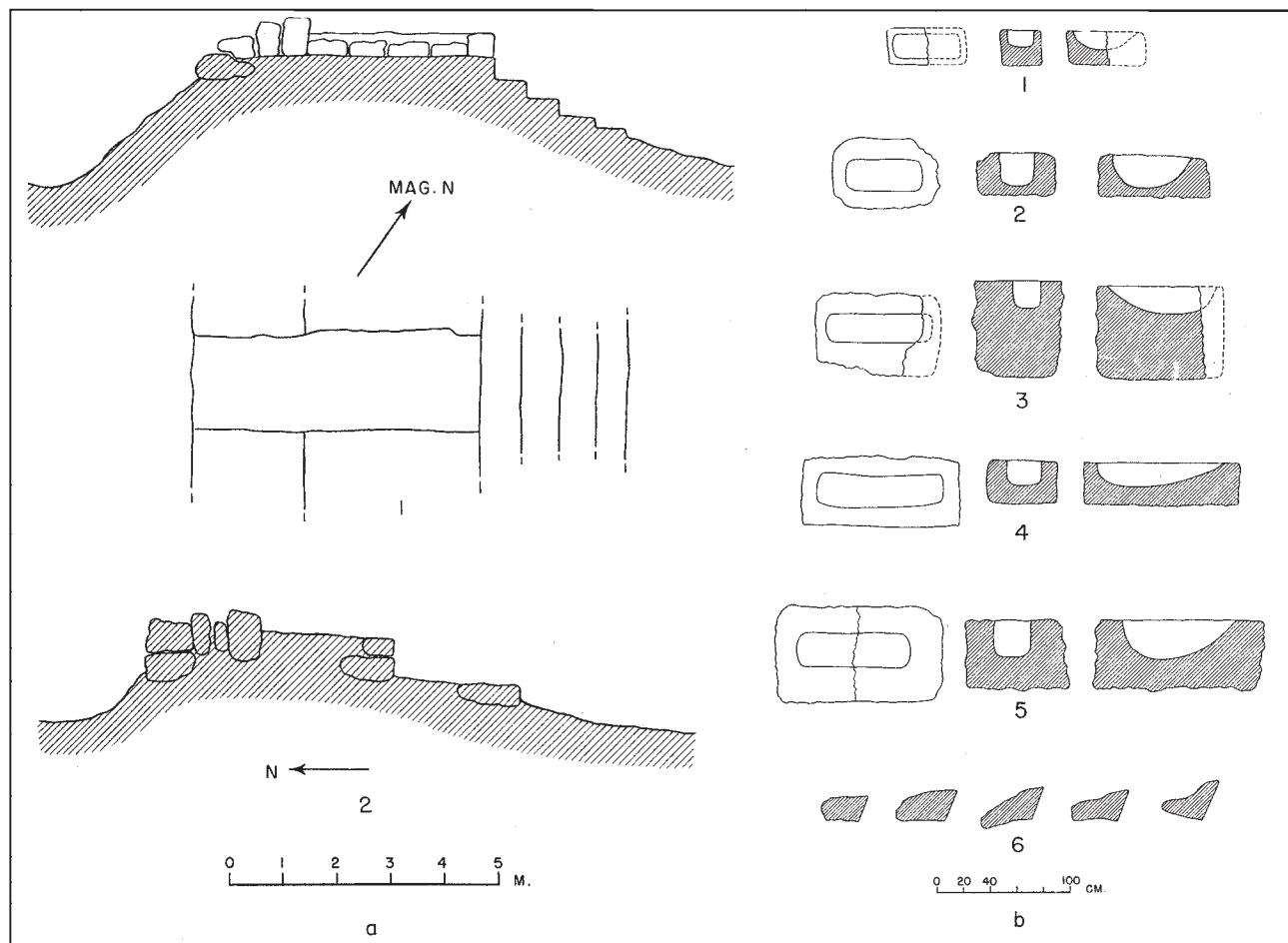
stood four centuries of quarrying and still remains a massive bulk of stone. Across the street from this great pile are the ruins of a large and once beautiful convent of the colonial period.

Leaving Teabo, we continued southeast on the road that eventually reaches the village of Xaya. At Km 48 we reached Hacienda San Diego Max, once a henequen plantation, now turned over to cattle raising. The hacienda is the property of Jose Dolores Salas of Teabo, who most kindly offered us the use of his buildings, apologizing for their roofless condition. Here we made camp, our information being that this was as far as the truck could go. It was later discovered that with a small amount of clearing the road was passable as far as Chacchob. Our entire journey from Telchaquillo to San Diego Max consumed approximately 4 hours and 30 minutes (running time), of which 1 hour and 40 minutes were devoted to the 10 km from Teabo to San Diego Max. It was subsequently determined that the additional 3 km to the ruins was a trip of 20 minutes by truck.

THE SITE

Chacchob, now the site of a small cattle ranch, lies east-southeast of San Diego Max, on the road to Xaya. The ranch and the ruins are reported to be on the lands of the latter village. Previously this terrain was a part of Hacienda San Diego Max, and until a few years prior to 1845 belonged to the Ucanes of Teabo (Anon. 1845a). This erstwhile *cacique* family, according to our anonymous author, who apparently had access to documents of the year 1630, had once owned the central part of the town of Teabo, where the church, plaza, and municipal buildings now are, and at the time of this writing still owned the great mound there.

The ranch of Chacchob lies almost at the center of the ruins (Fig. 6.1). It consists of several thatched houses and a tiny masonry chapel, all resting on a low, apparently artificial terrace that is probably ancient in origin. Immediately west of the ranch houses are the corrals, the walls and water troughs of which include many stones from the ruins, and a well. This well is worthy of note. At first sight it appears to be of artificial construction, typical of the innumerable wells dug during the colonial period and in later times. On closer examination, however, it is apparent that only the curb and a small depth of fill below are man-made. The well proper is a natural bottle-shaped opening reaching down to water, in other words, a cenote. Deep rope-cuts in the rim of natural rock below the artificial fill indicate centuries of use and almost surely date from the period of the ruins. This was the only source of water observed by



6.2. The Wall, Metates, and Vault Stones.

a. The Wall. 1. Plan and section of southwest gate; 2. Section of wall 40 m east of northwest gate. b. *Metates* and Vault Stones. 1. Normal-sized *metate* made from wall stone, by roadside north of Castillo; 2. *Metate* used for drinking trough at well. An almost identical specimen is in corral wall nearby; 3. *Metate* on house mound about 50 m. northeast of ranch house. Another of almost the same size lies close to it; 4. *Metate* made from stone that apparently had been a lintel, on house mound in northeast section of the ruins. Note length of groove; 5. Giant *metate* by roadside north of Castillo; 6. Sections of vault stones from Castillo and from corral walls at ranch.

ing features probably could not have been observed. The symmetry of these locations in relation to the other passages, however, is worth noting.

Near the center of the ruins, immediately north of the well, are two pyramidal structures, and a similar structure lies just to the south of the ranch buildings. These range in height from possibly 6 m to 10 m, the highest being the northernmost. Farther south is a large, low rectangular platform, some 50 by 60 m, with a fallen, once vaulted building on the western edge. It is this building and the pyramid south of the ranch that have furnished much of the stone for the corrals and other postconquest construction. In the eastern part of the site, approximately on the long axis, is the largest structure in the ruins, the so-called Castillo. An irregularly shaped platform that

supported the remnants of once vaulted structures as well as house platforms occurs in the western part of the area. Remains of house platforms are scattered throughout the site, their number and concentration not being known.

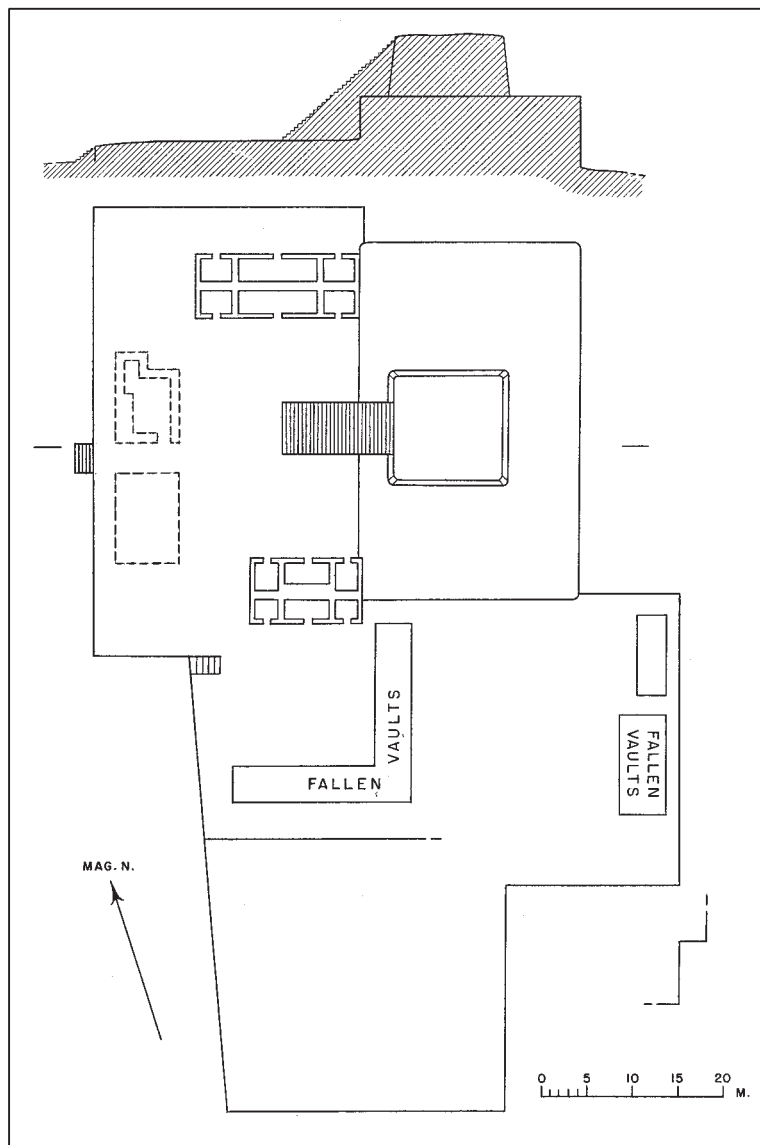
THE WALL

The wall surrounding the site was a matter of primary interest. It differs from the wall of Mayapán in that it follows a course clearly selected to utilize, wherever possible, natural elevations of the terrain. This is strikingly apparent in the southeastern, southern, and western sections, where the wall follows natural ridges several meters in height for a distance that comprises something like two-thirds of

the circumference. On the other hand, the Chacchob wall is rather similar to that of Mayapán in design and construction (see Shook 1952). It consists of an inner bench and a slightly higher, outer parapet, the whole built of rather large, roughly shaped stones (Figs. 6.2a,2; 6.6a). At places there are one or two steps or low terraces inside the wall (Fig. 1, at northwest). The parapet is for the most part formed of large stones set on edge, often in two rows (Fig. 6.2a,2), and generally does not rise more than 30 or 40 cm above the bench. The lowness of the parapet and the space between the rows of stone suggest that this was the foundation for a palisade, presumably of timbers set on end and bound together by lianas (Armillas 1948:151). Remains of a plaster floor on top of the bench at one point (Fig. 6.6b) clearly

indicate how that part was finished, and it is entirely possible that all surfaces once were plastered.

The total thickness of the wall would seem to average about 4–5 m. It is difficult to give any estimate of the present maximum height because of the confusion, without excavation, between what is natural and what is artificial. It would seem reasonable, however, to guess that the parapet attains at places a height of at least 2 m above ground. Maximum total height, including natural elevation, must be at least 6 m, probably more. Gates are simple cuts through the wall (Fig. 6.2a,l), the best preserved, those at the southeast and southwest, being about 2 m wide. Steps are visible leading up to these gates, this being made necessary by the natural rise. In the case of the southeast gate, steps occur at both approaches; at the southwest gate they were seen only at the inside.

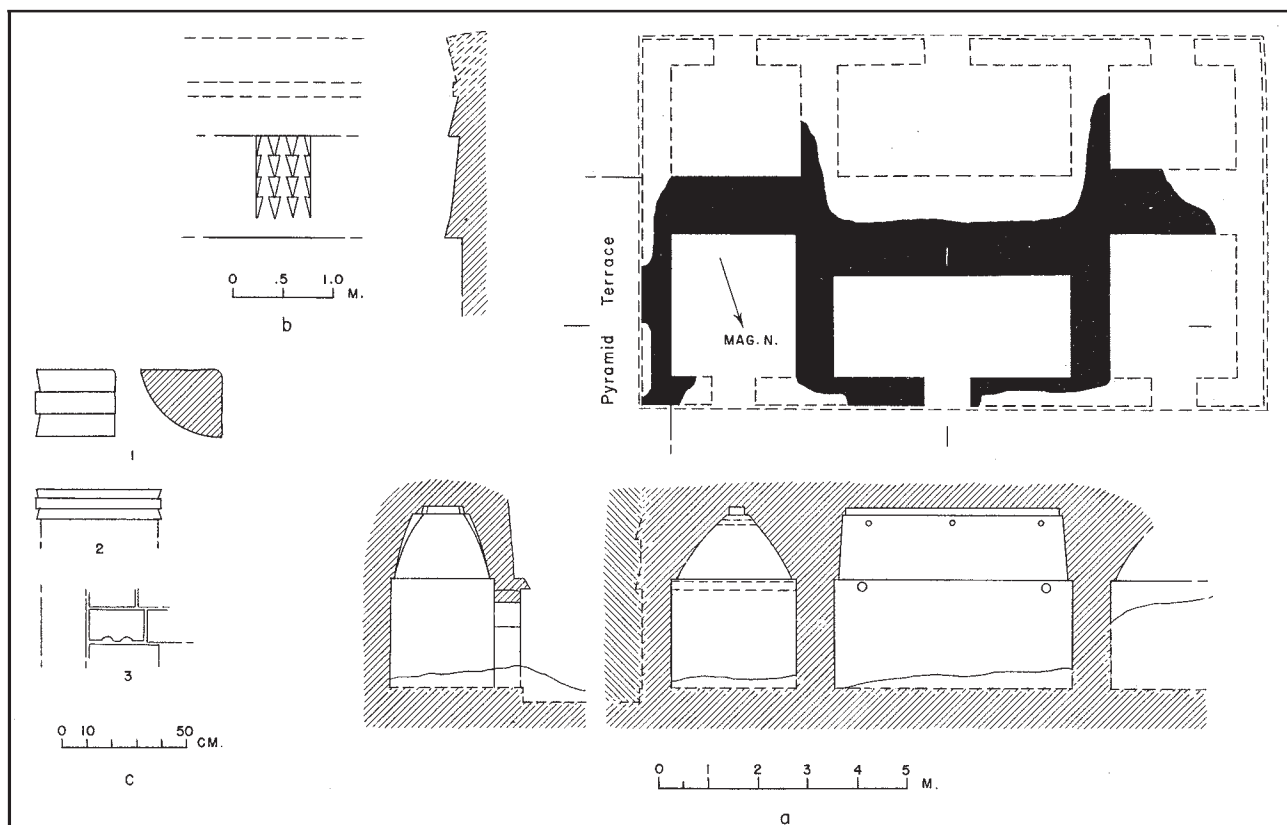


6.3. Sketch Plan and Section of Castillo.

THE CASTILLO

The only structure sufficiently well preserved to offer any appreciable amount of architectural detail is the Castillo (Figs. 6.3; 6.4; 6.6c–g). This large complex of terraces and adjoining courts covers an area approximately 60 by 100 m. The principal and dominating building is a pyramid which rises in two great terraces to a height of 13–16 m above ground level, the difference in elevation being due to the natural slope of the terrain. No trace remains of the temple building that once must have crowned the pyramid. There are indications of old excavations here, and it is worth noting that the anonymous author (1845a) reports the removal of stone from the Castillo for a nearby hacienda a few years before his visit to the site. The structure faces west, as is shown by the remains of the stairway that rises from a courtyard at the foot of the pyramid. This courtyard is formed by ranges of vaulted rooms, some of which are still standing, that extend west from the northwest and southwest corners of the lower terrace of the pyramid. To the south of the pyramid and of the courtyard are other courts and terraces, some of which supported vaulted buildings now fallen.

The relatively low terrace walls that surround the entire complex except at the northeast, where the first terrace of the pyramid rises directly from ground level, stand a meter or two in height and



6.4. Architectural Details at Castillo.

a. Plan and sections of building at southwest corner of pyramid (see Fig. 6.3). b. Profile and partly restored elevation of upper zone of façade at northeast corner of same building (see Fig. 6.6f). c. Architectural details. 1. Fallen façade decoration (spool) at south of pyramid stairway. 2. Top fragment of altar at foot of pyramid stairway. 3. Cord holder at east of doorway in north-central room in building at southwest corner of pyramid.

are built of large, very rough stones, only slightly worked, or merely selected for shape as they came from the quarry or were gathered from the surface of the land (Fig. 6.6c). The walls of the pyramid are of better construction, consisting of deeply tenoned blocks, the outer faces of which are relatively smoothly cut (Fig. 6.6d–f). Corners of both the upper and lower terraces are built of quarter-round blocks (Fig. 6.6d). A coat of plaster on the northern wall of the stairway suggests that all walls of the pyramid were thus covered. No step stones were observed. The stairway appears to be secondary to the upper terrace, but may only reflect the procedure of construction rather than any appreciable difference in time.

At the foot of the pyramid stairway are the remnants of a square stone altar. Only the top part, which carries a three-member molding on all sides (Fig. 6.4c,2), remains intact, and it is impossible to

determine the original height of the monument. South of the stairway, not far from the lower terrace of the pyramid, is a quarter-round spool (Fig. 6.4c,1). This element is normally associated with an engaged column at the corner of a building. Its present position is such that it might have fallen from the southwest corner of the now vanished temple building on the pyramid. The only other decorative elements observed were a good number of colonnettes, scattered throughout the group. They are of a type usually associated with architectural moldings.

The ranges of vaulted rooms at the northwest corner of the pyramid are for the most part fallen, and the plan shown in Figure 6.3 involves considerable restoration. It is reasonably certain that there are two parallel ranges, but the number of rooms and the arrangement of doorways are open to question. Part of the vault and the north wall of the southeastern room and a jamb of the southwestern doorway

are visible. There are indications that this building is secondary to the lower terrace of the pyramid, but that sequence is by no means certain. What little can be seen of the structure suggests that it is of the same general character and period as the building across the court to the south.

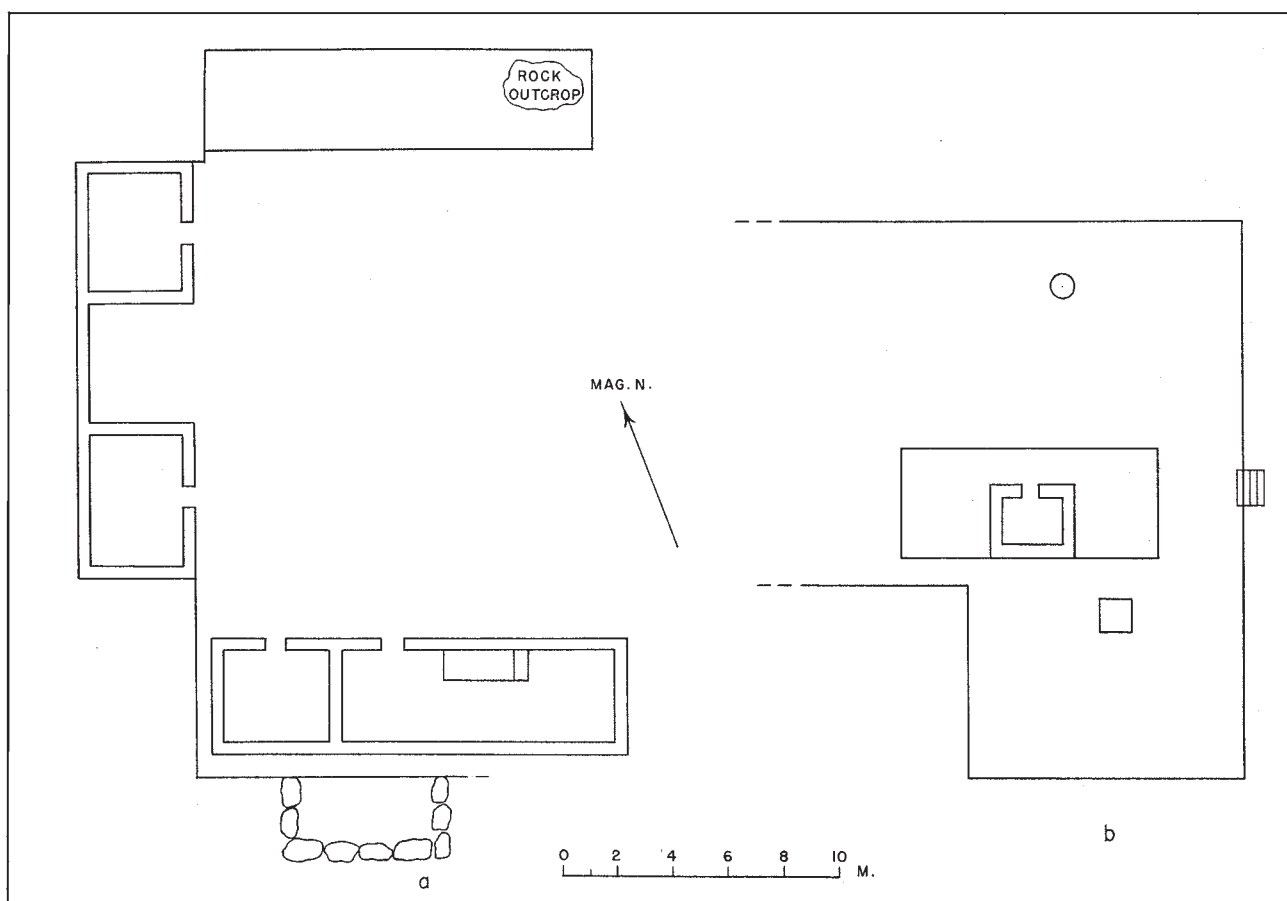
The best-preserved building at the site is that at the southeast corner of the pyramid (Figs. 6.3; 6.4; 6.6f–g). Two vaults remain standing; one doorway is intact; there are fragments of three other vaults; a profile of the façade is visible as high as the lower member of the cornice molding. The accuracy of the plan may be judged from the amount of wall shown as observed in place (Fig. 6.4a). Particularly open to question is the great wall thickness between the two central rooms. The southern of these rooms may have been wider than shown on the plan, its rear wall not following the line of the walls in the rooms to the east and west. The totally fallen remains of a second story are not shown, and there is the possibility of a stairway to the second floor at the south, presumably rising over a vaulted passage that gave access to the central room. Alternatively, the upper story may have been approached from the first terrace of the pyramid, which is on approximately the same level.

No plinth is visible, although this feature is undoubtedly present, hidden beneath the debris. It has been restored in the sections (Fig. 6.4a) as a single course of stone. A fragment of white plaster floor remains in the north-central room. The walls are of veneer masonry, the facing stone being cut in a manner that may be described as of medium quality in terms of Puuc architecture (Fig. 6g). The outer wall surfaces are of better-dressed stone than are the inner, as is customary in Puuc buildings. The one surviving doorway is constructed of two large stones in each jamb, each stone extending the full thickness of the wall, and is capped by a stone lintel. Inside the doorway, at each side and just beyond the jamb stones, are two cord holders, one near the lintel, one near the floor (Fig. 6.4c,3). Vaults, all of which run lengthwise with the building except those of the northeast and northwest rooms, carry an offset at the spring and one course below the capstones on the four sides of each room. There is a wide range in the shape and degree of specialization of the stones that form the facing of the vaults (Fig. 6.2b, 6.6). In the north-central room the visible length of capstones is markedly greater at the middle of the room than at each end (Fig. 6.4a, transverse section). The arrangement of wooden beams, none of which remains but the locations of which are shown by holes in the walls and vaults of the standing rooms, is shown in the sections. The upper central beam

hole is not present in the shorter northeast room. At the northeast corner of the building the upper façade has been preserved by the abutting terrace of the pyramid. This is visible in profile to the height of the lowest member of the cornice molding (Fig. 6.4b). The topmost members have been restored in the section and elevation according to one common arrangement in Puuc architecture. The only exterior decoration noted is that shown in Figure 6.4b. The façade at the western end of this panel has fallen (Fig. 6.6f), and there may originally have been more than three vertical rows of triangular elements. In the northeast room on the plaster at the northern end of the vault are traces of painting. No color was seen, only fragments of figures or designs drawn in black line. Too little remains to discover the nature of the composition or the subject.

The relation in time of this structure to the lower terrace of the pyramid is problematical. The northeast corner of the building clearly underlies the terrace, as witnessed by the buried façade of the former. A few meters farther south the upper façade of the building does not seem to be present, the terrace fill apparently lying against the unfinished outer face of the vault masonry as though the terrace had been built before this part of the building had been completed. Conditions at this point, however, are by no means clear. All that can be said is that the erection of the vaulted structure definitely was begun before the completion of the pyramid terrace, that the building of the two may have gone on at the same time, or that the vaulted structure was erected in its entirety prior to the building of the terrace. Because of the general similarity of the vaulted structure to the ranges of rooms at the northwest corner of the pyramid and the apparently secondary relationship of those ranges to the lower terrace of the pyramid, it is possibly best to surmise for the present that both vaulted buildings and the pyramid were built over a relatively short period of time.

At the western side of the courtyard before the pyramid are the remains of what seem to have been structures with low masonry walls (Fig. 6.3). Destruction is such that little can be made out, and small reliance should be placed on the plan shown for the northern of the two structures. The thickening of the masonry at the southwest corner of the building suggests the remains of a bench or altar. The southern construction is too tumbled to attempt a plan, but the contour of the debris seems to indicate a room or rooms. It is supposed that low stone walls of this sort are the foundations for houses of perishable materials. These remains are similar to those found on so-called house platforms, presumably the remains of dwellings.



6.5. House Platforms.

a. Plan of house group north of road to San Diego Max (see Fig. 6.1). b. Plan of house platform and terrace inside wall near northeast gate (see Fig. 6.1).

The terraces, courts, and buildings that form the Castillo group cover a large area and represent a great deal of labor. It is not unnatural to suppose that so large an architectural complex grew by accretion and that construction may have extended over considerable time. More than one cultural period thus may be represented. The fact nevertheless remains that all architectural details well enough preserved to form reliable criteria point to the Puuc period. The vaulted rooms at the western foot of the pyramid are unquestionably of Puuc style, and there are indications that the pyramid was built more or less contemporaneously with these rooms, although this is by no means certain.

Nowhere else at the site was there noted standing masonry that would indicate the period of construction. There were, however, many examples of loose building stones which by reason of design and style of workmanship might be associated with the Puuc period. Particularly worthy of mention is the occurrence in the corral walls at the ranch of column

shafts typical of those used in doorways in Puuc buildings. On the other hand, no mask elements were noted.

HOUSE PLATFORMS

A number of structures that appeared to be the remains of dwellings were observed. These occurred both on platforms that supported the debris of vaulted buildings and on platforms with dwelling-type remains only. The characteristic plan is that of a rectangular room, or a series of two or three rectangular rooms, outlined by low stone walls one or two courses high (Fig. 6.5). Doorways to rooms were frequently marked by jambs of larger stones. These low walls presumably were the foundations for houses of perishable materials. There also were instances of simple platforms which showed no surviving traces of houses but which might well have supported perishable construction. These house platforms occurred singly on a larger platform or

terrace, or in groups of two or three that formed a small courtyard.

The first of the two examples of dwelling-type structures illustrated here (Fig. 6.5a) lies west of the northernmost pyramid and just north of the road to San Diego Max (Fig. 6.1). It is of the courtyard type but not wholly typical in that the several structures are more closely grouped than often is the case. The courtyard presents a gravelly surface of small stone that suggests the remains of what had been a plastered floor. No plaster was noted, however, anywhere at this group. The northern wing is a simple platform about 20 cm high, edged by a single course of stone that retains a rock fill. An outcrop of bedrock protrudes above the fill at the eastern end. The low walls, at no place more than one course of stone in height, that form the other structures in the group are 40–60 cm thick. Some of the stone is well cut, of a type associated with more formal architecture. Door jambs are of larger stones, possibly 50 cm high, shaped but very roughly finished. There are the remains of a bench or altar in the east room of the south wing, and it is just possible that a wall crossed the room in line with the eastern end of the bench. The enclosure behind this wing, built of great rough boulders set on edge, represents a type of construction reminiscent of the property walls at Mayapán, being particularly comparable to the stone circle against a house terrace mentioned by Bullard (1952:39).

Another structure examined by us that may have been a dwelling (Fig. 6.5b) lies inside the wall at the northeastern edge of the site (Fig. 6.1). A good-sized terrace, a meter or two high and with a stairway on its eastern side, supports a low platform of which are the remains of a single room outlined by low stone walls. The walls of the terrace are built of large rough stone and are similar to the terrace walls at the Castillo (Fig. 6.6c). The house platform, such it is, stands about 20 cm. high and is faced on all sides with well-cut and dressed stone. The walls of the room, which are 30–40 cm high, are built for the most part of the same well-finished stone, two courses in height. The floor inside the room is paved with nicely dressed stone of the type used in wall construction in Puuc buildings. No mortar was noted in connection with any of this masonry. There is no appreciable amount of debris inside or outside the room.

North of the platform, near the northern edge of the terrace, is a circle 80–90 cm in diameter (Fig. 6.5b) made of well-cut stone set on edge, the dressed surfaces of the stones facing the inside of the circle. No mortar or fill is present, the stones resting loosely on the surface of the terrace. The jumbled remains

of what seems to have been an altar or low platform about 1.20 m square occur just south of the house platform.

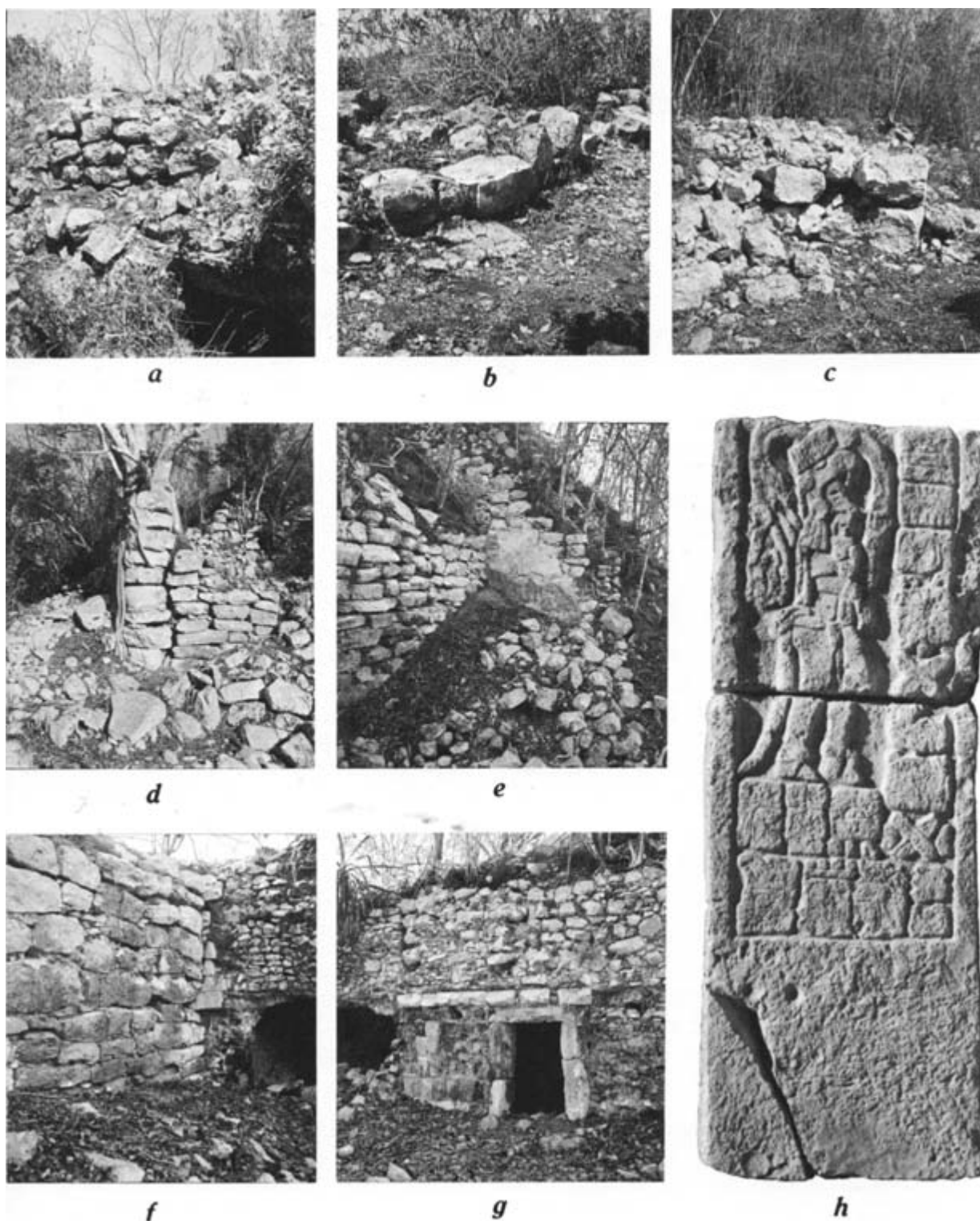
The use of well-cut and dressed building stone in the house platforms just described raises the question of the period of these structures. This stone is of a type associated with the formal architecture of the Puuc period. The mixing of the well-cut variety with stone of much poorer workmanship, particularly in the case of the house platforms first described (Fig. 6.5a), suggests the re-use of stone taken from the disintegrating or abandoned structures of an earlier period. On the other hand, it is entirely possible the stone simply represents a surplus left over from some large construction and used contemporaneously in house platforms of the same period.

At no place was there noted the typical Mayapán type of dwelling with benches, nor was there noted an instance of a rear room (Ruppert and Smith 1951: 231). The two examples of houses with benches or altars at Chacchob (Figs. 6.3; 6.5a) are very different from those at Mayapán. Just across the road north of the Castillo a group of houses with low walls that employed much cruder stonework than all others seen suggested a different period of construction, but there was nothing to suggest a similarity to Mayapán. On the whole, the dwellings we observed approximate more closely the low-walled remains, presumably domiciliary, that are found in the Puuc area.

Metates and fragments of metates are strewn all over the site. As might be expected, they are particularly common in association with house platforms. Many examples are much larger than the usual utensil of this sort. A range of shapes and sizes is illustrated in Figure 6.2b, 1-5.

POTTERY

During our last day at Chacchob time was available to dig one trench in search of pottery. This was located near a house platform in the northeastern section of the site. Soil was found to a depth of 40–50 cm, before bedrock was encountered. Two arbitrary levels were maintained, each about 20 cm in depth. Only 165 fragments of pottery were recovered. R. E. Smith examined this material after our return to Telchaquillo. Thirty-six of the sherds were too eroded or too fragmentary to be identified; the remainder were typical of the Puuc period. Nothing was noted that might be considered intrusive in Yucatán, nor was there a single sherd that might be suspected of belonging to the Mayapán period. There were no significant differences in the pottery from the two levels in the trench.



6.6. Views of Wall and of Castillo at Chacchob and Sculpture at Ukum.

a. Exterior of wall above cave northwest of southwest gate (see Fig. 6.1), looking north. b. Fragment of plaster floor on upper surface of wall about 75 m northwest of southwest gate. c. Southwest corner of low terrace in front of Castillo pyramid (see Fig. 6.3), looking east. d. Southeast corner of lower terrace of Castillo pyramid, looking west. e. Wall of lower terrace and northern wall of stairway of Castillo pyramid, looking south. f. Juncture of lower terrace of Castillo pyramid and building at southwest corner of pyramid, looking south. Note remains of façade decoration on building (see Fig. 6.4b). g. Doorway to north central room of building at southwest corner of Castillo pyramid, looking south. h. Sculptured door jamb from floor of machine house at Hacienda Ukum. Length of stone 1.49 m, width 54 cm thickness 24 cm.

SUMMARY

We returned to Telchaquillo on March 4, having devoted five days to our reconnaissance of the ruins. The results of our work may quickly be summarized.

Chacchob is a small site surrounded by a wall. In many respects the wall is similar to that which encircles the ruins of Mayapán. On the other hand, the architecture of Chacchob, or such of it as was observed, seems to be of the Puuc period. This time of occupation is further attested by the small sample of pottery recovered. As walled sites of the Maya lowlands are commonly considered to be of a period

later than that of the Puuc, and roughly contemporaneous with the major occupation of Mayapán, these findings were unexpected. Interpretation of these observations, however, should proceed with caution. Our evidence is fragmentary, and there certainly remains the possibility that Chacchob underwent a late period of occupation. The wall around the site may represent that period, as may certain mounds, but in such case there should be contemporaneous ceramic remains. Before any conclusions are reached, it would be well to have a better knowledge of house platforms, here and elsewhere in Yucatán, and a much larger sample of pottery from this site.

ARCHAEOLOGICAL RECONNAISSANCE IN TABASCO

HEINRICH BERLIN

Tabasco lies in southeast Mexico on the Gulf of Campeche. It consists mainly of an alluvial plain through which the Usumacinta and Grijalva rivers and their tributaries slowly meander. Only at the southern edge of the state does the plain merge into the northern Chiapas mountain chain. As Tabasco has one of the heaviest rainfalls of all Mexico, the country suffers each year from tremendous floods; even during the dry season, much of the land is perennial swamp.

Groves of coconut palms flourish along the coast, cacao is cultivated in the Chontalpa, and cattle are raised wherever possible, with a growing tendency to convert all Tabasco into a huge grassland for pasture. Corn, grown in the old *milpa* fashion, is insufficient to meet the demand and must be supplemented by imports from Campeche. Bananas, beans, copra, rice, and coffee are the other major agricultural products, followed by oranges, mangoes, and avocados.

Rivers and streams serve as main lines of communication. Riverboat service, with modern outboard motors, is available everywhere though irregular. Most of the larger villages are now connected with the capital of the state, Villahermosa, by plane; and the Ferrocarril del Sureste provides easy access to the hinterland of Tabasco and Campeche. Permanent highways supplement the railway to Villahermosa and to Puerto Ceiba on the coast. Many other places can be reached by bus, at least during the dry season.

Our knowledge of the archaeology of Tabasco is limited to a few sites. The principal explorers have been Désiré Charnay and Frans Blom; Berendt, Maler, and Seler have added a few bits of information. In recent times, E. Wyllys Andrews discovered new sites in southeast Tabasco; M. W. Stirling and his group thoroughly explored La Venta, with attention to the sculpture and ceramics.

The meagerness of this archaeological record prompted a fresh survey of this region where lie the

westernmost outposts of Classic Maya culture. It was particularly hoped that we might find indications of a supposed Toltec movement from Tula (Hidalgo) to Chichén Itzá, especially in view of the current belief that the Toltec cultural traits were transmitted to the Itzá by contact with Nahuatl-speaking nations west of Laguna de Terminos.

Therefore, I spent four months in Tabasco, from January to May 1953. As other institutions were surveying the district of Huimanguillo and the region around La Venta, I did not investigate the western part of the state. To acquire the archaeological background, I visited all known major sites (except Moral and La Venta), which I shall describe under the following more or less geographical groups. The Chontalpa lies north of an imaginary line from Cardenas to Villahermosa, extending almost to the coast and framed by the Rio Gonzalez and the Rio Seco. This region, where cacao shrubs dominate the landscape, has had the highest concentration of Indian population ever since the 16th century. But now the native dialect is rapidly dying out; Nahuatl, or Nahuat, which was spoken in several villages, has disappeared altogether. The search for major evidence of pre-Spanish occupation was disappointing; at a village with the promising name of Macuiltepec (Five Hills) there were no mounds at all. Even if, under strong clerical influence, the old temples were demolished here more rapidly than in the less populated hinterland, at least the substructures should have survived as places of refuge during the periodical inundations. The Coast was surveyed from Laguna Machona to Laguna de Terminos; all along it is lined with coconut palms. The existence or absence of lagoons with brackish water seems to have played an important part in the ancient cultural development of the region. The Lower Usumacinta, from a geographic point of view, should probably end above Jonuta where the Palizada River separates, but here the term Lower Usumacinta denotes the stretch from Tenosique to the point below Jonuta where the San Pedro y San Pablo River branches off. In this region, known in colonial times as El Partido de los Rios, are Tabasco's major cattle reserves, where the beasts graze in open savanna-like country. A few sites outside these three areas will be described, together with two Campeche ruins, under "Miscellaneous Sites."

It was necessary, during the time allotted to this first survey, to probe the region as a whole rather than excavate carefully at minor sites with the risk of having to pass over major sites. Therefore only sketches with estimated distances were made for many sites: Huimango, Iquiuapa, Ahualulcos, Bellote, Las

Minas, El Encanto, Tiradero, and Arenitas. Too inaccurate for publication, these sketches may nevertheless be of use to other archaeologists intending to work in Tabasco and so have been deposited with the Department of Archaeology of the Carnegie Institution of Washington in Cambridge, and with the Institute Nacional de Antropología e Historia in Mexico City.

I have not given in this report any description of pottery, though many sherds were collected from the surface and from test pits. As the next season will be devoted to ceramic excavations at places in Tabasco which, from this year's experience, seem to be key sites, it is expected that a subsequent analysis of the material will be of more lasting value. The term Fine Paste ware, however, appears occasionally in the text; it refers to a ware with little or no visible temper. Paste colors range from gray to orange. The well-known Fine Orange is considered here as belonging to this ware, but not all Fine Orange falls easily into Brainerd's (1941) scheme; for in Tabasco, especially along the coast, and perhaps in Campeche, a peculiar late variety of Fine Orange seemed to exist. The relationship of Fine Paste ware, as used here, with Drucker's Fine Paste ware of La Venta and Tres Zapotes (Drucker 1951) remains subject to more study in the field as well as in the laboratory.

For a history of Tabasco at the time of the conquest, the reader is referred to Scholes and Roys, *The Maya Chontal Indians of Acalan-Tixchel* (1948).

THE CHONTALAPA

CUNDUACAN. The present decadent village was once the large and famous *Cimatan*, Aztec mercantile center of southeast Mexico. Alfaro's 1579 map (Scholes and Roys 1948:16) shows three pueblos, called the *Cimatans* and originally "located on the Grijalva a short distance below the point where the Río de Dos Bocas branched off from it . . . Later all three towns were moved to the site of the modern Cunduacan, two suburbs of which are named Cimatan and Cuculteupa" (Scholes and Roys 1948:31). This map also shows "lagoons among the large Cimatans," one of which may be the present Laguna de Cucuyulapa. An informant at Cunduacan told me that near it were mounds where sherds had been found. Could these mounds be the remains of one of the Three Cimatans?

In modern Cunduacan a tradition of three original villages survives, and the wards of Santiago (Cimatan) and Cuculteupa still exist there. In the vicinity of the town itself I noticed only a few scattered overgrown earth mounds.

HUIMANGO. Lying within the jurisdiction of Huimango is a small ranch, which may formerly have been known as San Antonio. It can be reached by turning north off the Cunduacan-Jalpa road at the village of Pichucalco. Here I encountered a group of mounds, covered by cacao shrubs, arranged around a plaza. There were long platforms, 3 m high, and a main pyramid, possibly with a stairway facing east. Eyewitnesses stated that during an excavation on top of the pyramid, a white, chalky floor was reached. Various "idolos" were said to have been found during excavations in the plaza. I found abundant Fine Paste sherds in a ditch that had recently been opened for drainage.

Roy (1943:99–100) states that, like Cunduacan, Huimango was moved from its original location. Perhaps the present ruins correspond to the primitive settlement.

THE JALPA-COMALCALCO ROAD. The usual route passes through Chichicapa, but on my survey I followed a supposedly shorter one farther south and noted several archaeological sites. Galeana has a few low mounds and one larger one. At Iquinuapa I saw a nice court about 50 m square, with one mound on each side, the highest rising to 15 m. Beyond the Cuscuichapa River and shortly before reaching the Huimanguillo–Comalcalco–Puerto Ceiba highway, I found mounds at Rancho San Joaquin, which formerly belonged to Finca Esperanza. One of the mounds which I climbed showed abundant use of fired bricks, bound together with lime mortar containing small fragments of shell. Possibly temples, built of brick, once existed on top of these mounds, as is the case in the nearby Comalcalco ruins.

SANTA MARGARITA. This site, located on the Comalcalco-Aldama road, has only a few earth mounds, but holds considerable interest because the owner of one of the mounds had unearthed two fine *hachas* (Fig. 7.3e,f) under his house. They were found in a vertical position, facing each other. One, 24 cm high, depicts an old man with a bird beak over his head; above the ear the *hacha* is perforated by a biconically drilled hole. The other, 15.5 cm high, shows a face with deepset eyes and thick lips. Both are of granite, but of different kinds. From around the house, the owner had dug a few late Maya figurines, but apparently these were not directly associated with the *hachas*.

TAMULTE DE LAS SABANAS. This is a larger Indian village, northeast of Villahermosa. Despite proximity to the state capital, the village had no bus connection with Villahermosa until 1953 and so has

preserved its Indian character to a notable degree. The native Chontal is spoken everywhere. In a ravine near the outskirts of the village is a place of worship with some five natural sandstone rocks where pagan offerings are still made. No information could be obtained about the possible survival of the old Mesoamerican calendar system. Monday, Wednesday, and Saturday were said to be days of good luck; Tuesday, Thursday, and Friday were considered unlucky.

I was told that, standing in the savanna about 3 km west of the village, were a few low mounds where pottery figurines and whistles had been found. In the village itself, sherds could be seen lying in the streets where they had been washed out by the rain.

THE COAST

AHUALULCOS. Early in 1933, Ignacio Gutierrez of the local legislature of Tabasco, started to explore some mounds west of Paraiso and finally made, in August of that year, a huge funnel excavation in one of the larger mounds, where two "idolos" had previously been found on top of it, either exposed or set up. Gutierrez invited Jose Coffin to see his work, on which the latter took some notes. Coffin published the history of the excavation first in the local newspaper, *Redencion*, and then in *El Nacional* in Mexico City, where he printed at the same time a photograph of some very fine Ahualulcos Late Classic ceramic pieces which are now on exhibit in the museum in Villahermosa. This old photograph serves as undisputable proof of the provenience of these pieces; they had always been ascribed to Ahualulcos, but only by oral tradition. Coffin described (1933) what he saw when the excavation was under way: "Durante toda la semana han sido extraídos cuidadosamente valiosos geroglíficos, adronos e imágenes afortunadamente en regular estado de conservación. En el fondo de la excavación hecha en la cúspide de la pirámide apareció una escalinata con cuatro peldaños que termina en una mesa de 'cemento' donde aparecieron sepultados varios restos humanos y el de una concha al parecer de Carey donde reposaron quizá la cabeza o alguna otra parte del cuerpo antes de la violación del sepulcro . . ."

To reach the ruins, one must first go by bus from Paraiso to the small village of Tupilco. From there, one follows the Arroyo Verde by boat to Laguna Redonda, and then, still by boat, one continues southward to the ruins. They are situated about 4 km to the right of the Santa Ana River, and about 8 km above the point where it enters into Laguna Machona. The ruins stand on an island in the midst

of swamp. This island is known locally as Isla de Rendon, named for a former owner. Ahualulcos is the modern designation by Jose Coffin, as he considered the site to have been the main settlement in the pre-Spanish Ahualulco region.

Scattered over the island are many mounds, ranging from 3 to 8 m high. Several are in parallel rows. I ran a small trench across the top of one, and at a depth of only 80 cm found a good cement floor. On top of it was humus earth, with patches of packed shells; breaking through the floor, we encountered a solid fill of shells and small snails.

The mound where Gutierrez had excavated was in poor condition. Only minute fragments of the old structure could be seen. It seemed that the stairway had had inset steps which had been reshaped at least once, for there were two overlying cement layers separated by earth fill.

A few of the leftover sherds were collected. They included a wide-everted Chicanel-like rim sherd and a handle of a censer ladle, evidence of widely separated epochs.

BELLOTE. To Désiré Charnay goes the credit of having discovered the important site of Bellote, which he visited in 1881 or 1882. His description of it still holds true in many respects, and it is well worth reading (Charnay 1885:157–158). Despite that well-known text, no other archaeologist has cared to revisit Bellote, even to check on the veracity of Charnay's information; only M. W. Stirling touched it hastily in 1944.

The Bellote ruins extend along the northern shore of Laguna Mecoacan and can conveniently be reached by outboard motor from Puerto Ceiba. More than 20 loosely grouped mounds were counted; coconut palms were growing around and on top of them.

Efforts were concentrated on the mound described by Charnay. After the top had been cleared of vegetation, it exhibited a confused arrangement of heaps, the remnants of excavations started before Charnay visited the site and probably continued afterward. The structure had suffered much since Charnay's day; substructure walls were no longer exposed, and only a short section of a temple platform wall was still visible on top of the mound. Investigation was so brief that only miscellaneous data were gathered, I intentionally left untouched some linking sections so that evidence would not be destroyed for future excavators.

An approach trench at the base of the mound revealed that the substructure had at least two phases. Of the outer one, there existed only a vertical surface of plaster, 50 cm high, which was applied

over the sand and shell fill. The inner one showed a continuous batter of 45 degrees, rising to a height of 1.50 m. Red paint was observed on the earlier plaster facing. The trench was not extended farther but it is possible that still older substructures exist.

The temple platform is set well back on the northern part of the substructure. It is a simple rectangular construction, with an inset stairway facing south. The steps are in poor condition and show four, possibly five, heavy layers of mortar which probably belong to the various building phases of the temple platform walls. Charnay speaks of four layers of plaster on these walls. I could detect only three, but it is very likely that Charnay's fourth one has been ripped off in the meantime. The fact that the lower part of the third layer is hidden under a floor would argue for Charnay's fourth. It was probably from this last that he took the stucco piece illustrated by him and now in the museum at Villahermosa. (For a modern photograph, see *Tlatoani*, 1952, vol. 1, no. 2, p. 30).

The oldest visible layer on the walls of the temple platform rests, in all probability, directly over the fill, which consists of heavily packed shell. This can be seen in an old and large funnel excavation at the rear of the platform. No decorations were observed on this layer.

The second layer is 16 cm, thick. A stucco glyph (Figs. 7.1a; 7.3a) can still be seen on its outer facing within an oval frame on the south wall, close to the southeast corner. On the same wall, more toward the stairway, faint outlines of another glyph, possibly a human face, are recognizable.

The third layer is 25 cm thick and built of bricks embedded in mortar. It also has many sherds of a heavy, red-brown household ware, just as occurs at Comalcalco (Blom and La Farge 1926–1927:1, Fig. 90). A small excavation made west of the stairway, breaking through the floor of the lower platform, showed that the third layer was decorated with stucco medallions. One was almost completely exposed, the next one (nearest the stairway) partly so. The exposed medallion shows a frame similar to those in House A of the Palace at Palenque; inside the frame is an Ik sign (Fig. 7.1b). Since fragments of frames were also found on the east side of the stairway, the whole south façade, at least, must have been decorated with medallions. It would have been interesting to establish whether all the medallions had only Ik signs, whether there were other signs as purely decorative elements, or whether all 20 day signs were in medallions around the platform. These points could have been determined simply by widening the small exploratory pit, but for reasons stated earlier, I refrained from doing so.

A few more fine stucco pieces were found in front of the temple platform, e.g., a badly damaged head in three-quarter-round relief of the best Classic Maya style (Fig. 7.3a) and a smaller head with facial features gone, leaving only the head-dress. These two pieces were turned over to the museum at Villahermosa; the other less important fragments were returned to their finding place and covered again with all exposed parts of the structure.

Another exploratory pit was sunk in the lower platform. By piercing through six cement layers, we ran into solid packed shell. Two complete, though broken, Chicanel-like vessels and a piece of painted modeled stucco were found in this pit. Although the chronological equivalent of similar pottery types in Peten and Tabasco is by no means certain, this discovery suggests that the pyramid had been started by Chicanel times.

Another large pit, sunk to ground water in front of the pyramid, soon ran into what seems to have been a multiple grave. One skeleton of an adult lay in slightly flexed position, feet pointing north and head facing east. This skeleton was removed. Another one was left in place; only the out-stretched legs had been exposed, and these pointed north. The skeletons were in remarkably good state of preservation, considering the moisture of the earth in which they rested, with ground water only a few centimeters below them. Around the bones were some 20 very crude, red storage vessels of considerable size, mostly arranged in pairs, one serving as a cover for the other. Several pairs consisted of oblong basins with markedly incurved rims. Though the floors were completely destroyed, available evidence leads one to believe that the plaza floor at the outer wall of the substructure mentioned above, was partially broken in order to make the burial, and a new floor was then laid above the grave. Thus, the placement of the grave suggests a late stage in the occupation of Bellote. Some Fine Paste sherds seem to point to the same conclusion, but their association with the burial is not beyond question. One exceptional vessel from the burial may ultimately turn out to be Fine Paste ware.

Bellote is second only to Comalcalco as the major site of the Tabasco plains, and both are fine examples of full Classic Maya development. Even though there are no visible buildings standing at Bellote, it shares with Comalcalco the use of fired brick as an important building material, the ample use of stucco for modeled decoration, and true Maya hieroglyphs. We possess no information as to the historical development of Comalcalco, but in the case of Bellote we at least have the suggestion that activities, including mound building, had already begun during Chicanel times and that the site flourished during

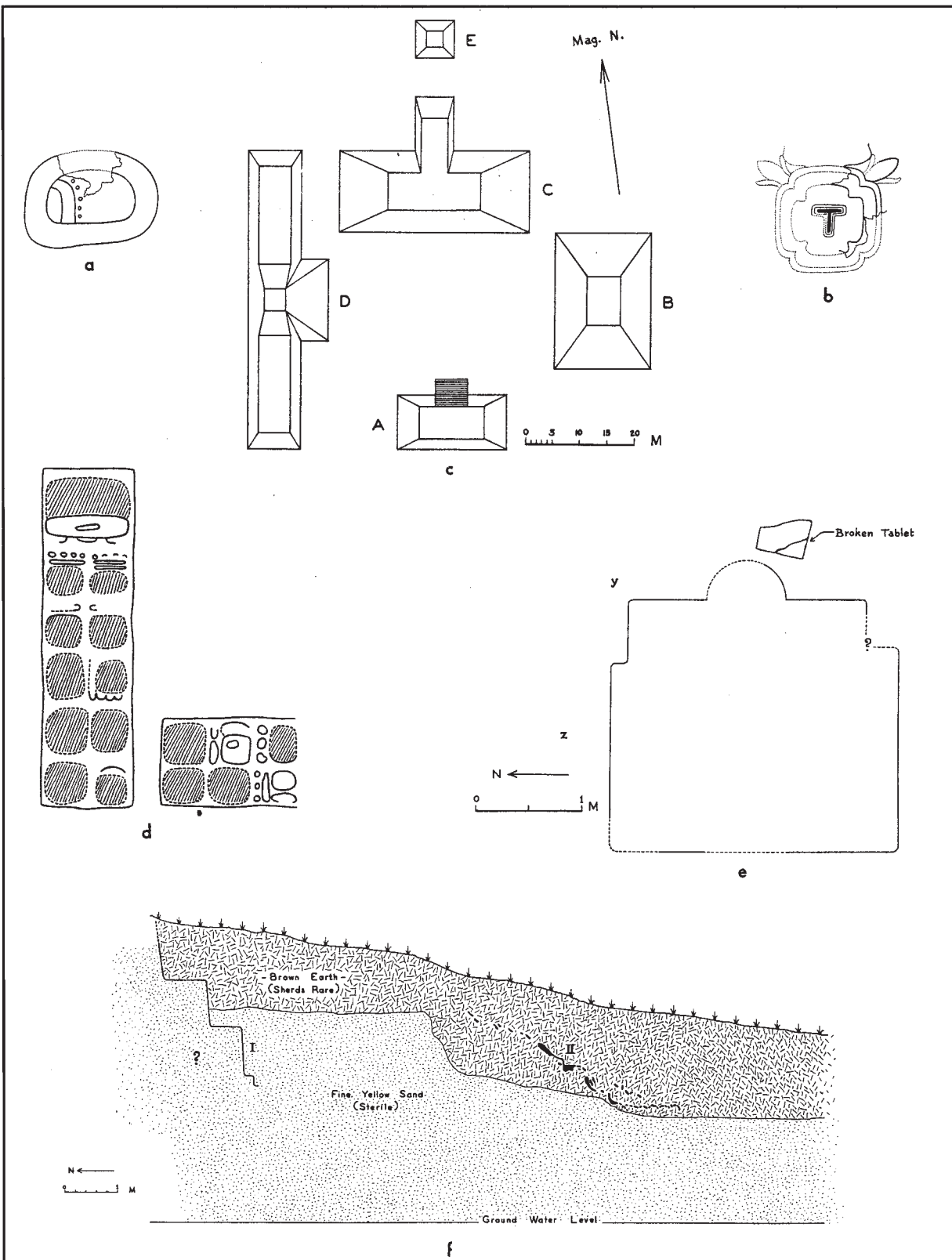
the Late Classic, with a chance that it survived even into Early Postclassic days. No material corresponding to Early Classic has as yet been identified, and this raises the question whether the pre-Classic dating of Chicanel-like pottery at this site is correct. Further excavations at Bellote will most certainly provide ample reward for the archaeologist, as many untouched mounds remain.

Just opposite Bellote lies a small island in Laguna Mecoacan, known locally as Isla de Francisco Chable. As at Bellote, thousands of sherds lie along the shore around the island. A few were collected, ranging from Chicanel or even Mamom to Fine Paste ware. The low mounds are built of shell with cement plaster covering the surfaces (Fig. 3b). From one of these mounds the owner had excavated a unique piece of pottery, fortunately unbroken, now on exhibit in the museum of Villahermosa (Fig. 3s). It is a red-pink vessel in the shape of a snail with four low feet and a lateral spout. In a panel it has a carved design of a head closely resembling Kidder's "Serpent X" (Kidder, Jennings, and Shook 1946, Figs. 97, 98). I believe the vessel belongs to very Early Classic.

We have now recorded three sites where shell mounds are associated with what may be pre-Classic material: Ahualulcos, Bellote, and Isla de Chable. A fourth, also in this lagoon area, is La Palma, near Paraiso, where shell mounds were destroyed in order to obtain road-building material. These mounds produced two tetrapods with a low basal ridge. They are now on exhibit in the museum at Villahermosa. As would be expected, these old shell mounds are concentrated around the coastal lagoons of northeastern Tabasco. Thence, to the east, there is none until the lagoon system of Laguna de Terminos, where Ruz (1945:67) reported their existence at El Aguacatal, significantly again, with Chicanel-like material.

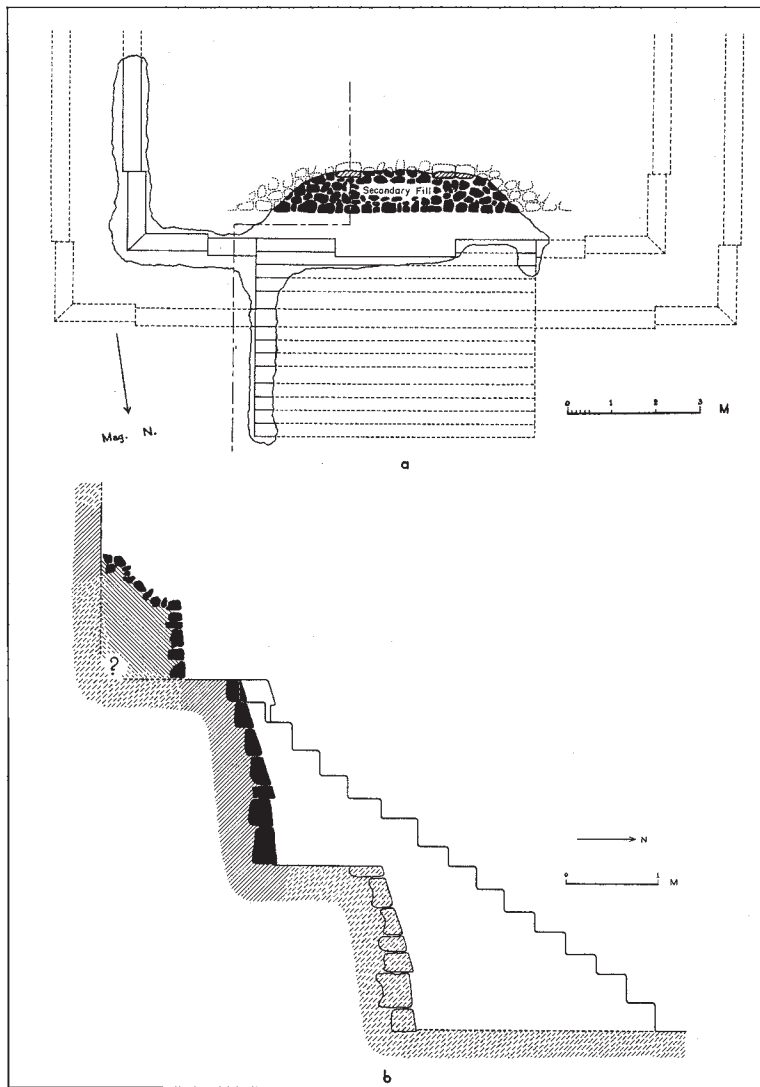
The two lagoon systems just mentioned are separated by a stretch of land which rises slightly over the southern swamps and follows the coast, roughly from the Gonzalez River to the San Pedro y San Pablo River. It is divided into two sections by the Grijalva. At the time of the conquest, this land was well populated, as can be deduced from the writings of Gomara, Diaz del Castillo, and Las Casas. The incursions of French and English buccaneers forced the natives to abandon their homes in the 16th and 17th centuries, retreating toward the south and returning only after these hostilities ceased. The proximity of the section on the left bank of the Grijalva to the Chontalpa easily led to the reoccupation of this area by Chontal Indians; Chontal is still spoken here today in several villages.

A line of mounds extends across this stretch of land, on both sides of the Grijalva. Students agree



7.1.

a. Bellote, Tabasco; stucco glyph on temple platform, Phase II. b. Bellote, Tabasco; stucco medallion on temple platform, Phase III. c. Escarcega, Campeche; plan of mounds. d. El Tortuguero, Tabasco; glyphs on Monument 5. e. Atasta, Campeche; platform, (y), position of scattered bones of two adolescents; (z), position of isolated skull of an adult. f. El Coco, Tabasco; section of trench. Drawings by L. Zavala.



7.2.
a. Ground plan. b. Section. Drawings by L. Zavala.

that Cintla, where Cortes fought his famous battle, was situated in the western section. Berendt, who visited the area in 1869, professed to have found the exact site, but I consider it doubtful that, with our limited knowledge of the Tabasco coast, any particular mound group could be identified as the old Cintla. Berendt worked around Cintla for six weeks, but I have had access only to Brinton's short abstracts concerning his excavations, not to his original field notes. The latter, however, may exist in the University Museum in Philadelphia.

A short tributary of the Grijalva, entering it opposite Frontera, was formerly called Rio de la Bellota, which gave its name to the nearby ruins, causing much confusion with regard to the site of Bellote, already described in this paper. In order not to further this confusion, I shall not identify each site

by its present locality. I shall first describe the sites on the left bank of the Grijalva, from east to west, and then those on the right bank, from west to east.

EL COCO. Several low mounds exist on the property of the Hacienda El Coco, especially on a lot called El Cajete mentioned by Berendt (1896:10). A trench was opened in one of the mounds a few years ago who still keeps the collection of Fine Paste vessels from his excavation. To study the building methods, I dug another short trench in the same mounds (Figs. 7.1f; 7.3c). This disclosed two constructions: the older one (I) was well preserved and showed vertical terrace walls; the newer one (II) was too broken up to allow judging its profile. In both cases the shell mortar which covered the walls was simply spread over a sandy fill. Only a few sherds were recovered from the fill. The top floors that had been seen in the earlier trench no longer existed, but my foreman, who had served in this capacity on the previous excavation, told me that all the pieces collected had been found above the floors. No further construction had been noted below the floors, and it thus would seem that the mound had been built up in only two periods of construction.

MADERO. This small village west of El Coco lies on the road which connects Frontera with Allende on the Rio Gonzalez. There are only a few mounds.

According to local tradition, a major excavation was carried out in one of them some years ago by Albert R. Morrell. This may be the one which Seler, who visited the region in 1911, described (1915, 5:149-151); he published a photograph of the stairway.

I saw a pre-Spanish bell now in private ownership; presumably it had been dug up locally. It is of the wire like type, almost identical with style F4 classified by Lothrop (1952:91-93, Fig. 86g), who considers these bells as belonging to the Mixteca-Puebla period, i.e., the last century before the arrival of the Spaniards.

JUAREZ. In the immediate neighborhood of this small village I happened to find a group referred to by Berendt as Cuyo Grande (Brinton 1896, Fig. 2, 3). The mounds do not seem to have suffered any recent intentional destruction, with the exception of



a



b



c



d



e



f



g

7.3.

a. Bellote, Tabasco; temple platform wall, Phase II, with stucco glyph and stucco head in front. b. Isla de Chable, Tabasco; wall of a shell mound. c. El Meco, Tabasco; trench. d. Las Minas, Tabasco; e, f. Santa Margarita, Tabasco; *hachas*. g. Isla de Chable, Tabasco; tetrapod snail vessel now in museum at Villahermosa. Height 14.5 cm; interior slip dark vermillion, exterior carmine slip and creamy wash. Courtesy Instituto Nacional de Antropología e Historia, Mexico. Photo L. Limón.

the façade of Mound B, where bricks had been torn off to get foundation material for the village school. It was only in the upper portion of the mound that I could still detect heavy pieces of shell mortar or plaster in the shape of an L, possibly the remains of a stairway that had been ripped off. This group has the best setting in the whole area.

GUERRERO. A rather high mound, visible from Mound B at Juarez, exists at this village. It may possibly be Berendt's Cuyos de la Cañada (Brinton 1896, Fig. 5). From the neighborhood of the village came a fine Late Classic Maya censer which is now owned by a collector at Paraiso.

LAS MINAS. These ruins, the first of the sites on the right bank of the Grijalva, consist of only two large mounds, both 15 m. high, which, though overgrown, still show terraces (Fig. 7.3d). Bricks were abundant. The group is surrounded by a deep moat which in March was still full of water, up to the saddles of our horses. It is evident that the fill for the mounds came from this ditch. Ditches are frequently found around the Tabasco earth mounds, but seldom are they so clearly defined as at Las Minas.

BOQUERON. Where the Frontera-San Pedro road reaches the sea, shortly before arriving at the mouth of the San Pedro y San Pablo River, stand the remains of a mound which is being washed away by the waves and in a few more years will vanish completely. This disappearance of an archaeological site due to water action parallels that of Xicalango postulated by Ruz.

EL ENCANTO. Going up the San Pedro y San Pablo River, which is lined with mangroves, I noticed a series of very low mounds, presumably pre-Spanish house mounds, in a clearing on the right bank. About 25 km south of the river mouth is the Hacienda El Encanto, which has a large group of mounds. The main structure, about 7 m high, has largely been destroyed. Bricks are scattered all around. The owners, who were responsible for this excavation, told me that they had found brick structures within the mound, including "arches," and that they had found bones. Two whistles, still kept by the owners, were truly Maya. From the little that could be learned, it would seem that a Maya vaulted tomb had existed there, probably in Comalcalco fashion. Some of the bricks were said to have had carvings of bars, dots, suns, and faces, implying further connection with Comalcalco, whence Blom and La Farge (1926-1927, Fig. 96) illustrate a few incised bricks.

The region of the Grijalva River mouth presents a rather uniform archaeological aspect at present. No indications of pre-Classic, or even Early Classic, occupation have as yet come to light. All evidence points to a fairly dense population from the Late Classic onward.

Mounds here are built of earth with plaster of shell mortar applied over the fill. Ruz (1945:68) found the same technique at Los Guarixes (a site apparently no older than Late Classic); he mentions a similar instance at Las Flores in the Huasteca, which Ekholm found to correspond to a recent epoch. I (1946:26) encountered another at San Pedro Buenavista in Chiapas, which also pertains to a post-Classic horizon.

The major diagnostic ware is Fine Paste; there is hardly a site where one cannot pick up a few pieces from the surface. In a sherd count of rims from Juarez, Fine Paste sherds ran 40 per cent.

All along the Tabasco coast, fired bricks are a conspicuous building material. A possible exception might be the westernmost part of the coast, for which we have no information, although at La Venta sun-dried bricks or adobes are known to occur (Drucker 1952). Lopez de Gomara (1943:1:93) was the first to draw attention to the use of brick in Tabasco. Diego Quijada, prior to 1566, ordered bricks of a *cu* to be used for the construction of a chapel (Scholes and Adams 1938:2:354). Since then, even into present times, pre-Spanish bricks have been excavated to form part of modern constructions. These Tabasco bricks are thin and range from red-brown to gray. They definitely appear in Full Classic times at such Maya sites as Comalcalco and Bellote, and probably at Jonuta, continuing in use until the conquest.

THE LOWER USUMACINTA

As one could expect from the importance of the stream, many small archaeological sites are found along the banks of the Usumacinta, though little can be said of them except that low mounds exist. Such minor sites as I visited are shown on the Archaeological Map of Tabasco, on which I made comments. Details will be given only for three major sites.

ARENITAS. This very important site lies about 18 km straight south of Balancan. To reach the ruins, one follows the telegraph line which connects Balancan with Tenosique, turning west at the huts of La Arena for 1.5 km.

Credit for the discovery of the site goes to a group of reporters on the Mexican magazine *Mañana*, who visited it in 1951 (Arguelles 1951). Not far from Arenitas, close to Chacaj, lies a group

of mounds which appears on Maler's archaeological map (Maler 1901, Pl. I). As in Maler's day Chacaj was the settlement closest to Arenitas, it is difficult to establish now whether the entry on his map refers to Arenitas or only to the Chacaj mounds.

The main group of the Arenitas ruins is concentrated about a huge plaza, 150 by 75 m (Fig. 7.4a). At the north and south ends of the plaza stand single mounds. Part of the stairway of the north mound is exposed, showing nicely cut stones. Long, high platform mounds bound the east and west sides of the plaza. It is possible that the high debris heaps on these platforms are collapsed buildings, for many fallen sections of compact limestone wall masonry are scattered around (Fig. 7.4b). Mortar has been used amply; a few stucco decorations lying at the foot of one of the mounds seem to have been parts of buildings.

East of the plaza is another group, forming a kind of court, built on a platform.

No carved or plain stone monuments were noticed, but, according to reports, a few stone sculptures of an unspecified nature had at one time been sent to Villahermosa.

TECOLPAN. On a reconnaissance trip in 1892, while searching for objects to be exhibited at the great Columbus Anniversary Exposition in Madrid, Captain P. H. Romero visited Tecolpan (or Tecolpa), a site on the left bank of the Usumacinta below Emiliano Zapata. On many maps Tecolpan is shown as belonging to Tabasco, but consultation with the Departamento Agrario at Villahermosa and the local authorities of Catatzaja established that Tecolpan belongs to Chiapas.

From some excavations along the riverbank, Romero (1926:472) reported having found filed and inlaid teeth, an *olla* containing a human skull, and metal bells. The last feature is clear evidence of a late occupation.

As Romero pointed out, constant erosion by the Usumacinta brings archaeological objects to light, not only at Tecolpan but at many other places. The river continuously takes sand from one bank and deposits it on the other. During the last 70 years at Tecolpan, the Usumacinta has swallowed a stretch of land about 100 m wide where archaeological mounds formerly stood. Even so, about 1 km west of the Tecolpan huts is a group, consisting of one large mound, 8 m high, and a few low platforms. They are standing on slightly raised ground, completely surrounded by swamps that during the rainy season make the group an island.

Two random test pits produced a great amount of pottery, with a high percentage of fine, probably

ceremonial, ware, including Fine Paste definitely associated with Late Classic Maya figurines. Because at El Tren, a nearby spot, Chicanel-like material was collected, it is likely that the Tecolpan region will yield a continuous ceramic column from pre-Classic to post-Classic.

JONUTA. This outpost of Classic Maya art in the Tabasco plains has never been explored adequately, for the present aspect of the ruins is not suggestive of any former splendor. The ruins are on a bend of the Usumacinta, where many of the lower mounds are serving as foundation for modern huts of the town of Jonuta. The only high mound (some 15 m) has a modern cement platform on top with benches; it has become a lookout. An old photograph by Rickards (1910:1:78) shows the mound untouched. Bricks are abundant, not only in this mound but in the smaller ones, where they were used for walls and stairways (but not as fill) with plaster over them. Where plaster is used in floors, they rest directly over the sandy fill.

Jonuta is famous all over Tabasco for the mold-made Maya figurines which abound there; but as there are many other Maya sites in Tabasco, the indiscriminate ascribing of these figurines to Jonuta gives a false picture of their real distribution.

From this site came two finely carved sculpture fragments; one has been illustrated by Kelemen (1946:2, Pl. 7b), the other by Proskouriakoff (1950, Fig. 69b). The second fragment shows the lower portion of a standing Maya human figure. It is of limestone, 67 cm wide, 4 cm thick, and at present 56 cm high. According to information, it was found about 20 years ago, upside down, some 30 cm below the surface in the northern mound zone of Jonuta, called Zapotal. A search made then failed to turn up the missing part. This piece has clearly been cut at the upper edge. As it is so thin, it could not have stood alone but must have leaned against a wall. There is no stone in the immediate vicinity of Jonuta so the two fragments must have been imported. As it is hard to believe that a sculpture tradition existed in a stoneless region, we may further assume that the stones were brought to Jonuta already sculptured.

According to Proskouriakoff (1950:148), both pieces belong to the Dynamic Phase, from 9.16.0.0.0 to 9.19.0.0.0, a judgment supported by the abundance of Late Classic Maya figurines at Jonuta.

MISCELLANEOUS SITES

TORTUGUERO. To Blom's excellent description of the site (1926:1:145-155) I wish to add only some new data gathered from the inscribed monuments during my short visit to the ruins.



a



b



c



d



e

7.4.

a. Arenitas, Tabasco; view of plaza from Mound A; b: Arenitas, Tabasco; block of fallen masonry. Courtesy *Mañana*, Mexico. Photos I. Lopez. c. Atasta, Campeche; modeled prowling jaguars. Courtesy M. W. Stirling. d. Tiradero, Tabasco. e. Escarcega, Campeche; Mound A.

MONUMENT 2. Since Blom's visit, the tailpiece has been broken off, but, with the help of a newly found fragment, it was possible to identify the two present fragments of the monument, together with the new piece and the plain shaft that had been designated Monument 4 by Blom, as having originally been a single sculpture, about 3 m high. Its Initial Series was read by Blom as 9.14.0.0.0 6 Ahau 13 Muan. The glyphs are in poor state of preservation, and little can be added to Blom's reading; but I should like to point out that the numerical coefficient of Glyph A4b, which in Blom's drawing is shown as 8, could have been 13. The possibility of its being 13 strengthens Blom's reading and would make Glyph A4b the month glyph. A4a would then probably be Glyph G, or even G/F combined.

MONUMENT 3. Since El Tortuguero has been conspicuously overlooked as a Maya site with monuments carved in full round, I present two photographs of Monument 3 (Fig. 7.5g), which, though unsatisfactory, give a better idea of this sculpture than Blom's drawing (1926:1, Fig. 119).

MONUMENT 5. Though we have just seen that Monument 4, properly speaking, does not exist as such because it is really part of Monument 2, I shall, to avoid confusion, start numbering the new monuments, discovered by me and not previously described by Blom, with number 5.

Strolling around the plaza where Monuments 2–4 are strewn, I came across a carved stone fragment (Figs. 7.1d; 7.5d). It is made of the local limestone, 14 cm thick, at present 55 cm high, with maximum width 30 cm. Traces of carving, along with two rows of three glyphs each, are noticeable on the front. Of this double row, only three dots at C1 and three dots and one bar at C2 are still recognizable. It seems, therefore, to have been a Calendar Round 3? 8?; we may venture to read it as 3 Ahau 8?. The presumable month glyph consisted of two elements, but it is very eroded, and we cannot go further in identifying it.

On the right aide is an Initial Series, written with bars and dots above the period glyphs and at the left of the day glyph. None of the period glyphs can be identified, and most of the numerals are badly weathered. Each glyph block is only 4.8 cm square.

A1–B2. The introductory glyph. The lower *tun* element is clear beyond any doubt, but the variable element is gone.

A3. Unmistakably 9 (*bactun*).

B3. The numeral was divided into three horizontal lines; the lower ones are clearly two bars. Doubt exists only about the uppermost line, but the ex-

istence of it postulates a number between 1 and 5 (inclusive). The best reading is 4, which makes the glyph read 14 (*k'atun*).

A4. The space available would not allow a numeral higher than 10.

B4. Same as A4.

A5. Completely eroded.

B5. The three supports of the day frame are visible. The space available at the left would not allow a number higher than 10. From what is left of it, a reading of 5 or 10 would seem to be the most likely.

A6–B7. None of these glyphs is identifiable.

A correct identification of the numerals is made difficult by the fact that in such tiny glyphs the incision lines dividing two bars erode very easily, and that we do not know what shape the numeral 0 will take after weathering for long periods. Therefore, we are unable to give a definite reading, though 9.14.10.0.0 5 Ahau 3 Mac does not seem to contradict any of the many possibilities; even if wrong, it should be very close to correct. This date is near the two known Tortuguero dates: 9.10.14.14.10 10c 3 Yax, on Monument 1; and 9.14.0.0.0 6 Ahau 13 Yaxkin, on Monument 2.

MONUMENT 6. About 100 m south of the plaza, a plain stone column, 1.90 m long, was found on one of the terraces.

In addition to the foregoing monuments, I was informed of the existence of another sculpture at the ruins. I failed to discover it but I have no reason to doubt the report. Indeed, it is very likely that more sculptures will be uncovered at these ruins when they are properly cleared.

Blom has mentioned the sherds and figurine fragments on the surface; they are abundant and cover the whole Classic period. In the hands of a collector at Macuspana, I saw a fragment of a plain yoke of green granite, a material not indigenous to this region. The owner said he had found it in the ruins, where he also claimed to have found a small colonial silver head, as well as a silver coin, dated 1796, nearby.

TIRADERO. This site, first mentioned by Andrews (1943:51), can now be visited easily. The ruins are on a bend of the San Pedro Martir River, which almost completely encircles them. South of the ruins, across the river, is the modern settlement of San Pedro, now a railway stop, which, according to information, was formerly on the other side of the river where the few Tiradero huts stand.



7.5.

a. Atasta, Campeche; statue, Courtesy M. W. Stirling; b,c. Museum at Ciudad del Carmen, Campeche. b. Jaguar head (ht. 16 cm). c. Stone sculpture (ht. 40 cm). d. El Tortuguero, Tabasco; Monument 5. e. Atasta, Campeche; stone tablet. f. Champoton, Campeche; stone statue in private collection (ht. 50 cm). g. El Tortuguero, Tabasco; Monument 3. h. Champoton, Campeche; stone sculpture in private collection (ht. 70 cm). i. Atasta, Campeche; stone sculpture (ht. 35 cm).

Andrews speaks of heavy ceramic deposits cut through by the railroad. He observed there a stratified pottery section to a depth of almost 4 m. Apparently in his day the section was fresh, but when I visited the site this cut was so over-grown that only after some weeding could I find a few sherds. On the other hand, at the time of Andrews' survey the immediate neighborhood was so covered with vegetation that Andrews failed to find any ruins. Now the land has been cleared for *milpas*, and even from the train, mounds about 20 m high can be seen (Fig. 7.4d).

The main group, near Kilometer 453 of the Ferrocarril del Sureste, lies about 10 m above the river, close to the east bend, where there is a sharp rise; toward the west the decline is gentle. There is a large plaza, bordered on the west by the highest of the surrounding mounds, which shows crude stone masonry. Almost in the center of the plaza stands an altar platform about 3 m square and 75 cm high, outlined by large unhewn rocks. No standing buildings were encountered, though their former existence seems rather likely in a mound group lying north-west of the plaza.

In this plaza a broken stela of limestone was found; it may have tumbled down from one of the platforms which limit the plaza toward the east. The stela is plain, 23 cm thick, 68 cm wide, with the top slightly rounded and a present height of 1.65 m.

A search around the stela failed to supply the missing part; a pit dug near it to a depth of 1.75 m did not discover plaza floors, which one would have anticipated. The ceramic material from the excavation was almost exclusively of pre-Classic type; only in the upper levels was a low percentage of Fine Paste ware found. Another dig near the railway cut produced only Chicanel-like pottery. Thus, this second visit to these ruins confirms Andrews' opinion that it is a predominantly pre-Classic site, though the presence of high pyramids with the use of masonry, the stela, and the Fine Paste ware leads one to believe that the site was also occupied in later times.

ESCARCEGA, CAMPECHE. The ruins lie about 3.5 km west of the modern village of Escarcega, now a station on the Ferrocarril del Sureste. The road, which passes near ruins, follows the abandoned Matamoros-Pital railway; the rails have now been taken up, and the old bed serves as a rough road, passable for trucks at least during the dry season. Starting from Escarcega, one turns north between Kilometers 43 and 44 for about 300 m to reach the main group of the ruins, about 400 m east of which lies an isolated high mound. Two *aguadas* were reported nearby but not visited. They do not seem

to be permanent; by March the water supply at Escarcega was extremely low.

Because the ruins are so close to the railway, local residents must have known of them long ago, although not until 1953 were they reported outside. They were used at that time as a source for road-building material. The removal of the debris of Mound A uncovered a well-preserved substructure, the stairway of which Carlos Heredia (a prominent citizen of Escarcega) partially cleared and subsequently covered again. To measure the steps, I cleared the previous trench and closed it once more.

The mounds of the main group stand on a platform on a hill about 7 m above the surrounding level and form a well-defined plaza. The ascent of this platform is very steep, except on the north side where there is an intermediate platform with a small low mound on it. The central part of Mound C also starts at this lower platform.

No standing buildings were observed. Only at Mound A could some architectural data be gathered (Figs. 7.1c; 7.2; 7.4.). Its substructure consisted, I believe, of two terraces. They have inset corners and show apron moldings. The stones used for the facing are well cut. The stairway is divided at the highest step by a projection of the top platform. The temple building may have had three doorways, since two pillars, partly hidden by a later fill of rubble, are still visible. These pillars are covered with good plaster bearing traces of red paint. There is some evidence that the assumed lateral doorways were at a higher level than the central one. This point could have been clarified by removal of the secondary fill, which was in the shape of a clearly defined wall in front of the temple, but time did not allow a major excavation.

ATASTA, CAMPECHE. The series of lagoons running westward from Laguna de Terminos makes a veritable peninsula of the land lying north of it. During pre-Spanish times there were on this peninsula two main towns, Xicalango and Atasta. The exact location of Xicalango is still a problem. Miguel Angel Fernandez located it near the Xicalango lighthouse (see *Atlas Arqueologico*). Ruz (1945:105) relates the ruins of Aguacatal with Xicalango. Jakeman (1952:25) is dubious about its exact location. Blom (in Torre 1944–1945:208) suggests that the ruins of Cerritos are the old Xicalango. To Roys (Scholes and Roys 1948:27), who shares this belief, the reader is referred for the history of Xicalango.

Atasta is first mentioned by Bernal Diaz del Castillo (1939:3:36) in connection with Cortes' expedition to Hibueras in 1524–25. In 1545, Tomas de la Torre (1944–1945:169) described it as a "pueblecito . . . donde ni conocían a Dios ni hay apariencia que

lo conozcan.” Today, Atasta faces the lagoon of the same name and stretches along one large street for more than 2 km, with uncultivated swamps to the north. A regular motorboat service connects the village with Ciudad del Carmen.

Atasta appears in the *Atlas Arqueológico*, although neither Ruz nor Jakeman, who worked in the general area, did any excavation there. The archaeological importance of the site was not disclosed until 1944, when it was visited by M. W. Stirling in April of that year. From Stirling’s diary I quote with his kind permission:

In Atasta it developed that the monument had been taken away about a month ago and brought to the local museum at Campeche. However, Ramon Hereria, on whose place it was found, had a good photograph of it which he gave to us. It represents a life-size standing figure in two pieces, the head and the body, which do not join properly. It was dug from the summit of a small mound about eight feet high about a year ago. We visited this mound group, which is about a mile west of Atasta. In another small mound in this group there is a cement-covered platform with a frieze of marching jaguars (à la Tula-Chichen) in modeled relief along the curving upper edge of the platform. Each figure is about three feet long. Just one small corner had been dug into and three slabs of stucco broken off so that the platform is probably likely still intact. The underside of the stucco is covered with bosses or protuberances of stucco so that the cover will adhere better to the clay core of the platform. The stucco-coated platform itself appears very similar to those we saw in the Ceiba shell mounds with their animal friezes in relief. Many fine objects were said to have been dug out of the top of the mound where the stone figure was obtained and were taken away by some *ingeniero*. One was said to have been an elaborately engraved clay tablet. There appear to be about ten or a dozen small mounds at this site and it is probable that others contain stucco-coated platforms. The school-teacher at Atasta had a small collection consisting of one small complete bowl of bright brick-red ware, fairly thin and quite hard, and about three-quarters of a tetrapod flanged base bowl also of red ware, a half-dozen or more effigy legs from similar bowls, the effigies consisting of both animal and grotesque human faces. These likewise, except for the material, appear similar to the specimens we collected at Ceiba. There were also three copper bells, 2 small and plain, and one large one with the upper portion copper-wrapped. They are of the elongated variety. The small bells are about an inch in length and the large one two inches.

When I visited the site, the small collection, which in 1944 had been housed in the school, had disappeared. I could not excavate where Stirling had seen the stucco prowling jaguars, because the owner of the lot was not in the village. The day before I left Atasta, he returned and showed me the spot, but the jaguars could no longer be seen, weeds and bushes having overgrown the site; only a few bossed stucco fragments were lying around.

I explored near the low mounds, from one of which the monument described by Stirling had been extracted. A test pit struck ground water at a depth of 2 m.

Another random dig, 50 m from the mound where Stirling’s monument was found, resulted in the discovery of a low platform about 2.50 m square, the walls of which were partially standing to a height of 40 cm (Fig. 7.1e). These were faced with plaster, 3 cm thick, applied over the sandy fill with bosses on the inside. The walls did not connect with any outside floor. The platform had rounded corners and a semicircular projection on the east side. No excavation could be made in the center of the platform since a huge coconut palm was growing there. Another tree prevented investigation of the southeast corner, but the structure apparently was asymmetrical. North of the platform, almost at the surface, lay a skull of an adult; at the northeast corner were the scattered bones of two adolescents. Close to the skull, a copper point 5 cm long was encountered, but there was nothing to indicate any relationship between the skull and the point.

Two fragments of a crudely carved, very soft limestone tablet (Fig. 7.5e) were discovered facing upward in front of the semicircular projection, but a careful search failed to reveal the rest of the tablet. It may originally have stood on the projection. The stone is 8 cm thick, 44 cm wide, and at present 37 cm high. The main object depicted seems to be a jaguar standing over a frame enclosing something undeterminable. On both sides of the animal appear slight incisions, presumably glyphs.

The findings at Atasta, plus other sculptures recorded during the survey, indicate the existence of a sculpture tradition along the coast in southwest Campeche, extending at least from the Rio San Pedro y San Pablo to Champoton. Let us summarize the known examples:

1. We have quoted the report by Stirling on one monument (Fig. 7.5a). Though Stirling points out that the two fragments do not join properly, Nicolas Heredia and his son, who dug out the monument, were positive that they belonged together and that the whole piece was buried facing upward with the feet pointing east. I was

able to locate the head in the small museum at Ciudad del Carmen; what had happened to the body, nobody knew. The head had suffered much damage, presumably during transport, and it is only by the old photograph that we can see it was covered with an animal helmet. The material is a mixture of sand and tiny shells, known locally as *conchuela* sand, which hardens to a degree where it can be used for sculpture. The head is covered with two layers of stucco, painted red. From the visible parts of the older layer, it can be deduced that at least the ear was first done in a simpler fashion. The general treatment of the face is reminiscent of the Xantiles of northwest Oaxaca, a late ceramic product according to Noguera (1940:95).

2. A mound only 60 m from where Monument 1 was extracted has recently yielded a sculpture that is now in the possession of Ramon Heredia at Atasta (Fig. 7.5i). It shows a human face in the mouth of a snake (?). The piece is broken at the chin in two parts; at the rear it has a tenon. It is also of *conchuela* material.
3. The limestone tablet mentioned above.
4. The stucco prowling jaguars photographed by Stirling (Fig. 7.4c).

All the foregoing pieces came from Atasta, from an area not over 150 m square.

5. Passing through the recent settlement of Nuevo Progreso, northwest of Atasta on the road leading from the Rio San Pedro y San Pablo to the town, I noticed several mounds, one of which was almost destroyed. According to an informant, this mound had a stairway; during the digging there, something like a "plaque with an eagle and unintelligible letters" was found. No precise information about its material could be obtained.

Two more sculptures of *conchuela* material are preserved in the museum of Ciudad del Carmen, although nothing is known about their provenience:

6. A badly eroded jaguar head with a tenon (Fig. 7.5b).
7. An unidentified piece with decorative elements, probably belonging to a snake (Fig. 7.5c).

Finally, at Champoton, two more sculptures were found in the possession of a dealer in antiques:

8. A reptilian grotesque (Fig. 7.5h), mentioned by Shook (Shook and Proskouriakoff 1951:239). The piece is said to have come from a mound in Champoton. The material is *conchuela* in an advanced stage of calcification. As the side at a right angle to the mouth shows some carving, the slab may well have served as a door jamb.

9. A human head of very simple features, carved in a very hard *conchuela* stone with almost no sandy inclusions (Fig. 7.5f). The provenience is said to be Champoton. The left ear has been chiseled off, as the finder wanted to use the stone in a balustrade.

Most of the sculptures mentioned were done in *conchuela* stone, a local material, which excludes the possibility of their having been imported. It would be rash to consider all of them as belonging to a definite style, though it can safely be said that none of them exhibits Classic Maya features. Nor do we find, with the possible exception of the stucco prowling jaguars, clear Toltec elements as identified in Tula and Chichén Itzá. On the other hand, it is well to bear in mind that the ceramic material so far found at Atasta, disregarding the broken tetrapod seen by Stirling in the local school, does not contain pottery of pre-Classic, or even Early Classic, type; nor did Ruz find any such material in his excavation at Champoton. It would seem, therefore, that the southwest Campeche coast sculpture, as now known, belongs to a time no earlier than Late Classic.

ARCHAEOLOGICAL MAP OF TABASCO

(Drawn by L. Zavala)

The map is based on the AAF preliminary base chart, 1945. Ismael E. Christen's 1900 map and the 1946 map of Tabasco, prepared by the Direction de Geografia Meteorologia e Hidrologia de la Secretaria de Agricultura y Fomento, were also used. Location of many ruins still leaves much to be desired. For the archaeological information, the *Atlas Arqueologico* (1939) and the *Tulane-Carnegie Map of Archaeological Sites in the Maya Area* (1940 edition) were consulted. The map incorporates Andrews' (1946) findings in the San Pedro Martir drainage, the principal sites discovered by P. Armillas in 1953, and my work of the same year. New sites not described in the text, as well as deletions from the earlier maps, are briefly discussed below.

THE CHONTALAPA

ROMA (FINCA): Low mounds, A Maya figurine head.

THE COAST

EL NARANJEÑO: Two plumbate vessels, now in the possession of a collector at Puerto Ceiba.

ARROYO HONDO: The *Atlas Arqueológico* cites Spinden (1913), who in turn refers to Seler (1915:3: 578–640). Seler, however, treats only Rio Hondo near Zacapa in Guatemala. But J. Coffin of Puerto Ceiba told me about the existence of ruins at a site called Arroyo Hondo but located farther west of Comalcalco than shown in the *Atlas*.

LIBERTAD: A few very low mounds.

SANTA RITA: Low mounds, Low mounds.

ZAPOTAL: Low mounds.

BUENOS AIRES: Low mounds.

THE LOWER USUMACINTA

ESTAPILLA: Low platforms. Sherds including a plumbate fragment.

SANTA ANA: The reference of Gordon (1898:8) given in the *Atlas Arqueológico* is incorrect, because Gordon refers to a place in Honduras. There are ruins at Santa Ana, however; I heard about a carved stone there but was unable to find it.

LEONA VICARIO: Near the school of the Ejido there are low mounds.

TIERRA BLANCA: Sherds and archaic figurines.

CORRAL NUEVO: Low mounds.

EL PAJARAL: Low mounds. Sherds.

RAMONAL: Low mounds.

QUIEN SABE: Low mounds.

SITIO NUEVO: Low mounds.

ZARAGOZA : Low platforms. Sherds.

PARAISO: Mounds which include a large rectangular one.

ENCARNACION: Mounds.

ACULTZINGO: Mounds.

PINO SUAREZ: Low mounds.

OAXACA: One large mound where bricks occur.

HUIMANGUILLO REGION

(Information from P. Armillas and W. Sanders)

ARROYO HONDO: Mounds. This site should not be confused with that of the same name in the coast area.

CHAPULTEPEC (DE AGUIRRE): Mounds, including house mounds. A yoke is reported from this site.

OCUAPAN: Mounds.

SANCHEZ SITE (TIERRA NUEVA): Pyramids, ball courts, house mounds.

SAN FERNANDO: Four sites in the neighborhood, with low mounds. Stone sculpture.

SIGERO: Pyramids, ball court, platforms.

TECOMINUACAN: Several mound sites in the neighborhood.

MISCELLANEOUS SITES

SAN MIGUEL: Mounds. Sculptures. Information from J. J. Valenzuela (1941) on file in the Instituto Nacional de Antropología e Historia, Mexico.

TEAPA: A fine Maya incense burner in the Museum of Villahermosa is said to have been found near here.

TAPIJULAPA: A fine incense burner in the Museum of Villahermosa is said to have been found near here.

CHOTAL: Platforms described by Charnay (1885: 369; and map, p. 381).

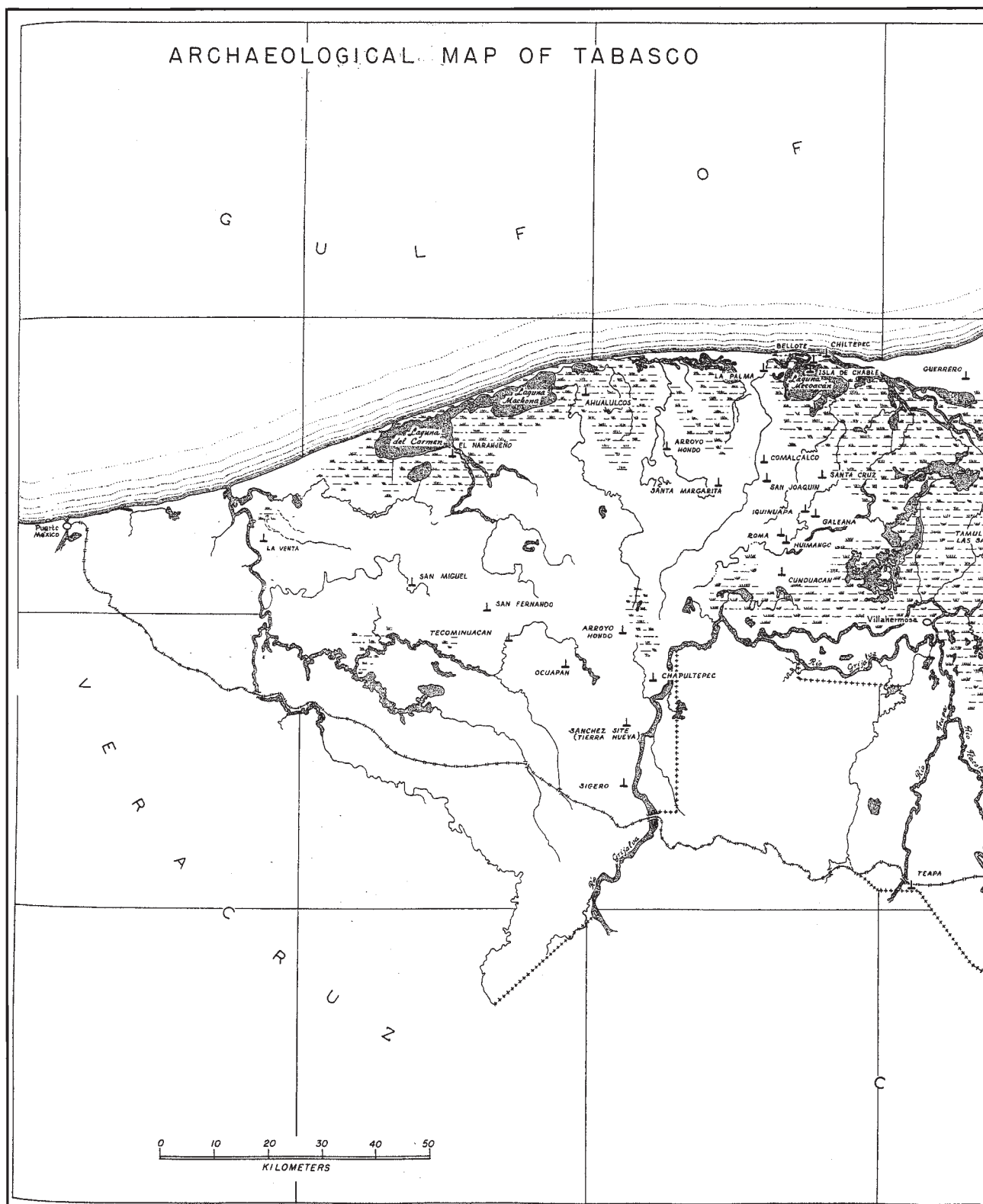
SITES DELETED FROM EARLIER MAPS

BELLOTA: [See body of report].

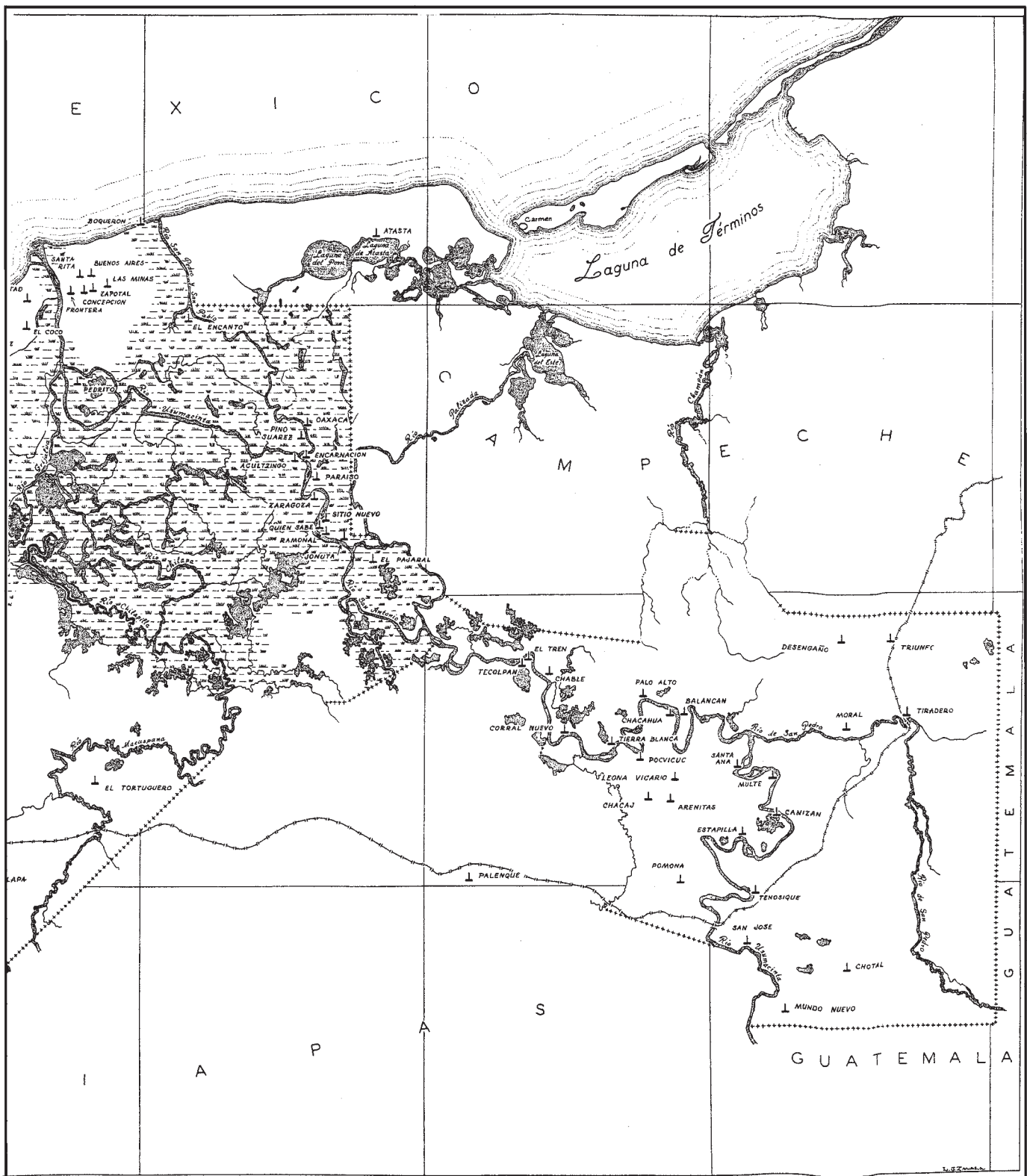
BLASILLO: Blom (personal communication) expresses doubt about the existence of specific ruins called Blasillo in the neighborhood of Cardenas or Huimanguillo. The error probably arose as the La Venta ruins, which are close to the Blasillo brook, belong to the municipio of Huimanguillo.

CENTLA: [See body of report].

CERRO SAN DIEGO: According to reliable information received at Macuspana, there are no ruins on the hill.



7.6. Archaeological Map of Tabasco.



CHINIKIHA: This site belongs to Chiapas.

CUSCUICHAPA RIVEIL: According to informants there are many mounds along the Cuscuichapa River, but as mound is a vague term, the specific site of San Joaquin is substituted on the map.

GRACIAS A DIOS: No reliable information is available.

IDOLOS: No proof of ruins at Idolos. The *Atlas Arqueologico* quotes Charnay (1885) and Hamy (1897), but the latter only republishes some figurines from Charnay which Charnay had acquired at Frontera without indicating their provenience.

IZANCANAC: A name invented by Maler for the ruins of Canizan.

JALPA: The report of a painted skull's having been unearthed at Jalpa does not seem to justify the inclusion of the site on an archaeological map.

LOS CALLEJONES: According to Charnay's sketch map (1885:81) this place is in Guatemala. He does not indicate it as a pre-Spanish site.

MECATEPEC: W. Sanders, who visited Mecatepec recently, informs me that he did not hear about the existence of any ruins in the immediate neighborhood.

MECOACAN: The reference given in the *Atlas Arqueologico* is too vague; it might as well refer to Bellote at the Laguna de Mecoacan.

MONO PELADO: Pedro Armillas informs me it is very dubious that there are ruins and in any case they would be on the Chiapas side.

PETENCHE: Identical with Chacaj.

ZOPO CAVE: From the available maps, including Blom's (1926–1927:92), it would seem that the cave is located in Chiapas.

A PORTAL VAULT AND TEMPLE AT MAYAPÁN

GUSTAV STRÖMSVIK

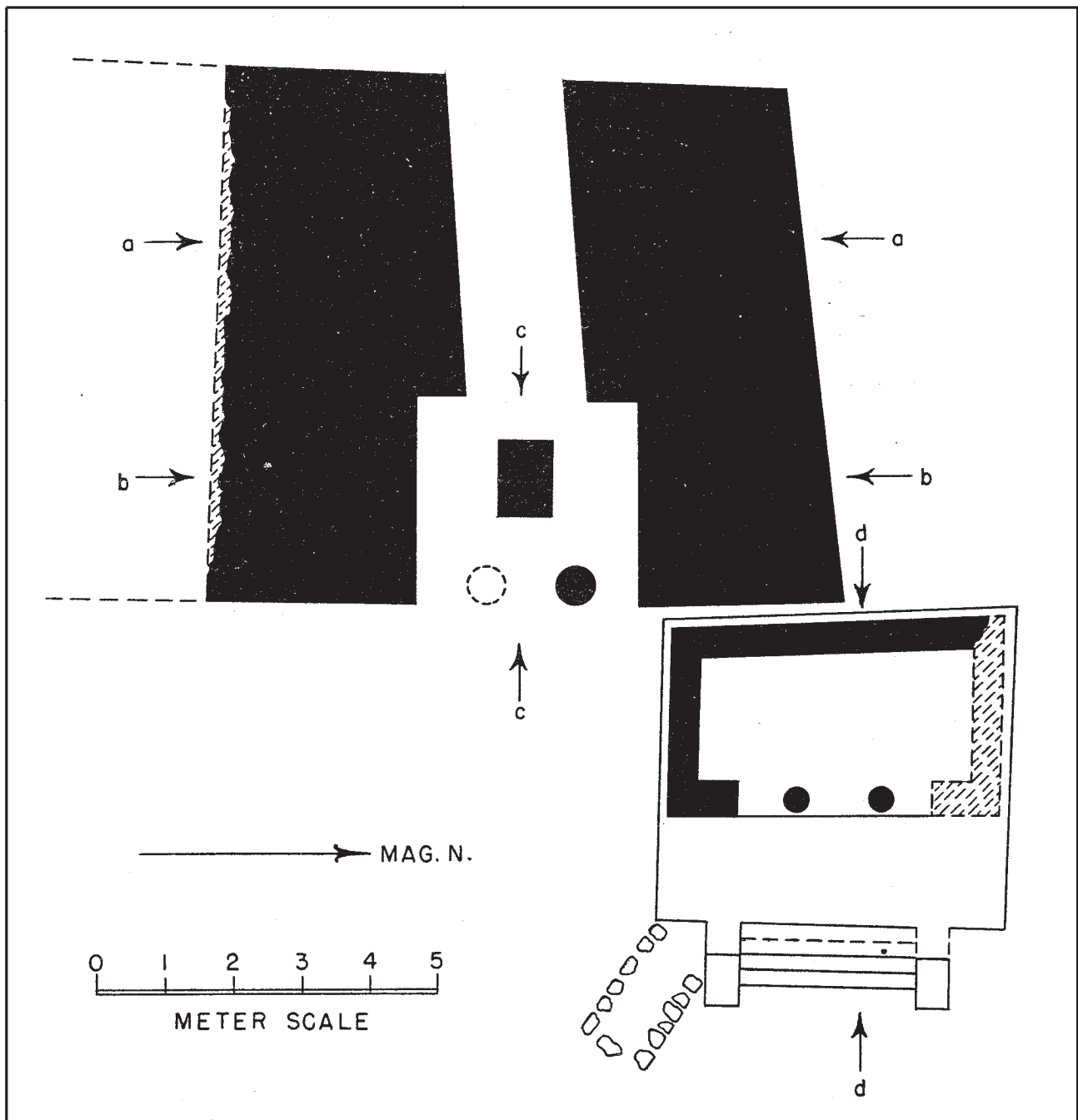
Str. Q-127 lies at the western edge (265 S, 110 W) of a small assemblage of ceremonial structures that appears to be distinct from the Main Group, some 70 m to the west (Jones 1952, map). A fair likeness of the ground plan is recorded on the map of Mayapán, and from that and what the cleared mound looked like, the structure seemed surely to be a portal vault. In plan (Fig. 8.1) it somewhat resembles the major gates of the Great Wall (Shook 1952), but the vaulted roofing here is quite different, and it is not connected with any existing wall or visible city division. As it is the only building of the kind, a free-standing portal vault, thus far known at Mayapán, it seemed well to examine the structure more closely.

The building was very much in ruin; the outer walls were virtually all fallen and one can only guess at what the outside originally looked like. The passageway from the west was filled to the spring of the vault with the tumbled-down roof materials. In the portico, or hallway, to the east the north side of the

vault was standing almost to its full height and well above the level of the fallen debris. On the south side of the portico the vault had fallen to within a course of the spring of the vault.

It is surprising that this much of the structure was still standing, considering that the rudely broken, unshaped stone slabs used for walls and vault were laid dry, as far as can be seen at present (Fig. 8.3a,b). It is possible, however, that mud mortar had been used, and that the many centuries of heavy rains and filtration may have washed it out completely.

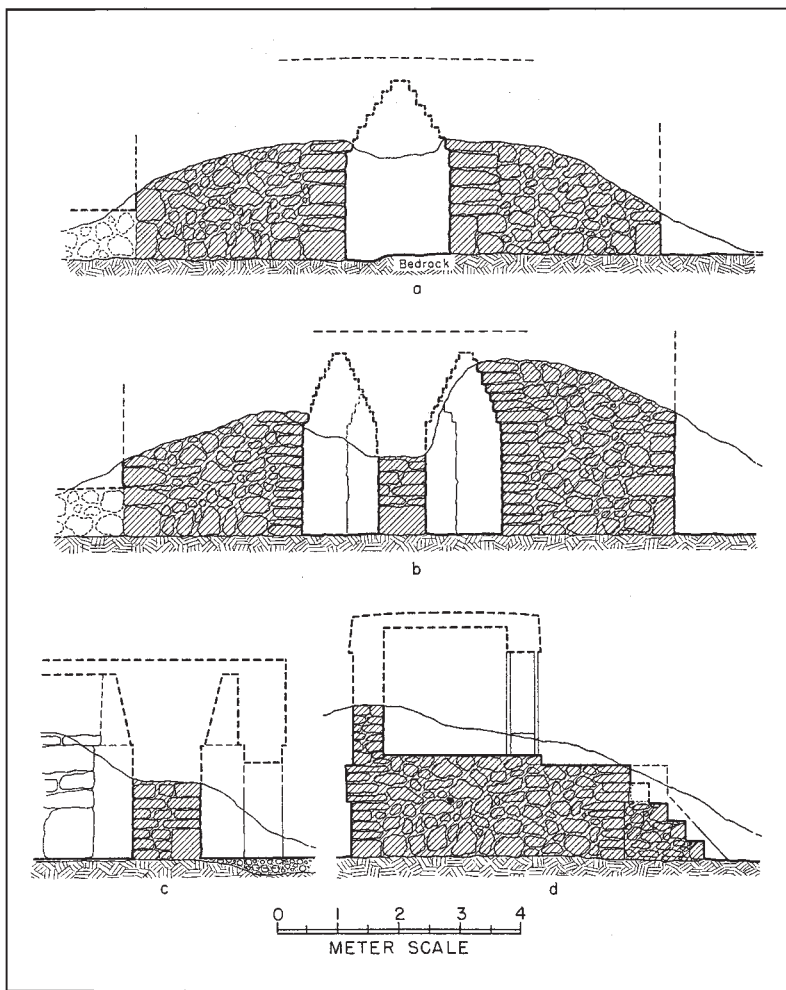
The portico is nearly square, a little over 3 m by 3 m, with a rectangular pier in the middle and two round columns bearing the west façade. One column shaft is standing to the height of 1.50 m, its sides slightly bulging in the fashion of Puuc doorway columns. It lacks one more drum and the wooden lintels, that probably were about 30 cm thick, to bring it to the height (1.90 m) of the spring of the vault. The other column is missing; only the hole in the floor



8.1.
Plan of Strs. Q-127 and Q-127a.

and a sliver of its bottom end prove its existence. The portico had been provided with a plaster floor, fragments of which were seen at the central pier and around the missing column. Incidentally, this column could not have been long removed, otherwise the edges around the hole would have been more obliterated.

The roofing was the common corbeled arch, built of uncut stone slabs, some almost 1 m wide, each stone projecting 5–10 cm beyond the one below it. The vault of the passageway, as is common with portal vaults, no doubt extended clear through from the west façade to the portico, where it intersected the inner transverse vault. The four inner soffits of



8.2.

Sections of Strs. Q-127 and Q-127a (see Fig. 8.1 for locations of sections).

the portico vaults were apparently carried on a rectangular pier, and the outer four soffits rose from the inner transverse wall, the two lateral walls, and the columns and lintels of the east doorway (Fig. 8.2a–c). These lintels were undoubtedly of wood.

It is difficult to believe that this structure had ever been plastered even on the inside, as not a trace of it could be found. Fragments can be seen in most cases, as on the neighboring Str. Q-127a. It also seems that the floor of the western passageway had never been plastered, as not the faintest speck could be found when the bedrock bottom was cleared.

No cut or dressed stone had been used in this structure, with the exception of a large, rectangular one used in the base of the central pier, and of course the columns. The former most likely is a jamb stone from a Puuc period building, re-used here.

The function of this structure can only be guessed. It may have been intended as a portal for

a city division that has been obliterated or never came into existence. It is just possible that it was used at one time, presumably late in the life of the city, as living quarters, as the quantities of utilitarian pottery and various worn-out metates found in connection with the building would indicate. There was also found, however, a certain amount of ceremonial pottery (censers), all of which can hardly have come from the nearby Str. Q-127a, and this may point to a sacred function of the portal at one period of its existence.

Str. Q-127a, immediately northeast of the portal vault (Fig. 8.1), could at first glance be taken for a building of the Puuc period. The masonry of the substructure is the best yet seen in Mayapán (Fig. 8.3d). On closer examination, however, it is clear that the structure was built for the most part of re-used stones from the Puuc period, presumably during the Mayapán regency and during the same general period as the adjacent portal vault.

The substructure, 1.60 m high, carried a simple cornice of three masonry courses with an outward lean of 5–7 cm (Fig. 8.2d). Plaster patches on the wall and cornice show that the entire substructure, with the possible exception of the west side, was at one time plastered. In spite of the protected location,

no plaster was found on the wall that faces the portal vault, only 15 cm distant. There was also no plaster floor remaining between the two structures, and it is therefore impossible to be certain which is the earlier. The absence of plaster on the west side of Str. Q-127a, which showed remains of plaster elsewhere, suggests that it was the later building, the ancient masons being unable to plaster the west wall because of the proximity of the portal vault.

On the east side four steps led up to a terrace which formed the fifth step. Built against the finished, but unplastered, facing of the substructure, this stairway is built of re-used wall stones of Puuc type (Fig. 8.3e). At each side of the stairs is a smooth balustrade, 50 cm wide, with a vertical block at the height of the two top steps.

The terrace is 1.80 m wide from the top step to the 20 cm high plinth on which the superstructure walls and the two columns of the doorway stand. Both the terrace and the room have superimposed floors, the upper some 5–8 cm above the lower. The



a



b



c



d



e



f



g

8.3.

a,b. Str. Q-127, the Portal Vault, from the east. c. Str. Q-127a, from the east. d. Substructure of Q-127a, from the south. e. South balustrade of stairway to Str. Q-127a, showing first stone of vertical block. f. Leg and head of stone figure from front of Str. Q-127a.

columns are 40–45 cm in diameter, only one drum of each remaining in situ.

The room is roughly 4 m long, north and south, and almost 2 m across from the columns to the back wall, which is standing to a height of about 1 m. This wall is decidedly inferior in construction to the substructure (Fig. 8.3c). It is built of smaller, more crudely cut stones, laid in lime-mixed, mud mortar. One rectangular, well cut, Puuc-type stone was noted in this wall.

The roofing was without doubt a flat, roof of mortar and small stone resting on wooden beams. No vault stones were found, nor was there enough debris to account for a vault. There was, on the other hand, too much debris of small stone and mortar to suppose that the roof was of thatch.

A trench was dug through the floor, across the room from the back wall to the front terrace, through the dry fill. Nothing was found in the floor construction except a few sherds of the common Mayapán Red ware.

A fine likeness of a human head, carved in stone, was found on the terrace in front of the columns (Fig. 8.3g), and a little farther east was found a leg of about the same proportion (Fig. 8.3f). It seems likely that the figure from which these parts came had once rested in, or in front of, the building.

Extending diagonally from the southeast corner of the substructure of Q-127a are two rows of wall stones, a little over 1 m apart, laid as retaining walls (Fig. 8.1). The function of this construction is not apparent.

The plan of the building, the ceremonial pottery found in and around it, the stone figure, or idol, described above, indicate that Str. Q-127a was a temple. It is assumed that the midden material between this building and the portal vault did not collect as a result of the ceremonial practices carried on in Str. Q-127a. It seems more likely this deposit was put there by the occupants of nearby dwellings, of which there are several just north of the portal vault. The character of the pottery and artifacts found in the excavation of Strs. Q-127 and 127a is discussed in the following paragraphs by E. M. Shook.

Four lots, C-50 to C-53, of cultural material were recovered from the excavations of Strs. Q-127 and 127a. All except a very small sample, C-53, represents post-construction rubbish accumulated above the floors of the portal vault, the temple Q-127a, and around the base of its substructure. The small lot, C-53, amounting to only 63 pottery fragments of the 7,587 total excavated, came from the core fill of Str. Q-127a. It serves, nevertheless, to place surely the construction of this temple during the site's major occupation, as over 80 percent of the sherds pertain to wares typical of the Mayapán period.

The general surface material was excavated in three separate lots: C-50 from a midden in the corner formed by the northeast edge of Q-127 and northwest base of Q-127a; C-51 from the portal vault, the court east of the portal, and along the south and east base of Q-127a; C-52 from above the terrace and room floors of the same temple. These three lots contained 7,524 fragments of pottery; 329 animal and bird bones; 9 obsidian flake-blades; 3 flint chips and 1 point (Cat. no. 53-200); 1 carved and 3 unworked shells (Cat. no. 53-221); and fragments of lime plaster, apparently fallen from the exterior of Str. Q-127a, bearing red, yellow, green, or brilliant blue paint. There was a preponderance, about 50 percent of all sherds, of human-effigy censers on the floor, front terrace, stairway, and along the east base of Str. Q-127a. Many of these censers still retained lumps of burned or partially burned copal. The proportion of censer fragments to other wares diminished around the portal vault and amounted to only 4.5 percent of Lot C-50 from the midden. This rubbish dump contained quantities of ashes, charcoal, the major portion of the animal and bird bones, a few stone artifacts, and 2,340 potsherds. The accumulation lay against, and in the narrow crevice between, Strs. Q-127 and 127a, obviously deposited after the two units were built. The high percentage in Lot C-50 of presumably utilitarian pottery, Mayapán Red ware 56.8 percent and unslipped, coarse, light gray ware 33.0 percent, and the presence of house-type structures nearby suggest that the midden may be a relatively pure sample of domestic refuse rather than breakage resulting from ceremonial rituals.

SOME SMALL CEREMONIAL STRUCTURES OF MAYAPÁN

ROBERT M. ADAMS, JR.

Although the Main Group is chiefly distinguished by the imposing and easily identifiable ruins of the more important temples and colonnaded halls, there is a considerable number of less impressive structures which also played a part in the activities at Mayapán. The excavations here reported, in and around several structures lying north of the Castillo, are perhaps not very important in their own right, but should be considered part of a continuing attempt to isolate recurrent features which define functional or stylistic categories among the lesser ceremonial buildings. Generally, these structures appear today as small, relatively low mounds of dirt and rubble for which it is difficult to establish a valid typology, yet distinctions between them are probably as important for understanding the nature of the ceremonial center and its function in the community life as distinctions between any of the larger units.

TRENCH NORTH OF STR. Q-79

At the beginning of the 1953 field season it was not known whether excavations in the Main Group would provide either a stratigraphic succession of building periods or an adequate assemblage of pottery and small objects to complement the expected wealth of detail on architecture. Attention was turned first, therefore, to the investigation of a sherd concentration that accidentally was discovered in the upper levels of a considerable deposit of fill and debris north of Str. Q-79 (Jones 1952, map, 160 S, 270 W). Later work showed that pottery was often abundant in superficial debris of ceremonial structures, and provided larger samples of early materials for the study of seriation. In this sense, a trench through the deposit, which ultimately was extended to a length of about 10 m, contributed disappointingly little. On the other hand, it along one side are all that remain of some sort of free-standing tomb which

protected the bodies, although the lack of ceremony connected with the burials seems inconsistent with the erection of a tomb.

Because the bodies lie close to an apparent northern entrance to the court of the Castillo, we might speculate that their deaths were the result of some struggle for possession of a gateway to the enclosure, but they might also have been sacrificial victims. The failure to extract three still-usable blades is perhaps more compatible with the vicissitudes of warfare, but Landa, on the other hand, has confirmed the practice of burying victims of sacrifice in the courts of the temples (Tozzer 1941:120).

Typological ceramic seriation, although evident in the materials from the trench, is in no way different from changes observed elsewhere in the Main Group. It need only be observed that the general, sudden, and overwhelming predominance of unslipped censer fragments among identifiable sherds from the latest period of occupation, and the slight but significant decrease in wares attributable to the Puuc period from earlier to later levels find their reflection in this trench.

The censer fragments, however, may be considered separately, for a number of details about their form and occurrence in the trench are available that cannot yet be checked with the much larger bulk of similar material from other operations around ceremonial structures. First, their distribution in the deposit indicates strongly that the censer vessels were broken in some other place before being discarded in the area of the trench, for although component sherds of individual large fragments are found grouped together in the debris, the several larger fragments into which each vessel had first been broken were widely scattered. As a result, it was not possible to reconstruct more than small portions of any censer. Second, relatively few sherds were found in the talus of Str. Q-79; the great majority was, instead, part of the bedded, debris underneath. Both of these observations are consistent with the suggestion that most of the censers were discarded over the edge of one of the structures close at hand, perhaps after the breaking in connection with a yearly renewal ceremony such as Landa describes (Tozzer 1941:161). The sherds from the relatively small area and short span of time which the upper level in the trench represents came from a minimum of 27 vessels (parts of at least 27 figurines could be counted), and experience elsewhere indicates that similar numbers must be expected around many other ceremonial buildings. It is difficult to believe that normal usage alone would result in this amount of breakage.

The vessels consist of thick-walled bowls on pedestals, that might result from the use of molds or

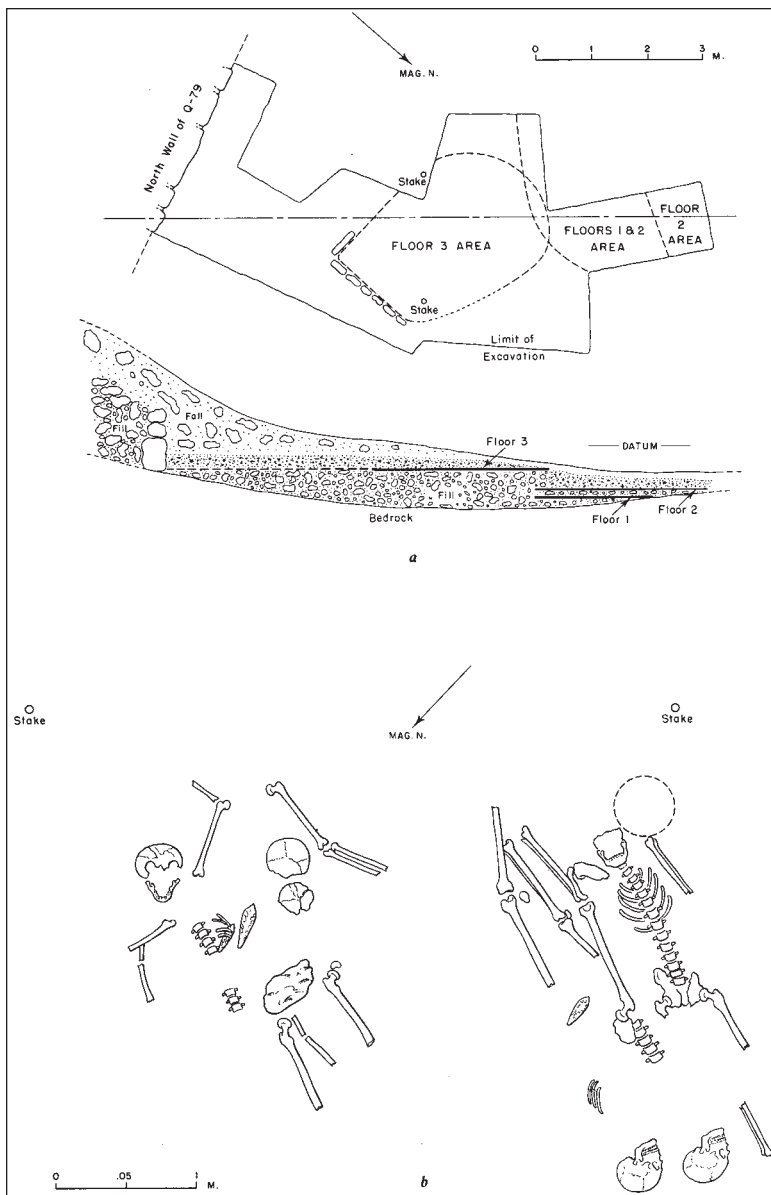
the simple duplication of standardized prototypes; in particular, facial characteristics and headdresses are markedly different.

SHRINES

There is manifest uniformity in some of the details of construction of small shrines, but differences in their position and orientation also suggest that there may have been two or more ceremonial functions for the same basic building plan. For example, a number of mounds which surface examination indicates probably are shrines face colonnaded halls across an open court and may have played a part in the ritual connected with the latter. Close inspection, however, shows that most of the smaller structures are quite imperfectly centered and oriented; moreover, all the shrines that have been excavated so far have proved to postdate one or more plaza floors or earlier fill and the sherd collections associated with them do not seem to represent anything but a late Mayapán period. Thus it is possible that the shrines of this category are all younger than the colonnaded halls they face. One example of this group was excavated during the 1953 season; Str. Q-71 (180 S, 325 W) faces somewhat obliquely toward a hall some 15 m to the west. It also stands near, but in no apparent functional relation to, a western entrance to the court of the Castillo. Another excavated shrine, Str. Q-69 (160 S, 290 W), serves as part of an enclosing ring of buildings and flanks a northern entrance to the same court. Still another group of shrines may be represented in this report by Str. Q-90 (150 S, 215 W); these are independent of any larger complex and seem to have been scattered more or less at random over the open areas left between earlier and larger structures.

Two of the shrines, Q-69 and Q-71, were almost entirely cleared of overburden, and each was trenched sufficiently to determine the major phases in, and manner of, its construction. The second structure was among those later restored and left as a permanent exhibit (Fig. 9.7b). The identification of Q-90 as a shrine is less certain; it was excavated only to the extent necessary to reconstruct its plan.

All these structures consist of a small shrine on a low platform. Although details vary considerably, the shrine is never larger than one room and is approached by a single stairway and entered through a simple doorway without columns. The generally thin surface accumulation over the floors within the shrines rules out the possibility of vaulted roofs and suggests the use of thatch, although the shrine walls are of typical Mayapán masonry. Roughly shaped and unworked masonry, heavily coated with plas-



9.1. Trench North of Str. Q-79.

a. Plan and section. b. Enlarged detail of skeletons.

ter, is also characteristic of the substructures, but well-shaped facing stones of the Puuc style of Late Classic Maya architecture were re-used in the stairways, balustrades, and plinths. Retaining walls and rock fill were laid dry, whereas the exposed masonry appears to have been set in lime mortar. An integral part of each structure is an ossuary cist containing the remains of several individuals, child and adult, male and female. Since Landa has observed that nobles and persons of high esteem were generally cremated (Tozzer 1941:130) it is perhaps not surprising that grave goods for these uncremated remains are few and poor and that manner of burial is uncer-

tain. But if these individuals were not nobles, it is by no means certain that they were ordinary peasants either, for Landa describes the burial of commoners in and behind their houses, not in what appear to be shrines.

Here the evidence of the pottery is important; the identification of these structures as shrines is partly based on the large proportion of censer ware in the plentiful collections of pottery from the surface refuse around them. Fewer sherds are found on the surfaces of the structures proper, and only a, very small number within the dry rock fill of any of the sub-structures, but in these lots, too, a majority of the identifiable sherds were from censers. In underlying levels penetrated by our shrine excavations, on the other hand, censer sherds were a very much reduced minority. It should be borne in mind, of course, that if the presence of numerous censer sherds in surface debris confirms the ritual function for the area which the architecture suggests, their absence from underlying levels probably has only chronological significance.

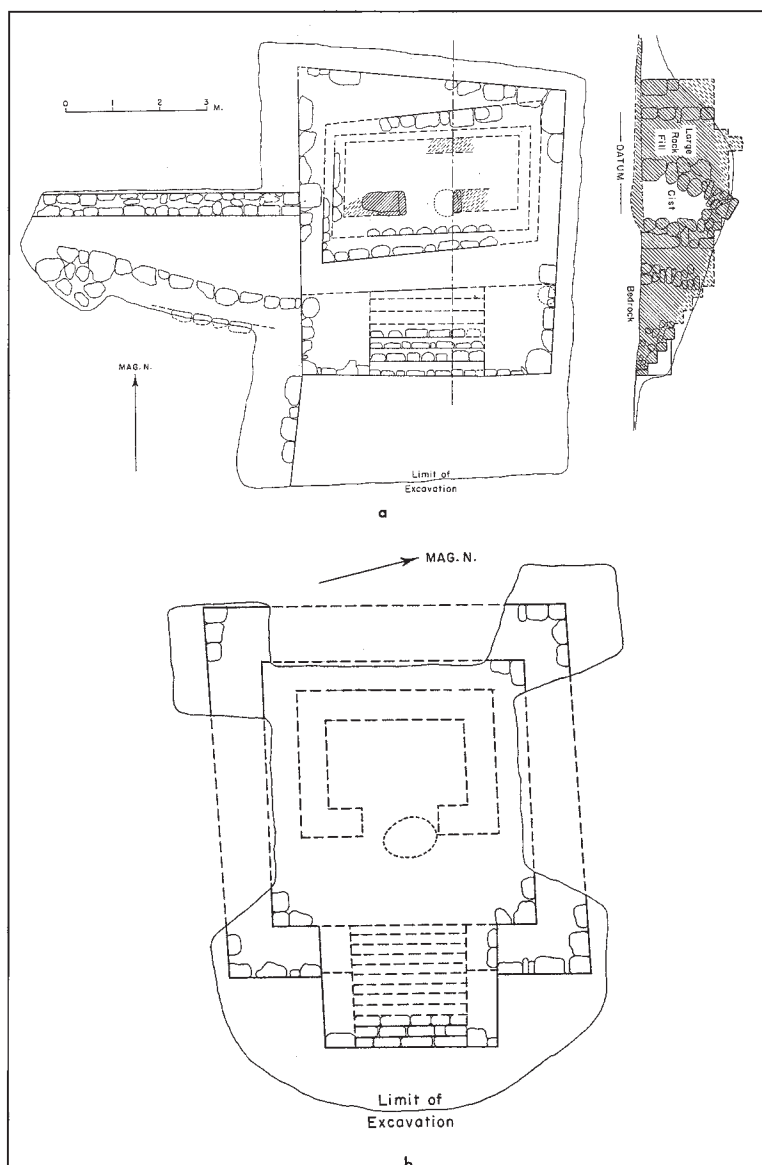
As might be expected, this rise in popularity of censers is normally accompanied by a slight decline in the proportion of sherds attributable to the Puuc period; in one exceptional lot (C-26) from an underlying level off the southeast corner of Str. Q-69 almost half could be so classified, but only a trace of Puuc period pottery is present in the small shrine sub-structures and in all of the surface lots.

Str. Q-69 conforms with the general characteristics that have been described for shrines, as is evident from its plan and section (Fig. 9.2a), but a more detailed discussion of some of its features is necessary. The inset stairway, in particular, is unique. It was preserved only to a height of four steps but must have risen about as high again, i.e., to the level of the building platform. As reconstructed in the section, the upper half of the stair rises above the level of a low terrace into which the lower half is inset. It might be argued on stylistic grounds that this is extremely unlikely, and since the terrace admittedly lacked a well-laid upper surface at the level shown, it might have risen higher than illustrated; but the dearth of fallen debris against its southern edge is difficult to account for if the terrace originally was as high as the building platform.

Very little remains of the shrine except its standing jamb stones, and the positions shown for its north, east, and west walls are unsupported guesses. Whatever their real positions, there would have been very little room inside the shrine if the walls were as thick as the jamb stones suggest. A portion of the plinth is preserved along the west, as well as on the south; only the east wall of the building platform is entirely undetected. The outermost terrace, or enlargement, can be traced continuously, and directly east of the shrine a portion of its wall is still in place to the full height of the building platform. As the plan shows, the different orientation and irregularity of shape of the successive additions are quite striking.

The structure faces roughly south, across one corner of the court north of the Castillo, and the masonry on the front is much more uniform than on the other sides (cf. Fig. 9.6a,b). On the west, for example, the plinth stones are roughly cut and poorly matched; on the south, the plinth consists of almost identical stones in the Puuc tradition. The northeast and southeast corners of the latest enlargement are composed, as the plan shows, of large, roughly shaped boulders (90 by 45 by 120 cm high and 45 by 45 by 95 cm high, respectively), but on the whole there is greatest disparity in size toward the rear of the structure.

The floor and building sequence may be described briefly. South of the southeast corner of the structure an abrupt depression in the bedrock had been covered with two successive floors. The lower antedates construction of the terrace and seals 75 cm of fill containing a high proportion of pottery that probably can be assigned to the Puuc period; it is likely that the small number of censer sherds recorded for this spot are intrusive. The upper floor, 10 cm or so higher, is later than the terrace. A similar situation is found north and east of the structure. Elsewhere, all phases of the building's enlargement rest on a single, lime mortar floor laid directly on bedrock, which implies that none of them are separated by any great length of time. The initial structure, of course, was the building platform with its accompanying cist, but as there is evidence that the shrine postdates the complete filling of the cist, it is possible that the shrine was not built in this first phase. Later, the platform was entirely enclosed by a larger platform of about



9.2. Small Shrines.

a. Plan and section of Str. Q-69. b. Plan of Str. Q-90.

the same height, and stairs were added on the south face. Most of the sherds from a cylindrical tri-pod cup of Mayapán Red ware (Fig. 9.9d) were included, probably accidentally, in the fill under the steps. Later still, the stairs were either partially or fully inset by the construction of terraces alongside them; at about this time also, irregularities in the terrain to the southwest were covered with a low platform. After about 25 cm of debris had accumulated west of the structure, another floor was laid, for traces of it could still be followed immediately underneath the stone wall that runs directly westward.

Depredations of postconquest wall builders have left only a short length of this last-mentioned wall intact, but clearly it connected Strs. Q-69 and

-70 late in the Mayapán period and thus closed off one of the few remaining avenues of access to the court of the Castillo. Landa has left an account of a walled inner precinct at Mayapán which previous investigations have not verified. His description is also somewhat at variance with this modest double row of slabs (Fig. 9.6a): "They surrounded it with a very broad stone wall, laid dry, of about an eighth of a league leaving in it only two narrow gates. The wall was not very high . . . within the enclosure there were only temples and houses for the lords and the high priest . . ." (Tozzer 1941:24ff). Surface inspection to date has not revealed any trace of continuous inner wall, but the same purpose might be served by the erection of an enclosing ring of ceremonial structures connected by short lengths of wall such as this one. Possibly the Main Group was sufficiently ruined and overgrown by Landa's time for the ring of structures to have been mistaken for a wall. In any case, the function of this particular wall segment can hardly have been military, for it probably never exceeded 1m in height.

The ossuary cist was capped by the east jamb stone in such fashion that it could not have been entered after the erection of the shrine (see section, Fig. 9.2a). Only 90 by 60 by 120 cm deep, it nonetheless contained the bones of seven individuals, six of them adult. Although badly preserved, they appeared to have been articulated at the time of burial. There is not enough room for all to have been interred simultaneously, as in a multiple sacrifice accompanying the erection of the building; we propose instead that each later body was not introduced from above until its predecessors had decomposed and settled. Sherds were present, but whole vessels do not seem to have been included, and other grave goods were entirely lacking.

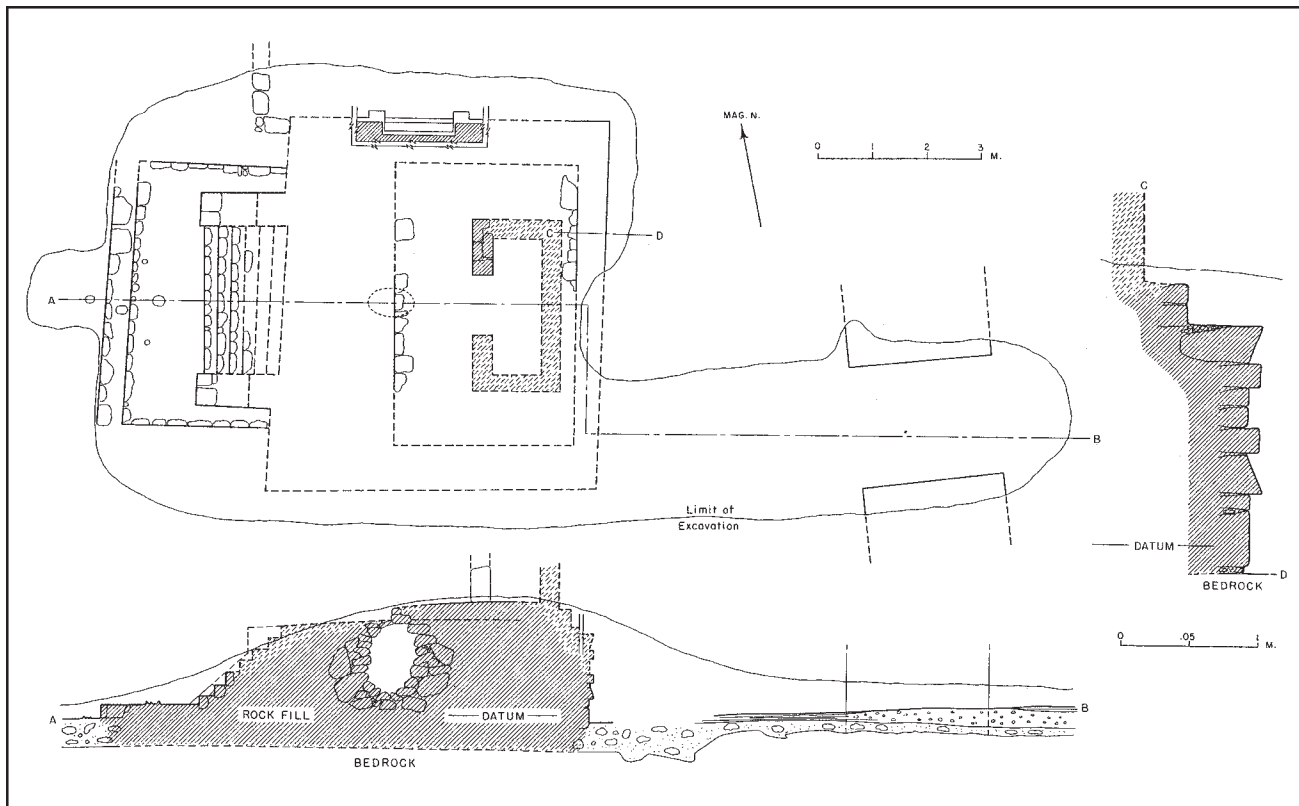
At least three standing human figures, modeled in stone and of about natural size, were associated with the structure. All were badly broken and weathered and none of the fragments was in situ. "one of the 'idols' consisted of a torso with portions of arms and feet, holding a vessel possibly containing corn or copal (Fig. 9.6h); it was found in the doorway and seems to have belonged in the shrine proper. Another was found high up in the debris just south of the "inner precinct" wall and consisted of a tenoned head and almost unrecognizable torso (Fig. 9.6g). A better-preserved head, still bearing traces of stucco and paint (Fig. 9.6g) found near the northwest corner, and may belong with a tenoned torso that lay on the surface below the eastern wall of the terrace.

Str. Q-71 was somewhat better preserved than Q-69, and can be reconstructed less speculatively (Fig. 9.3). Of the shrine, only the north jamb and

the base of the shrine wall of it were in place, but the latter included the northwest corner; hence it is possible to estimate the length of the shrine in front elevation fairly satisfactorily. The width of the shrine and the length of the plinth, on the other hand, could not be ascertained. The building platform retained its full height for a short section of the east face (Fig. 9.7c and enlarged section CD in Fig. 9.3), making possible a restoration of the moldings which apparently occurred on all four sides of the structure. These moldings were broken only at the wide stairway on the west and by a sloping panel recessed into the north side (Figs. 9.3; 9.7a). Two rectangular projecting blocks flanked the panel at the level of the lower of the two angular members of the molding, and the inset area was backed by roughly surfaced stones that once must have supported a stucco panel. Probably as a result of the greater care which was necessarily devoted to it, the masonry in the moldings was relatively well-shaped and fitted, but the masonry beneath was typical of Mayapán: rough, irregular, and uncut. However, large boulders, such as were encountered in Str. Q-69, were not used.

Three complete steps and part of a fourth were in place, as were also the sloping bottom courses of both balustrades. Since many step stones had obviously settled or fallen forward, the determination of tread and riser dimensions is somewhat arbitrary, and it will be noted that it was found advisable to reconstruct the stairway (Fig. 9.7b) with one less step than is shown in the plan and section. No internal evidence for the vertical blocks shown at the top of the balustrades was found, but their use at Mayapán can be shown on Str. Q-77 and by a fragmentary pottery model recovered during the 1952 field season. There is nothing which contradicts the assumption that they were normally employed. The stairway debouches on a low terrace, only 20 cm above the single plaza floor which is present here, and in the surface debris over the floor near the northwest corner of this terrace was found an intact pottery effigy of a frog (Fig. 9.9c).

Str. Q-71 rests on a distinctive fill with large, angular inclusions which can be followed for some distance to the east, but the floor which caps it in the vicinity of the court entrance formed by Strs. Q-70 and -72 does not underlie the shrine. Since Q-70 rests directly on bedrock, whereas Q-72 postdates this floor, the three structures might be dated in their numerical order, recognizing that continuity in the fill between Q-71 and -72 can only be assumed, not proved, and that in any case no great lapse of time need be involved. On this view, the shrine would bear no relation to the gate, which was formed only



9.3.

Small Shrine, Plan and Sections of Str. Q-71.

by subsequent construction. The later superposition of 11 refloorings in the area of the gate would also not require a long period because of the heavy wear which any opening to the court of the Castillo would receive.

Str. Q-71 was largely built as a unit, with only minor renovations and enlargements. Contrary to customary practice, a retaining wall is absent behind the stairway, which thus must be absolutely contemporary with the construction of the building platform, and the condition of the plaza flooring north and west of the structure indicates that even the low terrace at the foot of the stair is also contemporary. On the other hand, patches of flooring underneath the plinth suggest that this and the shrine were later additions; the slight westward extension of the terrace and the rough lines of stones at the northwest corner overlie the plaza floor and thus are also later.

The ossuary cist is capped by a large rectangular stone and is surely contemporaneous with the substructure; if the plinth and shrine are later, it may be that, as in Q-69, the cist was filled and sealed before the erection of the shrine. One adolescent and six adult skeletons were jammed into a space not exceeding 50 by 80 by 125 cm, again implying a period of decomposition between burials. Several

pottery vessels, including censer cups and bowls (Fig. 9.7e,f) and a grotesque effigy head (Fig. 9.9c), and a number of beads and other artifacts were included with the bodies. The latter are listed separately [...] as Lot C-22.

Three small circles roughly centered on the front of the terrace (Fig. 9.3) represent the bases of an unusual style of statuary associated with the shrine. Stalactites, presumably from a cenote, were set vertically in the floor and used as supports for rather small figures modeled in stucco. A similar figure stood on the plaza floor below the extension of the terrace. Many small fragments of painted stucco were found in the surrounding area, but not enough remained in place to determine the subject of the statues. A large, badly weathered stone feline head was found a short distance southwest of Q-71, where it had been re-used in a postconquest wall. It may originally have been associated with the structure, as May also a feline foot found in surface debris near the southwest corner. Architectural embellishments of a fine-grained limestone more typical of Puuc masonry were particularly numerous around the northwest corner of Q-71 and in the area of the gate, but could not be ascribed definitely too any building or period.

Str. Q-90 can be described as a shrine only with considerable reserve. Lower and more poorly constructed than the others, it has also suffered more through human or natural agency during the post-conquest period. No direct evidence for a plinth or the standing walls of a shrine room can be found today on its summit (Figs. 9.2b; 9.6c). On the other hand, a thick accumulation of stone over the small remaining patch of floor on the top of the building platform can be explained most readily as fallen wall, and the absence of a plinth is not surprising in view of the serious denudation that all of the upper surfaces have undergone. In its remaining features, moreover, the structure looks like a variant in the shrine category.

The underlying sequence to bedrock was exposed only at the foot of the stairway. A thick, worn floor 35 cm above bedrock passes beneath the lowermost of the steps; however, the shrine does not rest directly on the floor but on close-packed fill above it. This fill is found on all sides of the structure and supported an upper floor, now largely obliterated, a little higher than the base of the outer terrace. Fragments which have been preserved in the shelter of the terrace walls show that this upper flooring curved upward to become the plaster coating for the outer terrace walls; thus it must be approximately contemporary with the outer terrace. The inner building platform is an earlier phase, not a mere retaining wall used in constructing the final form which the structure assumed, for the stairway is contemporary with it and its outer surfaces were carefully plastered. But in the area where it could be most economically tested (the southwest corner) the platform was founded only about 10 cm deeper than the outer terrace and did not extend to or through a floor. In other words, the evidence again suggests a relatively short period of small shrine construction near the end of occupation of the site.

The masonry of Str. Q-90 is most typical Mayapán "slab and block." Along the front (east) of the substructure the stones seem slightly more uniform in that all of them are relatively flat and rectangular, but even here there is considerable variation in appearance. At least the southwest corner-stone of the building platform, and all of the cornerstones of the outer terrace, were vertical rectangular blocks somewhat larger than those normally used in the walls, but none approached the proportions of those used in the outer terrace of Q-69. Puuc-style facing stones are used only on the balustrades, and the step stones are indistinguishable from those in the outer terrace that flank the stairway. The use of vertical blocks at the top of the balustrades, as shown in the plan, is as before, pure assumption. An erroneous impression of height is given, perhaps, by the

number of steps shown in Figure 9.2b; the condition of the stairway (Fig. 9.6c) did not make an accurate reconstruction possible but suggested surprisingly small average tread and riser dimensions (13 and 15 cm respectively). In fact, from the base of the building platform to the shrine floor is slightly less than 2 m. The original height of the outer terrace is not known, but since it was founded slightly higher than the building platform, it is certainly somewhat less than the latter. If the outer terrace rose to the full height of the shrine floor, the upper portion of the stair would have been inset, and the top and edges of the building platform should not have been so extensively denuded; hence it seems more likely that the top of the outer terrace was substantially lower than the shrine floor.

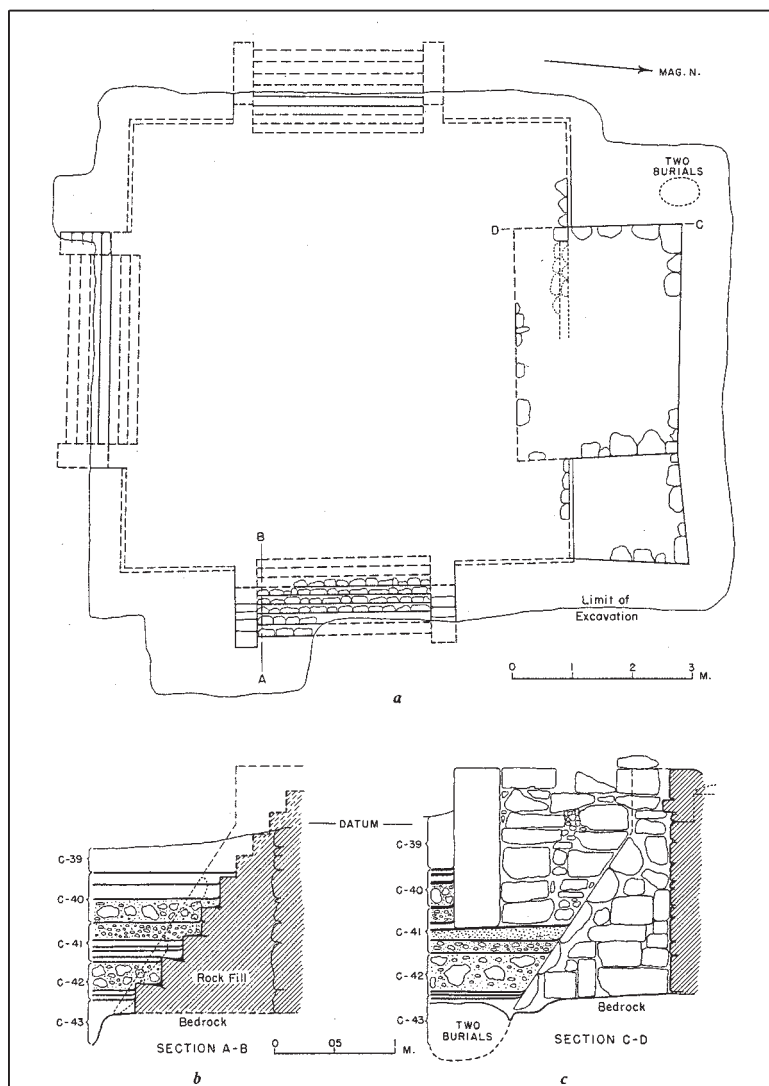
In keeping with the generally smaller size of Q-90, the ossuary cist was also very small and could be excavated only with great difficulty. Its upper courses were partly broken away, but the chamber appeared to have been constricted at the mouth to about 45 by 45 cm; the depth was estimated at 185 cm. At least three adults and two adolescents were buried in the cist, but only a single, well-chipped flint point (Lot C-37) might have been a grave offering.

Surface material around the structure contained no other artifacts than pottery. In particular, no fragments of statuary were found that might have been associated with the shrine.

PLATFORMS

STR. Q-77. The excavation of a low, roughly square platform north of the Castillo disclosed a sequence of floors of unsuspected depth. Eleven or twelve superimposed floors, some separated by thicker bands of dry fill, had raised the court level around Str. Q-77 (185 S, 280 W) more than a meter (Fig. 9.4a-c). The sides of the platform were cleared to the level of the uppermost floor, which was continuous around the structure, and a trench was extended about 32 m over the well-preserved lime mortar surface to the foot of the west balustrade of the north stairway of the Castillo. Under the protection of the thick mantle of fallen rubble there, five still higher refloorings were observable. The latter may have been local patches, attributable to the greater wear that the foot of a stairway might receive, but the uppermost floor around the platform, at least, was a continuous resurfacing of a large area. Furthermore, the similarity in the two illustrated sequences of fill and floors from different sides of the structure suggests that a number of earlier floors were also continuous.

Thus there is unmistakable evidence for continuity of occupation in the center of the Main Group



9.4. "Dance Platform," Str. Q-77.

a. Plan. b. Section, east stair. c. Section, balustrade of north stair.

for a considerable period. It is expected that further work will be undertaken in the hopes of obtaining a clear-cut stratigraphic record of ceramic seriation, possibly linked to phases of building activity, from the sherds in succeeding layers of floor-capped fill, and no attempt was made during the 1953 season to secure adequate samples. The full deposit was cleared to bedrock only in two small soundings (Fig. 9.4b at the south end of the east stair; Fig. 9.4c against what was originally the west balustrade of the north stair) that were intended primarily to elicit information on details of architecture. Still, it is surprising that the sherd collections obtained thus far from beneath these floors do not reflect greater change than they do. Censers make up the bulk of the surface pottery and diminish rapidly in number

with increasing depth, but even in the earliest levels wares attributable to the Puuc period are distinctly in the minority. Although lacking a comparable overlay of successive floors, the material from the filled depression southeast of Str. Q-69 looks earlier in this respect.

In its earliest phase, the platform was ascended by balustraded stairways on all four sides; the lack of debris above floor level indicates that it did not support another structure. One is reminded strongly of the Platform of the Eagles and the Platform of the Cones at Chichén Itzá, and it is interesting to note that the latter structure, too, lay not far from the foot of the north stairway of the Castillo at that city. Unlike the Chichen platforms, however, chac mools were not found in the fill of Str. Q-77.

The platform is preserved to its full height only on the north, and there typical Mayapán masonry in the lower courses gives way near the top to a narrow, projecting molding (Figs. 9.4; 9.8a,b) and better-finished stones resembling those used in the Puuc style of architecture. It is possible that this molding was originally a two-member cornice of the type seen on the platform of Str. Q-71 (Fig. 9.3), the upper member leaning outward slightly at one place but being vertical at another. Well-cut and dressed stone is used extensively in the balustrades and stairways, but an occasional stone is very rough.

This might be taken to imply that the well-cut, fine-grained blocks were re-used only because of their availability and appropriate size, and that careful working was no longer a virtue. Indeed, the heavy coatings of plaster employed in the Mayapán period might adhere better to rougher stones, and would certainly hide their defects. The use of a number of well-cut stones merely as part of the fill of the structure also indicates that a high valuation was no longer placed on their uniform appearance.

A trench in this original platform disclosed no cist or other cultural material except a flattened copper bell resting on bedrock (Cat. no. 53-135, Fig. 9.11c). Probably it was lost or discarded at the time the fill was laid, but since there was no supervening floor, it has been listed with surface material. Two partially disarticulated skeletons of nine- or ten-year-old children were left in a small niche in the bedrock near the north stairway (Fig. 9.4a,c) before the earliest floor was laid, and thus should be contemporary

with or earlier than the platform's construction. No grave goods accompanied them.

The square platform was founded directly on bedrock. After sufficient time had elapsed for six refloorings of the court (Fig. 9.4,5), all the north stairway but the lower part of its western balustrade and top step was torn out and replaced by a projecting platform which was built to enclose slightly more than the former area of the stair. Fragments of curved plaster attached to the top of the remaining portion of the balustrade inside the wall provide the most direct evidence yet available for the use of a vertical block at the top of a balustrade; the other balustrades have all been denuded substantially below the points where the blocks might be expected to have occurred. It may be suggested, purely as speculation, that only the presence of some sort of projecting head would make it necessary to dismantle the upper part of this particular balustrade rather than to incorporate it into the wall in the same way as the lower portion.

Three superimposed floors on top of the original platform, known only in the immediate vicinity of the top of the north stair, are contemporary with the six earliest floors in the plaza, for they underlie the southern end of the new projecting platform. One later platform floor was found which post-dated the renovation; it abutted the new platform to its full height along the west and part of the north sides (note the evenness of the top of the masonry in Figs. 9.4c; 9.8a) and is no higher than the earlier masonry. But the extension of the masonry outline of the later platform over part of the area of the earlier would suggest that the floor of the later, now gone, must have been laid even with the top of the masonry, and thus must have been slightly higher than the floor of the original four-sided platform. It is not possible to tell whether the new extension served as a low and open dais appended to the earlier structure or as the substructure for a small ceremonial building. In either case, the effect of the renovation was to orient the structure as a whole to face the Castillo, and hence it may be connected with some building activity there.

Two features of masonry of the new platform are perhaps of some interest. First, not so much care was expended on its upper courses; the molding, in particular, was not continued and the use of better-finished facing stones was abandoned. To indulge again in speculation, the masonry of the original platform might represent the persistence in attenuated form of earlier standards that were more exacting, while these standards had been given up entirely by the time of the renovation. Second, attention may be directed to the large cornerstone on the new plat-

form (Figs. 9.4c; 9.8a). These have been encountered before in this report in late renovations; they may be an architectural feature of chronological value.

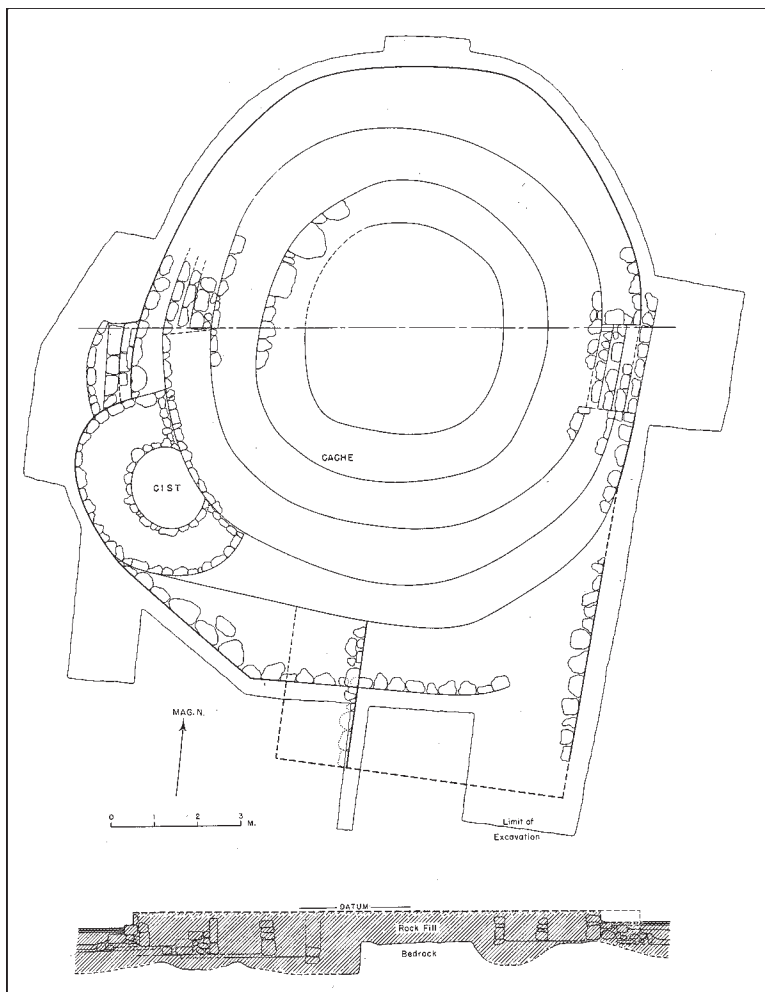
A second renovation followed the end of all floor-building activity in the court. It consisted in the elimination of an inner corner formed on the northeast by the original platform and its later extension (Figs. 9.4a; 9.8a,b), and again involved the use of a large cornerstone. Apparently no attempt was made to do this on the northwest.

Elements of stone sculpture, possibly including a stela, have been found on the surface in the vicinity of Str. Q-77, but all are too badly weathered to be recognizable.

STR. Q-84. Also founded on bedrock in the north plaza was another platform, but this one was very different in plan and associations, and presumably in function. Str. Q-84 was low and circular, possibly with rectangular additions in its latest phase. In appearance, it is broadly similar to round structures at Tulum, Chichén Itzá, Xelha, and elsewhere, which have been attributed by Pollock (1936:144) to an association with Quetzalcoatl and a period of strong Mexican influence. Although it underwent a number of enlargements, the elevation of the platform rose relatively little, and successive refloorings of the surrounding court finally almost covered it. Not discovered until after publication of the Mayapán map, it lies about 15 m east of Str. Q-77 and about 20 m northeast of the Castillo.

Even by comparison with the low level of technique which is normal Mayapán construction, the execution of this platform is crude and irregular. In its earlier phases it was only roughly circular (Figs. 9.5; 9.8d), and notions of symmetry or approximation to standard geometrical forms seem to have been dispensed with more and more as enlargements were added. This crudeness is reflected in the masonry also; only a very rare stone, usually in one of the latest phases, has been shaped at all, and great disparity in stone size has been accompanied by very little chinking. Even the stones used in the steps are not at all uniform, and the design of the stairs is uniquely asymmetrical (Figs. 9.5; 9.8c).

A single, very fragmentary platform floor could be detected occasionally under a few centimeters of humus, and fallen debris from walls or vaults was not present. The platform may have served as a substructure for some building of pole-and-thatch, but no more permanent structure is indicated. It is surprising that superimposed floors were not found over the center of the platform because each enlargement raised its elevation slightly and might be expected to have been accompanied by a refloor-



9.5.
Circular Platform, Plan and Section of Str. Q-84.

ing of the entire upper surface, but possibly only the earliest floor escaped destruction by root action.

Unlike the fill in the previously described square platform and in the substructures of the small shrines, the fill between the walls of successive enlargements of Str. Q-84 contained an appreciable amount of dirt and broken pottery as well as the usual rock. Small fragments of human bone also were scattered through this material, suggesting that middens or abandoned house platforms may have been used as sources. Since the concentric walls were clearly sequential, it seemed possible that the fill might show horizontal stratigraphy as one progressed outward, but in the gross indices relied on in this report no appreciable shift was observable.

One factor which undoubtedly tended to obscure what evidences of change there were was the absence of floors sufficiently intact to separate the fill from later surface accumulations. A small pit that penetrated to a depression in bedrock at a point

5 m southeast of the cist at the southwest side of the structure was sunk almost 2 m through intact floors underlying the latest enlargements and undoubtedly contemporary with some of the earlier phases. In contrast with the sherd collections from the fill itself, the proportion of censers were decreased sharply in earlier levels that were encountered here. As the excavation of Str. Q-77 showed, this sequence is normal for the Main Group, and the presence of censers in the fill accompanying early phases of construction of Str. Q-84 can be explained only as caused by surface intrusion.

It should be noted that ware proportions in and around this structure are different from those recorded for other ceremonial buildings. Sherds of Mayapán Red ware are uniformly more numerous than censers, and black-on-cream (coarse slate), Fine Orange, and Porous Gray wares occur in significantly greater quantities. These differences probably reflect the specialized ceremonial function of the platform. Slightly less than 10 percent of the identifiable pottery in both earlier and later phases of the fill was classified as belonging to the Puuc period. Only a slight decrease in the proportion of sherds attributable to this period was found in later levels of the stratified pits underneath Strs. Q-77 and -84, but it is still surprising that this slight decrease does

not find some expression in the Q-84 fill if a lengthy period of time is assumed for its accumulation. Late surface intrusions are hardly an explanation when the ware is early, and the uniformity in the proportions of Puuc pottery from succeeding deposits of fill remains a problem. However, the apparent absence of change should not be taken to show that most of the circles are mere retaining walls for a platform whose final form was reached after a single period of construction, for each enlargement was heavily coated with plaster and successively later floors turn up at the foot of each later wall. No very long period of time is necessarily implied for any one stage, or even for the entire sequence, as renovations may have been carried out fairly frequently.

In its earliest phase, the platform was about 5 m in diameter, and perhaps was built merely to cover or enhance a slight natural eminence in the bedrock (section, Fig. 9.5). No stairway is known for either this or the first alteration, but stairs on both east and west do appear with the second enlargement. In the



a



b



c



d



e



f



g



h

9.6. Small Shrines and Statuary.

a. Str. Q-69 from southwest. b. Str. Q-69 from southeast. c. Str. Q-90 from southeast. d. Standing column, Str. Q-84. e. Serpent head, Str. Q-84. f. Stone head, Str. Q-69. g. Stone head, Str. Q-69. h. Torso, stone statue, Str. Q-69.

succeeding phase, the same stairs remained in use; a semicircular enlargement was added to the south of the stairs, but there is no evidence for a balustrade

north of them. Next to be constructed was a thick-walled cist, which was sunk to bedrock alongside the semicircular enlargement after the latter had been



a



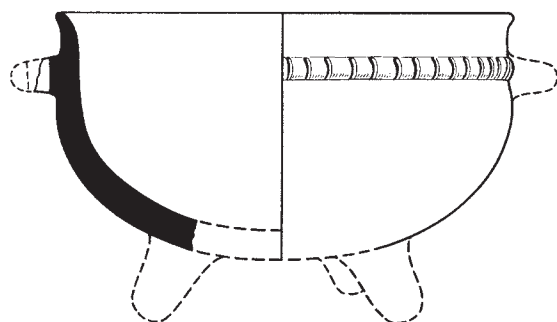
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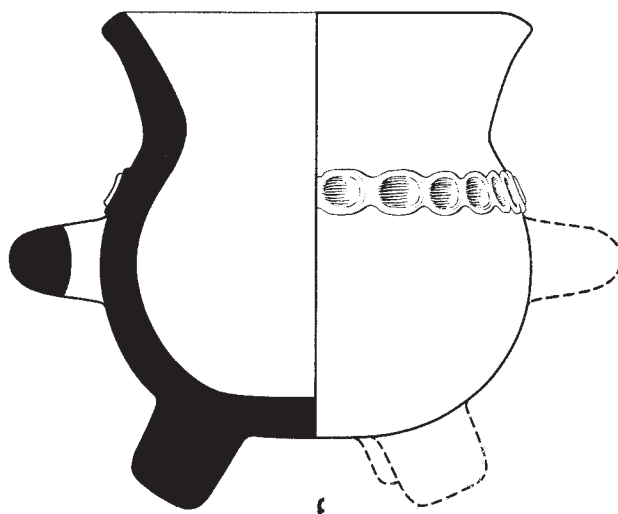
c



d



e



f

9.7. Small Shrine and Associated Censer Pottery, Str. Q-71.

a. From west after excavation. b. From southwest after restoration. c. Moldings at northeast corner of platform. d. Gate formed by Str. Q-70 and Q-72, after partial excavation, Str. Q-71 in back. e. Brown censer vessel from cist Lot C-22). f. Gray-brown censer vessel from cist (Lot C-22). Interior smoked, exterior lightly calcareous-coated.

completed and plastered. A somewhat wider semi-circular enlargement to the north then enclosed the west stair and completed the inseting of the east stair. At about the same time a new stairway was added on the west to replace the one covered over with fill, and the bulge of the cist was included within the first one and then another enlargement to the south. By this time the court floor had risen until the top of the terrace stood only 20 cm or so above it, and still later additions to the south are known only from shallow lines of stone bounding uncertain areas of fill. A low, rectangular extension to the southeast was certainly added; Proskouriakoff was able, although I was not, to identify a companion extension in certain surface conformations to the southwest.

In the fill of the southeast extension a few fragmentary remains of an adult were found about 10 cm below the surface; in the absence of grave goods, this may be either a pre- or a postconquest burial. The cist, on the other hand, although it contained a number of burned and unburned fragments of at least two human skeletons, many large sherds (not fitting to form restorable pots), and much charcoal in the sandy fill of its plastered interior, either was used from the beginning only as a repository for rubbish rather than for burials or was subjected to systematic later looting. The absence of any surface disturbance, or even any surface indication of the presence of a cist, makes the second possibility seem highly unlikely.

A number of large stone monuments occur at present on the surface of or near Str. Q-84, suggesting the possibility that it may once have served as a monument platform; it was mainly to verify or disprove this hypothesis that the structure was excavated completely. All the monuments were obviously not *in situ*, but it was hoped that the finding of broken floors, caches, or some other form of subsurface preparation would make possible at least a tentative restoration of the original position of some of them. The hope was not realized. Some of the monuments seem too large to have been moved very far and no reason is known for all of them to have been brought here after the abandonment of the site, but it still cannot be shown definitely that any of them stood on the platform.

One probable cache was found about 30 cm below the surface in the fill inside the first enlargement (Fig. 9.5) and near two monuments, but it could not be related to either of them with certainty. It consisted of two basal of a style which Shook presently believes is more typical of the early part of the Mayapán period (Fig. 9.9a,b), and three very large flint and obsidian blades (Fig. 9.11d) resting on a small, roughly cut, circular stone slab. The blades,

as well as the bowls, were broken into a number of pieces; the breaks in the flint were as heavily pitted as the surfaces. Hence there are some grounds for believing that the cache may have been crushed during the raising of one of the heavy monuments.

With the exception of a definite serpent head, all the stone is too badly weathered for the subjects of the sculpture to be identified, but several of the monuments appear to have been merely large, shaped stones, devoid of any surface treatment. The present positions of all possible monuments are given by number in Figure 9.5. A brief description of each follows:

Q-84-1. Serpent head with seated figure astride (Fig. 9.6e). Length 123 cm, height 86 cm, thickness 28 cm.

Q-84-2. Possibly a tenon to Q-84-1 that would add 40–50 cm to the length of the latter.

Q-84-3. Very large standing block (Fig. 9.6d) with figures carved in high relief on sides, shallow circular depression in top. 90 by 50 by 140 cm high.

Q-84-4. Well-worked oval slab of uniform thickness, basal and somewhat blunter than other. Length 105 cm, width 50 cm, thickness 34 cm.

Q-84-5. Rectangular block, 40 by 46 by 53 cm high, with a shallow circular depression in the top. Horizontal channels have been cut around the ends to leave projecting moldings.

Q-84-6. Trapezoidal slab of uniform thickness. 26 by 45 by 77 cm high.

Q-84-7. Rectangular slab, possibly a stela. 127 by 39 by 20 cm thick.

Q-84-8. Trapezoidal slab, found at bottom of cist. 60 by 30 by 17 cm.

Q-84-9. Pear-shaped stone, oval in cross section, partly buried in fill and thus somewhat more likely than the others not to have been moved after the site was abandoned. 115 by 63 cm.

MATERIAL CULTURE

All material other than pottery recovered from excavations described in the foregoing pages is listed below. Asterisks indicate objects illustrated in the figure referred to in each lot.



a



b



c



d

9.8. Ceremonial Platforms, Views of Strs. Q-77 and Q-84.

a. Str. Q-77 from north. b. Third building phase, northeast corner of Str. Q-77. c. West stairs, Str. Q-84. d. Str. Q-84 from top of Castillo, southeast.

TRENCH NORTH OF STR. Q-79

LOT C-6. Contents of upper 30 cm in preliminary pit near north end of trench: none.

LOT C-7. Contents of lower approx. 30 cm to bedrock in preliminary pit: 1 unretouched obsidian blade fragment.

LOT C-8. Contents of surface debris above Floor 3 (Figs. 9.1b; 9.11a): fragments of 6 adult skeletons (C-8a-e)*; shell-bead, small snail shell with rectangular perforation,* Cat. no. 53-17; bivalve shell with slit perforation below hinge,* Cat. no. 53-33; 3 flint points or knives (gray chert, white patina, poor chipping, blunted point,* 17.3 by 4.5 by 1.3 cm, Cat. no. 53-1; dark chert, heavy white patina, wide end blunt,* 11.6 by 4.5 by 1.15 cm, Cat. no. 53-2; grayish translucent chert, willow-leaf shape, poor material and chipping,* 17.2 by 4.1 by 1.55 cm, Cat. no. 53-25); 2 unretouched obsidian blade fragments; 1 flint chip; 1 fragment of carved stone; 1 worked shell fragment; stucco fragments; 3 animal bones.

LOT C-9. Contents of upper half of fill below Floor 3 in trench (Fig. 9.11a): child burial (C-9a) and 6 scattered bones of human adults; 1 double-perforated bivalve shell pendant,* Cat. no. 53-34; 1 bivalve with cut edge,* Cat. no. 53-36; 8 unretouched obsidian blade fragments; 1 small obsidian core; 14 animal bones; 1 unworked "tinkler" shell; 3 fragments of unworked shell.

LOT C-10. Contents of lower half of fill below Floor 3 in trench: 14 human bones; 1 animal bone.

LOT C-11. Contents of surface debris north of Floor 3 area and east of area of Floors 1 and 2 in trench, down to approx. the same level as Floor 3 (Fig. 9.11a): 1 human skull and femur; 1 animal bone; 1 broken bone awl, U-shaped section,* 6.3 by 1.5 cm, Cat. no. 53-54.

LOT C-12. Contents of surface debris, including fall from Str. Q-79, south of Floor 3 area to same depth as Floor 3 (Fig. 9.11a): 5 human bones, 1 human tooth; 1 broken corner of mano, 8.0 by 6.9 cm, Cat. no. 53-48; 2 broken fragments of 2 bone awls, shallow U-shaped section,* Cat. no. 53-58; 1 baked clay spindle whorl fragment, biconical, striated,* 2.75 cm diam., Cat. no. 53-60; 1 broken obsidian notched blade, 5.3 by 2.1 cm, Cat. no. 53-61; 1 re-used flint chip, 7.0 by 5.5 by 1.7 cm, Cat. no. 53-63; 1 broken flint blade; 1 flint chip; 1 large boulder metate; 1 unworked shell; 31 animal bones, including 1 antler.

LOT C-13. Contents of surface to level of Floor 2 in northern-most extension of trench (Fig. 9.11a): 1 cut human femur, Cat. no. 53-56; 1 fragment of perforated "tinkler" shell,* Cat. no. 53-137; 2 animal bones; 1 unworked shell.

LOT C-14. Contents of small pit adjacent to the wall of Str. Q-79 from level of Floor 3 to bedrock: none.

STRUCTURE Q-71

LOT C-22. Contents of ossuary cist (Fig. 9.11b): 6 adult and 1 adolescent-adult skeletons; 1 greenstone cat fragment, edges worn, Cat. no. 53-39; 3 broken chipped flint points (white chert,* 2.7 by 2.6 by 0.65 cm, Cat. no. 53-41; green-brown chert,* 3.0 by 2.5 by 0.75 cm, Cat. no. 53-42; chert, heavily patinated,* 8.3 by 3.9 by 0.95 cm, Cat. no. 53-44); 1 broken chipped implement of green-brown chert,* Cat. no. 53-43; 1 rubbing stone, 5.0 by 4.5 by 1.7 cm, Cat. no. 53-45; 1 perforated bone needle, end broken,* 8.6 cm, Cat. no. 53-50; 3 circular shell beads (2 pink, 1 white),* 0.4–0.8 cm diam., Cat. no. 53-53; 2 tubular Jade beads, poor quality stone,* 0.6 by 0.6 cm diam., 0.65 by 0.5 cm diam., Cat. no. 53-54; 2 rectangular white shell beads, 2 diagonal perforations on each from ends to back,* 1.7 by 1.3 cm, Cat. no. 53-55; 4 fragments of 3 bone needles,* longest 11.5 cm, Cat. no. 53-56; 3 unretouched obsidian blade fragments, Cat. no. 53-57; painted stucco fragments; 8 fragments unworked univalve shell; 1 fragment unworked bivalve shell.

LOT C-23. Contents of surface debris (Fig. 9.11b): 1 perforated human canine,* Cat. no. 53-77; 1 double-perforated bivalve shell pendant,* 3.0 cm diam., Cat. no. 53-79; 1 tubular jade bead, burned,* 1.2 by 1.4 cm diam., Cat. no. 53-126; 1 triangular chipped flint implement,* 5.2 by 4.7 by 1.4 cm, Cat. no. 53-125; 9 unretouched obsidian blades; 3 obsidian chips; 4 flint chips; 1 unworked shell; fragments of stucco; 130 small fragments of human, animal, and bird bone.

LOT C-24. Contents of area below intact floors around Str. Q-71: 230 small fragments of human, animal, and bird bone.

STRUCTURE Q-69

LOT C-25. Contents of surface debris: 2 fragments of a broken bone awl, Cat. no. 53-128; 5 unretouched obsidian blades; 3 flint chips; fragments of modeled stucco; 3 unworked univalve shells.



a



b



c



d



e

9.9. Pottery.

a. Basal-break bowl from cache, Str. Q-84 (Lot C-49). All-over pallid red polished slip, traces of blue paint applied after firing to interior. Three hollow, cylindrical, round-bottom feet, no vents. Orifice diam. 22.3 cm, height 7.7 cm. b. Basal-break bowl from cache, Str. Q-84 (Lot C-49). Same description as for a. Orifice diam. 22.0 cm, height 7.7 cm. c. Effigy vessels, left to right, frog effigy from Str. Q-71 (Lot C-23). Porous Gray Ware, painted blue. Height 11.0 cm. Effigy cup from Str. Q-71 (Lot C-22). Porous Gray Ware, painted blue-green except for teeth. Orifice diam. 5.2 cm, height 6.8 cm. d. Cylindrical vessel from Str. Q-69 (Lot C-27). Red slip on interior lip and all exterior. Tripod base, solid conical unslipped feet. Orifice diam. 5.2 cm, height 9.0 cm. e. Censer cup from Str. Q-84 (Lot C-44). Orifice diam., 7.8 cm, height 9.6 cm.

LOT C-26. Contents of an abrupt depression in the bedrock southeast of Str. Q-69; deposit exceeds 70 cm in depth and is sealed by a superimposed floor which antedates the outer terrace of the structure: 1 unretouched obsidian blade fragment; 3 animal bones.

LOT C-27. Contents of fill from terrace and platform, where it was removed to facilitate drawing section through stair: 1 broken greenstone celt; fragment of painted and modeled stucco.

LOT C-28. Contents of ossuary cist: 6 adult and 1 adolescent skeletons; fragments of painted and modeled stucco.

STRUCTURE Q-90

LOT C-36. Contents of surface debris: none.

LOT C-37. Contents of ossuary cist: 3 adult and 2 adolescent skeletons; 1 chipped flint point, about 7.0 cm long; 1 un-retouched obsidian blade; fragments of painted and modeled stucco; charcoal.

LOT C-38. Contents of fill between floor antedating structure and bedrock: 1 unretouched obsidian blade.

STRUCTURE Q-77

LOT C-39. Contents of surface debris (Fig. 9.11c): 3 broken flint points (rose chert,* 4.5 by 3.1 by 1.0 cm, Cat. no. 53-131; patinated chert, possibly complete,* 5.5 by 3.9 by 1.4 cm, Cat. no. 53-132; gray-buff chert, snapped point and butt,* 6.5 by 4.3 by 1.0 cm, Cat. no. 53-133); 1 chipped flint flake scraper, Cat. no. 53-134; 1 copper bell with pellet clapper, suspension ring on top, 2.6 cm av. diam., slightly flattened,* Cat. no. 53-135; 3 unretouched obsidian blades; 1 unworked "tinkler" shell; 1 stalactite for stucco figure; fragments of painted and modeled stucco and wall plaster.

LOT C-40. Contents of fill from between top floor and fourth-from-top floor in court adjacent to structure (for depth of deposit see Fig. 9.4b,c): none.

LOT C-41. Contents of fill from between fourth-from-top floor and either eighth-from-top floor northwest or ninth-from-top floor southeast in court adjacent to structure (for depth of deposit see Fig. 9.4b,c): none.

LOT C-42. Contents of fill from between eighth- or ninth-from-top floor (see Lot C-41) and lowest floor (for depth of deposit see Fig. 9.4b,c): charcoal.

LOT C-43. Contents of fill from between lowest floor and bedrock in court adjacent to structure (for depth of deposit see Fig. 9.4b,c): skeletons of 2 nine- or ten-year-old children.

STRUCTURE Q-84

LOT C-44. Contents of surface debris; in the absence of more than fragments of flooring on top of the platform, the upper-most 20 cm here was arbitrarily regarded as belonging in this category (Fig. 9.11c): 1 badly scattered and very fragmentary adult human skeleton; 1 copper pellet bell clapper, 0.5–0.7 cm, diam., Cat. no. 53-140; 1 worked shell burnishing tool (*),* 2.4 by 1.5 cm, Cat. no. 53-141; 1 worked stone burnishing tool (*),* 3.5 by 2.5 by 2.4 cm, Cat. no. 53-139; 1 spherical jade bead,* 1.5–1.7 cm diam., Cat. no. 53-165; 1 crudely chipped flint point,* 8.2 by 2.7 by 1.2 cm, Cat. no. 53-142; 6 unworked bivalve shells; 5 unworked univalve shells.

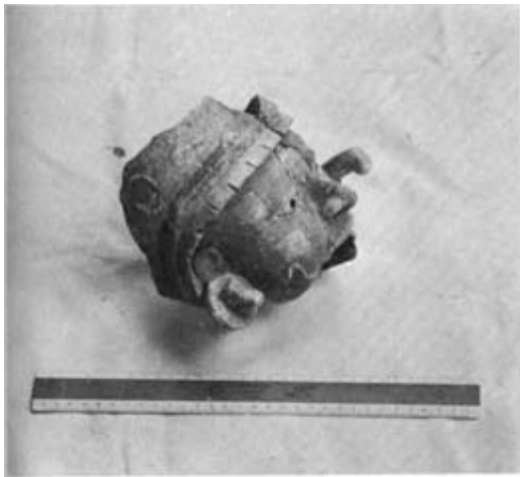
LOT C-45. Contents of fill sealed by floors between 30 and 60 cm depth in pit southeast of cist: 1 small cut stone; 1 obsidian blade; 1 unworked bivalve shell.

LOT C-46. Contents of fill sealed by floors between 60 and 90 cm depth in pit southeast of cist: none.

LOT C-47. Contents of fill sealed by floors between 90 and 120 cm depth in pit southeast of cist: 2 unretouched obsidian blades.

LOT C-48. Contents of fill between lowest floor and bedrock (from 120 to ca. 190 cm) in pit southeast of cist: none.

LOT C-49. Contents of fill of Str. Q-84 (Fig. 9.11c, d): fragments of at least 2 adult skeletons (cist), partially burned; 1 tubular shell noseplug (?) with broadened end,* 5.3 by 0.6 cm diam, Cat. no. 53-154, 1 sculptured human head, broken, stone, Cat. no. 53-205; 1 roughly worked stone disc (cache), 25 cm diam., 3.0–4.5 cm thick; 1 ceremonial chipped obsidian knife, in 4 pieces (cache),* 29.0 by 4.4 by 0.85 cm, Cat. no. 53-151; 1 ceremonial chipped chert knife, in 3 pieces (cache),* 28.5 by 7.0 by 1.9 cm, Cat. no. 53-152; 1 ceremonial chipped chert knife, in 2 pieces (cache),* 17.4 by 6.2 by 1.3 cm, Cat. no. 53-153; 1 finely chipped point of dark, translucent chert,* 11.4 by 5.0 by 0.8 cm, Cat. no. 53-149; 1 chipped flint point with elongated



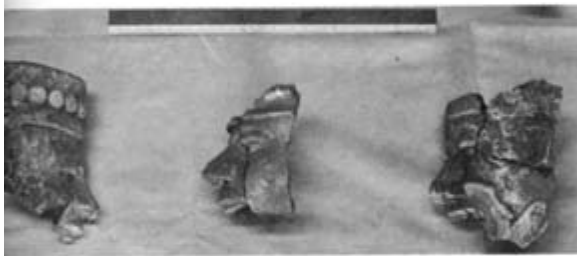
a



b



c



d



e



f

9.10. Censer Figurines from Trench North of Str. Q-79.

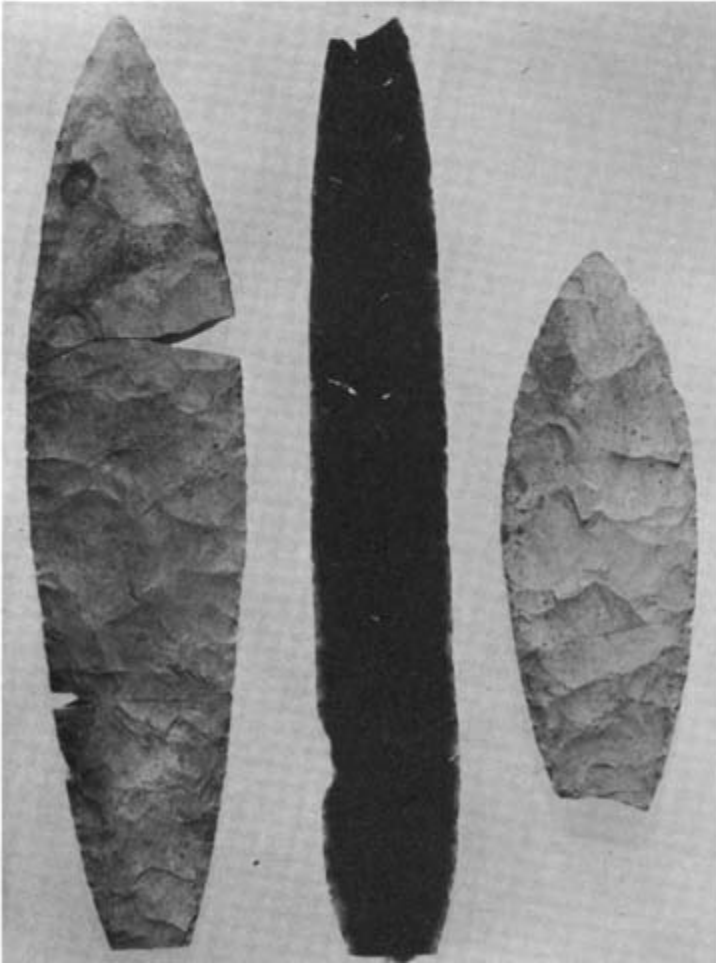
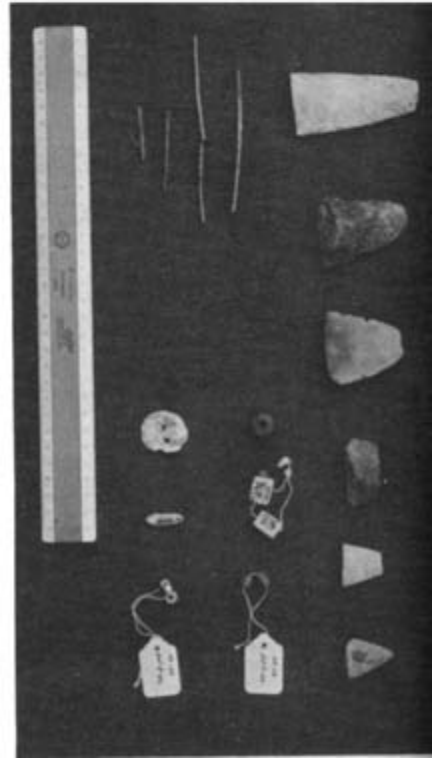
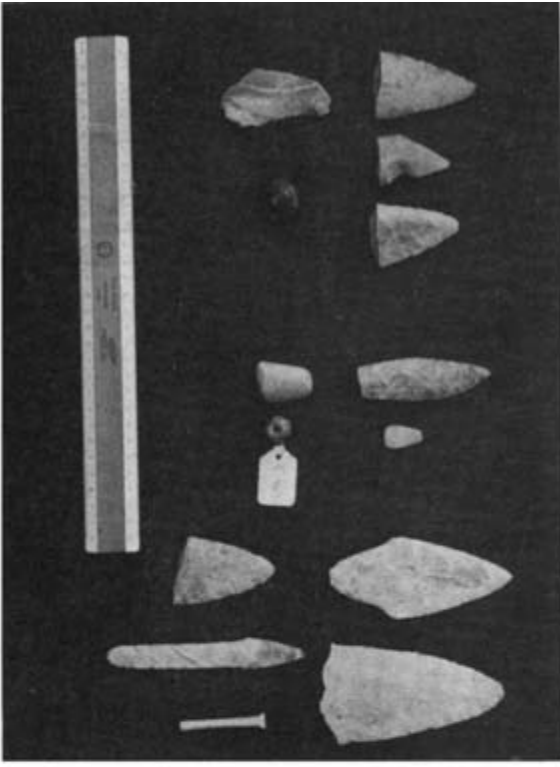
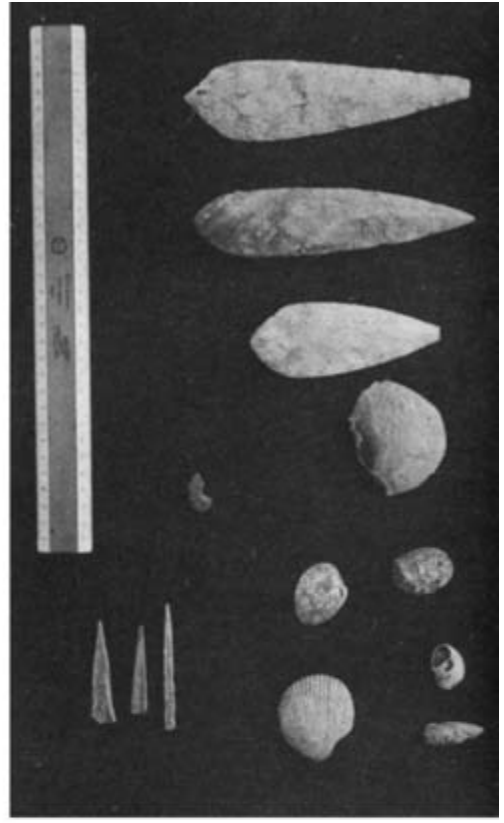
a. Head from Lot C-8. b. Mead attached to vessel, Lot C-12. c. Fragmentary heads, left to right, Lots C-8,-12,-12. d. Head from Lot C-11. e. Legs from Lots C-8,-11,-12. f. Arms from Lots C-8,-11,-12.

tang,* 12.5 by 1.9 by 0.55 cm, Cat. no, 53-150; 2 broken chipped flint points* (6.4 by 4.2 by 1.0 cm, Cat. no. 53-147; 11.5 by 6.0 by 1.4 cm, Cat. No. 53-148); 3 chipped flint point fragments; 98 small obsidian blades and chips, unretouched, found in cluster; 7

unretouched obsidian blades; 1 small obsidian core; 1 stalactite for modeled stucco; fragments of painted and modeled stucco; charcoal; 8 unworked bivalve shells; 4 unworked univalve shells; 44 small fragments of human, animal, and bird bone.

9.11 (overleaf). Small Objects.

a. Trench north of Str. Q-79: flints, left to right, Cat. nos. 53-1,-25, -2, -63; shell, top row, left to right. Cat. nos. 53-34,-17,-137; shell, bottom row, left to right. Cat. nos. 53-33,-36; bone, top to bottom, Cat. nos. 53-58,-58, -59; clay: Cat. no. 53-60. b. Str. Q-71: flints, left to right, Cat. nos. 53-44,-43,-127, -41,-42; bone, top bottom, Cat. nos. 53-50,-56,-56,-56; beads, etc., top row, left to right, Cat. nos. 53-126,-55, -54; beads, etc., bottom row, left to right, 53-79,-77,-53. c. Strs. Q-77 and Q-84: top row, left to right, Cat. nos. 53-133,-131,-132,-142,-141,-149, 148; bottom row, left to right, Cat. nos. 53-134, -135, -139, -165, -147, -150, -154. d. Blades from cache in Str. Q-84 (Lot Cat. nos. 53-151,-C-49): -152, -153.



EXCAVATIONS IN HOUSE MOUNDS AT MAYAPÁN II

A.L. SMITH AND KARL RUPPERT

During the 1952 season we excavated in house mounds where depressions in benches or any visible constructions below bench level, such as exposed capstones or bared vault or walls, were noted. These constructions had one, two, or three benches (Ruppert and Smith 1952).

In the 1953 season our excavations were confined to four structures: an altar shrine, and three buildings that showed four benches in the front room. In two buildings a shrine room appeared as an extension of the back room. In the third building were two subfloor chambers, one with a stairway. These two chambers had been cleared by pothunters at some time in the past. Trenches were also dug at the base of the platforms supporting Groups K-52 and Q-119.

R. E. Smith examined all ceramic material and furnished the data thereon in this report. It is interesting to note that of the 1952 sherd material from house mounds, 4.5 percent is of the Puuc period; the 1953 material is 0.08 percent Puuc. In 1952, sherds

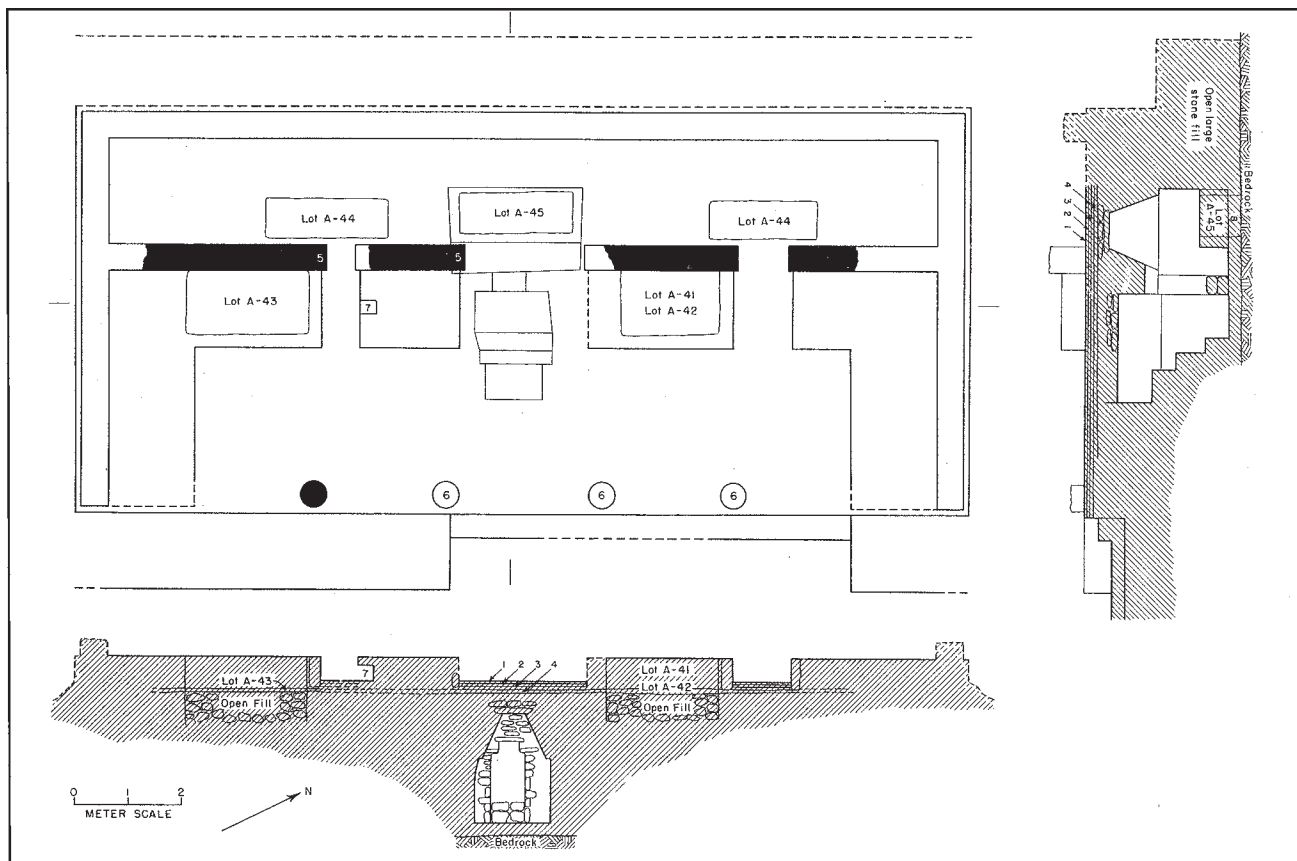
of censers constituted 6.2 percent; in the 1953 excavations the same type of sherds accounted for 20.8 percent. The increase in censer material is seen in structures with shrine rooms and especially in Str. K-52a, thus suggesting a correlation between building type and pottery.

Conforming to an agreement with the Mexican Government, we filled all trenches and pits at the completion of the work.

STR. Q-119A (110 S, 10 W)

Str. Q-119a (Fig. 10.1) lies on the west side of a well-defined natural hillock (Jones 1952, map) and faces south of east. It is one of two structures forming a group on the hillock; the other building, little of which is now exposed, is entirely in Square R but carries the group identification of Q-119b.

Before excavation began, none of the supporting terrace was exposed; we were able only to identify



10.1. Excavations in Str. Q-119a, Plan and Sections.

Lot A-41: Contents of north-central bench: sherds. Lot A-42: Contents of 10 cm of stone and mortar below rough floor under north-central bench: animal bone; human tooth; polishing stone; sherds. Lot A-43: Contents of 10 cm of stone and mortar below rough floor under south bench: 3 shell fragments; sherds. Lot A-44: Contents of pits below floor level of back room: sherds. Lot A-45: Contents of bench in inner subfloor chamber: sherds. 1-3. Plastered floor. 4. Layer of stone and mortar 10 cm thick. 5. Jamb stones not found in position. 6. Column drums not found in position. 7. Niche. 8. Tight fill.

some of the benches and make an adequate plan. Most of the back room had fallen down the slope of the hillock. Apparently no previous excavations had been attempted on the portion of the structure above terrace level. Some stones had been removed and used in post-conquest walls, one of which crossed the structure transversely at the south end.

Two vaulted subfloor chambers, one containing a stairway, were noted. Access to the stairway was through an opening in the floor of the front room of the structure, in line with the central passageway. The two subfloor chambers had at some time in the past been opened and cleared, and a bench in the inner chamber had been explored by pothunters.

The platform directly supporting Str. Q-119a is in poor state of preservation except for the east side. Only traces were noted on the north and south and none on the west.

Exposed on the east or front is a platform 74 cm high, its face only 11 cm beyond the line of the columns of the building. This platform had been extended eastward 1.42 m in two non-uniform and off-center sections. Between these extensions were remains of a single step. With these additions the floor level of the supporting platform seems to have been raised 24 cm.

In general the plan (Fig. 10.1) shows a row of four columns across the front; four benches, those at the ends being L-shaped; and a back room, now indicated primarily by three doorways leading to it and by the plastered floor of the passageways extending into this area. Stones which suggest the remains of a wall at the south end of the front room presuppose a similar wall at the north end. Large flat wall stones in the debris on the floor of the outer room at the south end of the structure were lying in a position

to suggest a fallen wall which originally blocked the space between the southernmost column and the south end of the building.

Masonry is similar to that in Str. R-100, with a fair amount of well-cut and dressed Puuc-type stones used here. The column drums, 50 cm in diameter, are not worked with care. The lower drum of the south column was found *in situ*. A number of drums were recovered from the post-conquest wall crossing the structure. No estimate could be made of the height of the columns or of the number of drums in each.

The jamb stones of the north doorway are in position. Each jamb is a single large block nicely squared. These stones project slightly from the line of the bench. The south jamb stones of the central and south doorways had been removed but were replaced when we finished the excavation.

The benches have an average height of 45 cm. The facing is in general a single course of stones set on end (Fig. 10.5aa). The stones rest on a 10 cm layer of lime and stone which formed the working level from which the building rose. Three distinct floors abutted the bench and jambs. Here and there patches of plaster still adhere to the bench facing.

The fill of the benches is miscellaneous small and large, rough and unworked stones with some mortar.

In the south face of the south-central bench is a niche, its floor on the same level as that of the passageway (Fig. 10.5a). The niche is 32 cm deep, 27 cm wide, and 36 cm high.

Test trenches were made in the south and north-central benches, which produced, respectively, Lot A-43, and Lots A-41 and -42.

Lot A-43 extended from the working level underlying the bench to the loose fill of the platform and yielded three shell fragments and 120 sherds, all Mayapán period except one which was not identifiable. The lot included one sherd of Fine Orange and 10 of censers.

Lot A-41 came from above the carelessly smoothed working level on which the bench rests and contained 23 sherds: 21 Mayapán period, one Puuc period, and one unidentifiable. Lot A-42 extended 10 cm through the working level. It contained fragments of animal bones, a human tooth, a polishing stone, and seven sherds of Mayapán period.

In the area of the back room two trenches were made in the fill of the platform. The material from these two trenches is listed as Lot A-44 and contained 48 sherds: 43 Mayapán period, including four of censers, and five unidentifiable.

There are two subfloor chambers: one contains the stairway and forms a sort of antechamber; the

other is the inner chamber with a bench (Fig. 10.1). Entrance to the stairway was through an opening in the floor of the front room, more or less in line with the medial axis of the building and to the east of the faces of the benches. As the opening was in poor state of preservation, it is not known if the entrance was closed or left open when the structure was occupied.

The masonry of the antechamber is crude; the stones are not carefully worked. Chinking is noted, and in some places plaster remains on walls, steps, and vault (Fig. 10.6a-c). The vault rises from an irregular offset to the capstones. The floor in both chambers was virtually destroyed; traces are seen where it curves up to the walls, step, or bench.

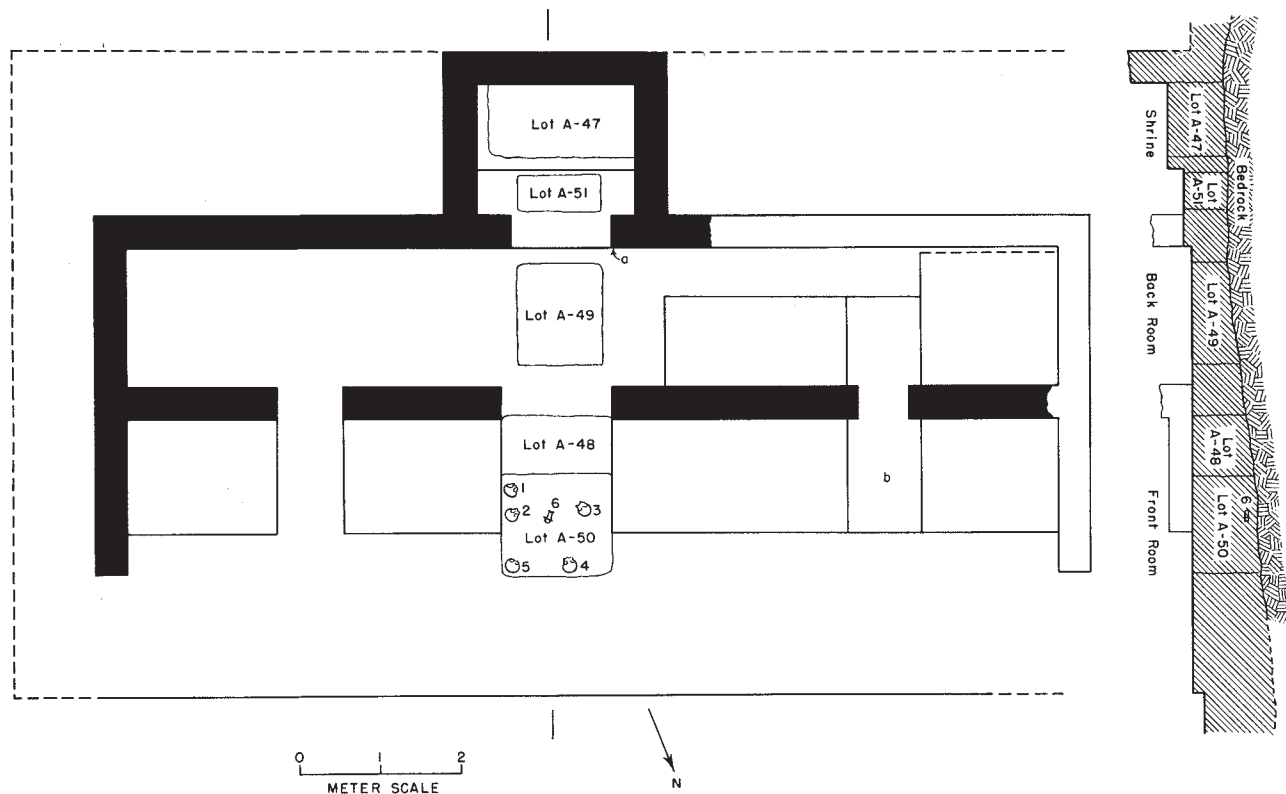
The doorway between the two chambers has corbels supporting the two stones of the lintel. The jambs are of slabs and blocks, and had been plastered. The doorway is now blocked to a height of 38 cm, although at one time it may have been blocked to the lintel. The floor in the doorway is carefully plastered.

The masonry of the inner chamber, as in the antechamber, is of irregularly shaped, unfaced stones. There is an average 10 cm offset at the spring of the vault and at the ends of the room. The vault is made of slabs and blocks, none beveled. Suggestions of stepping of the vault faces are probably only irregularities in construction; traces of a heavy coat of plaster still adhere in places. Much chinking was noted throughout the masonry.

Perhaps due to weathering, much of the north end of the vault has been destroyed. A decided cant of the north end wall of the vault is probably the result of recent architectural failure rather than intention.

The bench, averaging 1.07 m wide by 38 cm high, was built at the time of the construction of the chamber. It had been carefully plastered on top and front. Much of the fill of the bench, of large stones and mortar, had been removed at some time in the past. That which remained was examined and the excavation extended to bedrock, an average distance of 20 cm below the floor of the chamber. In this trench 10 sherds (Lot A-45) of Mayapán period were recovered.

A trench was made in the talus of the terrace to the northeast of Str. Q-119a. The trench had a width of 1.3 m, a length of 2.5 m, and a depth to bedrock of 70 cm at one end and 1.3 m at the other. The fill, which contained midden material, was of rock and earth with a 10 cm layer of sterile earth directly above bedrock. Recovered from the trench and listed as Lot A-46 were five fragments of animal bones, 23 shell fragments, five flint chips (one small, possibly



10.2. Excavations in Str. R-100, Plan and Section.

Lot A-47: Contents of pit in bench and fill in shrine room: flint chip; sherds. Lot A-48: Contents of pit below floor at south end of central passageway: 2 human bones; animal bone; shell fragment; 2 flint chips; obsidian lancet fragment; sherds. Lot A-49: Contents of pit below floor in back room in line with central passageway: animal bone; 3 obsidian lancet fragments; 2 shells; flint chip; flint point; sherds. Lot A-50: Contents of pit below floor at north end of central passageway: 1–5. Remains of adult skeleton, skull and some bones. 6. Pottery figurine of a woman (Fig. 10.9e). Miscellaneous objects: obsidian lancet fragment; flint chips; pieces of charcoal; sherds. Lot A-51: Contents of pit below floor in front of bench in shrine room: stone disk, sherds. a. Jamb, a re-used metate. b. Passageway filled to level of benches.

for polishing), six fragments of gray-streaked obsidian flakes, two bone awls, one pottery tubular ornament, one square iron nail, and 1,283 sherds. Of the latter, 946 sherds are Mayapán period (106 of censers, 14 Fine Orange, one Puuc, six Peten-like polychrome) and 337 unidentifiable.

STR. R-100 (295 S, 135 E)

Str. R-100 is situated on relatively low land between two large and imposing groups. One of the latter, including Strs. R-95 through R-98, lies to the west and is approached from the southwest by a sacbe (Jones 1952, map). The other group, Strs. R-102 through R-107, rises from a low hillock to the east.

Str. R-100 faces roughly north and rests on a platform approximately 20 cm in height that projects 2 m in front of the building. In plan (Fig. 10.2) it originally had four benches in the front room with three passageways leading to the back room.

At some time the west passageway had been filled, making a single continuous bench for the west half of the structure.

Two benches were in the west end of the back room. The western of the two was somewhat wider than the other although its south face had fallen so that no definite measurements could be made. At the time the passageway between the two benches in the front room was filled, the fill was extended into the back room as far as the south face of the eastern of the two benches. Benches in both rooms are comparatively low, now rising an average of 30 cm. In the front room their width is 1.4 m.

A doorway, 1.22 m wide, in the center of the back wall of the back room leads to a small chamber, the shrine room, which measures 1.6 by 2 m. The door sill and the floor are 5 cm above the floor of the larger room. A bench 1.1 m wide, extending the length of the shrine room and built against the back wall, has a height of 19 cm.

Doorways are marked by large stones having the same width as the walls. Such stones form the jambs in all openings between the front and back rooms. At the entrance to the shrine room a reused *metate* forms the west jamb; two stones form the east jamb.

The masonry throughout the structure varies. It is composed of roughly shaped blocks and slabs, some almost unworked, as well as a considerable number of well-cut, faced, and carefully dressed stones. The latter are re-used here, coming from some earlier buildings of the Puuc style of Late Classic Maya architecture. The walls average 40 cm in thickness and rarely rise more than two courses or an average of 50 cm. The paucity of debris precludes a greater height. The stones embedded in lime mortar are generally set on end to form a rough facing on both sides of the wall. Above the masonry, there no doubt were upright poles supporting a thatch roof.

Excavations in the structure consisted of a series of north-south trenches in line with the central passageway and extending to the underlying bedrock.

Two trenches were made between the central benches of the front room. One, yielding Lot A-50, was 85 cm deep. Remains of five human skulls were recovered from locations shown in Figure 10.2, all lying on, or a few centimeters above, the natural limestone. Skulls 1 and 2 showed the occipital opening upward; Skull 3 was face up; Skull 4 was too badly destroyed to indicate position; Skull 5 had the top up and the face to the west. All skeletal material was in poor state of preservation and nowhere did an entire skeleton appear to be present. Long-bones were not articulated but were noted above and at the sides of Skulls 1, 2, and 5, undoubtedly representing secondary burial. Besides a pottery figurine of a woman (Fig. 10.9e), this lot yielded fragments of charcoal, one fragment of an obsidian flake, one flint chip, and 89 sherds. Of the last, 20 were unidentifiable; the rest, including three of censers, are Mayapán period.

The second trench, producing Lot A-48, had a depth of 80 cm, the bedrock sloping upward from north to south. This contained fragments of two human long bones and one of animal bone, one fragment of shell, two flint chips, one fragment of obsidian, and 131 sherds. Of the last, 42 were unidentifiable; all others, including seven censers, were Mayapán period.

The trench in the back room varied in depth from 60 to 80 cm. Its Lot A-49 included one fragment of animal bone, three obsidian lancet fragments, one flint point, and 83 sherds. Fourteen sherds were discarded as too badly weathered for identification; all others, including four of censers, were Mayapán period.

The trench in the shrine room in front of the bench had an average depth of 47 cm. From its Lot A-51 came a stone disc and seven sherds, all Mayapán period.

The entire area of the bench in the shrine room was excavated. Bedrock was encountered at a depth of 72 cm. One flint chip and 82 sherds (Lot A-47) were recovered. With the exception of 16 sherds which were unidentifiable, all, including one of Fine Orange, were Mayapán period. Eleven sherds were from censers.

GROUP K-52 (250 N, 260 E)

Group K-52 rests on a fair-sized platform surmounting a natural hillock. The platform proper was not studied in detail but it was evidently enlarged by at least four separate additions. The final addition, on the southeast, may have been under construction when the group was abandoned.

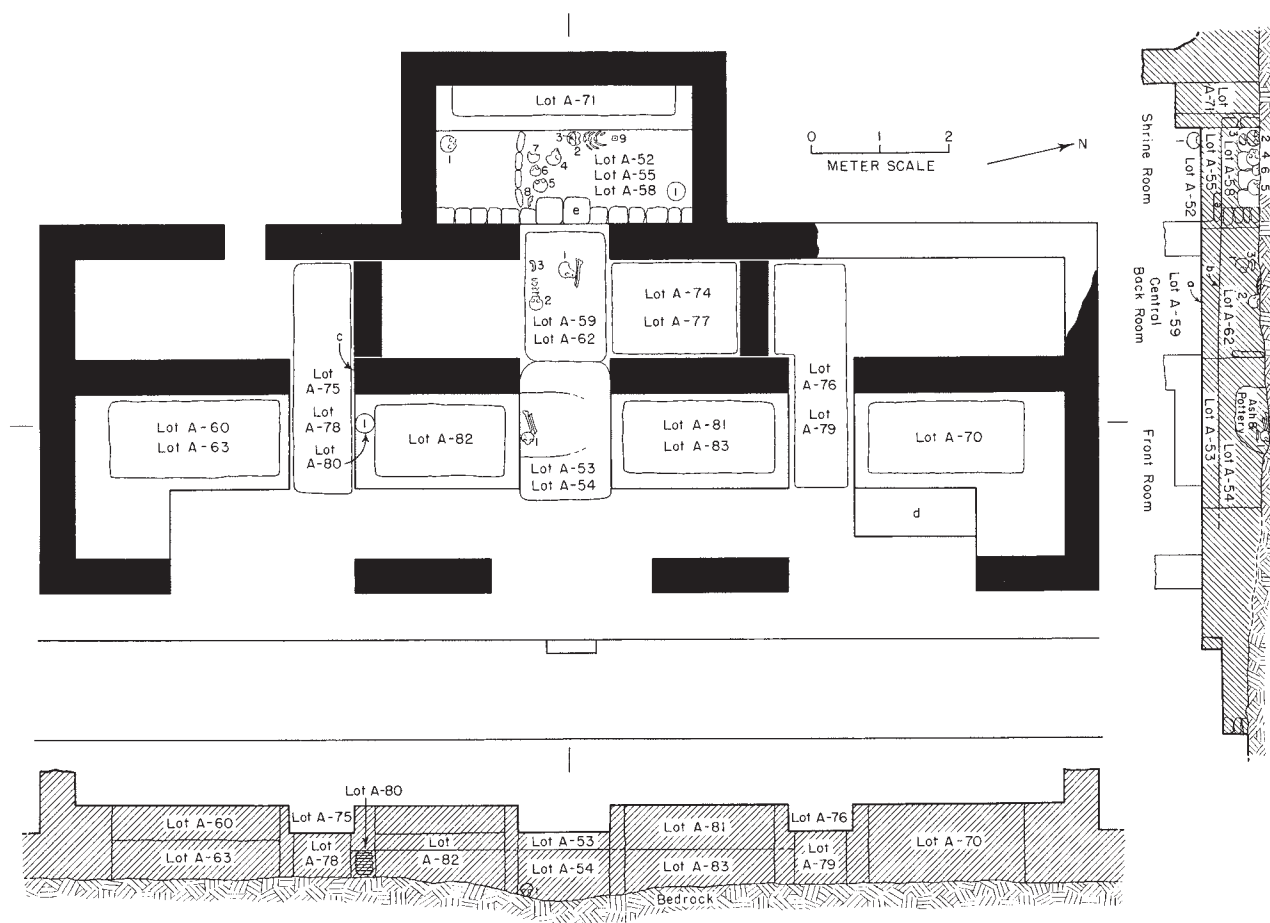
On the south side and abutting this last addition are the remains of a stairway 3.5 m wide and rising with four treads to a height of 1.2 m (Fig. 10.7a). The first riser rests on bedrock. Balustrades 70 cm wide flanked each side of the stairway. Leading south from the stairway are two rows of large stones defining a lane (Fig. 10.7b), which is a branch of a major one extending east and west.

A second stairway rising to the platform is on the north side. It has a width of 2 m, plus 70 cm balustrades. There is no evidence of a lane leading from this stairway.

Str. K-52a is in fair state of preservation. The terrace directly supporting the building rises on the east side with two steps which extend the entire length of the building (Fig. 10.3). Where examined by excavation, the lower 20 cm portion of the first riser is made of two courses of rough stones, the upper 20 cm of a single course of fairly well cut stones. The tread measures 1.43 m. The second riser measures 30 cm and is faced with a single course of well-cut stones. In line with the central passageway of the building and lying against the face of the second riser is a large, well-cut stone block, 72 cm long, 23 cm wide, and 30 cm thick. In the corner formed by the second riser and this block was found a small tripod vessel (Lot A-72). Lying east of the first block was a second one of similar dimensions which may have fallen from a position above the first. The building proper lies 66 cm west of the second riser.

The plan of the structure shows four benches in the front room, a long back room with two late partition walls, and a shrine room (Fig. 10.3).

At the front of the building are three doorways. The two masonry wall sections that separate the



doorways are each 2 m long and 50 cm thick; each end or jamb is formed of a single large stone rising about 1 m.

The masonry in general is good, perhaps better than average. Many carefully worked Puuc-type stones are used. All jambs are of single stones. The north jamb of the south doorway leading to the back room is formed of a re-used *metate* (Fig. 10.3c). The highest section of standing wall rose approximately 60 cm above the floor or 20 cm above the top of the bench. The face of the benches, not including the one in the shrine room which shows much mixture, is with rare exception made of a single course of stone.

The benches in the front room are similar to those in other structures of this type. Those at the ends are L-shaped; the north one has been enlarged (Fig. 10.3d).

Trenches through the floor of the front room were carried to bedrock. Those in the south and north passageway were extended into the back room. At the east edge of the trench in the south passageway bedrock was encountered 30 cm below Floor a; at the

west edge of the trench where it abuts the back wall, bedrock was encountered 75 cm below the same floor. Thus there is much irregularity in the contour of the bedrock.

The material above the floor in the south passageway (Fig. 10.3, Lot A-75) yielded one fragment of an obsidian blade and 43 sherds. All but 12 sherds, which were too fragmentary to be identified, are Mayapán period. Four of the sherds are from censers.

The material below the floor (Lot A-78) included one animal bone, one fragment of obsidian, one flint chip, and 101 sherds. The sherds, except for 20 which were unidentifiable, are Mayapán period.

In opening the trench in the south passageway we found a nest of crushed jars (Fig. 10.3, Lot A-80-1) just under the stones forming the face of the south-central bench. The sherds rested on a large stone slab and were covered by a second slab. Mixed with the crushed jars was a fine clean earth which the laborers said might be potter's clay. The crushed jars of Mayapán period ware are represented by 580 sherds.

Lot A-53 in the central passageway between Floors a and b, which are 24 cm apart, yielded a bro-

10.3. Excavations in Str. K-52a, Plan and Section.

Lot A-52: Contents of debris above floor in shrine room: 1. Remains of adult skeleton. Miscellaneous objects: 2 rubbing stones, Cat. nos. 53-176, -177 (Fig. 10.8c,e); fragment of stone ring with tenon (Fig. 10.8a); fragment of *mano*, Cat. no. 53-178 (Fig. 10.8c); fragment of lava metate showing part of a leg, Cat. no. 53-179 (Fig. 10.8a); fragment of obsidian blade; sherds. Lot A-53: Contents of pit in central passageway above Floor [b]: obsidian blade; sherds. Lot A-54: Contents of pit in central passageway below Floor [b]: 1. Remains of skeleton of a child. Miscellaneous objects: bone spindle whorl, Cat. no. 53-171 (Fig. 10.8f); nearly whole pottery ladle incense burner (Fig. 10.9a); nearly whole human effigy jar (Fig. 10.9f); pedestal base, restricted-orifice vessel (Fig. 10.9b); sherds. Lot A-55: Contents of pit in shrine room between Floors [a] and [b]: fragment of lava metate showing back leg, Cat. no. 53-235 (Fig. 10.7d); sherds. Lot A-58: Contents of pit in shrine room below Floor [b]: 1. Neck of pottery jar set in Floor [b]. 2. Remains of adult skeleton, skull and some long bones beneath. 3. Remains of child skeleton, portion of skull. 4. Remains of adult skeleton, lying on right side, skull and some long bones. 5. Remains of adult skeleton, skull facing north and some vertebrae. 6. Remains of young adult, skull facing west. 7. Remains of adult skeleton, skull. 8. Adult mandible. 9. Shell pendant, 3 by 3 cm, Cat. no. 53-172 (Fig. 10.8f). Miscellaneous objects: small obsidian flake 3.3 cm long; sherds. Lot A-59: Contents of debris in back room in line with central passageway above Floor [a]: obsidian blade fragment; sherds. Lot A-60: Contents of south bench from surface to 50 cm below: sherds. Lot A-62: Contents of pit in back room in line with central passageway below Floor [a] to bedrock? 1. Remains of adult skeleton, skull and long bones. 2. Remains of adult skeleton, skull to east, body extended west. 3. Mandible of old adult. Miscellaneous objects: rubbing stone, Cat. no. 53-180 (Fig. 10.8e); 17 obsidian blades, fragments; carved tinkler shell, Cat. no. 53-181 (Fig. 10.8f); 3 pottery pellets; sherds. Lot A-63: Contents of pit in south bench from below Lot A-60 to bedrock, 1.10 m below top of bench: obsidian blade fragment; 2 animal bones; sherds. Lot A-70: Contents of pit through north bench from top of bench to bedrock: whole conch shell (Fig. 7e); core of a conch (?) shell (Fig. 10.8f); obsidian blade fragment; 6 animal bones; sherds. Lot A-71: Contents of pit in bench in shrine room from top to bedrock: pounding stone, 7 cm diam., Cat. no. 53-175 (Fig. 10.8e); stone pot lid, Cat. no. 53-174 (Fig. 8d); lots of human-effigy censer fragments; 2 obsidian blade fragments; small rectangular polished stone 16 mm long, Cat. no. 53-173 (Fig. 10.8f); sherds. Lot A-74: Contents of debris above floor in north end of central chamber of back room: obsidian blade fragment; 2 flint chips; sherds. Lot A-75: Contents of debris above floor in south passageway: obsidian blade fragment; sherds. Lot A-76: Contents of debris above floor in north passageway: half of pottery tripod bowl (Fig. 10.9g); pounding stone (Fig. 10.8e); 2 pieces of flint with polished surfaces, Cat. no. 53-184 (Fig. 10.8d); piece substance. Lot A-77: Contents of pit in north end of central back room below floor: rubbing stone (Fig. 10.8c); small worked stone, 4 cm diam., Cat. no. 53-186 (Fig. 10.8d); shell (Fig. 10.8f); obsidian blade fragment; 2 animal bones; sherds. Lot A-78: Contents of pit in south passageway from below floor to bedrock: obsidian blade fragment; flint chip; animal bones; sherds. Lot A-79: Contents of pit in north passageway and in back room in line with passageway from below Floor [a] to bedrock: piece of shell; 4 animal bones; sherds. Lot A-80: Contents of pit under south edge of south-central bench: 1. Nest of pottery vessels. Miscellaneous objects: obsidian blade fragment; sherds. Lot A-81: Contents of pit in north-central bench from top of bench to level of Floor [b]: worked shell (Fig. 10.8f); obsidian blade fragment; animal bone; sherds. Lot A-82: Contents of pit through south-central bench from level of Floor [a] to bedrock: 2 pounding stones, Cat. nos. 53-188, -189 (Fig. 10.8e); piece shell; shark vertebrae; sherds. Lot A-83: Contents of pit through north-central bench from level of Floor [b] to bedrock: worked conch shell (Fig. 10.7e); animal bone; sherds. a. Plastered floor. b. Plastered floor. c. Jamb, a re-used metate. d. Addition to bench, e. Step down into shrine room, step later covered by Floor [a] (Fig. 10.6d).

ken obsidian blade and 76 sherds. Nine sherds were unidentifiable and were discarded. Below Floor b to bedrock (Lot A-54), the greatest depth being 70 cm, was found material as listed in the caption for Figure 10.3. The 42 sherds were all Mayapán period, exclusive of eight which could not be identified. Censers were represented by nine sherds.

Lots A-76 and -79 are from the trench of the north passageway and its extension into the back room (see caption to Fig. 10.3). It further includes 154 sherds, of which 23 were unidentifiable; the rest, including 24 of censers, are Mayapán period. Lot A-79 is from floor level to a depth of 95 cm, where bedrock was encountered (see caption to Fig. 10.3). The 89 sherds include 13 unidentifiable; the remainder are Mayapán period wares, of which two are Fine Orange.

Lots A-60 and -63 are from the south bench. The former is from the top of the bench to a depth of 50

cm; the latter from there to bedrock, an added depth of 60 cm. (see caption to Fig. 10.3). Sherds from Lot A-60 numbered 36, of which 25 are Mayapán period and 11 unidentifiable. In Lot A-63 were 66 sherds, all but six, which were unidentified, being Mayapán period.

Lot A-82 is from the south-central bench, from Floor a, on which the bench rests, to bedrock, a distance of 74 cm (see caption to Fig. 10.3). The 128 sherds are Mayapán period.

Lots A-81 and -83 are from the north-central bench. The former is from top of bench to Floor b at a depth of 70 cm; the latter is from Floor b to bedrock: a distance of 50 cm (see caption to Fig. 10.3). Of the 54 sherds in Lot A-81 seven were too badly weathered for identification; all others are Mayapán period. In Lot A-83 were 12 sherds, all Mayapán period.

Lot A-70 is from the north bench (see caption to Fig. 10.3). Of the 165 sherds, 14 were unidentifiable;

the others, all Mayapán period, include four of censers and one of Fine Orange.

The back room has the same length as the front one and has an average width of 1.45 m. Two partition walls were added later, forming three chambers. The south chamber has a doorway in the back wall which probably gave on a terrace. A doorway in the central chamber leads into the shrine room. As most of the back wall of the north chamber has fallen, there are now no indications of a doorway as in the south chamber.

The debris in the back room, in line with the central passageway and above Floor a, formed Lot A-59. A total of 31 sherds, all Mayapán period, were recovered; 14 sherds are from censers. Lot A-62 extends from Floor a to bedrock at an average depth of 78 cm. Floor b as seen in the front room was followed with difficulty into the central chamber of the back room. At the east side of the trench two large flat stones are set on end. The location of the skeletal material is shown in Figure 10.3. Of the 89 sherds, six were not identified; all others, except one of Puuc period, are Mayapán period, including one of Fine Orange and four of censers.

Lots A-74 and -77 are from the north end of the inner room. The former, from the surface to top of Floor a, includes two flint chips, one fragment of an obsidian blade, and 53 sherds. The last are classified as one Recent period and the others (except four unidentified) as Mayapán period, including 10 from censers.

Lot A-77 is from Floor a to bedrock, an average distance of 90 cm (see caption to Fig. 10.3). It is interesting to note that the coursed masonry of the back wall extends 52 cm below the floor level. The 56 sherds, including six from censers, are all Mayapán period.

The shrine room is entered by a 1.35 m wide doorway in the middle of the east wall. The room measures approximately 2 by 3.8 m and has a bench 65 cm wide built across the back wall. Floor a as seen in the front and back rooms of the structure extends into the shrine room. The debris on this floor had a depth of 37 cm (see Lot A-52 in caption to Fig. 10.3). Of the 279 sherds, 30 are much weathered and not identifiable, one is Recent period, and the remainder, including 151 of censers, are Mayapán period.

Floor b is the same as seen in the front room. It varies from 25 to 30 cm below Floor a. Two large flat stones (Fig. 10.3e) were placed on Floor b across the doorway forming a step. The step is 85 cm long, 40 cm wide, and rises 10 cm above the floor. The plaster of the floor curves up over the stones. The sill of the doorway is of stones and a 5 cm layer of plaster on a level with Floor a. Material found between Floors

a and b is listed as Lot A-55 in the caption to Figure 10.3. The sherds numbered 540, of which 20 were not identified, three are Recent period, and the remainder, including 346 of censers, are Mayapán period.

The neck of a Mayapán Red ware jar had been set in Floor b, in the northeast corner of the room (Figs. 10.3, Lot A-58-1; 10.7c). Bedrock encountered at an average of 58 cm was below Floor b.

The facing of the bench on the west side of the room extends to bedrock. On the east side the masonry of the wall at the level of Floor b is set out 20 cm and continues to bed-rock as rough foundation.

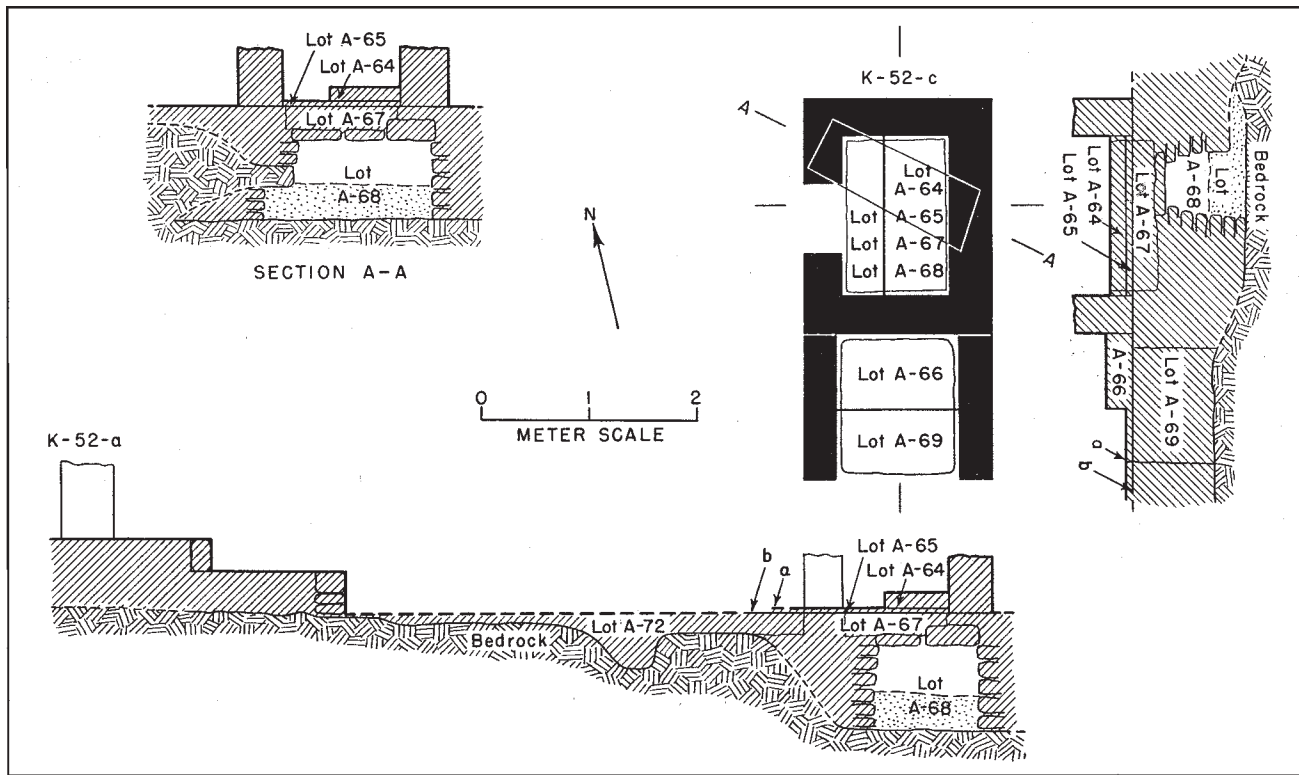
Approximately in line with the south jamb of the doorway and rising 40 cm from bedrock is a row of four large flat stones set on edge. They extend from the line of the bench to the foundation wall to the east. No purpose is known for the stones. Material from the area, Lot A-58, is listed in the caption to Figure 10.3. The sherds number 161, of which five were not identified, and one is of Puuc Thin Slate. The rest, including 94 of censers, are Mayapán period.

The original height of the bench is not known. When excavated, it rose 37 cm above Floor a. The masonry facing of the bench is similar to that of the benches of the front room, with perhaps more coursing. The facing extends slightly below Floor b whence it continues 54 cm to bedrock as rough foundation.

Lot A-71, from within the bench, yielded the material listed in the caption to Figure 10.3, plus 119 sherds, of which eight were unidentifiable and the remainder, including 94 of censers, are Mayapán period.

STR. K-52B lies 3.3 m south of K-52a, to which it is connected by a 60 cm wide wall pierced by an 80 cm opening. Str. K-52b is of the two-bench dwelling type and faces east. The north bench measures 1.45 by 2.15 m and rises not more than 30 cm. The length of the south bench is not known, as the southern end has fallen. The passageway, 1 m wide, is blocked in line with the wall at the west edge of the benches.

STR. K-52C, an altar shrine (Fig. 10.4), lies 4.3 m east of Str. K-52a. The original shrine was a single rectangular unit with a doorway to the west (Figs. 10.4; 10.6e). The walls rise from the floor (Fig. 10.4b) associated with the lower step in front of Str. K-52a. Masonry is relatively crude, large stones set on end and rising approximately 50 cm. Doorway jambs are of single large blocks. A second floor (Fig. 10.4a), 5 cm above the first, was seen inside the shrine; traces extended out the doorway and abutted the exterior west wall. A bench 15 cm high and 60 cm wide is built against the east interior wall and on Floor a. Excavations in the area of the bench (Lot A-64)



10.4. Excavations in Str. K-52c, Plan and Sections.

Lot A-64: Contents of pit in bench in north room: sherds. Lot A-65: Contents of fill between Floors [a] and [b], north room: sherds. Lot A-66: Contents of pit in bench in south room: sherds. Lot A-67: Contents of pit below Floor [b] in north room: stone Olmec face, 7 cm high by 6.5 cm across, stone not local, Cat. no. 53-170 (Fig. 10.9c); sherds. Lot A-68: Contents of tomb under north room: remains of an adult skeleton; fragment of pottery vessel; sherds. Lot A-69: Contents of pit below Floor [b] in south room: sherds. Lot A-72: Contents of trench between Strs. K-52a and K-52c from surface to bedrock: miniature tripod vessel (Fig. 10.9d); shell fragment; sherds. a, b. Plastered floor.

yielded 12 sherds, of which two were unidentifiable and the remainder all Mayapán period, include five of censers. Lot A-65, from the area between the two floors, contained 12 sherds: two were unidentifiable and the others, including two of censers, are all Mayapán period.

Lot A-67, from the area within the shrine but beneath Floor b, which completely sealed off the area above, and to a depth of 20 cm, yielded eight sherds: three were unidentifiable; the others, of Mayapán period, include one of a censer. In this lot was found a carved stone Olmec face (Figs. 10.4, Lot A-67; 10.9c).

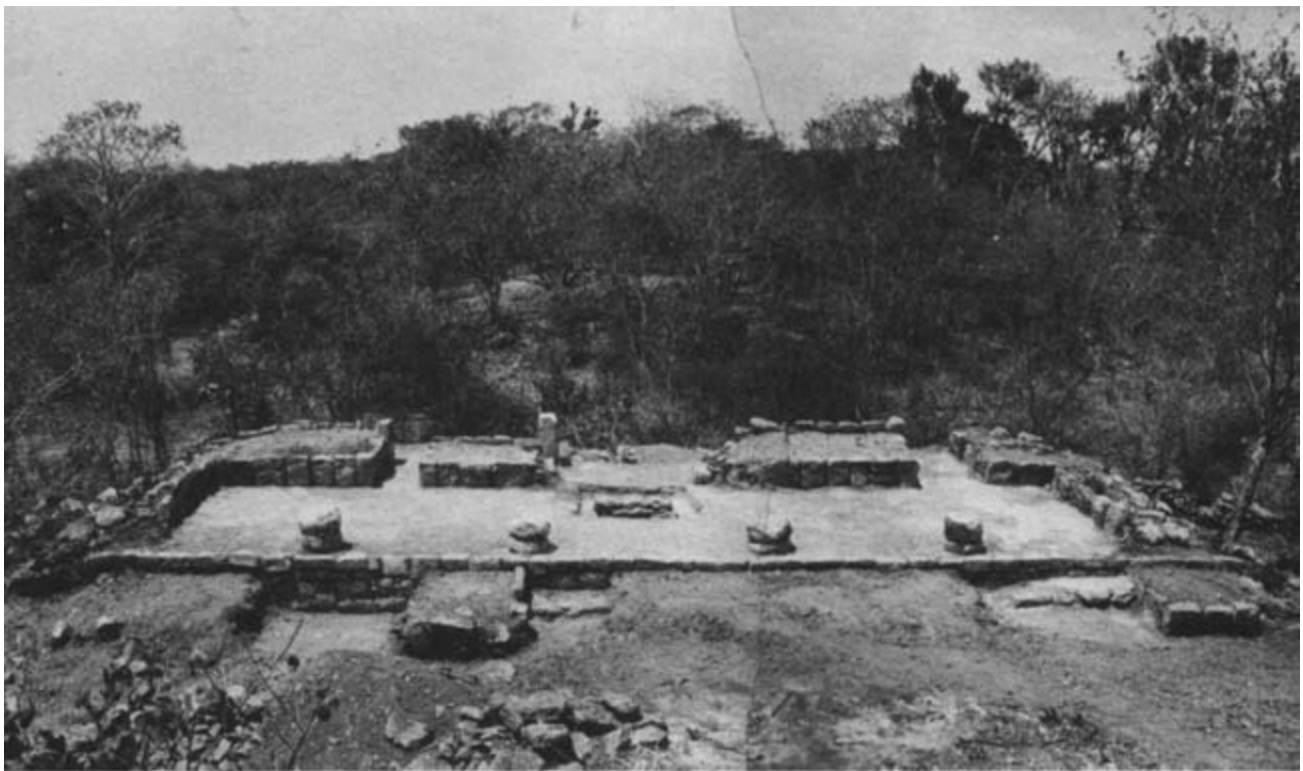
A burial vault beneath the north section of Str. K-52c was closed at the top by several large slabs, the under side of the slabs being an average of 30 cm below Floor b (Fig. 10.4b). The vault had a depth to bedrock of 75 cm and is irregular in shape. The side walls slope in toward the capstones whereas the end walls are relatively vertical. The walls are formed

in part by the limestone ledge and by rough dry masonry. The lower 35 cm of the vault were filled with earth in which were parts of a much disintegrated adult skeleton, fragments of a pottery bowl, and 14 sherds, all Mayapán period (Lot A-68).

A south addition to the altar shrine abuts the south end of the part just described (Figs. 10.4; 10.6f). The bench in the addition, 20 cm high and 70 cm wide, was built at the time of the construction of Floor a. Material in Lot A-66 from the bench includes one flint chip and 21 sherds, of which seven were unidentifiable and the others are all Mayapán period, including three of censers.

Excavations below the bench to bedrock, at a depth of 75 cm beneath Floor b (Fig. 10.4, Lot A-69), yielded 15 sherds: three unidentifiable, the remainder of Mayapán period.

In a trench between Strs. K-52a and K-52c bedrock was encountered at irregular depths, the average being 25 cm below Floor b (Fig. 10.4), with pock-



a



b



c

10.5. Str. Q-119a.

a. Looking west at front of structure. b. South-central bench, showing niche in south side (no. 7 in Fig. 10.1). c. Opening into subfloor chambers (Figs. 10.1; 10.6a–c).

ets as much as 55 cm deep. Material recovered (Lot A-72) includes one small tripod vessel, one shell fragment, and 90 sherds. All sherds except 33, which

were too weathered to be identified, are Mayapán period and include 15 of censers, one of Fine Orange and one Fine Gray.



a



b



c



d



e



f

10.6. Strs. Q-119a, K-52a, and K-52c.

a. Str. Q-119. Looking east at doorway between two subfloor chambers (Fig. 10.1). b. Str. Q-119a. Looking east up stairway leading to subfloor chamber (Fig. 10.1). c. Str. Q-119a. Looking at south end of inner subfloor chamber (Fig. 10.1). d. Str. K-52a. Looking east at step into shrine room, step later covered by Floor [a] (Fig. 10.3e). e. Str. K-52c. Looking east (Fig. 10.4). f. Str. K-52c. Looking northwest (Fig. 10.4).



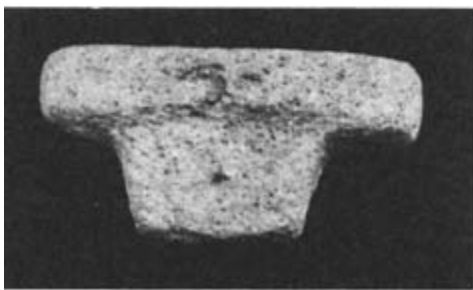
a



b



c



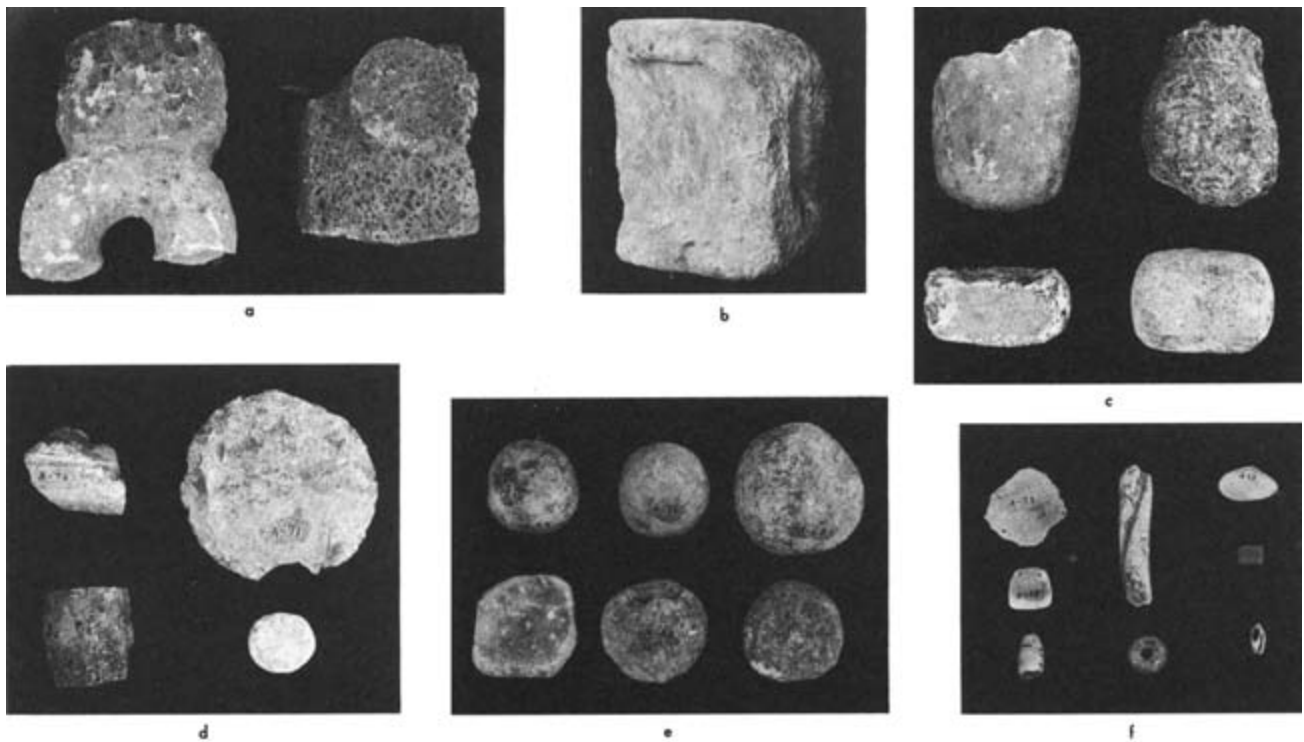
d



e

10.7. Group K-52.

a. Looking north at stairway on south side of platform supporting group. b. Looking south at lane leading to stairway on south side of platform supporting group. c. Str. K-52a. Neck of pottery vessel associated with Floor [b] in northeast corner of shrine room (Fig. 3, Lot A-58-1). d. Fragment of lava metate showing back leg 24 cm across, Cat. no. 53-235, Lot A-55 (Fig. 10.3). e. Left to right, worked conch shell, Lot A-83 (Fig. 10.3); whole conch shell, 13.5 cm long, Lot A-70 (Fig. 10.3).



10.8. Artifacts Recovered During Excavation in Group K-52 and During Mapping in Square X.

a. Left to right, fragment of stone ring with tenon, 18.5 cm long, Lot A-52 (Fig. 10.3); fragment of lava *metate* showing part of a leg, Cat. no. 53-179, Lot A-52 (Fig. 10.3). b. Metate fragment, 14 cm high, 30 cm long, 23.5 cm wide, with groove at one end, Cat. no. 53-236, Lot A, surface from Str. X-62. c. Top, left to right, fragment of *mano*, Cat. no. 53-178, Lot A-52 (Fig. 10.3); stone hand, Lot A-40. Bottom, left to right, rubbing stone, 10 cm long, Cat. no. 53-177, Lot A-52 (Fig. 10.3); rubbing stone or small *mano*, Cat. no. 53-185, Lot A-77 (Fig. 10.3). d. Top, left to right, flint with polished surface, Cat. no. 53-184, Lot A-78 (Fig. 10.3); stone pot lid, 14 cm diam., Cat. no. 53-174, Lot A-71 (Fig. 10.3). Bottom, left to right, flint with polished surface, Cat. no. 53-184, Lot A-76 (Fig. 10.3); small worked stone, 4 cm diam., Cat. no. 53-186, Lot A-77 (Fig. 10.3). e. Top, left to right, pouncing stone, Cat. no. 53-188, Lot A-82 (Fig. 10.3); pouncing stone, 6.5 cm diam., Cat. no. 53-183, Lot A-76 (Fig. 10.3); rubbing stone, Cat. no. 53-180, Lot A-62 (Fig. 10.3). Bottom, left to right, rubbing stone, Cat. no. 53-176, Lot A-52 (Fig. 10.3); pouncing stone, Cat. no. 53-189, Lot A-82 (Fig. 10.3); pouncing stone, Cat. no. 53-175, Lot A-71 (Fig. 10.3). f. Left row, top to bottom, perforated shell, Cat. no. 53-182, Lot A-73, trench in east side of platform supporting Group K-52; shell pendant 3 by 3 cm, Cat. no. 53-172, Lot A-58 (Fig. 10.3); carved tinkler shell, Cat. no. 53-181, Lot A-62 (Fig. 10.3). Center row, top to bottom, core of a conch (?) shell, 10.5 cm long, Lot A-70 (Fig. 10.3); bone spindle whorl, Cat. no. 53-171, A-54 (Fig. 10.3). Right row, top to bottom, shell, Lot A-77 (Fig. 10.3); small rectangular polished stone, 16 mm long, Cat. no. 53-173, Lot A-71 (Fig. 10.3); worked shell, Cat. no. 53-187, Lot A-81 (Fig. 10.3).

STR. K-52D lies in the northeast quadrant of the platform supporting the group. Now in poor preservation, as some of it has fallen down the east talus of the platform, it included two benches. The north bench is 5 m long and rises from a terrace 2.2 m wide on the west and 75 cm on the south. The south bench, 9 m long to its fallen south edge, rises from a terrace, 1.3 m wide on the west, which seems to be built against the terrace supporting the north bench. Both terraces rise 15 cm above the platform. The benches are 35 cm high; the passageway between them is 1.85 m wide.

A trench was made in the platform directly west of the terrace supporting the north bench. The trench

was 2 m square and had a depth of 1 m to bedrock. Its Lot A-57 consisted of three fragments of obsidian blades, one flint chip, one worked sherd from a red jar, and 60 sherds. Of the latter, four were unidentifiable and the rest are all Mayapán period, including nine of censers.

From a trench at the base of the east edge of the platform and in line with the passageway between the benches of Str. K-52d, Lot A-73 yielded one animal bone, one fragment of obsidian blade, one perforated shell (Cat. no. 53-182), one flint chip, and 265 sherds. Among the last, 159 were too weathered to be identified, the rest were Mayapán period, including one of Fine Orange and 33 of censers.



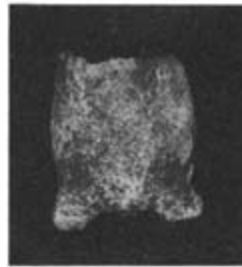
a



b



c



d



e



f



g

10.9. Objects Recovered During Excavations in Group K-52 and Str. R-100.

a. Pottery ladle incense burner, Lot A-54 (Fig. 10.3). b. Pedestal base, restricted-orifice vessel, Lot A-54 (Fig. 10.3). c. Greenish stone Olmec face, 7 cm high by 6.5 cm across, Cat. no. 53-170, Lot A-67 (Fig. 10.4). d. Miniature tripod vessel, Lot A-72 (Fig. 10.4). e. Pottery figurine of a woman, 12.2 cm high, Lot A-50 (Fig. 10.2). f. Human effigy jar, Lot A-54 (Fig. 10.3). g. Half of a tripod pottery vessel, Lot A-76 (Fig. 10.3).

THE X-COTON TEMPLES AT MAYAPÁN

EDWIN M. SHOOK

An examination in 1952 of the Mayapán map (Jones 1952) disclosed a major concentration of presumably nonresidential buildings within Square Q. We assumed the clustering of these structures to indicate the civic and religious center of the city. The remaining area inside the Great Wall and for some distance beyond was, with a few exceptions, occupied by residential structures. The fairly even distribution of house mounds was interrupted twice within the walled section: (1) by a group of ceremonial structures, in orderly arrangement around a small plaza, lying along the east side of Cenote Itzmal Ch'en in the northeastern sector of Mayapán; (2) by a second cluster, smaller than the first, situated just inside the Great Wall near Gate T and Cenote X-Coton at the southeastern extremity of the site. Preliminary reconnaissance included both groups, but excavations and intensive field studies have thus far been conducted only at the latter.

Investigations began at X-Coton because the two ceremonial structures there were clearly associated with two major entrances through the Great Wall and with the cenote (see map of Mayapán). One of the ceremonial structures, T-72, contained an open circular shaft in the center of the temple floor; the second, T-70, had twin temples supported by a common substructure with surface evidence of at least two balustraded stairways. Also, the discovery within the cenote of an artificially constructed platform, a partially buried stone stairway leading down to a funnel-shaped depression, and quantities of pottery scattered over the surface were further incentives for excavation. Accordingly R. E. Smith (1953) undertook the study of Cenote X-Coton, while I excavated Gate T, Blocked Gate T (Shook 1952a:12, 13), and the two ceremonial units described in this report. The work on the latter buildings has been summarized briefly in earlier reports (Shook 1952, 1953).

STR. T-72 (480 S, 1225 E)

Investigation of the southernmost unit, Str. T-72, was limited to surface examination of the substructure and temple, and to excavation of the shaft within the temple.

The structure faces slightly east of north, directly toward Cenote X-Coton about 40 m away. It consists of a terraced rectangular substructure, 3.4 m high, with a wide stairway on the north side, and a low-walled, single-room temple. The substructure and stairway are in such state of disrepair that little information could be learned from surface observation. It is not known if the stairway carried balustrades as do the majority at Mayapán associated with moderately high sub-structures. The terraces of Str. T-72, encasing a core fill of large uncut stones without mortar, have square corners and vertical walls built of typical Mayapán block-and-slab masonry. The facing stones are roughly shaped and, from the small sections now exposed, appear to have been laid without mortar. Had mortar and plaster been used at the time of construction, all traces have since weathered off.

The substructure rose in two, possibly three, terraces to the summit platform at the back of which stood the temple. This rear position afforded a moderately wide area for ceremonies at the top of the stairway directly in front of the temple. Both the summit platform and the temple room had been surfaced at least twice with lime concrete floors, the first being contemporary with the original structure, the second possibly representing minor repairs or remodeling. There was no plinth beneath the temple nor any abrupt change of floor level from the front of the platform to the chamber.

The building, rectangular in plan, has relatively thin masonry walls (40–50 cm thick) standing at present to a maximum height of 30 cm. The debris on the summit platform and within the room varies from 10 to 20 cm in depth; therefore, the masonry walls when built probably stood no more than 50 cm high. Above this stone base the walls may have been of upright wooden poles set close together and supporting a thatch roof. The base stone of the east jamb of the doorway remains in position, permitting the location of the missing west jamb to be estimated quite accurately. The resulting span is too wide for continuous lintels, and such widths at Mayapán normally call for two doorway columns. These in Str. T-72 were evidently Wooden posts because no stone column shafts or drums were found on the summit platform or in the debris below. We therefore visualize the superstructure as a single-room temple with a triple doorway, built of perishable materials except for the low base walls of masonry.

In the center of the temple chamber we encountered an open circular shaft about 1 m deep with a low mound of debris surrounding the orifice. It was quite obvious from the freshness of the debris and the sides of the shaft that the latter had been opened within the past decade. The looters thoroughly mixed the upper contents of the shaft but failed to reach bottom. We searched their back-dirt and excavated the remainder of the shaft prior to refilling it to the level of the temple floor (Fig. 11.2a).

We were able to determine that the shaft was artificial and had been built in ancient times. Its roughly circular wall was constructed of uncut limestone rocks laid without mortar. Incorporated in this irregular lining was a single well-cut and dressed stone. This one, obviously re-used, and several similarly well-cut and dressed wall and vault stones in the surface debris of Str. T-72, are of the type commonly used in vaulted buildings of Puuc-style architecture.

The contents of the shaft and the debris thrown out by the previous excavators (Lot C-2) consisted of dry earth heavily mixed with ashes and charred bones of cremated adults, children, and animals. Mixed with these were fragments of pottery vessels and effigy censers, flint chips, and obsidian flake-blades. Practically all (97.1 percent) of the pottery belongs to the Mayapán period, one-fifth consisting of human arms, hands, legs, feet, and bowl fragments from effigy censers. Many of these bear white, yellow, orange, red, and blue paint and are typical of human-effigy censers found in the latest occupational debris at Mayapán.

It is evident that Str. T-72 served as a temple where ceremonies took place involving the cremation of humans and animals, and much burning of incense in effigy containers. Ashes and charred bones were deposited with broken pottery censers and vessels in a repository constructed for the purpose within the temple room. The repository, or shaft, may have had a removable stone cover to allow the residue from these ceremonies to be added from time to time.

STR. T-70 (465 S, 1255 E)

This structure is located near Gate T in the Great Wall and just southeast of Cenote X-Coton. Prior to our investigations, the mound bore little evidence of having been disturbed since the abandonment of Mayapán. What destruction had occurred appeared to have been caused principally by natural agencies. Some minor damage may be attributed to the clearing and burning of the forest for planting corn and to stone robbing for the fencing of the cornfields. The area immediately surrounding Str. T-70 was

planted in corn when we began excavations in 1952. A thin mantle of soil and fallen debris partially covered the mound, leaving exposed enough features to permit Jones (1952, map) to draw a reliable plan of two small buildings supported by a single platform. He correctly noted two stairways, one for each temple. The presence of twin temples and stairways on a common substructure aroused our interest because it represented the only structure of that type depicted on the Mayapán map.

Excavations in 1952 were limited to clearing the surface debris from each temple interior, and clearing the frontal terraces, stairways, substructure, and a series of altars at the base of the south temple (Shook 1952:248, 249). During the 1953 field season narrow east-west trenches were cut through each unit from the stairway to the rear wall of the building.

The south temple proved to have stood alone in its earliest stages and to have undergone several renovations prior to the addition of its twin. The earliest construction encountered in the trench through the stairway and frontal terrace was identified by a lime concrete floor, its western edge cut away by the builders of a later addition (Fig. 11.2c,1). The thin lime floor continued east beneath the unexcavated portion of the temple. The floor overlay a grouting of crushed stone, which served also to level the substructure fill. The lowest fill rested on limestone bedrock or on sterile red earth (*kancab*) where depressions occur in the natural rock (Fig. 11.2c). There was no evidence in either of the two main trenches of a plaza floor associated with this primary unit. That it was erected during the major occupation of Mayapán could be ascertained by the presence of sherds in the substructure fill belonging to wares typical of the Mayapán period.

The second addition to Str. T-70 was a major renovation. The earlier unit was partially destroyed and the remainder buried by a dry rock fill spread over the primary floor and retained by a vertical wall of large stones (Fig. 11.2c). This formed a solid core, capped by a thin layer of lime grouting, over and around which was erected the substructure for a new temple. The substructure, rectangular in plan with vertical retaining walls, had a stairway on the west side (Figs. 11.1a; 11.2c,2). Five steps led to a wide frontal terrace 1m. above the general ground level. Toward the rear of the terrace two steps, first a low then a high one, gave access to a level platform on which the temple stood. Our narrow exploratory trench exposed only a central strip of the platform floor and a short section of the rear wall of the temple with a masonry altar against it. Therefore, the plan in Figure 11.1a is hypothetical except for the parts drawn in solid line. The unusual form of the

masonry altar was clearly marked by the turn-up of the temple floor and the position of two large stones tilted against the rear wall (see section, Fig. 11.2c,2). The upper part of the altar had been removed in ancient times, presumably to make way for an addition. This was true, also, of a circular altar or column erected on the broad frontal terrace directly on the axis of the temple. One minor renovation occurred while this unit functioned. A lime floor resurfaced the frontal terrace and temple interior.

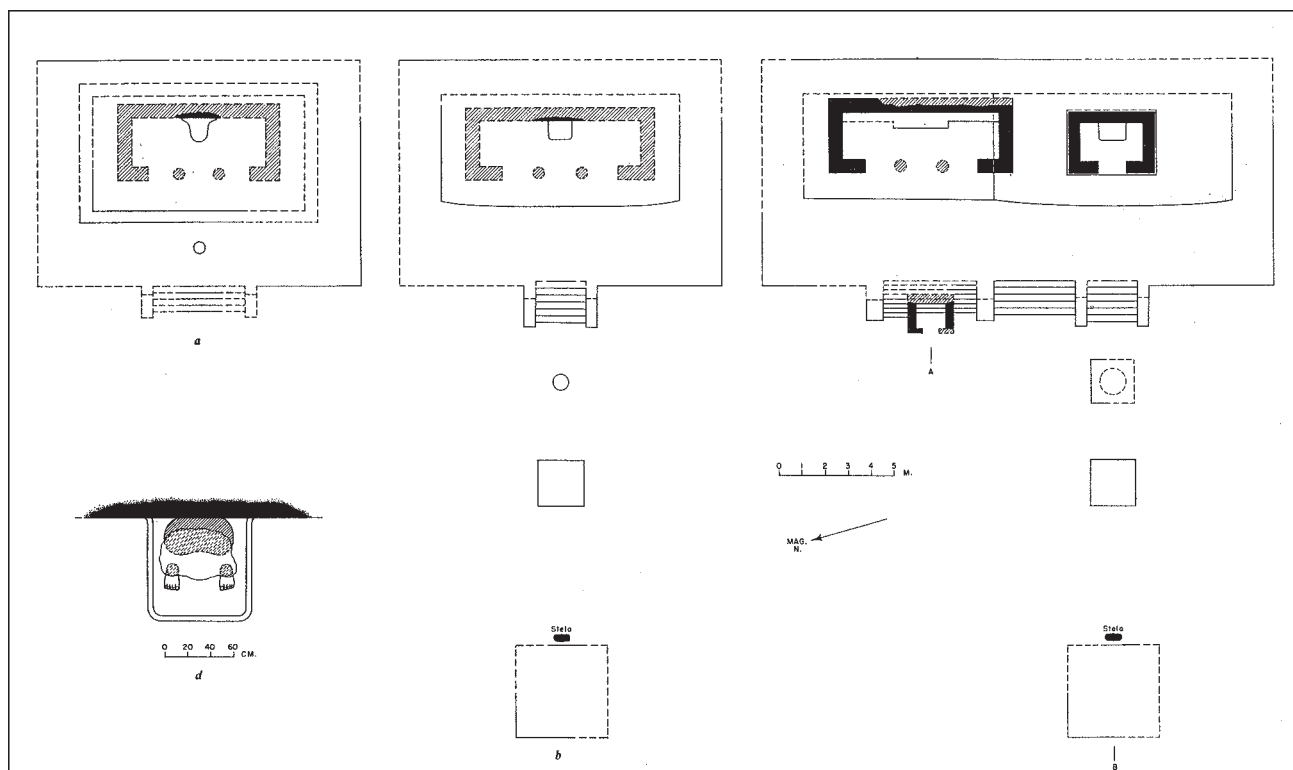
The third major building activity witnessed the removal of the older temple and its altars, the raising of the same substructure another 50 cm in height, and the addition of a new balustraded stairway on the west side. A new temple (restored plan, Fig. 11.1b) like the earlier one was built on a rectangular platform—one step high (Fig. 11.2c,3). Again, we found the floor turning up to what apparently had been a rectangular masonry altar against the back wall of the temple.

Contemporaneously with this third stage were built three altars or ceremonial platforms on the plaza level in front of the stairway and aligned on the axis of the temple (Figs. 11.1b; 11.2c,3). A plaza floor, the earliest we encountered associated with Str. T-70, extended west from the stairway as far as the second altar, and probably had originally continued beyond the third one. The plaza floor did not run under any of the three altars. The altar nearest the stairway was circular and made of a single moderately well cut stone surfaced with a thick coating of lime plaster, to which traces of blue-green paint still adhered. The second and third altars are square platforms faced with large roughly trimmed stones set on edge and retaining dry rock fill. The top levels on either platform are no longer preserved, though undoubtedly they bore a plastered surface.

A plain stela stands at the east edge of the largest platform (Fig. 11.2c). Its base rests on the rim of a deep natural pocket in the limestone bedrock, and the monument is firmly held upright by tightly packed stones around the base of the shaft. Despite the undisturbed position and the natural hole below, there was no evidence of a substela cache.

Unassociated with the stela and perhaps the altars was a cache below the primary plaza floor between the circular and middle altar (Fig. 11.2c,4). The cache contained a single pottery vessel of unslipped, light gray ware. It is the same type and form illustrated last year (Shook 1952a, Fig. 18.5), and frequently occurs in caches at Mayapán.

The fourth major renovation of Str. T-70 changed it from a single temple to twin temples supported by a common substructure (Figs. 11.1c; 11.3a–e). The older single temple with its altar was torn-down,



11.1. Str. T-70.

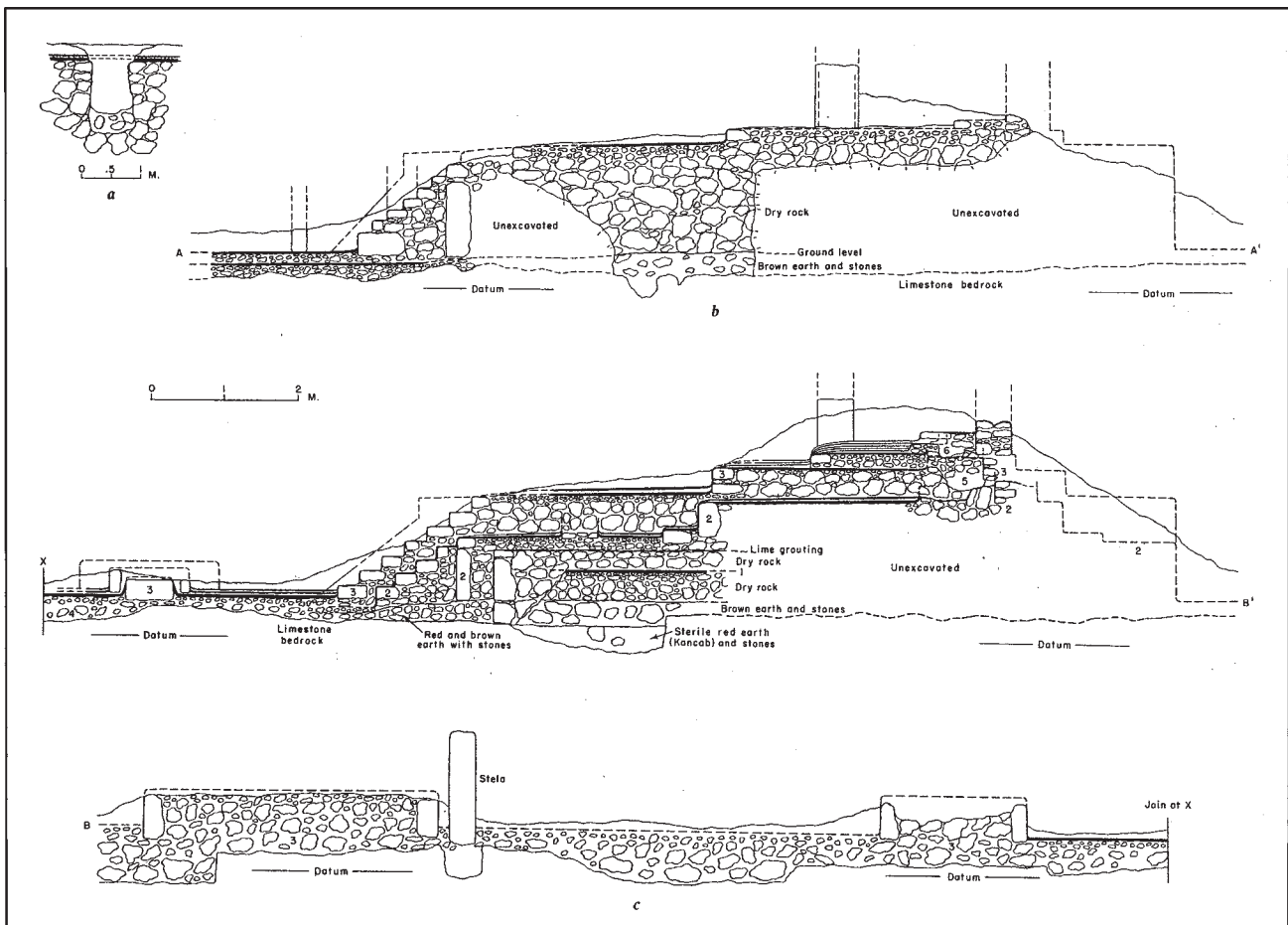
a. Restored plan showing second major rebuilding of temple during its existence as a single unit. b. Restored plan of third major stage. c. Plan of final stage showing twin temples supported by a common substructure. d. Plan of altar in south temple on which sat a human figure modeled in stucco. Irregular outline in center indicates the area removed in ancient times to receive cache (Figs. 11.2c,6; 11.3s) prior to erection of plain altar shown in Figs. 11.1c and 11.3a.

and a cache of two pottery vessels and several jade beads (Fig. 11.3k-m, r) were placed where the altar had been. Over the cache (Fig. 11.2c,5) another rectangular masonry altar was built against the rear wall of a new and smaller single-room temple. The substructure of the earlier temples was extended northward sufficiently to accommodate a second temple with its separate balustraded stairway.

The balustrades of the two stairways were similarly constructed. Large, full width, roughly trimmed blocks (Fig. 11.3a-c) formed the basal portion of each balustrade. Above these base stones the sloping faces of the balustrades were not preserved, though the lack of large blocks in the debris nearby make it evident that the upper portion of each balustrade had been finished with masonry of smaller uncut stones. Between the north and south stairways other steps were added. These six steps, though they appear superfluous, are constructed in the same manner and are as functional as those of the main stairways. Whether they were built at the same time or later than the north stairway was not determined.

The two temples share many features. Each has a single room with low, relatively thin masonry walls built of roughly shaped, undressed blocks and slabs bedded in weak mortar. This, when applied, was principally mud with varying amounts of lime or lime gravel. Scattered among the roughly trimmed stones were others easily recognized by their surface finish. These were well-cut, faced, and carefully dressed wall, vault, plain, and decorated molding stones from vaulted buildings belonging to the Puuc style of architecture. In Str. T-70, these stones quite obviously had been re-used. Often they were laid upside down or lengthwise, thus burying the smoothed faces in the wall masonry. We encountered none of these well-cut stones in the construction of the earlier units of Str. T-70. The few observed were all in the walls or surface debris of the latest buildings.

Among the differences between the two temples we note first the roofing. It is certain from the existing heights of the walls and the shallowness of debris covering their floors that neither temple had been



11.2. Strs. T-70 and T-72, Sections.

a. Section of shaft in center of temple floor, Str. T-72. b. Section A-A' of north temple, Str. T-70. c. Section B-B1 of south temple, Str. T-70. 1. Floor of earliest construction below south temple. 2. Second major renovation (Fig. 11.1a). 3. Third major stage (Fig. 11.1b). 4. Position of cache vessel of Unslipped Light Gray Ware. 5. Position of cache containing 1 fragmentary Fine Orange tripod vessel (not illustrated), Red Ware vessel (Fig. 11.3r), and jade beads (Fig. 11.3k-m). 6. Position of cache containing Mayapán Red Ware bowl (Fig. 11.3s), 2 jade beads and fragment of ornament, 1 stone and 2 shell beads.

vaulted. The north unit, the larger of the two, had so little debris that it evidently had pole walls above the low masonry ones. For the same reason a roof of thatch on a pole frame doubtless covered the temple. Next, the breadth between doorway jambs necessitated two equally spaced columns. These may have been wooden posts though columns built of stone drums are a possibility. There were seven stone drums scattered on the temple floor, front terrace, and in surface debris off the north edge of the substructure. Two of the seven were crudely trimmed drums of the type normally employed in columns of the Mayapán period. The remaining five drums were well-cut and dressed. Three are plain drums 39 cm. diameter and 22 cm high; another of the same

size has a shallow depression in the top and the fifth has an 8 cm wide collar or flange at one end. These, and particularly the latter two, are more suggestive of altars than column drums. All five may represent re-used stone elements from buildings earlier than the Mayapán period.

The smaller south temple has masonry walls now standing to an average of 60 cm and fallen debris of about the same height. The debris covering the room floor consisted of 10–20 cm of lime and gravel at the bottom and large stones above. These conditions suggest that the building had masonry walls to a height of approximately 2 m supporting a flat beam-and-mortar roof. The temple, as previously mentioned, in its earliest stage had a rectan-



a



b



c



d



e



f



g



n



o



h

i

j



k

l

m



p



q



r

s



t

11.3. Str. T-70 and Artifacts.

a. Balustraded stairway of south temple, looking east. b. Same, looking northeast. c. Stairway of north temple and miniature shrine secondarily built on plaza floor and lower steps, looking southeast. Note large stone forming base of south balustrade. d. View of south temple from northwest. e. Interior of south temple, showing last masonry altar constructed in this room. f. Jade pendant, mottled grayish green stone carved in style suggesting Maya Late Classic. Possibly an heirloom. Three conical perforations through earplugs and chin, one biconical perforation through top of head from side to side. Max. ht. 4.5 cm. Lot C-3. g. Jade pendant, polished bright green. Lateral, biconical perforation near upper edge. Max. length 2.5 cm. Lot C-3. h. Tubular jade bead, triangular in section, medium polish, opaque light green. Length of fragment 2 cm. Lot C-3. i. Tubular jade bead, low polish, dark green stone with white mottling. Length 1.7 cm. Lot C-3. j. Spherical jade bead, low polish, light green. Biconically perforated. Lot C-3. k. Jade bead, high polish, blue-green. Length 2.7 cm. Lot C-4. l. Jade bead polished, light gray-green. Lot C-4. m. Jade bead, polished, light green, mottled. Lot C-4. n. Tubular shell bead. Length 1.6 cm. Lot C-3. o. Highly polished, grayish brown pebble, possibly a charm stone. Width 1.8 cm, thickness 0.5 cm. Lot C-3. p. Obsidian arrowhead of clear, transparent to slightly cloudy black obsidian. Edges finely chipped; excellent workmanship. Length 3 cm. Lot C-3. q. Greenstone celt of dark green diopside jadeite (?). Well-polished faces, sharp cutting edge, Length 4.7 cm. Lot C-3. r,s. Mayapán Red Ware vessels from caches below altars in south temple. The larger, (r), with fragmentary Fine Orange tripod vessel and the jades, (k-m), had been deposited in an earlier construction (Fig. 11.2c,5) than the cache containing the small bowl, (s) (Fig. 11.2c,6), Greatest diam. of (r), 11 cm. Lot C-4. t. Miniature vessel of Unslipped, coarse paste, light gray pottery found on plaza floor just north of south stairway. Max. diam. 5.5 cm. Lot C-3.

gular masonry altar or raised platform 60 cm wide, projecting 65 cm from the center of the back wall. The altar sealed a cache of jades and pottery vessels (Figs. 11.2c, 5; 11.3k-m, r). Thereafter, the temple underwent at least five alterations, each marked by the addition of a new lime concrete floor. Several of these changes included renovation of the altar (Fig. 11.2c). The earliest was ripped away and a low rectangular platform built in the same position to support a seated human idol modeled in stucco (Fig. 11.1d). The front half of each sandaled foot, and the plaster turning up to the rump of the figure were the only remaining evidence of the statue. It had been torn out to place there another cache (Fig. 11.2c,6) of jade and shell beads and a small Mayapán Red ware bowl (Fig. 11.3s) prior to building the final, rectangular masonry altar (Figs. 11.1c; 11.3e). The primary floor and each of the five succeeding ones, normally white, were severely burned to grayish black on and around the altars, in the temple doorway, and on the front terrace. Many fragments of pottery incense burners lay on the top floor of both the north and south temples and their front terrace, but the heaviest concentration of effigy censers littered the stairways and plaza floor along the west base of the substructure. Evidence of burning, however, was observed only in and around the south temple.

Further additions to Str. T-70 appear to have been minor. A miniature shrine was built at the foot of the north stairway, resting partly on the plaza floor and overlapping the lower steps (Figs. 11.1c; 11.2b). Quantities of broken effigy censers covered the floor on the interior and exterior of the shrine. At the base of the south stairway, only the circular altar underwent changes. The first remodeling consisted of a circle of stones with plaster on the exterior

around the original altar, enlarging its diameter to 1.1m. Two successive plaza floors joined this circular altar (Fig. 11.2c). Subsequently the altar was buried by a square masonry platform, about 2 m on a side, which resembled the other small platforms (Fig. 11.1c).

MATERIAL CULTURE

LOT C-2. Contents of ossuary in Str. T-72 (Fig. 11.2a): charred and fragmentary human and animal bones; 1 obsidian flake-blade and 1 chip; 17 flint chips; sherds.

Total sherds: 1,264: 710 vessel body fragments (140 Red ware, 570 Unslipped) too small or weathered for classification; 554 (153 rims, 401 body sherds) are 97.1 percent Mayapán period; Unslipped jars, 19.3; Effigy censers, 19.8; Ladle-Type censers, 4.8; Uncertain Forms, 11.9; Slipped Red ware, 41.3), 2.9 percent Puuc period, all noticeably more weathered than Mayapán period pottery.

LOT C-3. Collection from surface of Str. T-70: 18 flint chips; 11 obsidian flake-blades; 1 obsidian arrowhead, Cat. no. 52-76 (Fig. 11.3p); 1 polished pebble charm (?), Cat. no. 52-79 (Fig. 11.3o); 1 greenstone celt, Cat. no. 52-79 (Fig. 11.3s); 5 jade beads and pendants, Cat. no. 52-77 (Fig. 11.3f-j); 2 shell beads, Cat. no. 52-78 (one illustrated, Fig. 11.3n); fragments of painted stucco ornaments; 1 complete miniature vessel, Cat. no. 52-80 (Fig. 11.3t); sherds.

Total sherds: 4,901; 3,536 too weathered for classification; 1,365 (253 rims) are 87.2 percent Mayapán period (Unslipped vessels, 20.6; Effigy censers, 52.4; Slipped Red ware, 13.8; Fine Orange, 0.4), 6.4 percent Puuc period, 6.4 percent Miscellaneous and

Unidentified slipped wares. Among the last were a single polychrome sherd from a basal-flange bowl resembling Early Classic Peten types and one early post-Classic Tohil Plumbate body sherd. The latter, from surface debris in the north temple (possibly fallen from the wall masonry), is one of two Plumbate sherds found to date among some 100,000 sherds excavated at Mayapán.

LOT C-4. Contents from sealed fill of south temple: 1 small sculpture of chalky limestone, possibly profile head of a fish, Cat. no. 53-203; 1 dark brown stone bead, Cat. no. 53-198; 5 jade beads, Cat. nos. 53-199, -196, -195 (Fig. 11.3k-m), and -197, -200; fragment of light green, highly polished jade ornament, Cat. no. 53-194; 2 shell beads, Cat. nos. 53-201, -202; 2 Red ware vessels (Fig. 11.3r,s); sherds.

Total sherds: 319; 75 percent Mayapán period (Unslipped jars, 13.7; Noneffigy censers 2.2; Miscellaneous and unidentified 6.2; Red ware 39.2; Black-on-Cream or Coarse Paste Slate 5.6); 25 percent Puuc period.

LOT C-4A. Contents from trench through substructure fill of north temple (as practically no floor remained, surface material filtered down through the loose rock fill): 3 obsidian flake-blades; 1 fragment of stone turtle, Cat. no. 53-204; sherds.

Total sherds: 355; 20.5 percent Puuc period; 79.5 percent Mayapán period (Unslipped jars, 10.4; Effigy censers, 32.4; Unidentified, 6.0; Red ware, 28.2; Black-on-Cream or Coarse Paste Slate, 2.5). High percentage of effigy censers is believed due principally to the accumulation of such material on terrace and stairway and filtration into loose substructure fill when floors disintegrated.

DISCUSSION

The presence of a water supply in Cenote X-Coton may be considered the prime factor in the development of human activities in this locality. That they began at least as far back as the Early Classic period was demonstrated by the finding of certain dichrome and polychrome pottery types in the cenote (R. E. Smith 1953:73) and a similar sherd in Str. T-70. Ceramic evidence also indicated heavy occupation of the area and use of the cenote in Late Classic times. Also, it is virtually certain that nearby there were contemporary, decorated, vaulted buildings in the Puuc style of architecture. Had we found only the specialized wall, vault, and cornice stones of such buildings re-used in the X-Coton temples, one might reason that the builders of the late structures transported these stones from some distant

source. However, the presence of Late Classic pottery from trace to appreciable amounts around and below Gate T, from Blocked Gate T, Strs. T-70 and T-72, and the cenote favors the theory that contemporary structures existed in the immediate vicinity of Cenote X-Coton.

Singularly lacking here is recognizable ceramic or architectural evidence of the early post-Classic or Toltec period in Yucatán. The one Tohil Plumbate sherd from the debris in the north temple of Str. T-70 represents the only identified material of that period. Perhaps during the Toltec period there was a hiatus in the occupation of the Mayapán region other than for casual farming operations. It may be that during this span of time the relatively numerous Puuc buildings, presumably abandoned, began to disintegrate, and the founders of Protohistoric Mayapán encountered these buildings already in ruins.

Our investigations disclosed that the major activities around Cenote X-Coton took place during the Mayapán period. An artificially constructed platform and a stone stairway leading to the water hole were built within the cenote. Outside, on its southern periphery, were erected Strs. T-70 and T-72. These temples and cenote formed part of the confines of the walled city of Mayapán and their importance is suggested by the placement close-by of two major entrances, Gate T and Blocked Gate T, through the Great Wall.

Str. T-72, unexcavated but for the remains of a shaft on its summit, proved to be a single-room building with a triple doorway atop a relatively high substructure. It served in this final form as a temple in which the cremated remains of adults, children, and animals were interred in a centrally placed depository. It seems probable these individuals and the animals had been sacrificed during religious rites held at this temple.

Str. T-70 in its early stages was a single building on a low platform. Repeated alterations to this unit were evident, until at one stage the substructure was extended northward and two temples erected upon it. We can only wonder if the Mayapán architects were attempting to imitate a style of architecture, two temples on a common substructure, in vogue at approximately the same time in the far-off Mexican and Guatemalan highlands. They did produce a structure which, to our knowledge, is unique in Mayapán and the northern peninsula of Yucatán. The placement of offerings (pottery vessels, stone and shell ornaments), the evidence of much burning, and the frequent renovations suggest that the south temple of Str. T-70 may have been a more sacred shrine than the north one. Both, however, served as important temples, particularly after their

last remodeling, for ceremonies involving the use of large effigy incense burners. Fragments of these littered the floors, terrace, and especially the front base of the platform. It would seem that the Maya in their final days in Mayapán, as indicated here and in the central area of the site, were constantly attempting

to appease their gods with the burning of copal and the sacrifice of humans, animals, and birds.

Strs. T-70 and -72 at X-Coton may have been the first and last stations to show devotions to the gods as the Maya entered or left this sector of the city through Gate T in the Great Wall.

CENOTE EXPLORATION AT MAYAPÁN AND TELCHAQUILLO

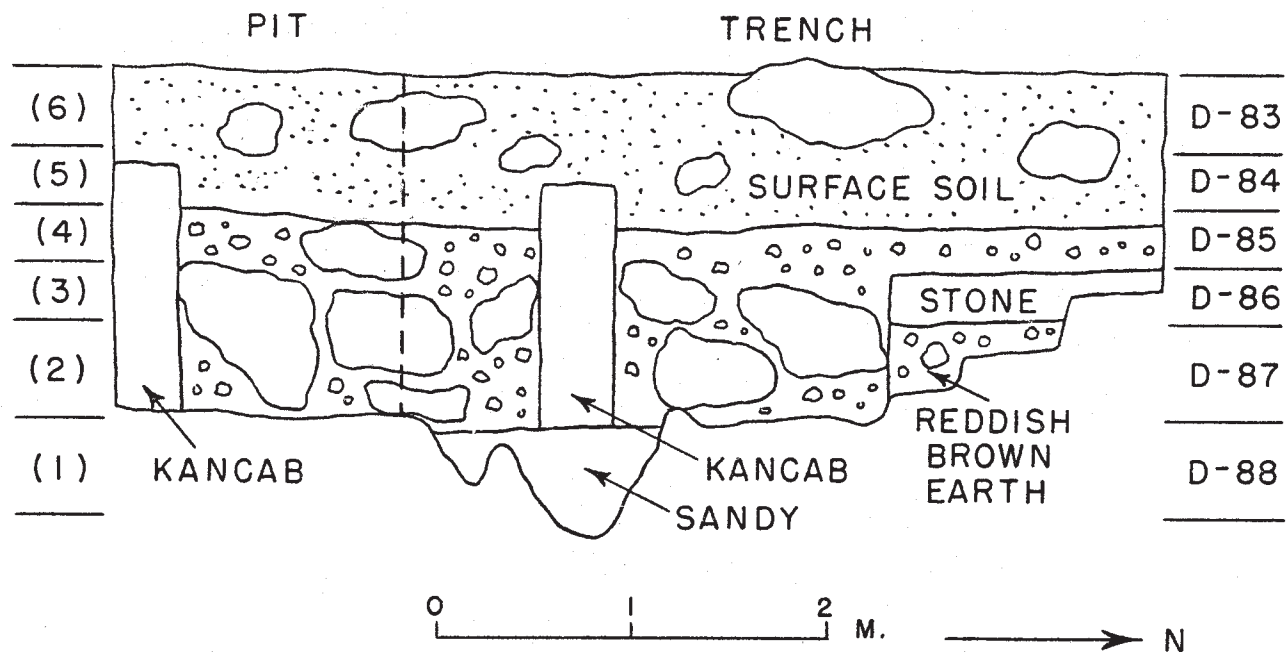
ROBERT E. SMITH

In Europe prehistoric archaeology has largely been established on the results of exploration in caves. More recently archaeological data have been obtained from cave investigation in the United States. As might be expected, therefore, the cenotes of Yucatán have yielded remunerative finds of the same nature.

In a land lacking rivers and lakes, cenotes served the ancient Maya of Yucatán both as important sources of water and as sacred places where man could propitiate the gods. Because dwelling centers as well as religious groups often developed around these deep natural wells, an excavator might expect to find in them layers of both utilitarian and ceremonial refuse. Plenty of artifacts have, indeed, been encountered in the few cenotes so far dug, although rarely in undisturbed human rubbish layers. The dredging of the Sacred Cenote at Chichén Itzá produced a considerable collection of unstratified ceremonial objects. The excavation of

Cenote X-Coton (Smith 1953) at Mayapán uncovered ceremonial and utilitarian pottery and other artifacts associated with artificial constructions resting on a leveled fill of dirt laid down during the Mayapán period. Although stratigraphy was well marked in the successive fill levelings in this part of the cenote, a clear-cut chronological sequence was lacking because the fill was composed of refuse debris. The town cenote at Mani, however, yielded a sequence ranging from pre-Classic to postconquest deposits (Brainerd 1942:255), indicating that extensive chronological deposition may be found in cenotes.

During the 1953 season two cenotes were investigated: Ch'en Mu1 at Mayapán, and one in the nearby village of Telchaquillo. Further research was also done at Cenote X-Coton. Our knowledge of cenotes was thereby increased by the finding in both Ch'en Mu1 and X-Coton of early *kancab* deposits that had been mined by the ancient Maya.



12.1. Section of Pit-Trench in Cenote X-Coton.

The strata (6-2) in the original exploratory pit which occupied 1.5 m at the south end of this trench have lot numbers D-78 to D-82, respectively.

Kancab (*kankab* or *chac kancab*) is red earth. It is used today, and presumably was used in preconquest times, as a slip for pottery and, with *sascab* (marl) and grass, in the construction of native house walls. Redfield and Villa (1934:35) mention that it is mostly found where ants live. They suggest that ant hills may be employed for these purposes. A very deep deposit of red earth on Actun Spukil, disturbed by the ancient Maya possibly for use on pottery or house walls, is recorded by Hatt (1953:23). *Kancab* thus furnishes another reason for man's use of cenotes.

CENOTE CH'EN MUL

The first two months of the 1953 season were spent investigating Cenote Ch'en Mul, just east of Str. Q-162, the Castillo, at Mayapán (Jones 1952, map). This cenote was selected because of its important location in the main ceremonial group, its large size, the number of its water holes, and the abundance of visible potsherds as well as the considerable depth of debris unearthed in two test trenches dug some years ago by Brainerd (1942:254-255).

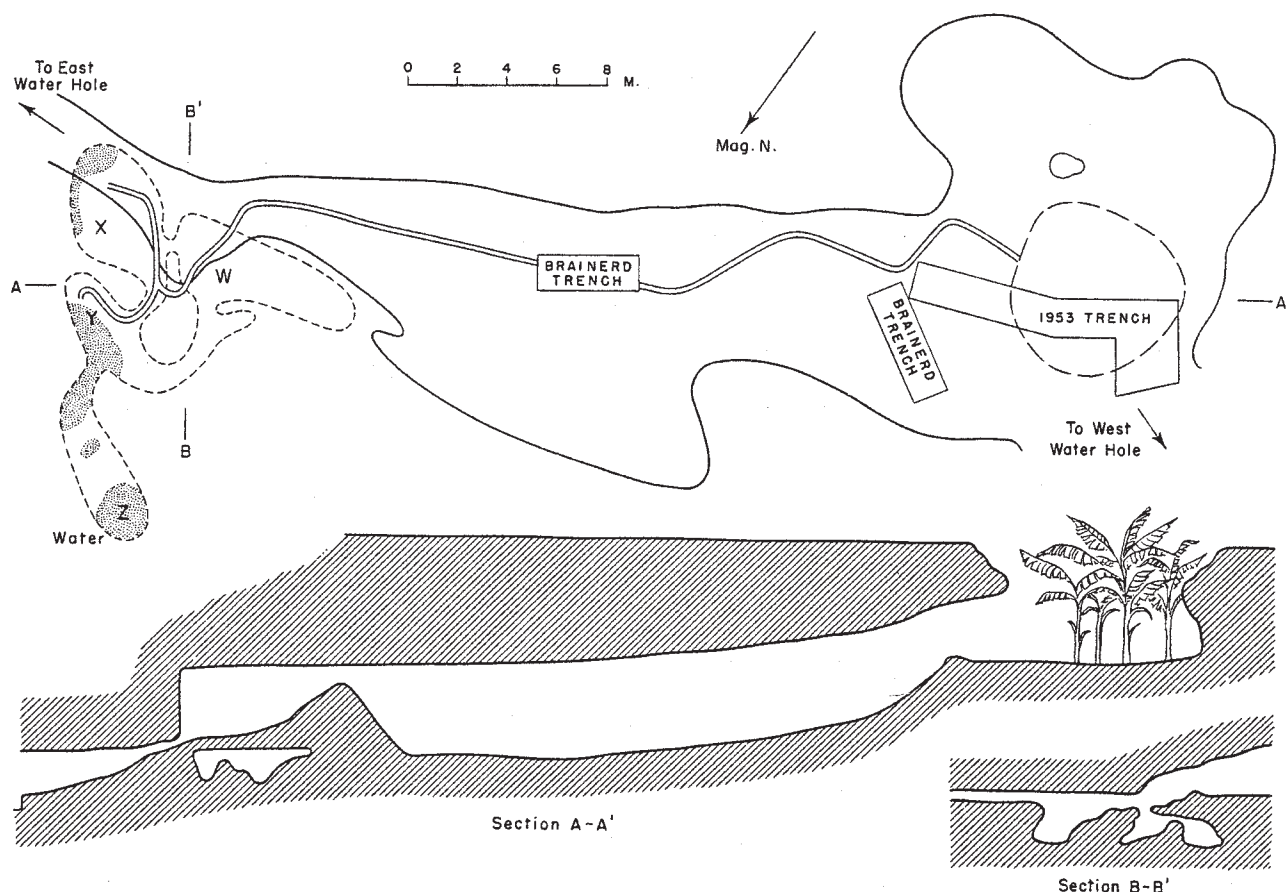
Ch'en Mul is a jug-shaped cenote with low cave-like extensions (Fig. 12.2; east and west extensions not shown on plan). A few banana trees grow on the floor in soil washed in through the rather large circular opening. The mouth is near the southern end of the cavern, which is roofed by natural rock

extending north and northeast for more than 60 m and possibly as far to the west, a low roofed area hard to penetrate.

Three main water holes were located by following paths strewn with pottery. The largest, Z (Fig. 12.2), about 4 m in diameter and most accessible, is approximately 40 m north and slightly east of the mouth. The other two, reached by some of the smallest laborers, are in the extreme east and west sections of the cenote that are difficult to crawl to.

Before work began, a number of depressions (Fig. 12.2, W,X,Y) flanking the path to the north waterhole (z) were observed to be bristling with potsherds. During the period of high water these small pools probably served the people until recession of the water made available the deeper water hole.

The depressions were systematically cleaned. W, 50 cm deep, was divided into three strata. The two lower strata averaged 20 cm each; the upper stratum, 10 cm. Nearly 4,000 sherds, fairly evenly distributed but somewhat more numerous in the lowest stratum, came from this cut. The material is preponderantly late, save for a few Puuc period sherds at top and bottom. Perhaps of most significance is the rarity of effigy censers in all strata (0.7 percent) and the concentration of Black-on-Cream ware (Brainerd's Coarse Slate) in the lowest (1.6 percent) and middle (2.9 percent) strata with only 0.3 percent in the upper. X, about 45 cm deep, was divided into a top



12.2.

Plan and Sections of Cenote Ch'en Mul.

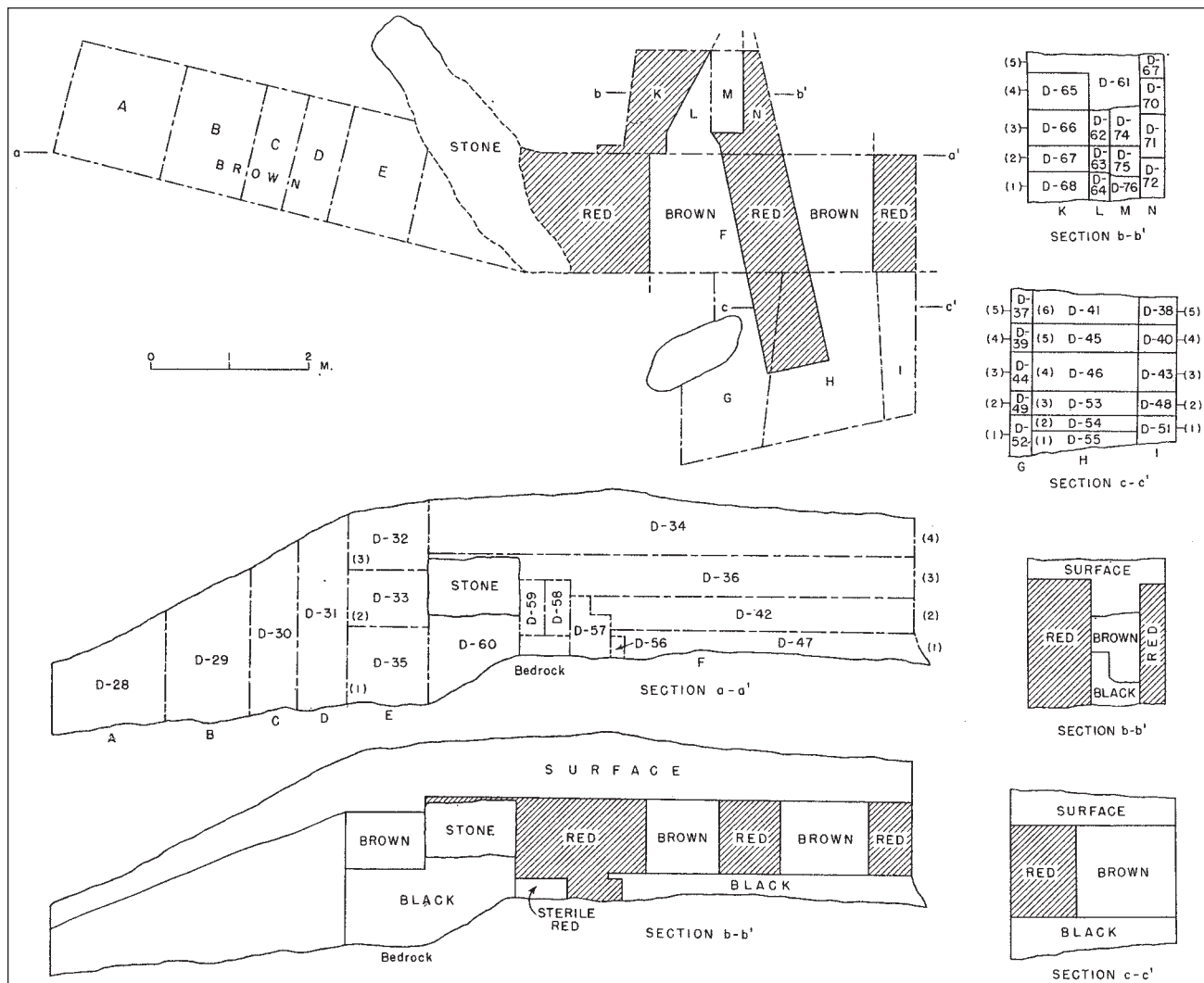
level of 15 cm and a bottom level of 30 cm, most of the latter in mud and water. Over 3,000 sherds were taken from X, the bulk (84.3 percent) coming from the lower level. Again, the Black-on-Cream ware was most abundant in the lower level with 4.4 percent as against 1.2 percent in the upper. A few effigy censer fragments were removed from the lower stratum, none from the upper, an unusual reversal in order. A few Puuc and a much larger collection of probably Classic-type sherds occurred in the lower level, none in the upper. Y, 10–20 cm deep, was cleaned out as a single lot. Noteworthy here was the fact that black-on-cream ware was more abundant than usual (10.3 percent).

Work on the mound of earth and debris below the mouth of the cenote was started by cutting a 1.5 m wide trench through the center from north to south, beginning at the south side of Brainerd's southernmost cut (Figs. 12.2, 12.3). This trench was divided into six parts (A–F), of which only two (E and F) were sectioned. The pottery from Parts A–D, amounting to approximately 1,800 sherds, was not examined stratigraphically in order to save

time in reaching the deeper section of the mound. Furthermore, the sloping, north end, from which these sherds came, was judged to be partially disturbed when Brainerd's trench was dug, some of the bottom debris from his cut perhaps being left on top of the new trench location.

Parts E and F were excavated stratigraphically, the former being divided into three levels, the latter into four. E contained no red earth, or *kancab*. Its lowest stratum was composed of black earth and few rocks, the middle of brown earth and numerous medium and large rocks, and the topsoil of humus and small stones plus a few large rocks. F, the largest part of the trench, exhibited sizable areas of red earth, apparently extending from just below the surface soil (Fig. 12.3, plan) to the natural rock base. Besides the red earth, F contained sections of black below brown earth similar in profile to E. The stratigraphic ceramic sequences of E and F remained the same even though the red earth material in F was inadvertently lumped with the rest.

The same ceramic sequence was obtained from a column about 2 m square, isolated on three sides



12.3. Plan and Sections of the Trench and Its East and West Extensions in Cenote Ch'en Mul.

The plan is shown with the surface soil stripped off.

and cut from the west side of the trench close to the center of the crater. This column (H), approximately 2 m deep, was arbitrarily separated into six strata (Fig. 12.3, section C-C'), whereas only five strata were made in the north (G) and south (I) isolation cuts. Once again the ceramic material from a red earth section on the north side of the column and in G was lumped with the sherds from the black and brown sections. Therefore, a separate examination of the red earth, with particular emphasis on its contents and relation to the adjacent black-brown sections seemed desirable.

In order to accomplish this a sizable area, showing red, and black-brown sections in profile on the east side of the trench almost opposite the column,

was excavated (Fig. 12.3K,L, M, N). To begin with, it was noticed that all other earth deposits were covered by the surface soil, under which only the red earth extended to bedrock. On examination the red earth proved to be sterile save for the larger root channels harboring black soil, and for badly weathered tiny potsherds and insignificant bone fragments in the root channels and elsewhere. As the digging progressed it became increasingly evident that sizable sections of *kancab* had been removed before the accumulation of the topsoil. Thus, open pits, often having evenly cut vertical walls, remained and in time became filled with deposits of refuse, rock, and earth. The order of the last was consistently black below brown, a sequence found in E, located outside the red

earth zone. This zone appears to be confined to an area immediately underlying the cenote mouth.

The sterility, depth, and location of the red earth go far toward proving its early deposition, whereas the sequence of the black and brown earth below the surface soil suggests later and gradual accumulation. The theory of gradual accumulation is strengthened by the ceramic findings, which show a distinct chronological change from bottom to top. The date of the start of this accumulation is of course marked by the latest sherds found on the bottom. These were of early Mayapán period type. The orderly bottom-to-top chronological development consists of the following: Puuc and Classic types diminish and Mayapán Red types increase; effigy censers, which belong primarily to the late Mayapán period, are usually absent at the bottom and become increasingly abundant as one moves upward; black-on-cream ware, most prolific in the middle levels, is often absent at the top. This order is the rule at Mayapán whether in cenotes, ceremonial assemblages, or house-platform groups.

CENOTE X-COTON

Additional work was done at Cenote X-Coton to determine if the southern section had been filled artificially (Smith 1953:70, 71, Figs. 12.1; 12.2b). A pit-trench (Fig. 12.1) gave us what is probably the best stratigraphy so far encountered. This exploratory pit, 1.5 m square and 1.8 m deep, later extended to a 5.3 m trench, was sunk about 9 m north of Cave 4 and 1 m west of Pit 2 (Smith 1953, Fig. 1). Like the trench in Cenote Ch'en Mul, this pit-trench contained sections of *kancab*. The surface soil, varying from 50 to 80 cm deep and composed of humus, roots, and some small stones, included some very large rocks, a few of which, probably fallen from the rim of the cenote, showed on the surface. Below were sections of sterile *kancab* and many large rocks, small stones, refuse debris, and sherds interspersed in a reddish brown earth. Finally, at the bottom tremendous rock segments of the original cavern roof were encountered. A small man was able to squeeze between some of these and, working in brownish sandy soil possibly reaching to bedrock, obtained a small sample of largely Puuc and Classic ceramic types as well as a large percentage (32.9) of unidentifiable sherds but no definitely Mayapán period pottery.

The manner in which the *kancab* sections are associated with the brownish sandy and reddish brown earth levels is very like the situation found in Cenote Ch'en Mul, if black and brown are substituted for brownish sandy and reddish brown levels.

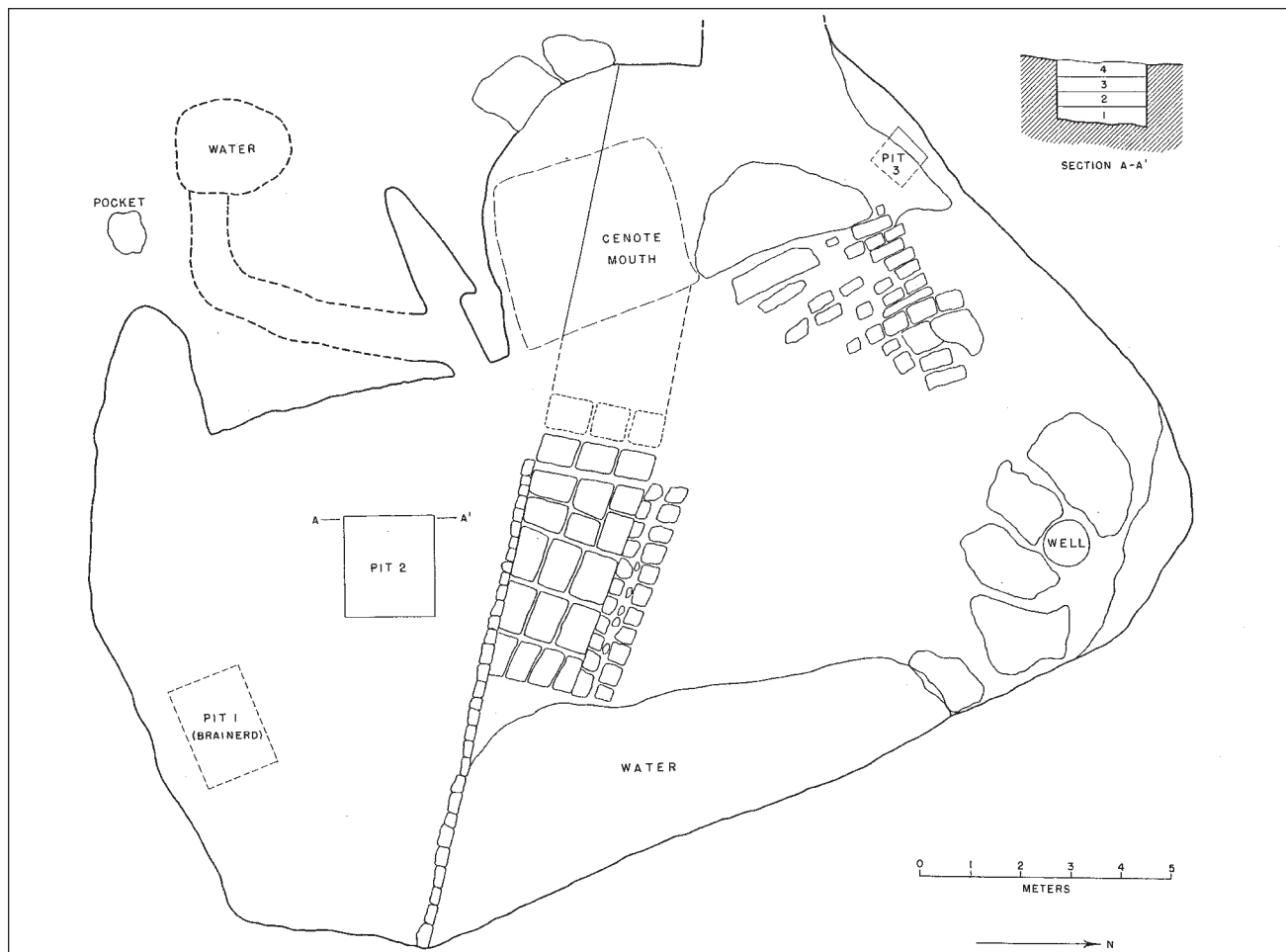
Thus, a similar procedure of early *kancab* deposition and gradual accumulation of debris in excavated sections may be hypothecated, especially since once again it is substantiated by ceramic stratigraphy. Therefore, if the deposit in the rest of the southern section corresponds with the finding in this trench, that entire area may be assumed to have been filled by natural accumulation.

CENOTE TELCHAQUILLO

In the main plaza of Telchaquillo, a village close to Mayapán, there is a sizable cenote with a large main water hole. The cenote is jug-shaped but has two mouths, one centrally placed, the other a ramplike entrance from the west which terminates in crudely fashioned steps near the water (Fig. 12.4). Another stairway, well constructed, was partially uncovered in the center of the cenote. There is also a well shaft cut through the roof of the cavern, presumably in colonial times, but no longer used. Brainerd (1942:254) had dug a pit (Pit 1) in the southeast corner of the cenote but found only postconquest pottery.

After the cenote was mapped, Pit 2, almost 2 m square, was sunk about 2 m northwest of Brainerd's. Four 30 cm levels were cut in uniformly brown soil, well provided with medium-sized stones. The surface level contained nothing but post-conquest red jars (some are brownish) and three glazed white or polychrome pieces. The next level included 16 Mayapán Red jar sherds plus two Black-on-Cream pieces with 172 fragments of postconquest red jars. The stratum below had 558 sherds, of which eight were Mayapán Red. The bottom level contained a small lot of 92 sherds, including 17 Mayapán Red and one from a Puuc Medium Slate jar. The pottery from these excavations that has been identified as Mayapán Red may conceivably be, with the exception of two rim sherds, of postconquest period. At times body sherds of these red wares are all but indistinguishable, a slight difference in surface texture being the only identifying mark. Rim forms, however, are distinctive, and the two rim sherds mentioned are unquestionably Mayapán Red.

A second but much smaller water hole was found due west of Pit 2, and a small near-by pocket containing dirt and potsherds was excavated. This lot of 45 sherds had only two postconquest examples; the rest included two Mayapán Red, 28 Black-on-Cream, three Puuc, seven Early Classic, and three Unidentified fragments. Pit 3 was dug under and north of the crude north stairway. It had two strata, the upper with a preponderance of post-conquest red jar fragments plus a few Mayapán Red, Black-on-Cream and Puuc-type sherds; the lower includ-



12.4.
Plan of the Cenote in Telchaquillo Plaza and Section
of Pit 2.

ing fewer post-conquest jar sherds and a greater proportion of the earlier types.

CENOTE POTTERY

It is too early to attempt a careful analysis of the pottery from Mayapán, and a brief summary of the material thus far collected has been offered elsewhere (Smith 1953a:281–282). We have noted in the present report, however, the general trends of pottery found in cenotes, trends also typical of the ceramic material in ceremonial centers and house-platform groups. It should be noted that the small amount of material from house groups, due to insufficient excavation, does not allow us to put much weight on that part of our findings.

Naturally, the pottery found in cenotes differs in type from that encountered in other parts of Mayapán. For instance jars, mostly for carrying

water, form the largest percentage (57.9 percent) of cenote sherds of all periods, whereas censers, mostly of the effigy type, are preponderant (43.5 percent) in ceremonial centers. In cenotes, censers, especially the effigy type, of course do not have the importance (13.5 percent) given to them in ceremonial centers where jars, although well represented (33.5 percent), fall well below the record attained in cenotes. Bowls, on the other hand, are very constant (about 11.2 percent) wherever found. It is interesting to note that bowl rim sherds (4.6 percent of all sherds) are consistently more numerous than jar rim sherds (3.9 percent), even in the cenote collections, although jar body sherds (39.5 percent) far outnumber bowl body sherds (6.2 percent) wherever found. As might be expected, unidentifiable (weathered and fragmentary) sherds are most abundant in surface soil and, interestingly enough, in red earth collections, apparently owing to the filtering of surface sherds through root channels.



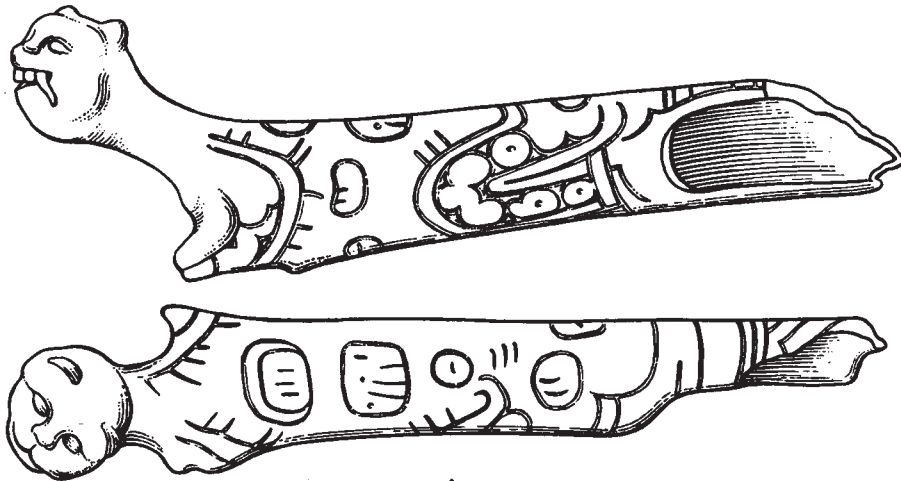
a



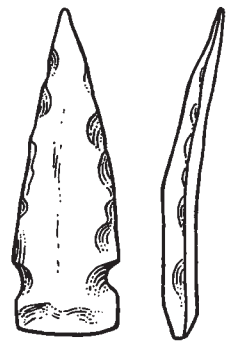
b



c



d



e

12.5. Cenote Ch'en Mul.

(For lot numbers see Fig. 12.2). a. View from west. b. Sculptured stone animal-like head ca, 29 cm high, Lot D-30. c. Sculptured stone human head with tenon, traces of stucco, 33.5 cm long, Lot D-29. d. Animal femur carved to represent a jaguar with glyph-like spots on body, full size, Lot D-30. e. Flint projectile point, full size, Lot D-69.

CENOTE ARTIFACTS

There appear to be comparatively few artifacts in the Mayapán cenotes so far investigated. Bone fragments, both human and animal, are more abundant. Only 119 artifacts of stone, obsidian, flint, shell, bone, and pottery were recovered from cenotes in 1953, compared to 55 from a single pit in a *sascab* quarry. The 1953 cenote sherd count equaled 40,200; that from the *sascab* quarry pit, 3,561. Only 11 of the 119 artifacts could be considered as ornaments and two as ceremonial pieces, the remainder being implements of one kind or another. These figures merely point to

the *sascab* pit as harboring a true midden, whereas the cenotes were natural depositories for washed-in surface debris. It is of interest that 70 percent of the artifacts from cenotes were obsidian flake-blades, of which 70 percent came from the upper and 30 percent from the lower levels. Approximately this same proportion in upper and lower levels holds true for all artifacts found in the Mayapán cenotes. Other types encountered were: flint points (Fig. 12.5e), worked bone (Fig. 12.5d), carved stone (Fig. 12.5b,c), worked sherds, shell and bone ornaments, and one stone hammer.

BOUNDARY WALLS AND HOUSE LOTS AT MAYAPÁN

WILLIAM R. BULLARD JR.

During the field season of 1952, preliminary studies were made of the rough stone walls found in great numbers through-out the ruins of Mayapán. The results indicated that the walls surrounded dwelling-type structures and in all probability marked the boundaries of house properties (Bullard 1952). During that season, effort was directed mostly toward examination of the walls in the central and southwestern parts of the site. Although valuable knowledge concerning the basic function of the walls was obtained, much of the information was not entirely satisfactory, largely owing to the great amount of destruction and disturbance of old wall patterns during postconquest use of the land. We needed more information about the general pattern of walls over a broad area, as well as on such specific problems as the relationship of walls to ceremonial groups, correlation of the size of property enclosures with the size of house groups, etc. The work of the 1953 season was aimed at answering these questions.

The walls in Squares H, I, and Q (Jones 1952, map) were completely plotted, other parts of the ruins were surveyed in order to investigate certain specific problems, and several small excavations were undertaken for possible features of construction not apparent from surface observation. As a somewhat fuller picture of the first year's work was obtained, it seems desirable to repeat here some of the ground covered in *Current Report* 3. For the term *property wall*, used previously, we are substituting the less specific term *boundary wall*.

We called attention to the great number of stone walls built since the abandonment of Mayapán. The extent of this activity has varied from one part of the site to another, but at least some relatively recent walls are to be found everywhere. The majority of them seem to have been built as milpa boundaries; some, especially those near Rancho San Joachin, as cattle enclosures. Where postconquest wall building has been considerable, ancient boundary wall

patterns are almost completely obliterated. Stones were removed, and the direction of old walls was changed as they were incorporated into the later walls. Very likely parts of some ancient walls were demolished because they interfered with the uses to which the modern enclosures were put.

Although in relatively late times a great many stone walls have been built in Mayapán, present-day Indians construct very few of any extent in the ruins, although they take advantage of already existing enclosures where convenient. They do, however, commonly utilize ancient boundary walls as foundations for the thick brush fences which protect cornfields from deer and cattle, and they not infrequently build up and repair the old walls to further this purpose (Fig. 13.5a).

Squares H and I, in the eastern part of Mayapán, were selected for investigation because reconnaissance had shown that they contained relatively few postconquest walls, and therefore would presumably have original wall patterns relatively well preserved. The area also contained such features as a well-developed lane system and the ceremonial group at Cenote Itzmal Ch'en. Of all the areas examined for boundary walls, Squares H and I proved to be the most informative (Fig. 13.1).

The walls were plotted also in Square Q, which contains the main ceremonial group of Mayapán, to determine the relationship of boundary walls to ceremonial and other nonresidential buildings and to detect any difference in pattern of walls around house structures close to the Main Group. The results of much of this work were disappointing. In contrast to Squares H and I, Q is covered by a dense network of walls of unquestionably postconquest origin, indicating intensive farming and ranching in this part of Mayapán from the colonial era on. Ancient walls are so fragmentary that little in the way of pattern could be determined, but even here, where disturbance is at a maximum, a few relatively long sections of ancient wall still stand, in close proximity to large modern walls. These traces permit conclusions of a general nature only.

The walls were plotted on 2½× photostatic enlargements of sections of the Jones map, which gives the convenient scale of 1:1,000. Corners of ruined buildings and other features on the map served as reference points. Each wall, regardless of its antiquity, was followed; then areas between walls were examined. Many ancient walls, especially in sections of heavy postconquest disturbance, may consist of only a rough alignment of well-spaced or well-scattered stones, all too easy to overlook.

CONSTRUCTION OF THE WALLS

The walls are of the simplest construction (Figs. 13.2a,b; 13.5b,c). Large, irregular slabs or boulders from the limestone bedrock were tilted upright and placed in a row with their edges either touching or a few centimeters apart. Their bases were braced with smaller stones as the nature of the terrain or the shape of the stone required, but often the base of a stone was sufficiently wide and flat for adequate support. The size of the stones varied from wall to wall and even within the same wall. Most commonly they ranged from 60 cm to a meter in height, 40–80 cm in length, and 30–50 cm in width. The largest wall stones seen were 1.5 m high.

The intervals between the stones were probably chinked with smaller stones, a few of which still remain in most walls. Debris around the walls consists of a scattering of small stones and chips as well as larger stones which have toppled from their former positions. Some of the debris must represent fallen chinking stones, but much of it comes from breakage and spalling of the larger stones caused by weathering, tree roots, and especially milpa fires. Only occasionally is the debris sufficient to suggest that the walls rose higher than the tops of the stones now standing, probably not more than one additional course of small boulders. It is always possible, of course, that the small stones were added in relatively recent times by farmers. Conversely, the presence of a postconquest wall nearby suggests that smaller stones may have been robbed from the ancient wall.

No evidence was found that boundary walls were ever plastered over or otherwise smooth-surfaced. Their original appearance was probably that of a rough field-stone wall. Perhaps wood or brush fencing was placed on top of the stones.

Of the many boundary walls observed, only two differed to any appreciable extent from the description given above. Str. G-8 (712 N, 1563 E) and Str. T-18 (10 S, 1275 E) both had surrounding walls which were formed in part of a small stone fill between retaining walls. In the first instance, the total width of the filled part of the wall was about 1.2 m. and the height 60 cm; in the second, the width was about 1.4 m and the height about 75 cm (Fig. 2c). The remainder of each wall was one stone thick, as is standard. No reason for these two exceptions, besides the whim of individual householders, is apparent.

The problem of distinguishing Mayapán period walls from later ones, which may also have considerable age, is always present, even in parts of the city where there are few late walls. No hard and fast criteria are possible, but postconquest walls tend

to be constructed of small stones generally laid in rough courses. Ancient walls, on the other hand, have larger slabs and boulders set upright. Column drums and cut stones are used in the late walls in areas where these features occur in the ruined architecture. Late walls are better preserved, on the whole. All these characteristics, however, can be confused by the fact that old walls were rebuilt and often incorporated into later ones. Pattern, of course, is a most useful determinant. Ancient walls in most instances surrounded or were definitely related to ruined buildings. Postconquest walls, in contrast, usually blocked out large areas with no regard for the position of ruins, crossing over house platforms and terraces and cutting older wall lines.

HOUSE GROUPS AND SETTLEMENT PATTERN

Boundary walls are necessarily studied in close connection with settlement pattern and housing. The general characteristics of Mayapán dwellings have been described by Ruppert and Smith (1951:231). Houses occur alone and, perhaps more frequently, in groups. A house group consists generally of two or three associated structures, usually in rectangular arrangement and often standing on a common terrace. Considerable variation occurs, however. The central and western parts of the city have more groups which are larger and which not infrequently have more elaborate features of construction, such as stone columns. Five or six structures are probably about the maximum for a single group, but most commonly the Mayapán houses occur singly or in twos or threes. Sometimes small stone altars stand on the terraces in front of the houses, and often a stairway leads from ground to terrace.

In general size and arrangement the Mayapán house groups resemble the dwelling units to be seen in the Yucatán villages of today, where, besides the family dwelling, there is often a separate kitchen or storehouse and sometimes another dwelling for a closely related family. Detailed studies of dwelling-type structures, now in progress (Ruppert and Smith 1953), may afford more precise information concerning the social significance of the Mayapán house groups.

The maximum concentration of dwellings is around the main ceremonial group and in the central and western parts of the city generally. Here also are most of the more elaborate groups where the leaders of Mayapán probably lived. Density is less in the eastern part, where much of the past season's work was conducted. It should be noted that houses do not cluster around the cenotes and ceremonial

groups at Itzmal Ch'en and X-Coton. Outside the city wall, we saw isolated groups as far as 0.5 km, but in most directions settlement seems to stop almost immediately beyond the city wall. There are prehistoric house ruins in and around the modern village of Telchaquillo, about 1 km north of Mayapán, but this seems to have been a separate settlement, and the chronological relationships between the two are not yet clear.

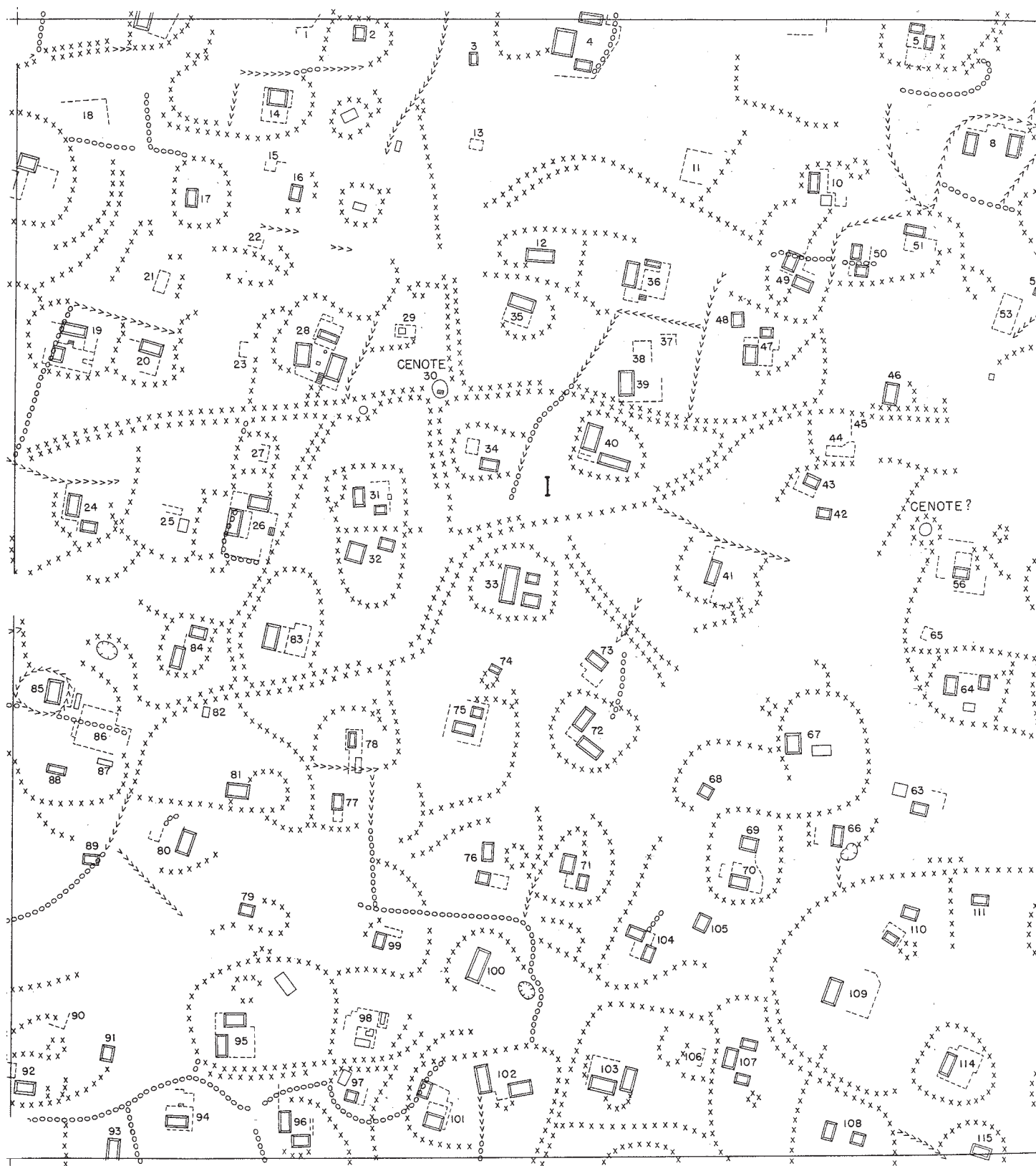
The Mayapán houses appear on the map to be scattered over the terrain with no formal city plan. Actually, terrain was a major factor in the location of a house. Slight elevations, particularly the tops of low rocky knolls, were clearly preferred as sites. Where settlement was dense, there were not, of course, enough elevated positions for everyone, but in thinly populated districts a greater proportion of houses are on knolls. Outside the city wall, the number of houses drops abruptly and almost every one is on a prominent elevation.

HOUSE LOTS

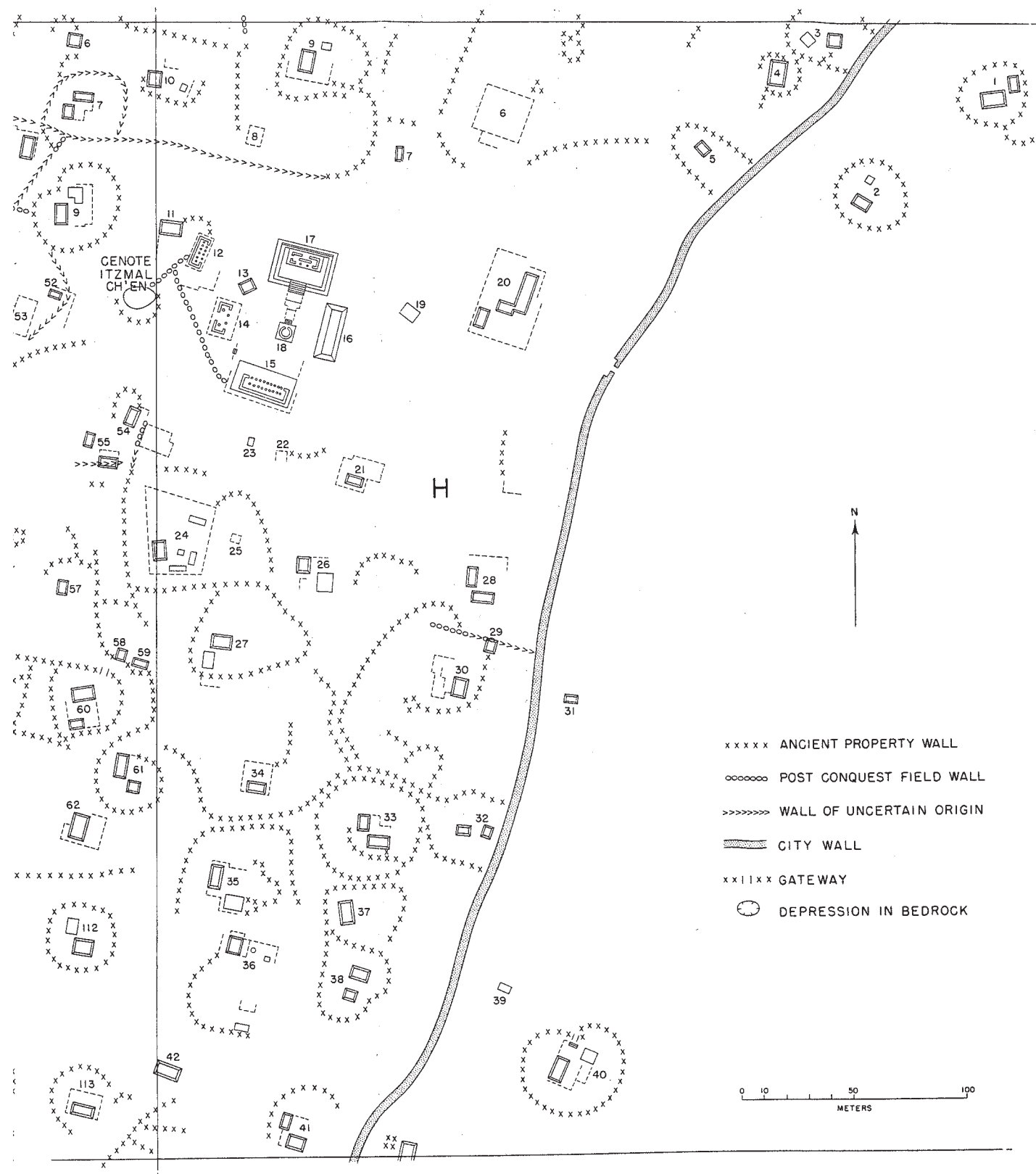
A glance at Figure 13.1 will show that the great majority of boundary walls surround house groups. There seems little question that they mark the bounds of the properties belonging to individual groups and we can therefore properly call these units of land *house lots*. Figure 13.3 illustrates a rather typical house group and lot.

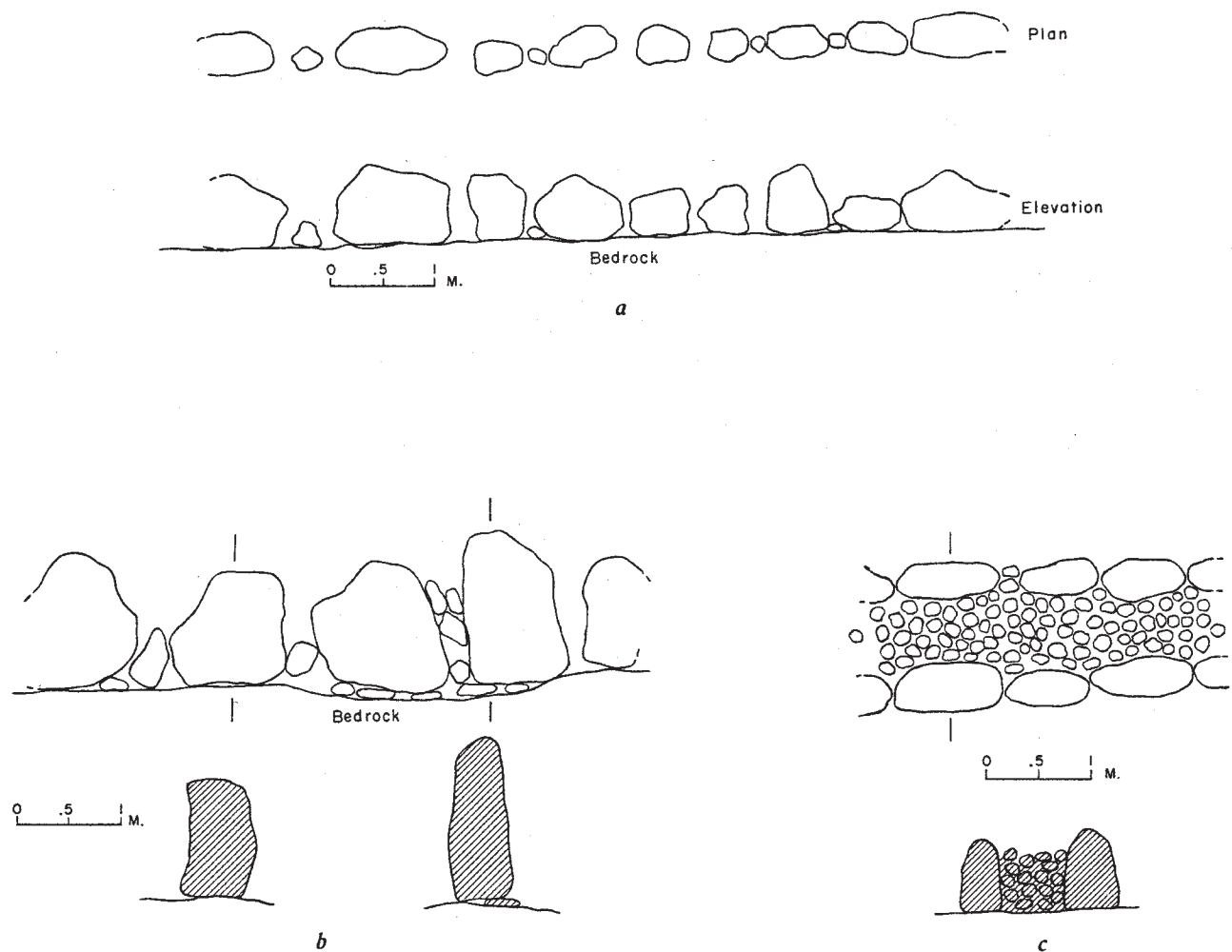
Some of the characteristic patterns formed by individual walls were illustrated previously (Bullard 1952, Fig. 3.2). All of these can be duplicated in Squares H and I, but the most common is a simple oval enclosure or a rectangular enclosure with rounded corners. The use of common walls between adjoining lots is frequent. It is also usual for a house next to the city wall to use that as one boundary for its lot. Walls abutting house platforms or terraces were somewhat scarcer in Squares H and I than in other squares. Sometimes smaller enclosures lie within a house lot, as, for example, in the house lot of Group 103 near the southern edge of Square I. Actually, every enclosure has its own features, the range of variation being shown in Figure 13.1.

Frequently a house group will not be encompassed completely but the wall will make only a partial circuit around the buildings. Several explanations are possible for this. In many instances parts of the walls have almost certainly been demolished by farmers since the abandonment of the city. Also, when a particular house was deserted in ancient times, the neighbors may have carried off stones from the boundary wall for their own use. Near the northwest corner of Square I, for example, there are



13.1.
Plot of Walls in Squares H and I.





13.2. Mayapán Boundary Walls.

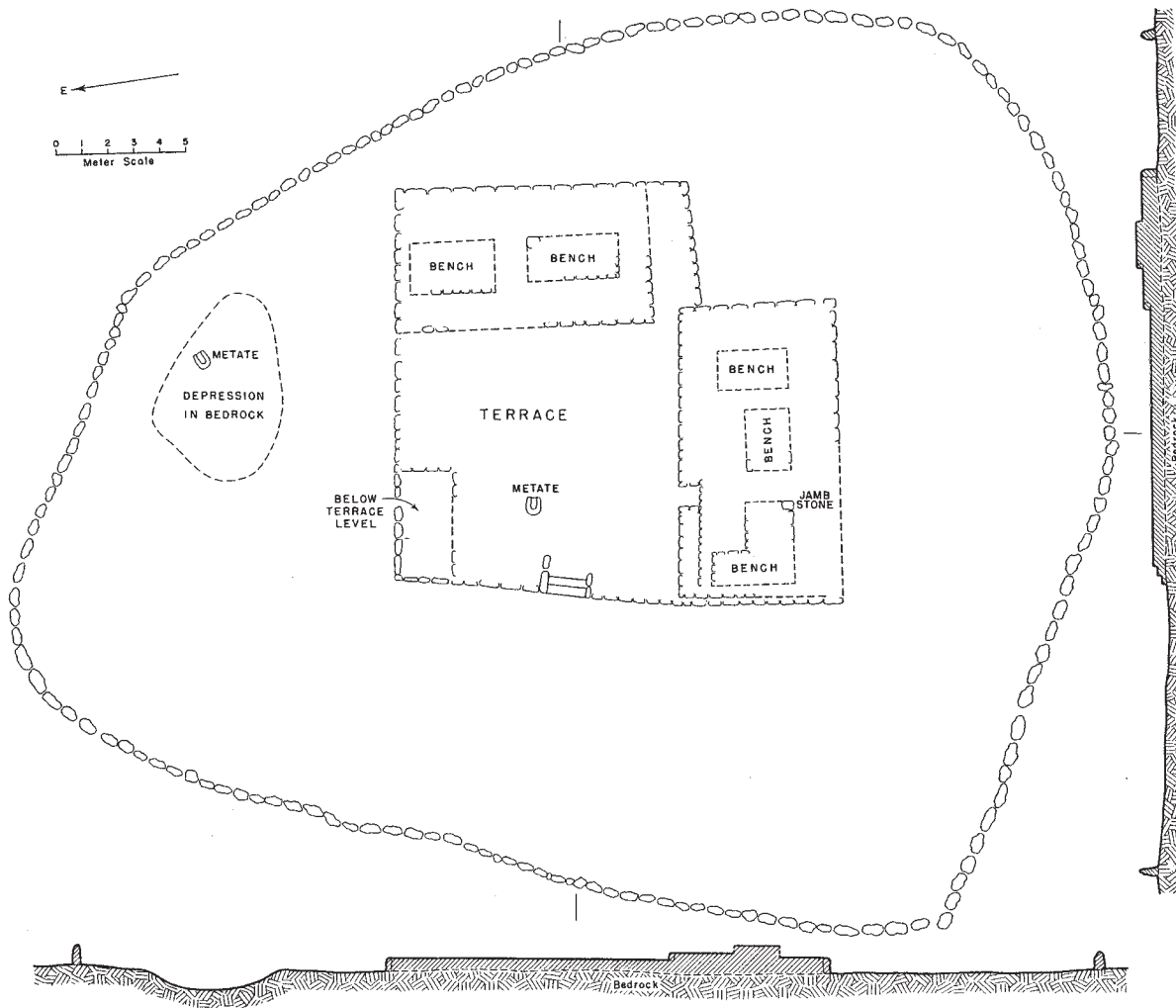
a. Plan and elevation of part of boundary wall around Group I-40 (250 N, 1224 E). The size of the stones is typical of the Mayapán walls in general. The bases of the stones rest on bedrock. b. Elevation and sections of part of boundary wall around Str. EE-11 (1125 S, 300 W). The stones in this wall are exceptionally large. Their bases rest on rather uneven bedrock and are braced with small stones. c. Plan and section of part of boundary wall around Group T-18 (10 S, 1275 E). This wall is one of two seen in Mayapán which consist of a fill of small stones between retaining walls.

several considerably demolished house platforms and fragmentary walls in close proximity to houses and walls which are well preserved. Stone-robbing of deserted structures would seem a plausible explanation in this instance. A further reason for the incomplete circuit could be the practice of closing the gap with wooden or brush fences. Finally, it is also conceivable that some householders may not have desired a complete wall around their property.

Houses in the residential areas of Mayapán without any trace of an associated boundary wall are relatively rare. Although structures and boundary walls are well preserved in this part of Square I, careful search failed to reveal any sign of walls

around Groups 62 and 63 (Fig. 13.1). Other buildings without boundary walls are near the main ceremonial group and near the Itzmal Ch'en ceremonial group.

Ordinarily, each house group had its own boundary wall, but sometimes a wall fenced more than one group. Groups 109 and 110, near the southern edge of Square I, are apparently included within the same enclosure. Evidence from the central and southwestern parts of Mayapán faintly suggests that this situation may have been more common there. One instance in the southern part of Square AA seems to consist of a large group of four structures surrounded by four or five groups of two structures each, all surrounded



13.3. Map of House Group and Lot (750 S, 620 W) in Square AA.

A characteristic example of a Mayapán house group and its associated boundary wall. The group consists of two house platforms standing on a common terrace. Many of the boundary wall stones are tilted and fallen from their original positions so that it is no longer possible to determine the location of the gateway which must once have existed. The terrain within the lot is almost entirely bedrock.

by the same wall (945 S, 567 W). Nevertheless, the standard pattern throughout Mayapán is unquestionably a separate lot for each house group.

Watch was kept for boundary walls which might encircle large areas containing several separate house lots. A prominent feature of Square I is two long lanes (Fig. 13.1). Between the lanes and their interlocking branches it is possible to recognize large enclosures containing two or three house groups, each with its own encircling wall. Taken alone, these might be adduced as evidence for enclosures larger than individual house lots, but when the lane

system is examined, it seems more likely that they are accidental groupings formed by the branchings of the lanes. Also in Square I, the long wall which arcs around Groups 109 and 110 seems to continue so as to partially include Group 112, which has its own boundary wall. Just north of this occurrence, the conformation of walls around Groups I-56, -60, and -64 hints of a similar grouping. But none of these instances are sufficiently well defined to permit the conclusion that enclosures larger than individual house lots existed. The weight of evidence is to the contrary.

It is logical to assume that most boundary walls had some sort of gateway, certainly those walls completely encircling a house lot, yet discovery of intact gateways was exceedingly infrequent. From the few probable instances, the common type of gateway seems to have been merely a gap in the wall about 1 or 1.5 m wide. In some cases the stones on either side of the gap may have been slightly larger than the rest of the wall stones but this was probably not a regular feature. Actually, even in relatively well preserved walls, so large a proportion of the stones are tilted and fallen from their original positions that the location or character of a gateway could easily be obscured.

A few houses, not over half a dozen in all the areas investigated, have traces of more formal entranceways. These are short lanes formed by parallel walls 1–2 m apart. They lead from a gap in the boundary wall of the house lot toward, usually, a stairway leading to the terrace on which the house stands (Bullard 1952, Fig. 3.3d). In Square I, Groups 28 and 41 have such entrance lanes (Fig. 13.1).

The size of individual house lots varies, but usually there is only enough space for a small yard around the buildings. The amount of available land does not seem to be a factor. Lots are not appreciably larger in the lightly occupied parts of the city than where population was dense, nor in the most isolated groups on the fringes of settlement outside the city wall than those inside.

A specific aim of the 1953 work was to look for correlation between the size of house lots and the size and elaborateness of house groups, a correlation which would have important sociological implications since the most elaborate houses were probably the residences of the leaders of Mayapán. Unfortunately, most of the elaborate groups are situated in those parts of Mayapán where the wall patterns are most poorly defined. But many groups of this sort were included in the areas plotted during the first season and in Square Q which was done this past year. In addition, a number in other parts of the ruins were visited and the walls around them examined. No evidence was found that the elaborate groups had larger enclosures than the ordinary ones. Some had only small enclosures built along one side of the group; others, although they included dwelling-type structures, apparently lacked house-lot walls completely, a fact which might bear on the interpretation of their function.

The type of terrain within house lots varies with the location of the house. Some lots contain areas of deep soil; others, including many of the desirable elevated sites, consist almost entirely of bedrock. One receives the impression that no particular effort

was made to include within a lot land which would be advantageous for growing crops. This, of course, does not preclude gardens within house lots. The modern Maya are adept at raising plants in small rock crevices, pottery vessels, hollow logs, etc.; and these talents were no doubt fully exploited in the past.

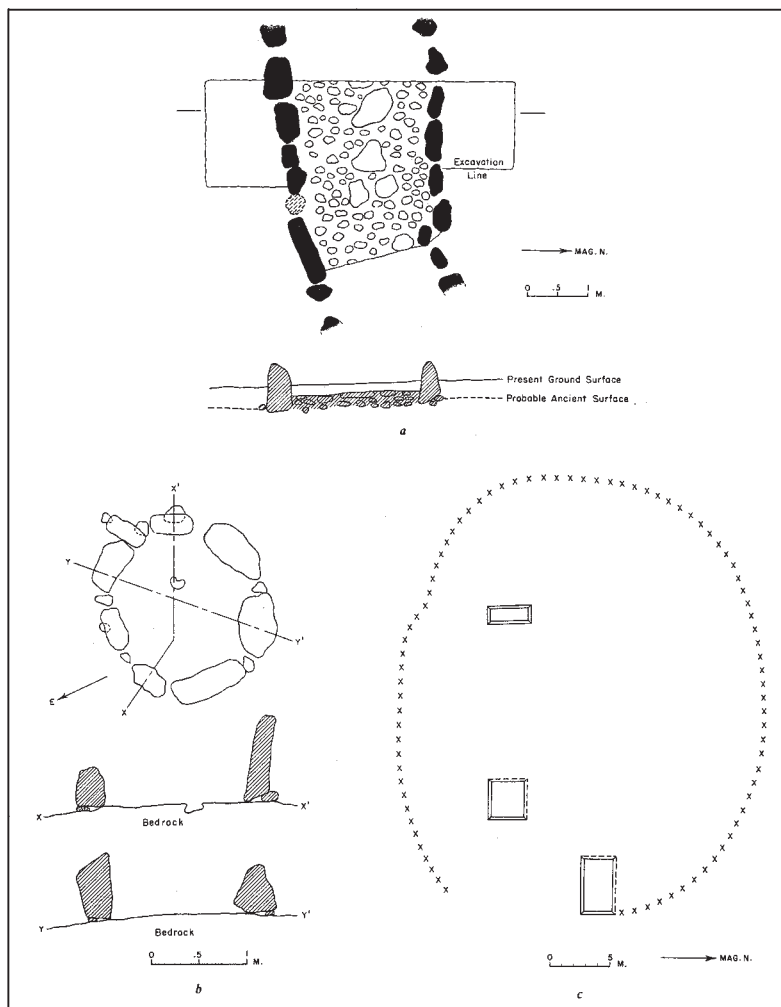
Other than houses and boundary walls, there are no features consistently associated with house lots. Occasionally a lot includes a small stone circle, some 2–5 m in diameter, formed by upright slabs of the same size as those in boundary walls. Two of these were excavated in an attempt to discover their purpose. Both were cleared of soil (one shown in Figs. 13.4b; 13.5d), one being a small structure built against the side of a high house terrace. All the examples seen were footed on bedrock and bedded in very shallow soil. Nothing showed their purpose. One possibility, sheer speculation, is that they were filled with soil and planted with trees or other vegetation. Such raised gardens, similar in size though usually square, are sometimes found in modern Maya villages (Wauchope 1938, Fig. 49f).

RELATIONSHIP OF BOUNDARY WALLS TO CEREMONIAL CENTERS

One aim of the 1953 season was to determine the relationship, if any, of the boundary walls to buildings and areas of obvious ceremonial or public function. Good information was obtained from Square H where the Itzmal Ch'en ceremonial group is located (see Fig. 13.1). In addition, a wall plot was made of Square Q, which contains the main ceremonial group of Mayapán.

At Itzmal Ch'en, a wall curves around the southern half of the cenote proper, but boundary walls are conspicuously scarce in the area around the ceremonial buildings from the cenote to the gate in the city wall east of Itzmal Ch'en. House groups bordering this area are surrounded by walls except in three instances, Groups 21, 26, and 28. The three are not distinguishable in either size or construction from the common run of dwelling-type structures throughout the city; but their lack of boundary walls is unusual and this fact, coupled with their location near the ceremonial center, suggests that they may have served some special purpose in connection with the center, perhaps as residences for certain functionaries.

The great number of postconquest walls and the fragmentary condition of the ancient boundary walls in Square Q have already been mentioned. The data are such that only broad generalizations can be made. It is clear, nevertheless, that, like the Itzmal



13.4. Stone Circle and Lane Pavement at Mayapán; Boundary Wall at Chichén Itzá.

a. Pavement in lane (310 N, 1030 E) in Square I. The surface of the pavement was found 10–15 cm below present ground surface. It consists of a strip about 25 cm thick of small irregular stones (Fig. 13.5e). Near the center of the lane are laid some irregular slabs 40–60 cm across. The surface of the pavement is reasonably level. At this section the lane is built on soil rather than on bedrock. Exact location of the original ground surface outside the lane could not be determined in the excavation. b. Stone circle (330 N, 22 E) next to Group K-44. The stones rest on bedrock and are propped by smaller stones (Fig. 13.5d). There is a small natural cavity in the bedrock near the center of the circle. c. Sketch plan of boundary wall and house platforms near Chichén Itzá. The stone-filled platforms are broken down and benches or other surface features could not be recognized. The boundary wall resembles the Mayapán walls in construction. The stones are about 50 cm high. The group is located roughly 2 km west of the Castillo.

Ch'en group, the Main Group is practically free of boundary walls. A few segments of what look like boundary walls were found close to colonnaded halls and temple structures, one actually abuts the back wall of a hall, Str. Q-99 (200 S, 175 W), but these can nearly all be associated with small dwelling-type

buildings, several of which are on the immediate fringes of ceremonial areas. Excavations within the Main Group have uncovered occasional low walls of shaped stones which apparently mark the limits of ceremonial plazas or precincts, but these do not seem comparable in either construction or purpose with the rough boulder-and-slab walls found throughout the residential areas of Mayapán. The data from the Main Group, supported by those from Itzmal Ch'en and from observations made at the small ceremonial group at Cenote X-Coton, indicate clearly that the temples, shrines, colonnaded halls, and other ceremonial or public buildings did not have associated boundary walls; these walls are almost exclusively associated with residential buildings.

Outside of the Main Group, Square Q contains a dense concentration of ruined buildings. Many are ordinary house structures but there is also a liberal scattering of groups which are larger and more elaborate and where we suspect the wealthier or more important residents of the city lived. Broken remnants of boundary walls occur throughout this presumed residential area. Although no over-all pattern could be worked out, it was noticed, particularly in the south and east parts of the square, that the remnants become scarcer as one approaches the Main Group. Many houses, both simple and elaborate, have no trace at all of associated walls. Furthermore, the scantiness of the remaining fragments suggests the possibility that the nature of landholdings close to the Main Group may have been somewhat different from that which prevailed elsewhere in Mayapán. As was suggested for Itzmal Ch'en, many of the house structures here may have had some functional relationship to the ceremonial center, such as quarters for priests, attendants, or other officials.

LANES AND ROUTES OF PASSAGE

The first season's work brought to light numerous short winding lanes, formed by the walls of neighboring house lots, which provided access to dwell-

ings in crowded areas. We found little lane systems of this sort throughout Mayapán. An especially clear one is in the south part of Square H (Fig. 13.1; also Bullard, 1952, Fig. 3.1).

Prominent features of Square I are two long lanes running east-west across the square (Fig. 13.1) and formed by parallel walls about 2 m apart. In appearance they resemble the shorter lanes mentioned above, but are unique because of their great length and because, in the main, they run independently of house-lot walls. The north lane, discovered during the 1952 season, starts near the west edge of the square and continues east for 400 m, coming to an end about 100 m southwest of Cenote Itzmal Ch'en. The south lane winds across the square in a south-west-northeast direction and joins with the first lane a short distance before its eastern terminus. Both lanes tend to follow low areas and seem to be laid out so as to avoid house lots, suggesting that they are of relatively late construction. Although the lane walls seem in general to be independent of house-lot walls, an occasional house may use a lane wall to mark one side of its lot boundary, as, for example, does Str. I-83.

The walls of the long lanes are constructed in the same manner as all the boundary walls. The height of the standing stones varies from about 40 cm to 80 cm, averaging about 60 cm. The lane is about 2 m wide for the most part but some sections are as much as 3 m. The southern lane shows a gap in the north wall where it goes by Group 1-40, but the other wall is unbroken.

For most of their length the lane walls are set directly on bedrock. Near Group I-24, the northern lane crosses a low area with a relatively deep accumulation of soil. We trenched across the lane at this point and uncovered a pavement composed of irregular slabs and smaller stones (Figs. 13.4a; 13.5e). Since the low area would become very muddy in wet weather, it is to be supposed that the pavement was intended to provide a dry footing.

Several short lanes branch from the two long ones. One leads to the stairway of Group I-28; another may have led to the stairway of Group I-26.

Near the center of the northern long lane two shorter lanes converge from north and south respectively. At their junction is a small cave or sink with three or four steps leading into it (Fig. 13.5f). This proved to be the entrance to a cenote, which natives of Telchaquillo say was blocked within recent years by farmers. We made an entrance and followed a natural passageway, in which rough stone steps had been laid, down to water. The lane leading south from this cenote joins with the southern long lane; the lane leading north could be followed for only

about 60 m. The location of the cenote at a junction of what were probably main routes of travel shows its importance as a water source for this district of the city.

About 40 m west of the cenote, one wall of the long lane swings out to include a natural shaft-like sink hole in the limestone. The diameter of the opening is about 1 m from ground surface there is a straight drop of about 4 m from which level a sloping passage descends out of sight. This also is probably the entrance to a cenote.

Despite the presence of the cenotes, the location and direction of the long lanes suggest that they served primarily as routes of travel to Cenote Itzmal Ch'en and its nearby ceremonial group. Their eastern terminus is only a short distance from this large cenote, and between the two points there are no intervening walls which could have impeded passage. An attempt was made to follow the lanes farther west, into the adjoining Square J, but without success. As far as we could determine, both lanes end near the west edge of Square I. These two long lanes are the only thing we could find in Mayapán suggesting formal routes from one part of the city to another.

The whole problem of routes of travel in Mayapán has been a bothersome one. Throughout the city there is so dense a maze of house-lot walls that one wonders how the residents found their way about. It is likely that fairly direct avenues did exist. During both field seasons, reconnaissance was made through parts of the ruins where detailed wall plots were not made. Particular attention was given to locating lanes and, when encountered, following them. Nothing was seen comparable to the long lanes in Square I; all the lanes followed were short passageways between adjacent lot walls. Special effort was spent trying to locate avenues or roadways leading from the major gates in the city wall to the Main Group. A reasonably straight passage could be made from the large gate in the city wall in Square P nearly to the Main Group without crossing ancient boundary walls, but there was no evidence of any kind for a roadway or formal route. Elsewhere, postconquest wall building has obscured evidence of possible straight routes between house lots, but if lanes or artificial roadways had existed, traces would certainly have been found. There is, to be sure, a causeway near the center of Mayapán connecting two large groups of structures and there is another short section of what may be a causeway in Square E (Jones 1952, map), but these were clearly not major avenues of travel about the city. The "main streets" of Mayapán must have been for the most part simple trails which ran through the spaces between house lots.



a



b



c



d



e



f

13.5. Boundary Walls, Stone Circle, lane, and Cenote Entrance.

a. Ancient boundary wall used as base for modern brush fence (300 N, 1275 E). b. Boundary wall around Group 1-67 (180 N, 1335 E). The stones stand on irregular bedrock. The edge of Str. I-67a shows at the extreme left. c. Boundary wall around Str. H-34 (150 N, 1535 E). The bases of the stones in the foreground have been excavated. They stand on level bedrock. d. Stone circle (330 N, 22 E) in Square K (see Fig. 13.4b). The bases of the stones have been excavated. They stand on bedrock and are propped upright with smaller stones. e. Pavement in lane (310 N, 1030 E) in Square I (see Fig. 13.4a). f. Cenote entrance (338 N, 1188 E) in Square I. The opening of the passage leading to water is visible in the side of the cave below and to the left of the workman. The stones which blocked it have been pulled aside. Three or four stone steps (not visible in the photograph) lead from ground level into the cave. The cenote is at the junction of four lanes.

BOUNDARY WALLS AND CENOTES

A number of cenotes were located in the squares where detailed investigations were made. In no instance did we see a cenote entrance within the boundary walls of a house lot. They were always in areas between house lots and thus presumably accessible to the general populace.

At Cenote Itzmal Ch'en, at the border of Squares H and I, a boundary wall encircles the southern half of the wide opening at a distance of 3–7 m from the edge (Fig. 13.1). The wall does not tie in with other boundary walls in the vicinity, nor is there any trace of a wall around the north half of the opening.

In Square I, just northwest of Group 56, there is in the bedrock a depression 4 or 5 m across which has been almost filled with boulders. It is completely encircled at a distance of about 3 m by a broken-down boundary wall, stones from which have obviously been used as filling material. According to a native of Telchaquillo, this is the entrance to a cenote which was blocked many years ago to prevent livestock from entering. We were able to move enough stones to see a passage, but the blocking stones were too entwined with tree roots to force an entrance.

In the south part of Square F there is a natural pothole (520N, 380 E) which, like the possible cenote mentioned above, is completely encircled at a distance of 4 m by a wall. The pothole is bell-shaped, 1.5 m in diameter at the opening and 4 m in diameter at the widest part. It is filled with soil to within 1.2 m of the surface. My Maya helper insisted that this could not be a cenote entrance. Conceivably, if cleaned out, it might have served to retain water.

Mention has already been made of the cenotes in the long lane in Square I. A fully comparable situation was not noted elsewhere in the ruins. However, Cenote X-Leth in Square R has a lane leading to within a few meters of its entrance. The lane could be followed for only a short distance, and attempts to find its relationship to boundary walls in the immediate vicinity were without conclusive results.

SUMMARY AND DISCUSSION

Except for occasional use in lanes and in connection with such features as cenotes, boundary walls are almost exclusively associated with dwelling-type structures, forming the limits of house lots. In the main, these lots surround single house groups only, although an occasional lot will contain more than one group. There are suggestions that the pattern of house lots around dwellings close to the main ceremonial group may have differed somewhat from that prevailing elsewhere in the city, but our information is too poor to define the exact nature of the

difference. Although nearly every house group in Mayapán has associated walls, some of the houses close to ceremonial centers lack them completely, suggesting that these buildings may have had some special function in connection with the center, such as residences for officials. The size of house lots does not correlate either with the amount of available land or, as far as we could determine, with the degree of elaborateness of house groups, the latter being taken as an indication of the wealth or prestige of the inhabitants. Nor is the type of terrain a factor. The lots seem to have been merely small yards around the buildings, and we can infer no purpose for the stone walls other than as boundary markers. Often, short winding lanes formed by neighboring house-lot walls provided access to individual houses, but, with the exception of two relatively long lanes in the eastern part of the city, we found no evidence of formal roadways or streets to provide routes of travel from one part of Mayapán to another.

Mayapán house groups bear a general resemblance to the modern Yucatán dwelling units. The presence of a walled lot around each modern unit offers a further parallel, although today the walls are necessary for the control of livestock, a problem the ancient Maya did not have to consider. The Mayapán data, however, show that the custom of carefully marking property boundaries is part of a cultural tradition that has its origins prior to European conquest and influence. The Mayapán pattern of a boundary wall ordinarily enclosing only one house group is very similar to the modern custom in Yucatán, and it is reasonable to expect that, as regards settlement, an analogous social situation prevailed.

Conclusions concerning the significance of the Mayapán boundary walls are hampered by the absence of comparative material from other Maya ruins. The only mention in the literature is by Wauchope (1934:143; 1938:9). While digging house mounds at Uaxactun, he uncovered some walls, the function of which was doubtful since they did not retain any core of fill. They were excavated for some distance and, although they were never traced completely, Wauchope suggests that the walls from two neighboring mounds may have been connected and that these very likely were stone boundary walls comparable to the modern Maya walls.

During the 1953 season, visits were made to the ruins of Uxmal, Kabah, and Sayil in the Puuc region. Settlement around these centers was obviously a great deal more dispersed than at Mayapán. Although isolated examples of rough boulder walls were seen rarely, it is clear that there was no such system of boundary walls as at Mayapán. A visit was also made to Chichén Itzá, where, although the

same remarks hold generally true, we saw one good example of three small stone platforms surrounded by a wall that was identical in construction to the Mayapán boundary walls (Fig. 13.4c). It is difficult to appraise the significance of this occurrence, since it is located about 2 km from the center of Chichén Itzá and there is no clue to its relative date. Explorations around Chichén Itzá were extensive enough to show that walled house lots are not a regular feature of that ruin.

Present indications seem to be that, for Yucatán at least, the emphasis on delimitation of property boundaries was a relatively late phenomenon. Reasons for this will not be clear until we have more knowledge of Maya settlement patterns and their changes.

Some words of caution are necessary. The extreme shallowness of the soil in northern Yucatán makes it easy to see and trace the crude stone boundary walls, but elsewhere in the Maya area, where soil accumulation is more substantial, the existence of a wall system might be revealed only by excavation, as were Wauchope's questionable boundary walls at Uaxactun. Furthermore, whereas in Yucatán where, with its overabundance of readily available stone, we might expect house lots to be walled with stone as are those at Mayapán, elsewhere boundary markers might well have been of some perishable construction such as rail or wattle, so that the absence of stone walls is not in itself proof of the absence of house lots.

THREE TEMPLES AND THEIR ASSOCIATED STRUCTURES AT MAYAPÁN

EDWIN M. SHOOK

The following report describes the investigations, during the 1953 field season, of several ancient structures within the central group of religious and civic buildings at Mayapán. There are approximately 100 of these units tightly clustered around the central and dominant architectural feature of the site, the Temple of Kukulcan, or Castillo (Str. Q-162). The ones reported here are among the cluster forming the northern ring around the Castillo: Strs. Q-58 to -60 about 100 m north, and Q-82 and Q-95 roughly 75 and 125 m northeast of the Castillo (Jones 1952, map).

STR. Q-58 (125 S, 300 W)
(FIGS. 14.1, 14.2, 14.5, 14.6)

Prior to investigation this structure appeared as a huge, pyramid-shaped, steep-sided pile of rock. Closer examination, however, disclosed short sections of terrace and temple walls, evidence of doorway columns, and a single stairway on the east side.

Also, a gaping hole in the center of the temple floor exposed the artificially constructed walls of a deep, bottle-shaped shaft. The presence of a shaft penetrating the pyramid from the floor of the temple spurred us to further investigation, because a similarly placed shaft in a temple at Chichén Itzá had been discovered and excavated many years ago by E. H. Thompson (1938). He encountered a series of graves within the shaft and for that reason named the structure the Osario, or High Priest's Grave. There the burial shaft was associated with a temple and pyramid architecturally and stylistically belonging to the Toltec period of that site, whereas at Mayapán the same feature appeared in a temple and pyramid of the typical Mayapán style of architecture. The study of Str. Q-58, therefore, presented possibilities of demonstrating the degree of cultural continuity or change from the earlier Toltec phase at Chichén Itzá to the later stage of Yucatán history as depicted at Mayapán.

The excavations of Str. Q-58 were restricted to those features not observable by surface examination but necessary to establish reasonably complete data on the architecture, pottery, and function of the unit. Digging took place at the southeast base corner of the pyramid, the front and north side of the stairway, the northeast and northwest corners of the upper terraces, the superstructure, and the remains within the shaft.

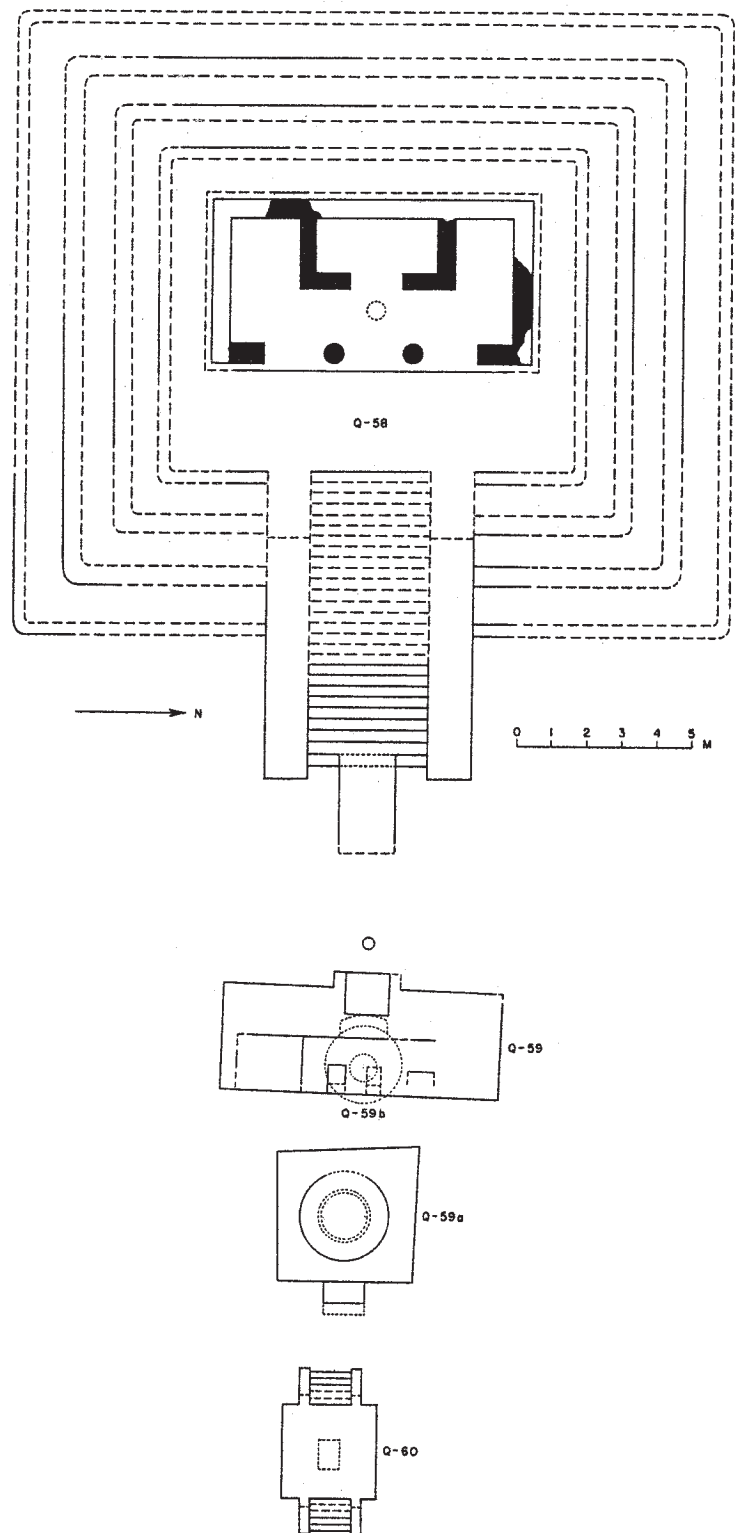
There were two major rebuildings of the unit, and at least five minor additions or renovations. The earliest construction identified consisted of a thin, lime concrete floor overlying a shallow fill of brown earth and stones which rested on bedrock. This floor (Fig. 14.2a,1) sloped eastward and ended a few meters beyond Str. Q-58 where it merged with bedrock. It may have served to level an area in preparation for building the primary structure, or as a plaza floor associated with structures other than Q-58. A small pottery sample (Lot C-18), re-covered below this earliest floor, contained mostly early Mayapán period ceramic types.

The first major structure consisted of a terraced pyramid width, we believe, a single stairway on the east side and a temple-type superstructure. The stairway and the superstructure had been torn down in ancient times when the second rebuilding of the unit took place. We encountered only the bottom step of the primary stairway (Fig. 14.2a,2) and the plaster turn-up to the superstructure on the top terrace of the pyramid (Fig. 14.2a,3).

This early pyramid rose in four narrow terraces to the summit platform, its plain battered terrace walls lacking embellishment in either stone or stucco (Figs. 14.2; 14.5a-c). These walls were built of roughly trimmed blocks laid without coursing in a weak mortar of lime, earth, and gravel. Leveling and chinking were achieved by frequent use of small stone fragments (Fig. 14.5a). Generally, larger blocks formed the terrace corners, each trimmed in a small arc on the outer face to produce an abruptly rounded corner (Fig. 14.5b). The resulting uneven surface of the terrace walls was smoothed somewhat by a thick coating of poor quality lime plaster. Little of it remained on the walls despite the protection afforded by an enveloping, later pyramid.

Apparently, one of the most important features, around which centers the question

of the function of this temple, was the slender bottle-shaped shaft penetrating the core of the pyramid (Fig. 14.2a). The shaft was constructed at the same time as the primary structure because its casement



14.1. Plan of Strs. Q-58 to -60.

retains the loose, dry rock fill of the pyramid. The builders erected the shaft much like a smoke stack or well casement, and as it gained height they added the pyramid fill. The masonry casement consists of roughly trimmed blocks and slabs set in lime mortar (Fig. 14.2a,4). Also observed among these undressed stones were a few well-cut and, dressed Puuc-type wall stones. These undoubtedly had been salvaged and re-used from more ancient buildings. The fairly even surface of the shaft walls was further smoothed by plaster. No sockets or projecting stones had been left in the wall to provide a means of entry or exit.

Unfortunately, the remains in the shaft had been disturbed in modern times. We found the orifice open, and the greater part of the shaft's contents heaped around the opening and spilled down the back slope of the pyramid. These tailings were culled, and Strömsvik excavated the remaining debris on the floor at the bottom of the shaft. He recovered bones and teeth of more than four children and adults, animal and bird bones, and a few artifacts and fragments of pottery (Lot C-20). The small orifice and diameter of the shaft, the lack of means to descend, the absence of formal grave furniture, and particularly the variety of skeletal remains indicate that humans, animals, and birds were sacrificed and dropped into the shaft from the temple floor.

The depository was in use during the existence of the primary unit as well as the later temple, which suggests that the razed earlier temple served the same ceremonial purpose as the subsequent one.

The second major phase of building activity associated with Str. Q-58 witnessed a complete remodeling of the unit. A new, larger pyramid was erected directly over and in the same architectural style as the older one (Fig. 14.2a). On the east, a single stairway with a wide balustrade flanking each side, led to the temple on the summit (Figs. 14.1; 14.2a; 14.5e,f). Contemporaneously, a plaza floor was laid over an extensive area surrounding the pyramid and especially towards the east (Figs. 14.2a; 14.5). This floor continued beyond Str. Q-60, the eastern extent of our excavations, but terminated to the north at a plaza edge (Fig. 14.2c). Here a sectional trench, dug to bedrock, disclosed that a low east-west wall or parapet bordered the edge of later plaza floors and that a similar one may have marked the extent of the first floor.

The only difference noted between the terraces of the second pyramid and those of the earlier appeared in the masonry of the terrace walls. The later walls were faced with stones tending more to slab form than those used in the primary structure, and they were hid in courses, though quite irregularly (Figs. 14.2a; 14.5d,e).

The re-use in the substructure of well-cut and carefully dressed Puuc-type stones was limited apparently to the steps and balustrades of the stairway (Fig. 14.5e,f). None of these stones appeared in the terrace walls of either pyramid. They did occur frequently in the plinth and walls of the later temple, possibly having been salvaged from the razed primary one.

Toward the rear of the pyramid summit was erected a temple with a triple doorway formed by serpent columns. The building rested on a simple plinth, one step high, and consisted of a single large chamber with a small, central shrine room against its rear wall (Figs. 14.1; 14.2a; 14.5g, h). We found most of the back and end walls sheared off and spilled down the steep slope of the pyramid, but enough remained in place to ascertain the temple plan accurately. The turn-up of the lime concrete floor, in many instances, indicated the extent of the room. The position of the missing south column of the doorway was clearly shown by the floor plaster. Both doorway columns had been, fashioned to simulate serpents, though we found no trace of stone or stucco heads at the base of the columns or on the front terrace. With the debris at the east base of the pyramid were two fragments of sculptured stone serpent heads which may have come from the doorway. If so, their positions and the absence of drum sections of the south column on the front terrace suggest willful destruction of the temple. The sculptured stone representing the rattle tail of each serpent lay in the fallen debris on the front terrace (Figs. 14.2a,6; 14.6a,b). These elements normally form the capitals of the columns.

A collapsed section of masonry from the upper zone of the temple also lay on the terrace (Fig. 14.2a,6). It provided some evidence of the original appearance and height of the building. Underlying the mass of fallen wall masonry and covering the temple floor was a layer averaging 20 cm thick, composed principally of roof debris. The layer included some painted wall-plaster fragments but in the main contained lime, gravel, and chunks of mortar from the lime concrete roof cap which fell when the supporting wood beams decayed. The restoration of the upper zone and roof shown in Figure 14.2a is based on this evidence.

The temple underwent frequent refurbishing (Figs. 14.2a,7; 14.2b), necessitated perhaps by the stench and blood stains of the sacrifices. Also, ceremonial fires and the frequent burning of copal incense within the temple undoubtedly heavily smoked and obscured the polychrome painted walls. Each of the five lime floors, normally white, had gray and black areas resulting from surface burning on the front terrace, between the doorway columns, and around the orifice of the burial shaft. Quantities of broken

pottery censers (Lot C-17a) covered the uppermost temple floor, especially in the shrine room. Another heavy deposit of censer fragments was found in the corners formed by junction of the terraces and the stairway. Here it appeared as if the rubbish had been swept or thrown off the front terrace of the temple. The distribution of human-effigy censer fragments, though present everywhere, was noticeably less around the foot of the stairway of Str. Q-58 despite the presence there of a masonry altar built in late times. Also sherds of the same type of censers were thinly distributed over and around Strs. Q-59, -59a, and -60.

Excavations along the north stairwall of Str. Q-58 uncovered the skeleton of a male adult lying against the stairwall. The articulated body, minus the head, had been placed without furniture in a shallow grave cut through the latest plaza floor. Apparently the head had been severed from the body before burial and the lower jaw removed from the crania and placed in the grave next to the left elbow. The position of the grave, the casualness of the interment, and the lack of mortuary furniture may indicate that the individual was an enemy warrior slain in battle rather than a human sacrifice.

Several fragments of stone sculpture, so severely eroded that details could not be studied, lay scattered in the mass of fallen building debris at the foot of the stairway of Str. Q-58. One zoomorphic sculpture projects from a horizontal tenon. The sculptures lay well out in the talus from the stairway and from their positions surely fell from the temple or upper portions of the pyramid.

Following the building of the outer pyramid and temple of Str. Q-58, and the laying of its plaza floor, a series of minor structures were added from time to time at the east base of Str. Q-58 and aligned on its central axis. These units, Strs. Q-59, -59a, -59b, and -60, will be described in the chronological order of their construction rather than in the numerical order assigned prior to excavation.

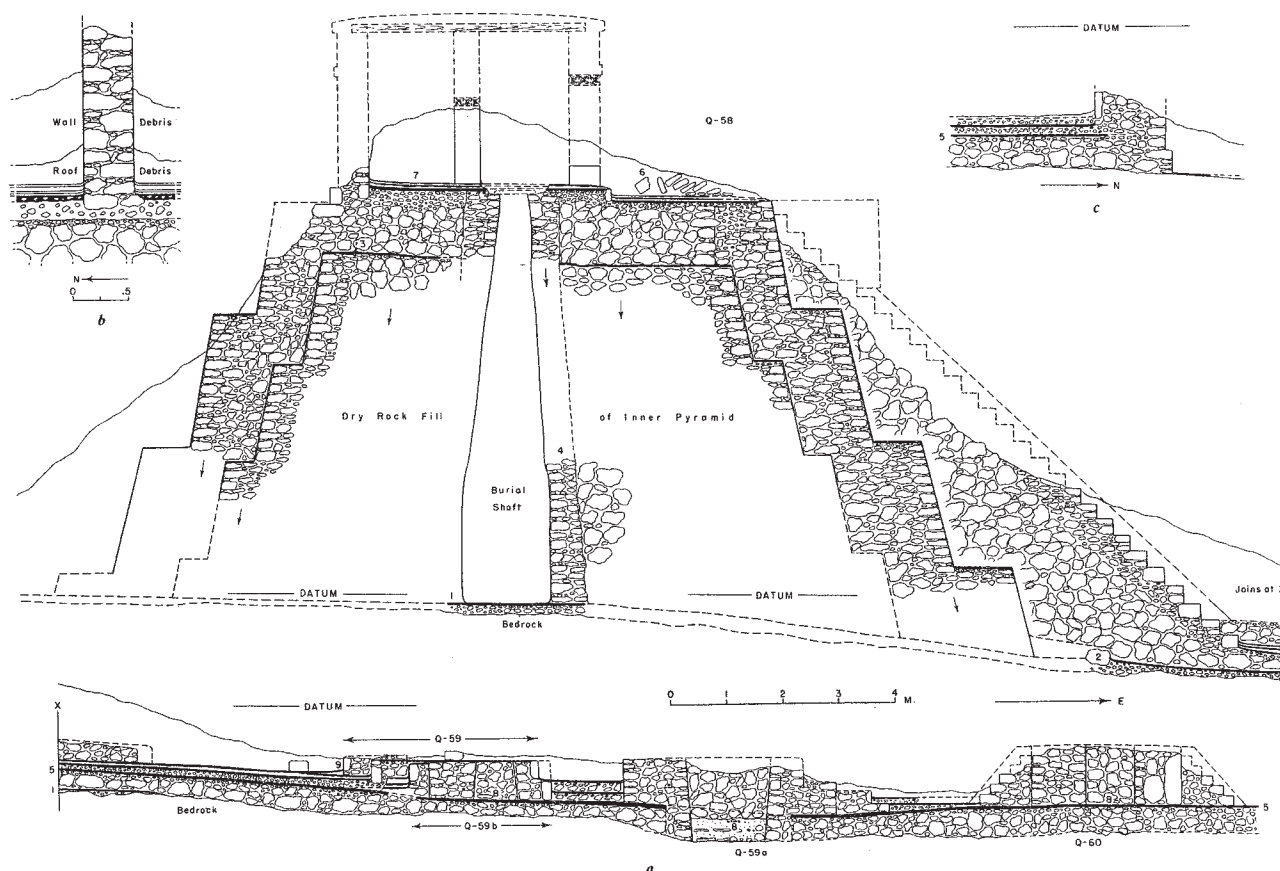
STR. Q-59A (FIGS. 14.1; 14.2A; 14.6C,G)

This structure, a low nearly square platform surrounding a slightly higher round altar or platform, was the first addition at the east base of Str. Q-58. The builders began by digging a pit through the existing plaza floor to bedrock, then erected a circular shaft of roughly trimmed stones (Figs. 14.2a; 14.6e). The shaft walls flared slightly toward the orifice which projected above the simultaneously constructed square platform. The latter rested on the plaza floor and had a single stairway on the east side. The pri-

mary purpose of Str. Q-59a seems to have been for burials, three of which were found on the bottom of the shaft. Prior to excavation, a shallow depression could be observed in the loose rock surface of Str. Q-59a. This depression led to the investigation which disclosed the circular burial shaft. The upper portion contained loose rock, with no remaining evidence of the lime concrete floor we believe originally sealed the shaft. The 90 cm depth of rock fill contained fragments of painted stucco from a modeled, life-size human figure, two limestone manos (Cat. nos. 53-46,-47), and weathered pottery fragments, including a few from human-effigy-type censers. Below the loose stone fill we encountered a tightly packed gray layer of ash, lime, and gravel in which lay a human skeleton (Skel. 3). The bones, though in poor condition, showed that the body had been articulated when placed in the circular cist, with the head against the north-east wall, the torso extended in a southwest direction, and the lower legs flexed at the knees. Directly below Skeleton 3, another, Skeleton 2, lay in an east-west line with the head toward the east. The bones rested on a bed of ashes, charcoal, copal, and broken pottery. It was evident that the burning had been done within the cist and after the placement of the corpse. Many of the bones were calcined, others partially burned, and some bore no trace of fire. This condition suggests that the body had been placed on a pyre and partially cremated.

A third, Skeleton 1, in better state of preservation than the upper skeletons and showing no trace of burning, lay below Skeleton 2 on the bedrock floor of the cist. Like the burned one, the body lay extended, head against the east wall, and legs flexed at the knees which touched the west wall. The small diameter of the burial cist prohibited the placing of the three bodies in fully extended positions. In each instance the limited space required that the legs be flexed at the knees. However, the three separate interments indicated that care had been exercised in placing the corpses. In this respect, these burials differed markedly from those of sacrificial individuals dropped into the deep burial shafts of Strs. Q-58 and -95, to be described later in this report. The question arises. May not the adults interred here in Str. Q-59a, and the ones in similar burial cists in Strs. Q-59b and -60, have been of a different social caste than the individuals sacrificed in the temple rites?

Accompanying the three skeletons in the burial cist of Str. Q-59a were eight restorable, ladle-type censers, of which two are illustrated (Fig. 14.10t), two Mayapán Red ware tripod bowls (Fig. 14.10u), and a single jade bead (Fig. 14.9i). Many of these mortuary offerings clustered under and around the burned skeleton. It was observed that neither the



14.2. Strs. Q-58 to -60.

a. Detailed east-west section adjusted to show the central axis of each unit, and section through the terraces north of the stairway of Str. Q-58. 1. The primary plaza floor of lime concrete representing the earliest construction at this location. 2. Basal step of the stairway pertaining to the primary pyramid of Str. Q-58. 3. Terrace floor turning up to the destroyed primary temple of Str. Q-58. 4. Circular masonry casement which forms the burial shaft and retains the dry rock fill of the primary pyramid. 5. Plaza floor of lime concrete laid at the time of building the outer pyramid of Str. Q-58. 6. Tail element of rattlesnake (Fig. 14.6a) probably forming south column of doorway and stones fallen from the upper façade of temple. 7. Temple floors. Only three of the five existing are shown (see detail in Fig. 14.2b). 8. Cist burials in Strs. Q-59a,b and -60. 9. Cache of two pottery vessels (these are shown in Fig. 14.10r). b. Detailed section of north wall of shrine room, Str. Q-58 (also see Fig. 14.5h). This is fairly representative of Mayapán block-and-slab masonry. The roughly trimmed stones were laid in mortar of lime and gravel. Note the many refloorings. c. Section of masonry parapet bordering the north edge of the plaza.

lower nor the upper skeleton bore evidence of burning and that each was separated vertically from the middle severely burned skeleton. This fact may be interpreted to mean that the cist had been re-opened at least twice to admit the two upper bodies. After Skeleton 3 was placed in position, the cist had purposely been filled with loose rock to the top of the shaft and presumably sealed with a lime floor.

STR. Q-59B (FIGS. 14.1; 14.2A; 14.6C,F-I)

This unit, a small round platform with a, steplike projection on the west side, was built on the plaza

floor between Strs. Q-58 and -59a. Like the latter unit, it contained a circular burial cist.

The ancient builders first erected a ring of stone masonry approximately 75 cm high with an interior diameter of 80 cm, and exterior of 220 cm. At this stage, most likely, the body of a young adolescent was placed in a tightly flexed position on the floor of the cist. No formal mortuary furniture accompanied the burial although a small heap of charcoal beside the skeleton suggested some ceremonial burning. The cist had then been filled with stones tightly packed in lime and earth containing broken pottery and fragments of painted stucco or plaster. Perhaps at the time the cist was filled the steplike projection

was added on the west side of the round platform, the plaza level raised, and the round structure surfaced with a heavy cap of lime plaster. The finding of the platform intact with the sealed cist provided us with a numerically small but valuable pottery sample (Lot C-19) for the chronological ordering of certain Mayapán ceramic types. The lack of human-effigy censers in Str. Q-59b, which postdates the construction of both the outer pyramid and temple of Str. Q-58, and Str. Q-59a, adds further verification to the evidence gathered elsewhere in Mayapán that the use of ornately decorated human-effigy censers began comparatively late in the history of Mayapán.

Further additions were made around Str. Q-59b, from time to time. We recovered traces of three successive plaza floors abutting the unit, and remains of a square or rectangular masonry platform which must have completely buried the round unit. The south and west walls of the square platform were found in our excavations, but the north and east walls had been destroyed in ancient times, presumably during the construction of Str. Q-59.

STR. Q-59 (FIGS. 14.1; 14.2A; 14.6C,F)

Owing to considerable destruction, little more than outlines of this unit remained. It consisted of a low rectangular platform one step high facing the stairway of Str. Q-5Q. Upon the platform, we found traces of masonry walls, piers or columns, and a raised square altar (Figs. 14.1; 14.2a). None of these were preserved sufficiently to permit a restorable plan. The general scarcity of fallen debris over the platform, and the presence of low masonry walls and piers or columns did suggest that the structure may have been roofed with thatch partially supported by perishable timbers.

The square altar projecting from the center of the west side of Str. Q-53 possibly once supported a life-size human statue, polychrome painted and modeled in lime stucco. Fragments of such a figure lay buried in the surface debris on the floor of Str. Q-59, on the plaza floor, off the platform edges, and over Str. Q-59a. The smashed condition and wide distribution of the stucco fragments, apparently from a single figure, could have been caused only by human agencies, again suggesting willful destruction. This figure, and many others discovered since in Mayapán, had been modeled in lime stucco around natural stalactites obtained from cenotes and caves. The stalactites were most frequently utilized in the arms and legs, simulated limb bones. They also served a practical purpose, that of strengthening the lime stucco figure.

A plain circular stone altar and a pottery cache were brought to light in the excavations along the west side of Str. Q-59. The altar, 36 cm in diameter and 22 cm high, rested on the uppermost plaza floor (Figs. 14.1; 14.2a); the cache (Figs. 14.2a; 14.10r) evidently had been placed in a shallow hole cut through the same floor.

STR. Q-60 (FIGS. 14.1; 14.2A; 14.6C,D)

The final structure added to those centered on the principal temple was a square platform or shrine with balustraded stairways on the east and west sides. The unit, like Strs. Q-59a and b, contained a burial cist, which in this instance had a rectangular rather than a circular form. Prior to the building of Str. Q-63, an area of the plaza floor 1.5 m in diameter, subsequently covered by the structure, had been subjected to a considerable amount of burning. The normally white lime floor had turned dark gray to black from fires which, to judge from the prominent position on the central axis of Str. Q-58, were probably ceremonial. The placement of Str. Q-60 directly above, its cist centered upon the burned area, did not appear fortuitous and suggests that the adult male buried in the cist was of some importance.

The structure consists of a masonry block constructed of roughly cut stones laid horizontally in mud mortar. Occasionally, larger stones used in the facing were set vertically on edge. The masonry conforms to the typical Mayapán block-and-slab type. The platform, which encased a small rectangular shaft, was erected before the addition of a narrow flight of stairs on both the east and west sides.

The skeleton of an adult male, tightly flexed due to the limited space, was placed without grave offerings on the cist floor. The shaft then had been filled with loose rock without mortar. The top of the structure probably bore a lime floor and plaster on its sides and stairways, however, we found no plaster in situ. The ruined condition of the top level also precluded determining if the platform had supported a super-structure of thin masonry walls or of poles and thatch.

All our excavations around Str. Q-58 were refilled to prevent future deterioration. Strs. Q-59, -59a,b, and -60 were solidified by Strömsvik and left exposed.

STR. Q-82 (165 S, 235 W) (FIGS. 14.3, 14.7, 14.8)

This is a temple in the northeast corner of the north court of the Castillo. It pertains, however, not to the

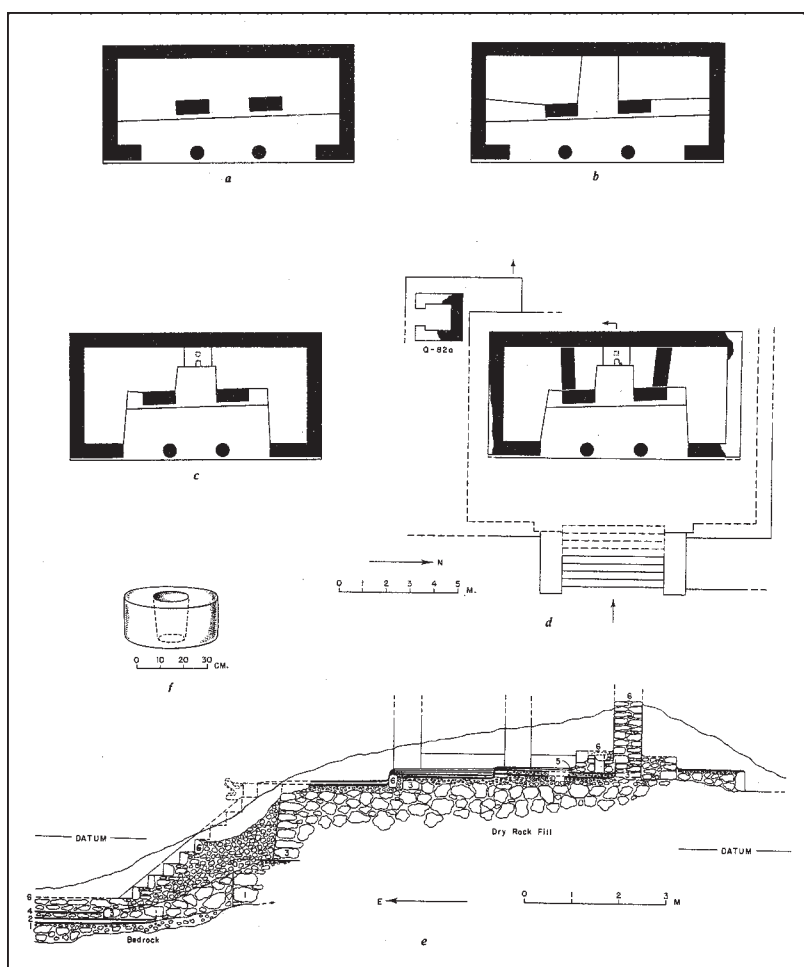
Castillo enclosure but to a court formed by temples, colonnades, shrines, and a house structure lying farther north-east. Str. Q-82 faces east directly over a shrine, Str. Q-89, and across the court towards a long colonnaded building, Str. Q-95.

Before excavation, the temple appeared as a mound of rubble, with a bare trace of walls and doorway columns exposed on the surface. Pollock began excavations here for the purpose of obtaining an accurate plan for the detailed map of the central ceremonial group in Mayapán. These initial investigations disclosed no modern disturbance of the building debris, a somewhat better state of preservation of the temple than we had found in Str. Q-58, and a marked similarity in plan between the two units. Therefore, it was decided that I should investigate Str. Q-82 more thoroughly, and that Strömsvik should solidify and partially restore it as a typical example of a Mayapán temple (Fig. 14.7e,f).

Str. Q-82, like every larger unit so far studied in Mayapán, had undergone a series of changes from the earliest construction to the final stage before the abandonment of the site. We recovered evidence of the structural sequence principally from an east-west trench, on the central axis, dug to bedrock through the stairway to the retaining walls of the substructure (Fig. 14.3e) and from a shallow trench in the same line through the temple. This permitted the exposure of only narrow, trench-wide portions of the earlier units; fuller information on the later ones came from excavations through the floors and benches of the final temple.

The earliest construction is represented by a plaza floor and a vertical terrace wall (Fig. 14.3e,l). The latter, made of large uncut stones laid horizontally in mud mortar with an abundant use of spalls, rests on bedrock. The wall face bears no trace of ever having been plastered, though the terrace has a thin lime floor grouted on crushed rock. The level terrace floor continues westward beyond the limit of our excavations. It is therefore uncertain whether the terrace is the lower of several terraces or a front esplanade for a building standing farther west and buried by the later construction.

The turn-up of the primary plaza floor 1.6 m east of the vertical terrace wall is fairly certain evidence

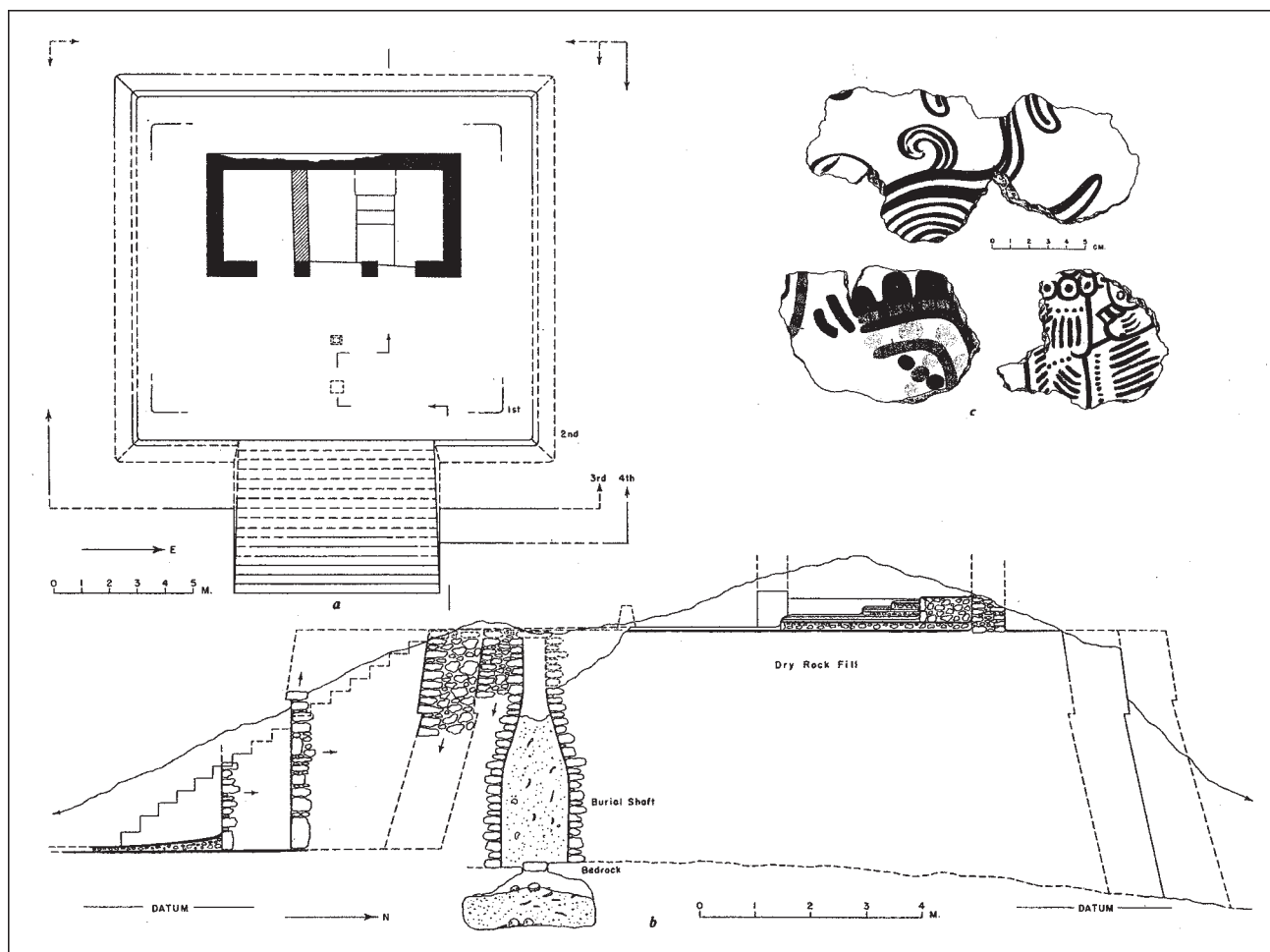


14.3. Structure Q-82.

a. Restored plan of temple during third stage. b. Restored plan of temple during fourth and fifth stages. c. Restored plan of temple during sixth stage. d. Plan of temple and substructure during the seventh, eighth, and ninth stages and a late addition, Str. Q-82a. e. Detailed section on central axis except for the terraces near the southwest corner. 1. Plaza floor turning up to razed stairway. Terrace wall of oldest construction. 2. Plaza floor representing second stage. 3. Remnants of the razed third-phase temple. 4. Plaza floor part of fourth stage. 5. Temple floor representing fifth addition. 6. Plaza floor, stairway, plinth, walls, and altar of sixth stage. f. Banner holder (?) of limestone with large tapering perforation, found in surface debris at base of substructure.

that a stairway giving access to the summit platform originally existed here. We were able to distinguish the line marking the division between the fill of brown earth and stones below the presumed stairway and the large stone fill of a later stairway.

The thin, lime concrete plaza floor extending eastward sealed a leveled stratum composed of occupational debris mingled with brown soil and



14.4. Structure Q-95.

a. Plan showing all additions to the primary temple and substructure. The square in dashed lines at the head of the stairway is the orifice of the burial shaft. Just beyond, shown as a small truncated pyramid is the presumed location of a tapering sacrificial stone found in neck of shaft. b. Section along line shown on the plan. Note: not all floors of the temple are shown. c. Fragments of wall paintings from interior walls of temple. The upper and lower right pieces came from the same design area. In these examples the white background is blue on the original, crosshatching represents red, and black represents black. The fragment in lower left, from a different layer of plaster, had blue background with designs in specular hematite red and various tones of yellow.

14.5. Structure Q-58

a,b. Close-up views looking east and south to the terrace walls of the primary pyramid. Note in b the rounding of the stones forming the terrace corner. c. A distant view of the excavated northwest corner of Str. Q-58 showing the position of the terraces in a and b. d. West side. Terrace walls at lower right belong to the latest pyramid. e. Looking southwest to the stairway, north balustrade, and terraces of the outer pyramid, after excavation. Workmen at upper right center are standing on the temple floor. f. Stairway of the late pyramid from the east. The edges of the flanking balustrades show on the extreme lower left and right, and in the center the remains of a low altar or platform built over the two bottom steps. g. View of the temple, from the northeast, showing the building plinth in the foreground, the north column and jamb of the double-columned doorway. The front wall and doorway of the shrine room may be seen in the background; the orifice of the burial shaft is obscured by the column. h. Detail of masonry in shrine room, showing a section of the front wall on the right, and elevation of the north end wall.



a



b



c



d



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f



g



h

14.6. Strs. Q-58 to Q-60.

a. Stone sculpture fragments representing rattle tail of serpent presumably from south column of temple doorway, Str. Q-58. b. The same, probably from north column of doorway. c. Looking east to small structures at the base of Str. Q-58, after their repair. The first, in the foreground, is Str. Q-59, which completely buried the earlier circular unit, Q-59b. The middle structure is Q-59a; farther one, Str. Q-60. d. West side of Str. Q-60 before repair. The small square platform contained a burial cist, as did Strs. Q-59a and -59b. e. Circular burial cist extending to bedrock in Str. Q-59a. This cist contained skeletons of three adults, pottery, artifacts, and other material listed under Lot C-15. f-i. Views of circular structure, Q-59b, during excavation. [f] shows the unit from the north with the remnants of Str. Q-59 overlying it. The line of stones at the right formed the west edge of a raised level in Str. Q-59. Many of these stones, including the carved element at the near end, were re-used from earlier building belonging to the Puuc style of architecture. [g], same view after removing the remnants of Str. Q-59. Note lime concrete floor sealing the burial cist within the circular structure. [h] and [i], looking south and north to Str. Q-59b after excavation of burial cist, which contained a skeleton of a young adolescent (Lot C-19). The small stone mortar at center left in [i] was in the fill of the cist.

scattered stones. This stratum, resting directly on bedrock, contained midden rubbish deposited before the beginning of building activity at this immediate locality. The rubbish was composed of charcoal, ashes, disarticulated animal and bird bones, stone and bone artifacts, and a considerable number of pottery fragments (Lot C-34). The sherd material demonstrated that despite the long sequence of construction in Str. Q-82, the first unit had not been erected until some time after the inception of the Mayapán period, Lot C-34 containing 95 percent Mayapán period pottery, still may confidently be assigned to the early part of that period. There was a high percentage (20 percent) of Black-on-Cream pottery, a type associated with the initial stages of the Mayapán period. The absence of human-effigy-type incense burners in the sherd sample adds corroborative evidence that these censers are a later manifestation of the culture in Mayapán.

The second addition to Str. Q-82 apparently consisted only of raising the plaza level with another floor (Fig. 14.3e,2). A layer of fine-textured, light brown ashy material was spread thinly over the primary floors and surfaced with lime concrete.

Subsequently, a major re-building took place which increased the size and developed the plan of Str. Q-82 almost to its final form. The builders utilized the older unit as a foundation, erecting a high substructure retaining wall upon it (Figs. 14.3e,3; 14.7c,d). This wall of rough uncut stones laid horizontally without the use of mortar rose on a slight batter and retained the fill of large rocks. A stairway on the east side, built against the early vertical wall and the new sloping one, lead from the plaza level to the wide terrace before the two-room temple. The stairway, like the postulated early one for the primary unit, had been destroyed in ancient times for a later addition to Str. Q-82. We encountered only the basal step of the stairway remaining in position (Fig. 14.3e,3). The single riser, and likely the miss-

ing steps, was formed of well-cut, dressed Puuc-type wall stones, obviously re-used in this Mayapán period structure.

The temple consisted of two long parallel chambers with triple entrances and a step-up to each room (Fig. 14.3a). The exterior plinth, one course high, ran the length of the façade. It did not continue, as in most Maya buildings, around the ends or the rear of the temple. The entrance to the anterior chamber was formed by two plain circular columns equally spaced between door jambs. Similarly placed, free-standing wall sections provided three wide entrances into the back room of the temple. The raising of the floor level of the rear room a step above the front is an uncommon practice in Mayapán. This example in Str. Q-82 represents the only one yet reported at the site, and is a feature more typical of older, Classic Maya architecture.

The temple floors had been surfaced with good quality, hard lime concrete and smoothly polished. Walls, with the exception of a few well-cut Puuc-type stones, were built of normal Mayapán block-and-slab masonry. The use of cut and dressed Puuc-type wall, vault, and cornice stones was reserved principally for stair risers, facing of balustrades, building plinths, and door jambs. The last were entirely faced with re-used Puuc-type stones (Fig. 14.8a-c). Doorway lintels, owing to the wide span, must have been of wood. Columns most probably were built up of roughly trimmed, stone drums, and the temple roofed with wood beams capped with thin slabs and lime concrete as in the final structure.

Uncertainty on these details was due to the fact that the major portion of this temple had been razed at a later time and a similar one erected over the remains. Only the medial wall sections and room benches were utilized in the later temple, whereas the exterior walls, columns, and plinth of the original had been either torn down to the floor level or left standing a maximum of 30 cm.



a



b



c



d



e



f



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h



i

The third stage of Str. Q-82 described in the above section was followed by two seemingly minor building phases before a major renovation, the sixth stage, took place.

The fourth change consisted of masonry benches added to the north and south end of the rear chamber of the temple (Fig. 14.3b), and at about the same time, the raising of the plaza floor adjoining the substructure stairway (Fig. 14.3g). The substructure and temple plan remained essentially the same during this stage and during the fifth, which was a general refurbishing of the entire building. The floor levels of both chambers were raised slightly, and the benches and walls replastered.

Succeeding these building activities, another major renovation of the substructure and temple was inaugurated. The outer walls, doorway columns, and plinth of the older unit were razed, and new ones erected almost identical to those destroyed. The proportions of the new temple changed slightly, i.e. the front wall, columns, and plinth were shifted eastward about 35 cm. The masonry of the walls in the new unit could hardly be distinguished from that in the earlier structure. Roughly trimmed blocks and slabs, heavily chinked with spalls, were laid in a poor quality lime mortar (Fig. 14.8a,d). The plinth, one course high (Fig. 14.8a,d) and the door jambs were built entirely of re-used Puuc-type stones (Fig. 14.7b). The doorway columns were built in layer-cake fashion of roughly circular stone drums averaging 21 cm in height and 58 cm in diameter. These drums, normally quite irregular though occasionally showing evidence of more care in shaping, had been set one on top of another in a thin bed of lime mortar and leveled with spalls (Fig. 14.8a). Around the edge, where the gap between drums was the greatest, thin stones were driven in like wedges to fill the space. The column then received a thick coat of lime plaster which often noticeably increased the diameter. This plaster coating obscured the rough masonry and produced a smooth, monolithic-appearing doorway column.

The temple had been covered with a flat beam-and-mortar roof. We recovered large chunks of lime mortar in the surface debris, some bearing casts of the supporting timbers. One fragment, evidently from the roof edge, indicated that a rectangular molding projected approximately 6 cm beyond the upper wall zone, and that shallow gutters modeled in the surface plaster provided drainage to special outlets on the roof edge.

At the time of construction of this final temple, the earlier benches on the interior were extended to fill each end of the front room (Fig. 14.3c). Also, a masonry altar was added for the first time in the center of the rear chamber against the back wall. A

small square cist in the altar probably had held a dedicatory cache (Fig. 14.3e,6).

The substructure also underwent change. Two new vertical terrace walls encased the older ones, the plaza level was again raised, and a new stairway was built on the east side against the earlier terrace walls (Fig. 14.3e,6). The stairway, supported by a dry rubble fill of small stones, had flanking balustrades. Both the stair risers and the sloping faces of the balustrade were built exclusively with well-cut and dressed Puuc-type stones (Figs. 14.3e,6; 7c-f).

Two stone serpent heads, each with a horizontal tenon, were found in the surface debris on the plaza floor fronting Str. Q-82. One (Fig. 14.8g,h) lay at the foot of the south balustrade; the other (Fig. 14.8j) had fallen several meters northeast of the base of the north balustrade. As both balustrades were preserved at the base, neither showing a gap for the tenoning of a head, we are certain they fell from a higher position on the substructure. During the repair of Str. Q-82, the better-preserved example was re-set in the vertical zone at the top of the south balustrade, the most logical place (Fig. 14.7e). Another fragment (Fig. 14.8k) from a carved serpent head also came from the surface debris, as did a plain circular stone disc with a central tapering perforation (Fig. 14.3f). It lay approximately 2 m southeast from the base of the south balustrade. The perforated disc may have served as a banner holder on the front terrace of the temple. Lastly, the torso of a human figure sculptured in the round was uncovered in the debris on the front terrace near the southeast corner of the temple (Fig. 14.7b).

It is of interest to note that severely burned floor surfaces appeared for the first time in association with this new temple and its masonry altar in the rear chamber. Whether the evidence of burning and the addition of an interior altar may be indicative of a change in function of the structure or of its increased popularity for religious practices cannot be ascertained. Be this as it may, the excessive burning caused the normally white lime floors to be blackened along the central east-west axis from the front terrace through to the altar in the back room.

At least three minor renovations followed the completion of the sixth-stage temple. Each change included a new floor over the interior and a replastering of the benches and walls. The final, ninth, stage (Fig. 14.3d) of building activity witnessed, besides the floor and plaster renewal, the building of cross walls in the rear chamber. These formed an interior plan identical to that of Str. Q-58.

The story of the final activities associated with Str. Q-82 may be gleaned from the records left as rubbish strewn over the interior and exterior of the



a



b



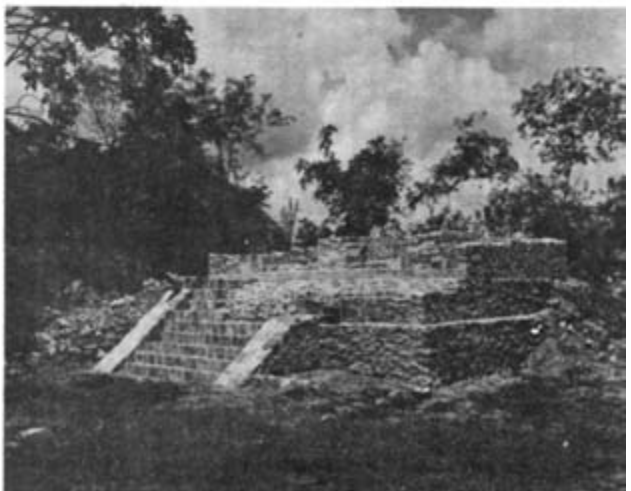
c



d



e



f

14.7. Structure Q-82.

a. Looking west after partial excavation of the temple. b. Looking northwest to partially excavated temple. The much eroded carved stone in front of the building plinth (lower center of photo) represents the body of a human figure; the head was not found. c. Looking west, after partial excavation of the substructure. d. The same from the northeast. The well-cut and dressed stones utilized in the stairway and elsewhere in Str. Q-82 were salvaged and re-used by the Mayapán people from older and presumably long abandoned Puuc-style buildings. e,f. Looking west and southwest, after solidification.



a



b



c



d



e



f



g



i



h



j



k

14.8. Structure Q-82

a. Close-up of double-columned doorway, looking southwest. b. Shrine room, looking southwest. c. Doorway of shrine room partially excavated. Thin stones leaning against north jamb are slabs which fell when the supporting wood lintels rotted. d. Plinth of final building made of re-used Puuc-type wall stones. The trench on the central axis of the temple exposed a succession of lime concrete floors. e. Trench showing exploration of the numerous floors, altars, and benches in the shrine room. The rear wall of the temple is typical Mayapán block-and-slab masonry. f. Exterior southwest corner of the temple and secondary platforms built against it. g–i. Tenoned serpent head found in building debris at foot of the south balustrade of the stairway. Max. length, 95 cm. This sculpture was reset at the top of the balustrade (see Fig. 14.7f). j. Fragment of a tenoned serpent head from the debris in front of the stairway. Max. length approx. 50 cm. k. Fragment (eye element) from a serpent sculpture found in debris at foot of the stairway. Fragment 25 cm diam.

temple. It would seem from the enormous amount of broken incense burners of the human-effigy type that the temple had been in constant service for appeasing the Maya gods. The floors bore the signs of burning; charcoal and ashes intermingled with a few artifacts and thousands of fragments from pottery censers covered the temple floors to a depth varying from 5 to 20 cm. The heaviest concentration lay before the altar and in the shrine zoom doorway. The rubbish was distributed more thinly at either end of the rooms, on the benches, and on the front terrace. A thick deposit lay around the base of the substructure, particularly in the corners of the stairway, as if the temple floors occasionally were swept clean and the debris thrown off the terrace edges. Altogether, we recovered from the surface of Str. Q-82 over 8,300 pottery fragments (Lot C-32), of which 80 percent came from censers. The proportion of censers reached over 96 percent of all sherds from above the floors inside the temple.

One of the last human activities identified within Str. Q-82 apparently was an act of vandalism. The top of the masonry altar in the shrine room was torn off and the contents of the cist were removed. One large jade bead (Fig. 14.9g) found in the debris at the front of the altar may have been from the cache and have accidentally been dropped and lost by the looters. Also, the complete tripod cup (Fig. 14.10s) found near the jade bead conceivably could have been from the cist and have been discarded as worthless. Such vessels often accompany dedicatory offerings in temple and shrine caches in Mayapán. The looting may have taken place at the time of abandonment of Mayapán, or shortly thereafter. The act occurred before the collapse of the temple roof, because we found undisturbed roof and wall debris covering the altar, benches, and floors to a depth of 0.5–1.0 m.

Str. Q-82 differed in one major feature from Strs. Q-58 and Q-95 described below. There was no burial shaft within the structure, no minor platforms with burial cists associated with the unit, nor any evidence recovered in the excavations to suggest sacrificial rites.

**STR. Q-82A
(FIG. 14.3D)**

A late construction added to the substructure of Str. Q-82 was a small single-room shrine located off the southwest corner of the temple. The shrine faced south to the Castillo court and was built of rough stones set on edge without mortar. The lack of surface debris precluded its having been vaulted. The tiny building may have had a flat, beam-and-mortar roof and resembled the numerous miniature shrines found at Tulum and along the east coast of Yucatán.

**STR. Q-95 (125 S, 200 W)
(FIGS. 14.4; 14.9A–F)**

Our attention was drawn to this unit because of its irregular plan as depicted on the map, its relatively high substructure, and the presence of a slumped area in the debris on the summit platform. Pollock began the investigation of the substructure; Strömsvik partly excavated the temple and the deep burial vault which was indicated by the slumped surface debris; and I completed the study of the temple and substructure.

Str. Q-95 stands at the northeast corner of the same court on which Str. Q-82 is situated. The building faces south toward a low square mound, Str. Q-96, on the court floor. This structure, though not excavated, suggests a shrine or platform with a burial cist comparable to those at the base of Str. Q-58. The investigation of Str. Q-95 disclosed that this unit also had undergone many remodelings over a long period of time. Four major changes were distinguished in the substructure and there were frequent renovations of the temple, but we were unable to determine, except for the primary structure, which additions to the platform coincided with those on the temple.

The oldest feature identified in connection with Str. Q-95 was a small oval subterranean chamber (Fig. 14.4b). Evidently all successive architectural and ceremonial activities centered around it. Originally



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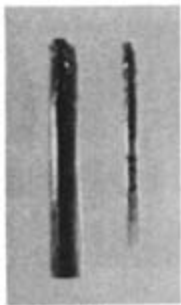
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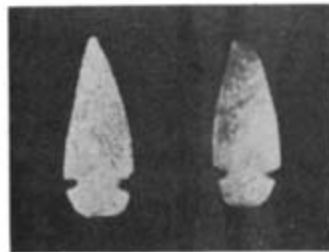
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14.9. Structure Q-5 and Material Culture.

a. Junction of the fourth- and third-phase terrace walls with the north wall of the second-phase stairway. Note lack of balustrade on this stairway. b. Second-phase terrace wall at the center of the north side. The apron molding shows at center of picture. c. The northwest corner showing the second-phase terrace wall and abruptly rounded corner. d. View looking northeast to square pillars forming the triple-entrance doorway of the temple. Note the secondary partition wall abutting the pillar in the foreground. e. East pillar of the temple doorway showing the numerous replasterings on the inner face. f. Looking southwest to the entrance to the burial shaft on the front terrace of Str. Q-95. g. Unusually large spherical head, low polish, mottled light green jade, 3.9 cm diam. found in front of altar on shrine floor. Str. Q-82. Lot C-32, Cat. no. 53-113. h. Irregular-shaped bead, polished, mottled clear green jade, 2.2 cm max. length. From room below burial shaft in Str. Q-95. Lot C-30, Cat. no. 53-91. i. Flattish bead, highly polished, mottled light green jade, 2 cm long. From burial cist in Str. Q-59a. Lot C-15, Cat. no. 53-20. j. Flattish bead, low polish, mottled green jade, 1.7 cm long. From surface excavations of Str. Q-95. Lot C-31, Cat. no. 53-161. k. Tubular jade bead, burned by fire to gray color, 2.3 cm long. Found in lower levels of burial shaft in Str. Q-95. Lot C-29, Cat. no. 53-67. l. Celt-shaped bead, polished, clear green jade, 0.8 cm max. dimension. From the burial shaft in Str. Q-58. Lot C-20, Cat. no. 53-40. m. Obsidian flake-blades, clear gray stone, largest 8 cm long. From above the temple floor, Str. Q-82. Lot C-32, Cat. no. 53-115. n. Obsidian core of abnormally small size, clear black stone, 2.6 cm long. From surface excavations of Str. Q-59. Lot C-17, Cat. no. 53-62. o. Arrowheads, opaque brownish chert. Complete one 4.7 cm long. Both found together below earliest floor joining west side of Str. Q-59a. Lot C-17, Cat. no. 53-38. p. Fragment of chipped flint point, 5.3 cm long. Found in lower levels of the burial shaft in Str. Q-95. Lot C-29, Cat. no. 53-64. q. Chipped flint point, fragment 3.4 cm long. From surface of Str. Q-82. Lot C-32, Cat. no. 53-114. r. Chipped flint point, 8.3 cm long. From the lower levels in the burial shaft of Str. Q-95. Lot C-29, Cat. no. 53-65.

there may have been a natural cavity in the porous limestone which the Mayapán people enlarged, leaving a round opening on the surface. The chamber first served as a place of burial, then seemingly a refuse dump. The bodies of an elderly couple, the female's skull highly deformed, lay on the chamber floor. Heaped over them, and filling the cavity to within a few centimeters of the roof, was midden rubbish containing ashes and charcoal intermingled with an extraordinary number of animal and bird bones; artifacts of bone, shell, and stone; two complete pottery bowls (Fig. 14.10v); pot sherds; and the disarticulated skeletons of two young children. Both skeletons had artificially deformed skulls. Except for the human bones and the whole vessels, the material from the chamber (Lot C-30) appears to be normal household refuse. The two whole vessels sat on top of the midden unassociated with the aged adults on the floor or the scattered bones of the children. Yet the importance of the chamber and its contents was sufficient to cause the sealing of the room with a capstone and the erecting, directly over it, of an elaborate burial shaft around which centered the major activities thereafter.

The earliest architectural unit consisted of a massive substructural platform, 4 m high, erected simultaneously with the circular burial shaft, supporting a single-room temple. The shaft, founded on bedrock, was constructed in the form of a tall-necked bottle with the narrow upper part square in plan (Fig. 14.9f) and just large enough to permit a human body to pass freely. The opening at the level of the front terrace doubtlessly had been covered with a capstone, removable when necessary.

The platform of Str. Q-95, lacking terraces, differed from the substructures of Q-58 and Q-82. Instead of having terraces its walls rose on a batter from ground level to summit and bore a heavy apron molding around the top (Fig. 14.4b). The walls were constructed of roughly trimmed blocks and slabs laid in poor mortar of lime, earth, and gravel. Somewhat better-shaped blocks were employed at the platform corners and trimmed to produce an abrupt rounding like those of the second phase (Fig. 14.9c).

The temple, set far back on the rear half of the substructure and thus leaving an unusually broad front terrace, has a triple entrance formed by square pillars or columns (Figs. 14.4a; 14.9d,e). The absence of a building plinth, a single large room, and the square pillars are features distinguishing Str. Q-95 from Strs. Q-58 and -82. Indeed, doorway pillars built of squared blocks are unknown elsewhere in Mayapán. In this one example, the stones are laid one upon another in the same manner as the circular drums in the normal Mayapán columns. Wall masonry in Str. Q-95 is the typical rough block-and-slab type. Doorway jambs are built of full-width stones. These and the square blocks of the pillars are evenly cut but not dressed, a fact which demonstrates that on occasion in the Mayapán period some fair stone-cutting was achieved. The quality, however, never equals that of the normal workmanship evident in Puuc-style buildings.

The primary temple of Str. Q-95 continued in use, with exterior unchanged, probably up to the abandonment of the site. Minor renovations of the interior took place many times. One of the first changes witnessed the building of a partition wall



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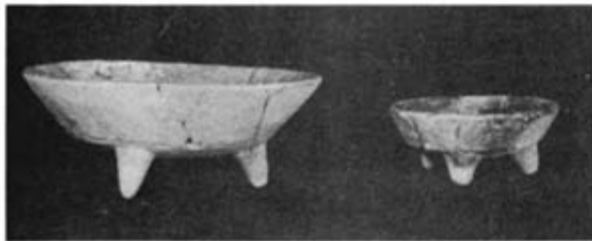
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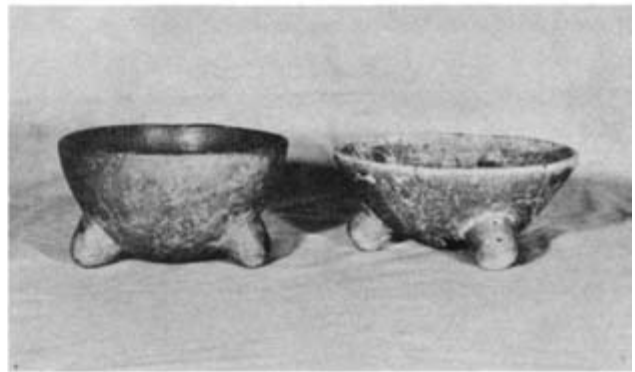
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14.10. Material Culture.

a,b. Limestone manos, large surfaces smooth from wear, (a) 14.6 cm long. Both from sealed chamber below the burial shaft in Str. Q-95. Lot C-30, Cat. nos. 53-167,-168. c. Hammerstone, probably re-used fragment of limestone mano, 8.8 cm diam. Found with a,b, Cat. no. 53-169. d. Bark-beater, fine-grained limestone, apparently re-used as a hammerstone, 9.4 cm long. From surface of Str. Q-95. Lot C-31, Cat. no. 53-104. e. Unidentified object of limestone, traces of plaster on all surfaces except tenon, 14.5 cm long. From surface excavations of Str. Q-59. Lot C-17, Cat. no. 53-49. f. Shell pendant, perforated at narrow end, 2 cm long. Found in burial shaft of Str. Q-95. Lot C-29, Cat. no. 53-69. g. Tubular shell beads, longest 2 cm. These and the shell tinklers [h], were found on the surface of Str. Q-82. Lot C-32, Cat. no. 53-116. h. Shell tinklers, av. 2.5 cm long; 2 in center are complete univalves, the others are halves cut from univalves. Cat. no. 53-117. i-l: Perforated shell ornaments, [i] 5 cm diam. All from Str. Q-95. [h] on surface, Lot C-31, Cat. no. 53-106. [i] and [l] in burial shaft, Lot C-29, Cat. no. 53-66. [j] from sealed room below burial shaft, Lot C-30, Cat. no. 53-89. m. Bone awl with trident at opposite end, 6.7 cm long. Found under lowest plaza floor at base of Str. Q-82 stairway, Lot C-34, Cat. no. 53-130. n. Sting-ray tail, incomplete, 4.8 cm long. From surface of Str. Q-82. Lot C-32, Cat. no. 53-116. o. Perforated animal tooth, 2.8 cm long. From sealed room below the burial shaft in Str. Q-95. Lot C-30, Cat. no. 53-90. p. Copper ornament, irregularly shaped disc, thin metal with blue patina, 1 cm diam. Found with gold fragment, (q), in burial shaft of Str. Q-95. Lot C-29, Cat. no. 53-71. q. Gold fragment of very thin sheet metal, 1.8 cm long. Cat. no. 53-70. r. Cache vessels of unslipped, coarse paste, light gray pottery, largest 11.8 cm max. diam. The miniature pot lay inside the larger at the west edge of Str. Q-59, just below the topmost plaza floor, Lot C-17. s. Miniature tripod cup, same ware as above, 7.5 cm high. From temple floor, Str. Q-82. Lot C-32. t. Ladle censers, same ware as above, no perforations in bottom of bowl, handles hollow, large bowl 19 cm diam. Both found with Mayapán Red Ware bowls, [u], in burial cist of Str. Q-59a. Lot C-15. u. Mayapán Red Ware tripod bowls, solid conical feet, interior slipped red and polished, exterior unslipped cream, larger vessel 23 cm diam. Lot C-15. v. Mayapán Red ware tripod grater bowls, hollow feet, polished red slip over all exterior and down to scoring on interior, left bowl 17.8 cm diam. Both from sealed chamber below the burial shaft of Str. Q-95. Lot C-30.

(Fig. 14.4a) across the west third of the interior, thus creating a cell-like end room. Thereafter, apparently, all new additions were concentrated in the larger east chamber. Could the smaller one have served as a guardroom for victims awaiting sacrifice?

Quite certainly the east chamber was a place of importance ceremonially. A rectangular masonry altar built against the rear wall became the focal point for the burning of copal incense. In one instance a layer 4 cm thick of partially burned copal covered the floor in front of the altar. From time to time in the east room were added benches; steps leading to the altar, new floors, and new plastering of the chamber walls. At least 10 successive refurbishings were recorded (Figs. 14.4b; 14.9e). Both the floors and walls had been painted, the floors monochrome in black, blue-gray, or light gray, and the walls in polychrome designs (Fig. 4c).

The second phase of building activity on the substructure saw the complete encasement of the primary one by another (Figs. 14.4a,b; 14.9a-c). The new platform was an exact replica of the earlier substructure except for size. A broad stairway, without the usual flanking balustrades, led from the plaza level to the temple terrace. Step risers were principally of re-used Puuc-type stones perhaps salvaged from the torn-out primary stairway.

A third enlargement of the platform of Str. Q-95 considerably increased its areal dimensions but not its height. This addition differed slightly from the

earlier ones in having vertical walls to the height of the apron molding along the front of the structure, while retaining battered walls on the west side as shown by our excavations, and presumably on the rear and east sides. We encountered the wall preserved as high as the first course of the molding only in one place where it joined the north stairway. It is uncertain if the molding continued vertically or rose on a batter as on the earlier platforms.

The fourth renovation of the substructure may have been incomplete, as we could trace its walls only from the north stairwall around to the northeast corner. The addition may have been structurally necessary to buttress the older walls. It was built vertically like the third phase wall on the south side. The stairway of the second period continued in use throughout the later stages.

The function of Str. Q-95 may be surmised from the gruesome contents of the deep burial shaft. Its greatest part, from the sealed orifice of the subterranean chamber to the beginning of the constriction towards the shaft neck, had been filled with over 40 skeletons of children, adolescents, and adults of both sexes; bones of animals and birds; charcoal; ashes; broken pottery; and artifacts of metal, bone, shell, and stone. That the humans, animals, and birds had been sacrificed upon a tapered stone altar in front of the temple appears indubitable. Such a stone was found in the collapsed part of the shaft's north side. It is certain from the stratigraphy of the contents of

the shaft (Lot C-29) that the tossing in of the bodies and refuse continued over a lengthy period. As an example, pottery censers of the human-effigy type comprised approximately 50 percent of all sherds in the upper levels and were entirely absent in the bottom level. The debris mixed with the bones throughout the shaft probably represents the sweepings from the temple and front terrace. The shaft would seem a most unlikely place to sweep trash had it contained persons of importance. This disregard for the dead and the lack of formal mortuary furnishings with these individuals further suggest that they were the victims of sacrifice by the Mayapán priests.

MATERIAL CULTURE

LOT C-15: Contents from burial cist in Str. Q-59a: 3 adult skeletons; burned copal; charcoal; 6 fragments of stucco from a modeled human figure; 1 obsidian flake-blade; 1 jade bead, Cat. no. 53-20 (Fig. 14.9i); 2 limestone manos, Cat. nos. 53-46, -47; 2 Mayapán Red ware tripod bowls and 8 Ladle-Type Censers (Fig. 14.10t,u); sherds.

Total sherds: 653; 1.8 percent Puuc period; 98.2 percent Mayapán period (Unslipped Jars, 11.8; Effigy Censers, 20.1; Ladle-Type Censers, 32.3; Unidentified, 10.8; Mayapán Red ware, 22.1; Red-on-Cream, 1.1).

LOT C-16: Contents from below second plaza floor and above primary floor or bedrock: 3 fragments of human bone; 1 obsidian flake-blade; sherds.

Total sherds: 646; 9.4 percent Puuc period; 90.6 percent Mayapán period (Unslipped Jars, 23.2; Effigy Censers, 4.5; Ladle-Type Censers, 0.3; Unidentified, 18.0; Mayapán Red ware, 43.4; Black-on-Cream, 1.2). Most of the 29 effigy-censer fragments came from a trench along the north stairwall of Q-58, where a heavy deposit of censers lay above the plaza floor. Though unnoticed in the field, the plaza floor may not have been unbroken, thus permitting surface sherds to filter through.

LOT C-17: Contents from surface and unsealed construction fill from east base of Str. Q-58 and from Strs. Q-59 and Q-60: 44 fragments of human and animal bones; 15 fragments of modeled and painted stucco architectural ornaments and human figures, Cat. no. 53-51; 6 obsidian flake blades; 1 very small obsidian core, Cat. No. 53-62 (Fig. 14.9n); 2 arrowheads, Cat. no. 53-38 (Fig. 14.9o); 1 stone object, Cat. no. 53-49 (Fig. 14.10a); 3 fragments of unworked shell; 2 cache vessels (Fig. 14.10r); sherds.

Total sherds: 3,577; 2.7 percent Puuc period; 97.3 percent Mayapán period (Unslipped Jars, 6.1;

Effigy Censers, 27.7; Ladle-Type Censers, 0.7, Miscellaneous; and Unidentified 28.9; Mayapán Red ware, 33.2; Fine Orange, 0.4; Black-on-Cream, 0.2).

LOT C-17A: Material from above room floors in Str. Q-58: 1 obsidian flake-blade; sherds.

Total sherds: 2057; 0.4 percent Puuc period; 99.6 percent Mayapán period (Unslipped Jars, 1.8; Effigy Censers, 71.9; Ladle-Type Censers, 1.1; Unidentified, 16.0; Mayapán Red ware, 7.7; Red-on-Cream, 0.6; Black-on-Cream, 0.4; Fine Orange, 0.1).

LOT C-18: contents from below primary plaza floor at east base of Str. Q-58: 16 animal and bird bones, one perforated bone; 1 obsidian chip and 1 flake-blade; sherds.

Total sherds: 226; 4.4 percent Puuc period; 95.6 percent Mayapán period (Unslipped Jars, 23.9; Ladle-Type Censers, 3.1; Miscellaneous and Unidentified, 7.1; Mayapán Red ware, 55.7; Black-on-Cream, 4.9; Fine Orange, 0.9).

LOT C-19: Contents from burial cist in Str. Q-59b (Fig. 14.6f-i): 1 skeleton of young adolescent; charcoal; 1 obsidian flake-blade; 1 stone basin (Fig. 14.6i); 3 fragments of painted stucco; sherds.

Total sherds: 193; 2.1 percent Puuc period; 97.9 percent Mayapán period (Unslipped Jars, 6.2; non-Effigy Censers, 43.5; miscellaneous and Unidentified, 5.2; Mayapán Red ware, 43.0).

LOT C-20: Contents of unsealed and disturbed burial shaft in Str. Q-58 (Fig. 14.2a): bones of more than 4 adults and children, some bones show evidence of burning; charcoal; ashes; 1 jade bead, Cat. no. 53740 (Fig. 14.9l); 12 obsidian flake-blades; 2 fragments of unworked shell; sherds.

Total sherds: 466; 3 percent Puuc period; 97 percent Mayapán period (Unslipped Jars, 15.5; Effigy Censers, 24.7; Ladle-Type Censers, 0.4; Unidentified, 9.0; Mayapán Red ware, 46.6; Black-on-Cream, 0.4; Fine Orange, 0.4).

LOT C-21: Sherds from fill of late pyramid, Str. Q-58.

Total sherds: 174; 10.3 percent Puuc period; 89.7 percent Mayapán period (Unslipped Jars, 6.3; Effigy Censers, 16.1; Miscellaneous and Unidentified, 23.0; Mayapán Red ware, 34.0; Black-on-Cream, 8.6, Fine Orange, 1.7).

LOT C-29: Contents of burial shaft in Str. Q-95 (Fig. 14.4b): Bones of more than 41 children, adolescents, and adults; large quantity of animal and bird

bones; charcoal; ashes; 2 jade beads, Cat. nos. 53-67 (Fig. 14.9k), -68; 44 obsidian flake blades; 1 obsidian thumbnail scraper, Cat. no. 53-164; 2 flint points, Cat. nos. 53-64, -65 (Fig. 14.9p,r); 8 flint chips; 3 fragments of unworked shell; 3 perforated and 1 small tinkler shell, Cat. no. 53-66 (Fig. 14.10i); 2 shell pendants, Cat. nos. 53-69 (Fig. 14.10f), -163; 14 snail shell beads, Cat. no. 53-73; 5 tubular bone beads, Cat. no. 53-72; 1 fragment of gold, Cat. no. 53-70 (Fig. 14.10q); 1 copper disc, Cat. no. 53-71 (Fig. 14.10p); sherds.

Total sherds: 2,211; 0.1 percent Puuc period; 99.9 percent Mayapán period (Unslipped Jars, 10.5; Effigy Censers, 41.7; Ladle-Type Censers, 2.3; Unidentified, 19.1; Mayapán Red ware, 24.2; Hard Red ware, 0.8; Red-on-Cream, 0.5; Black-on-Cream, 0.4; Fine Orange, 0.4).

LOT C-30: Contents of sealed chamber below burial shaft of Str. Q-95 (Fig. 14.4b): one aged male and one female skeleton; 2 deformed skulls of children 4–6 years of age; quantities of animal and bird bones; charcoal; ashes; 1 jade bead, Cat. no. 53-91 (Fig. 14.9h); 12 obsidian flake-blades; 3 limestone manos, Cat. nos. 53-167, -168 (Fig. 14.10a,b); 1 hammerstone, Cat. no. 53-169 (Fig. 14.10j); 2 shell ornaments, Cat. nos. 53-88, -89 (Fig. 14.10j); 5 unworked shells; 1 animal tooth, perforated for suspension, Cat. no. 53-90 (Fig. 14.10o); 2 Mayapán Red ware grater bowls (Fig. 14.10v); sherds.

Total sherds: 657; 0.3 percent Puuc period; 99.7 percent Mayapán period (Unslipped Jars, 50.0; Miscellaneous and Unidentified, 1.1; Mayapán Red ware, 45.7; Hard Red ware, 1.1; Black-on-Cream, 0.5; Fine Orange, 1.3).

LOT C-31: Material from surface and general excavations of substructure and temple, Str. Q-95: charcoal; copal; 1 jade bead, Cat. no. 53-161 (Fig. 14.9j); 6 obsidian flake-blades; 1 flint chip; 1 bark beater, Cat. no. 53-104 (Fig. 14.10d); 1 polishing (?) tool of very hard, fine-grained limestone, Cat. no. 53-105; 5 shell ornaments, Cat. nos. 53-87, -106 (Fig. 14.10k), -160; 2 unworked shells; 1 cut deer (?) bone;

many fragments of painted wall plaster with colors in blue, yellow, orange, red, and black (Fig. 14.4c); sherds.

Total sherds: 2,072; 0.3 percent Puuc period; 99.7 percent Mayapán period (Unslipped Jars, 5.3; Effigy Censers, 66.2; Ladle-Type Censers, 0.5; Unidentified, 4.7; Mayapán Red ware, 21.7; Red-on-Cream, 0.2; Black-on-Cream, 0.5; Fine Orange, 0.5).

LOT C-32: Material from above floors, terraces, and stairway of Str. Q-82: 20 animal and bird bones; charcoal; ashes; 3 jade beads, Cat. nos. 53-112, -113 (Fig. 14.9g), -159; 16 obsidian flake-blades, Cat. no. 53-115 (Fig. 14.9m); 1 flint point, Cat. no. 53-114 (Fig. 14.9q); 1 flint chip; 1 limestone disc, pot cover (?); 1 small, carved stone figure, Cat. no. 53-211; 9 shell ornaments, Cat. nos. 53-116 (Fig. 14.10g), -117 (Fig. 14.10h), -210, -212; 1 bone awl, Cat. no. 53-209; 1 sting-ray tail, Cat. no. 53-118 (Fig. 14.10n); 1 miniature tripod cup (Fig. 14.10s); sherds.

Total sherds: 8,364; 0.1 percent Puuc period; 99.9 percent Mayapán period (Unslipped Jars, 1.9; Effigy Censers, 80.2; Ladle-Type Censers, 0.4; Unidentified, 3.2; Mayapán Red ware, 13.5; Red-on-Cream, 0.2; Black-on-Cream, 0.4; Fine Orange, 0.1).

LOT C-33: Contents from fill of benches, below floors, and stairway of Str. Q-82: 1 obsidian flake-blade; sherds.

Total sherds: 399; 2 percent Puuc period; 98 percent Mayapán period (Unslipped Jars, 22.6; Effigy Censers, 12.3; Ladle-Type Censers, 135; Unidentified, 1.5; Mayapán Red ware, 52.4; Black-on-Cream, 7.3; Fine Orange, 0.2).

LOT C-34: Contents from below earliest plaza floor under stairway of Str. Q-82 (Fig. 14.3b): 72 animal and bird bones; charcoal; 2 flint chips; 1 bone implement, Cat. no. 53-130 (Fig. 14.10m); sherds.

Total sherds: 785; 5 percent Puuc period; 95 percent Mayapán period (Unslipped Jars, 10.5; Non-Effigy Censers, 0.4; Unidentified, 14.5; Mayapán Red ware, 49.0; Black-on-Cream, 20.0; Fine Orange, 0.6).

THE NORTHERN TERMINUS OF THE PRINCIPAL SACBE AT MAYAPÁN

H.E.D. POLLOCK

The principal sacbe, or causeway, at Mayapán is seen on the map of the ruins (Jones 1952) running from the western part of Square R in a southwesterly direction to the northeastern part of Square Z. The roadway connects two groups of structures, each group forming a quadrangle about a court, that give the impression of having been of some importance, to judge from size of structures and quality of workmanship. The northern group (Strs. R-95 to -99), which is the larger, appears to be domiciliary in character and it is probable that the oft misused term "palace" can appropriately be applied to it. It is likely that the southern group also was primarily domiciliary, but its character is less clear from superficial observation. One cannot, moreover, in the absence of further excavation disregard the possibility that these assemblages may have served as community ritual centers.

Artificially constructed roads, or sacbes, are of course well known in the Maya area, where they

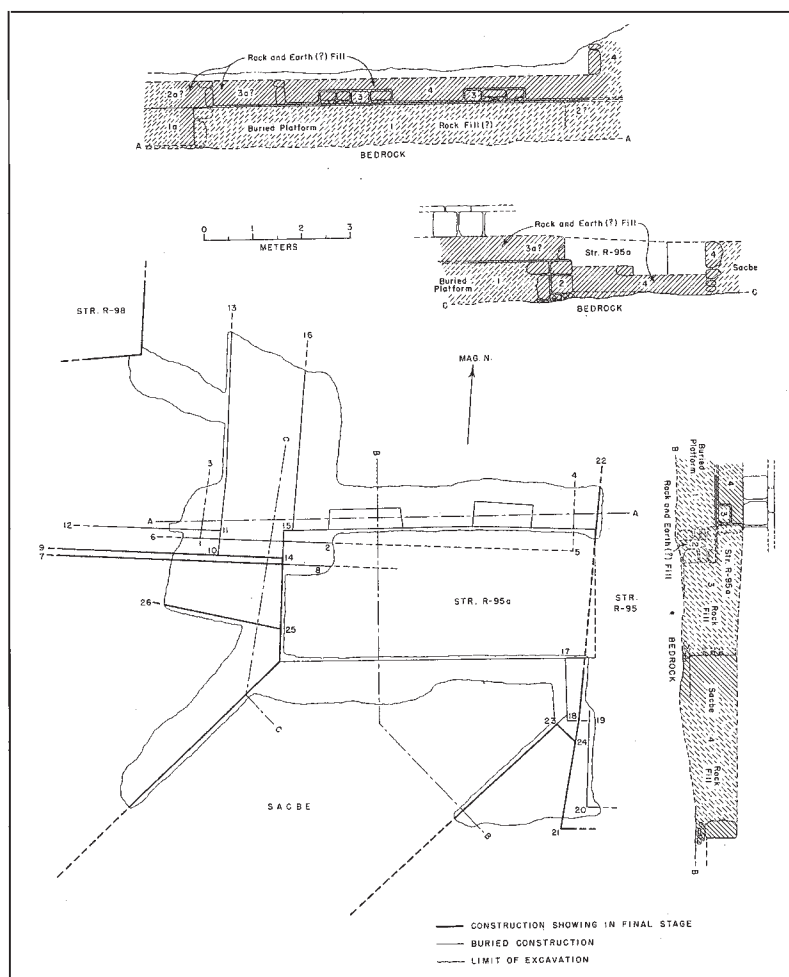
occur in both the northern and southern regions. For the most part they presumably date from the Classic period, but at Chichén Itzá certain examples appear to be from Toltec times. Recently, after the work described in this paper was completed, William T. Sanders informed me of the existence of two sacbes on the island of Cozumel, a fact of which I was ignorant. It is entirely possible that those roads are of the same late period represented by the Mayapán remains. It should also be noted that there are two other constructions at Mayapán, one in the southwestern part of Square E, the other in the southern part of Square Y, that are considerably smaller than the principle sacbe and of which there is some question as to function. They probably are small roads and deserve the designation sacbe.

The work described here was undertaken to find the time of construction of the sacbe: first, in relation to that of the quadrangle (Strs. R-95 to -99) at the northern end; secondly, and if possible, in relation

to the period of occupation of the site. There are ample traces at Mayapán of remains that almost surely date from a time earlier than that of the great epoch of the city, remains apparently of the Puuc period of Yucatán history. These occur in the form of pottery and of loose and re-used building stone. No structure that can be assigned to Puuc period, or for that matter to the Toltec period of Chichén Itzá, has yet been identified. We wondered if the sacbe, and possibly some underlying construction in Group R-95 to -99, might be of an early time. This did not turn out to be the case. The sacbe apparently was constructed not only during the Mayapán period but probably late in that era.

In order to relate the detailed plan given here (Fig. 15.1) to the plan of the group shown on the map of the site, it should be noted that Str. R-95 is the small southern mound on the map and Str. R-98 is the western mound. Str. R-95a was mostly buried and developed only by excavation. On the map Str. R-98 appears to rest immediately on the southern edge of the general terrace supporting the group, whereas the building proper, of which only the southeast corner is shown in Figure 15.1, actually rests about 4 m north of the edge of the terrace. Only the west end and southwest corner of the substructure of Str. R-95 are shown in Figure 15.1, our excavations not having been carried as far east as the superstructure. The line of this substructure on the detailed plan closely approximates that shown on the map.

So far as I know, no earlier excavations, with one minor exception, had been carried on in connection with the sacbe or at Group R-95 to -99. The northern end of a vaulted passage that forms an entrance to the quadrangle at the northeast corner of the court (shown in dashed line on the map) had been cleared of debris, presumably by E. W. Andrews in 1942. A photograph of this excavation shows four or five steps rising from ground level to the floor of the passage. The present excavations are indicated in Figure 15.1 and shown elsewhere in the illustrations accompanying this report. Digging extended to bedrock at the east side of the sacbe and at the southwest corner of the substructure of Str. R-95, at the west side of the sacbe, along the west side and along part of the south side of Str. R-95a, and along the south face of the main terrace of the group from



15.1. Plan and Sections of the Northern Terminus of the Sacbe.

Numbers on plan are referred to in text. Numbers in sections show stages of construction as described in text.

its juncture with Str. R-95a for 2 or 3 m westward. North of this line of the main terrace we penetrated, except in one small area, only to an earlier floor level about 50 cm below surface. A detailed description of the progress of our excavation would seem to add nothing to an understanding of the situation and will not be given.

BUILDING SEQUENCE

As previously noted, the determination of the relative time of construction of the sacbe was the primary objective of our work. Owing to discontinuity of floors, which often occurred as disconnected patches, it is not possible to be certain of the precise sequence of construction of all terraces and platforms uncovered. In major outline, however, the sequence is clear, the description that follows will

indicate where we appear to be on sure ground, where uncertainty prevails.

The earliest construction uncovered is a buried terrace or platform later incorporated into the main terrace of Group R-95 to -99. The southern edge of this buried platform, which rests on bedrock, is shown in Figures 15.1, 1-2; 15.2a. An old corner is located at 1, where the edge of the platform originally turned and extended north (Fig. 15.1, 1-3) for an undetermined distance. A down-turn of the plaster upper surface, or floor, of this early platform at the line 4-5 in Figure 15.1 suggests the location of the eastern side of this structure, and one might expect a corner at 5. This corner is strictly hypothetical and indeed the eastern edge of the platform is surmised only from the down-turn of the plaster floor which was traced about 40 cm north of Str. R-95a. Both east and west sides of the buried platform are indicated in Figure 15.1, A-A. It will be noted from the sections (Fig. 15.1, A-A, B-B, C-C) that the upper surface of the platform is about 50 cm below the final level of the court of Group R-95 to -99.

The next construction uncovered by our digging was the extension westward for an undetermined distance of the buried platform. This is shown in Figure 15.1 by line 1-6. There was also an eastward extension of the buried platform beyond the plaster turn-down (Fig. 15.1, 4-5) mentioned above, but we do not know if this occurred at this time. The eastern addition was built prior to the construction of Str. R-95a, as the primary floor covering it was broken by the erection of the later structure. The addition may, however, have come about at any time between the building of the original buried platform and the construction of Str. R-95a.

Next in order of building was an extension southward (Figs. 15.1, 7-8, B-B, C-C) by less than 50 cm of the original buried platform, first mentioned above, and its western extension. This addition, which was no more than a secondary facing where it overlies the earlier walls (Fig. 15.2b), seems to have carried as far west as the southwest corner of the group. It was excavated for only a short distance, but its course may be traced above ground for the full distance. To the east it runs under Str. R-95a for an undetermined distance, as shown in Figure 15.1, 7-8. The eastern addition to the original buried platform may well have come at this time.

Apparently at the time of this refacing of the south wall of the terrace, and by now the main terrace of the group was probably beginning to take form, a parapet (Figs. 15.1, 9-12) approximately 50 cm high was added along that edge of the terrace. The parapet could not have been earlier, as it rests on the new wall, and the floor covering the western exten-

sion of the original buried platform turns up to the inner face of the parapet, indicating that the parapet must have been built when the new southern face (Figs. 15.1, 7-8) was applied. It should be noted that only one floor was found here, although two might be expected, the first laid at the time of the western extension of the original buried platform, the second laid when the new southern face of the terrace and the parapet were built. This can be explained best, it seems to me, by assuming that the present floor was broken to erect the parapet and a patchwork turn-up to the parapet made at that time. Different explanations can be given, but this strikes me as more likely than any other.

The sequence of construction so far described, with the exception of the time of the eastern addition to the original buried platform, has been relatively clear cut, with little doubt as to the order of building. The placing in the sequence of the next construction, on the other hand, is dependent upon the tracing of floors, and, as mentioned earlier, these floors are often discontinuous. The problem is whether one is correct in identifying a particular floor, or sequence of overlying floors, by means of patches that may be interrupted by intervening areas of a meter or more where the floor is destroyed. I believe that the next building operation consisted of the raising of the general terrace level north of the parapet described above. The east wall of this raised area, or platform, is shown at 10-13 in Figure 15.1 (also see Fig. 15.1, A-A, and Fig. 15.2c). The new level was that of the top of the parapet so that the inner face of the parapet was buried. Str. R-98 rests directly on this level, and it is entirely possible that the new construction was to serve as a building platform for R-98. On the other hand, as will subsequently be seen, Str. R-98 may have been erected later.

The above-described building activity is placed at this stage in our sequence because of two floors associated with the east wall (Fig. 15.1, 10-13) of the new platform. The lower of these floors, presumably that of the original buried platform, runs under the wall; the upper floor turns up to, and is contemporaneous with, the wall. Both floors can be traced eastward, although by means of unconnected patches, where they either underlie, or are cut by, the north wall of Str. R-95a (Fig. 15.1, B-B). This platform supporting Str. R-98 would thus seem to be earlier than Str. R-95a, the next in our sequence, and to be later than the parapet, which it buried, and the secondary facing wall (Fig. 15.1, 7-8) on which the parapet in part rests.

Str. R-95a (Figs. 15.1; 15.2b,d-g) was built next. It will be remembered that both the original buried platform (Fig. 15.1, 1-2) and the later southern

extension, or secondary facing (Fig. 15.1, 7-8), underlie this new platform (Fig. 15.2a,b). It is footed on bedrock and stands about 50 cm higher than the constructions it overlies (Fig. 15.1, B-B, C-C), rising to the same level as the platform supporting Str. R-98. At the north side of the structure are two small steps (Figs. 15.1; 15.2e,f) giving access to the new platform from the then lower level of the main terrace or court of the group.

Following the building of Str. R-95a, the platform (Fig. 15.1, 9-10-13) on which Str. R-98 rests was extended eastward (Figs. 15.1, 10, 14-16; 2c) so as just to overlap the northwest corner of Str. R-95a. It seems certain that this building operation followed the construction of Str. R-95a because the plaster on the corner of R-95a underlies the wall (Fig. 15.1, 15-16) that forms the east face of the new extension. Str. R-98 may, of course, have been built prior to the eastward extension of its platform, at the time of the extension, or any time later. Only one floor was found at the southeast corner of that building, a floor that turned up to the building. One might expect two floors had Str. R-98 been erected before the eastward extension of its platform. It is of course possible that any higher floor than the one we found has disappeared, as it presumably would have formed the final surface of the main terrace and court of the group. As it is, we only can say that Str. R-98 was built after the raising of the old terrace level beneath it (but how long after we do not know).

The finding of fewer floors than might have been expected occurred again in the area north of Str. R-95a and east of the extension to the platform supporting Str. R-98, just described. It will be remembered that two floors ran eastward from the earlier east face (Fig. 15.1, 10-13) of that platform and that these floors were broken by the construction of R-95a (Fig. 15.1, B-B). The small steps at the north side of R-95a rest on these floors. One might expect that with the building of R-95a a third floor would have been laid, turning up to it and to the earlier east wall of the platform supporting Str. R-98, and a fourth floor with the eastward extension of that platform. We found only three floors, the topmost turning up to Str. R-95a, to its steps, and to the wall forming the new east face (Fig. 15.1, 15-16, A-A) of the platform of R-98. Moreover, only two floors ran under this wall. A conceivable explanation is that when Str. R-95a was built the then existing floor continued to be utilized, the wall plaster of the new structure being curved down and outward to join the old floor. In this case the third and topmost floor noted by us would have been laid at the time of the eastward extension of the platform of Str. R-98. There was the suggestion, but we could not be certain, of two lay-

ers of plaster on the north wall of R-95a east of the platform (Fig. 15.1, 15) but only one layer where the platform overlaps R-95a, a condition that favors the above explanation.

At the south side of Str. R-95a, near its southeast corner, a secondary wall runs southward a short distance (Fig. 15.1, 17-18). This wall faces west and is footed on bedrock, as is Str. R-95a. At the southern end of the wall there is the suggestion of an old corner (Fig. 15.2h), as though the wall had turned east at that point. Whether it turned east or continued south, the wall seems to have been destroyed in ancient times beyond that point. It should be noted that there is no way of relating the time of this construction to that of the last building operation north of Str. R-95a, described above, beyond knowing that in each case the work took place after the construction of R-95a.

Eastward and south of the wall just mentioned is the face of an old buried platform or terrace (Fig. 15.1, 19-20) that seems to form a corner and turn east at its southern end but merely ends in rock fill at the north. It is impossible to be certain of the time relationship of this construction with Str. R-95a or the secondary wall (Fig. 15.1, 17-18) running south from the latter. The matter does not seem important in our sequence leading to the building of the sacbe, and rather than argue the several possibilities I shall only say I think it most likely that the secondary wall referred to above and the buried terrace face are contemporaneous and that a short eastward jog (Figs. 15.1, 18-19) of the former, later ripped out, closed the gap between the two.

The final building operations uncovered by our digging were the raising of the level of the court north of Str. R-95a to the height of that structure (Figs. 15.1, A-A, B-B, C-C), thus burying the small steps to R-95a, the construction of the sacbe, and the building of the substructural platform of Str. R-95 (Figs. 15.1, 21-22). We cannot be sure of the place of the construction of the sacbe in this sequence. The south face of R-35a and the secondary wall (Figs. 15.1, 17-18) near the east end of that structure were buried with the building of the sacbe (Fig. 15.2g, h) and it seems clear that the causeway postdates R-95a and the secondary wall. I am inclined to believe that the raising of the court level north of Str. R-95a, which became the final court level of Group R-95 to -99, preceded, or was contemporaneous with, the construction of the sacbe. This conclusion is based only on the idea that with the building of the road a major approach or entrance to Group R-95 to -99 was created, and the small steps that had previously given access to Str. R-95a would hardly have been adequate as a major approach to the group.

It is quite certain that the final substructural platform of Str. R-95 was built after the court of the group was raised to its ultimate level. The retaining wall of this platform starts from a corner (Fig. 15.1, 21) at the south, where the wall is footed 15–25 cm above bedrock, about on the level of the footing of the sides of the sacbe, runs northward to climb over the top of Str. R-95a (Fig. 15.2i) and farther north to rest on the topmost fill of the court of Group R-95 to -99 (Figs. 15.1, 21–22, A-A, B-B, C-C; 2f). It is thus clear that the wall was built after the court had been raised to its final level. This retaining wall of course buried the old terrace face at the south (Fig. 15.1, 19–20), and it seems probable that the destruction of the secondary construction (Fig. 15.1, 18–19) south of Str. R-95a occurred with the building of this retaining wall.

We cannot be certain whether the sacbe was built before, at the same time, or after the construction of the final substructure of Str. R-95. A short wall (Fig. 15.1, 23–24), secondary to both constructions, links the east wall of the *sacbe* with the substructure of R-95 but gives no clue as to which was built first. This short cross-wall was probably to hide the rather poor joints that the wall of the *sacbe* and the wall of the substructure of Str. R-95 make with the earlier, buried construction. The walls of the *sacbe* and the southwest corner of the substructure of R-95 are footed 15–25 cm above bedrock (Fig. 15.2h,i), in contrast to all earlier terrace and platform walls which are footed approximately on bedrock, suggesting that the general ground level had been raised somewhat by this time. It is probably best to think of the *sacbe* and the substructural platform or Str. R-95 as roughly contemporaneous.

One minor construction remains to be mentioned. In the plan and section (Fig. 15.1, 25–26, C-C) it will be noted that a single course of stone, apparently a step (Fig. 15.2b,g) runs westward from Str. R-95a. It was not traced to its western extremity. This step is clearly secondary to R-95a. The fact that the foot of the step is on the general level of the foot of the wall of the *sacbe* suggests that the step was installed when the ground level had been raised to that point, in other words, probably with the building of the *sacbe*.

It may be useful to review the major stages of construction, those of which we are certain, disregarding lesser alterations and those that are problematical in our sequence: (1) The construction of the original buried platform (Fig. 15.1, 15.2, 1–3) and its later western extension (Fig. 15.1, 1–6). (2) The addition of a later southern face (Fig. 15.1, 7–8) to the buried platform and its western extension, which probably formed the south face of the main terrace of Group R-95 to -99. (3) The building of Str. R-95a.

(4) The raising of the court of Group R-95 to -99 to its final level, the building of the *sacbe*, and the construction of the substructural platform of Str. R-95.

We can be very brief in our description of the construction of platforms and terraces. This is shown in the photographs and sections accompanying this report. Generally speaking, wall masonry and fill are typical of what is found throughout Mayapán. Such construction has been illustrated and described in numerous places in this series of reports. In a word, wall stone is roughly shaped but not dressed. There is the occasional re-use of Puuc-type building stones. It seems that there is some tendency to set the stones of the lowest course in a wall vertically rather than horizontally, but this is by no means universal. Walls resting on bedrock are usually footed on smaller stones and earth, the top of the small stone and dirt layer presumably marking the approximate ground level. The almost universal presence of earth between stones suggests the use of mud mortar. Little wall plaster was found, but where encountered, it tends to be heavily applied, and it probably was used profusely. Fill is of rock with a varying admixture of earth. I suspect that all fill encountered here was originally of rock alone and that the dirt and soil have washed in from wall masonry and from surface accumulation, but it is impossible to be certain of this. Floors, wherever preserved, are of lime mortar and typical or those found elsewhere in Mayapán.

The construction of the *sacbe* is simplicity in the extreme. It consists of side walls of rough thick slabs of stone (Fig. 15.1, B-B, C-C, and Fig. 15.2g,h) set on end or side, which retain a loose fill of stone. The stones of the walls are footed on smaller stone and earth which rest on bedrock. The thickness of this bottom layer varies with the contours of the bedrock. Whether the upper surface of the *sacbe* was of lime plaster, *sascab*, or packed earth cannot be told. At present this surface is no more than a jumble of loose stone. It is known that in certain instances, at an earlier time, *sacbes* were surfaced with lime plaster floors, and there was wide use of such typical Maya flooring at Mayapán. The fact remains, however, that no trace of any floor on the *sacbe* at Mayapán has been noted and we can only guess how the road was surfaced. The causeway has not been searched from end to end but there is little chance of any floor surviving on so exposed a surface.

ARTIFACTS AND POTTERY

The pottery and other objects that came from these excavations were separated into what was considered to be surface material and what seemed to be,

15.2. Views of Excavations, Details of Construction, Artifacts.

a. South side of early buried platform, showing old southwest corner (lower left) and platform wall running beneath Str. R-95a (right), looking northeast. b. Secondary facing on south side of early buried platform and west wall of Str. R-95a, looking northeast. Note re-used column drums (cut by Section C-C in Fig. 15.1) in secondary wall, parapet (left), upper edge of early platform behind secondary facing, and the latter running beneath Str. R-95a at right. Also note step running west from Str. R-95a. c. East wall (rear) of platform supporting Str. R-98 and wall (front) of later eastern extension of that platform, looking northwest. The southeast corner of Str. R-98 can be seen near the center of the picture, and the northwest corner of Str. R-95a is just visible at lower left. d. Southwest corner of Str. R-95a, looking northeast. The southern face of this platform, exposed here by a trench cut to bedrock, had been buried by the construction of the sacbe (see Fig. 15.2g). e. North side of Str. R-95a and small steps leading to it, looking southeast. Note wall of substructure of Str. R-95 beyond farther step. f. East step at north side of Str. R-95a and substructure of Str. R-95, looking east. Note that wall of substructure is footed on fill at level or top of Str. R-95a. g. Juncture of west wall of sacbe with southwest corner of Str. R-95a, and step (left) running west from end of R-95a, looking east. Note smaller stones and dirt that form footing for large, rough slabs that form the side wall of the sacbe. h. East wall of sacbe and its juncture with secondary wall running south from Str. R-953, looking north. Vertical squared stone overlapped by horizontal stone near right edge of picture is what may have been old corner in secondary wall (Fig. 15.1, 15.18). i. West wall of substructure of Str. R-95 at its southwest corner, looking northeast. Note that footing of substructural wall rises to the north (left) so as to rest on top of Str. R-95a. j. Chipped discs of limestone and one pottery disc (bottom) from surface excavations, Lot A-131. Pottery disc has lime plaster adhering to convex surface; 8.5 by 1.4 cm. Thickness of stone discs varies from 3.8 cm (54-118) to 1.6 cm (54-119), Cat. nos. (top) 54-114, -121, -115, -116, (middle) 54-120, -118, -117, -119, (bottom) 54-122. k. Arrowpoints of chert (left) and obsidian (right) from surface excavations, Lot A-131. Chert point 4 by 1.4 by 0.03 cm, Cat. no. 54-131; obsidian 3.4 by 1.2 by 0.03 cm, Cat. no. 54-130.

as nearly as could be obtained, an unmixed sample from beneath the sacbe. The surface finds, Lot A-131, came from all excavations with the exception of the lower levels of a cut into the sacbe. Since much of the digging was in artificial fill, there is little question that a good part of the material recovered was deposited where found during the course of construction of Group R-95, -99 and the sacbe. None of it, however, was found under strictly sealed conditions or at any considerable depth. Because of the ease of surface sherds and other small objects filtering through the loose fill, both over the years and during the course of excavation, it was thought best to list all these finds as coming from the surface.

Lot A-132 represents material gathered from a cut into the west side of the sacbe along the west side of the sacbe along the south side of Str. R-95a (Fig. 15.1). A 50 cm deep trench was first dug across the top of the sacbe. The pottery from this trench was considered to be from the surface. Next, this trench was cut to bedrock at the west and carried halfway across the sacbe at that level (Fig. 15.2d). The objects recovered from this second operation form Lot A-132. Although it should be a pure sample of material buried at the time of construction of the road, there is of course the chance that some surface sherds may have sifted down through the loose fill of the sacbe and that an occasional sherd may have tumbled down in the course of our digging.

The specimens recovered from these excavations are not very impressive. Among the objects included in Lot A-131 are eight chipped discs of limestone, often referred to as pot lids, and a pottery disc (Fig. 15.2j) that came from the digging south of the main

terrace of the group, along the west side of Str. R-95a and the west side of the sacbe. Two arrowpoints (Fig. 15.2k), one of chert, the other of obsidian, came from the same area. Although these objects have been classed as "surface" remains, as explained above, it is highly probable they were in fact thrown in with the stone and earth, or fill, that raised the general ground level at the west of Str. R-95a (Fig. 15.2, C-C), presumably at the time of construction of the sacbe and the single step that runs west from R-95a.

Other artifacts recovered from surface excavations are a triangular chipped tool of chert of a type common at Mayapán (see Adams 1953, Fig. 11b, top row, third from left), a broken stone disc similar to those illustrated here, flakes and chips of obsidian, chips of chert, a shell fragment, and animal bones. Pieces of a glass bottle found well below the present surface illustrate how later intrusive material can become mixed with earlier remains unless the deposit is sealed off by a floor or some other relatively impenetrable form of construction. A perforated shell tinkler of common type (see Ruppert and Smith 1952, Fig. 8f, lower right), chips of chert and animal bones are the only artifacts in Lot A-132 from beneath the sacbe.

The pottery from these excavations was analyzed by R. E. Smith. Lot A-131 consists of slightly over 1,000 sherds, one quarter of which are too weathered to be identified. A single sherd of Puuc-type pottery is clearly of a time earlier than the Mayapán period. Two specimens of Fine Orange may or may not be earlier than that period. A single Black-on-Cream sherd presumably represents an early phase of the principal occupation of the site. The vast preponderance of the pottery is of types common during Mayapán



a



b



c



d



e



f



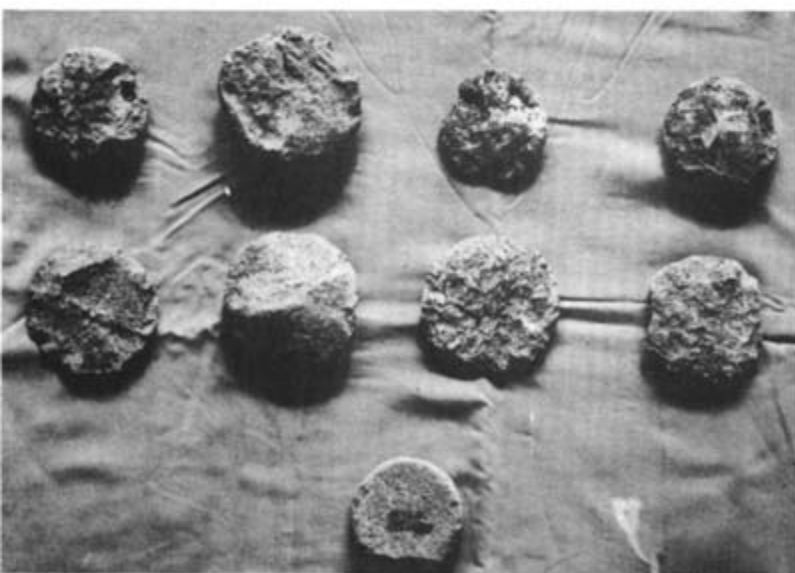
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i



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k

times but which cannot yet be arranged chronologically. There are 75 sherds of effigy incense burners, plus 30 body sherds that may be from these vessels, and 22 sherds of the relatively rare Red-on-Buff pottery, both very late types in the Mayapán period.

Lot A-132 amounts to a little under 600 sherds, slightly over one quarter of which are too weathered to be identified. Not a single identifiable sherd is earlier than the Mayapán period. The bulk of the pottery is of common Mayapán types. Effigy incense burners account for 20 sherds, plus 27 body sherds that may be from this type of vessel. There are six Red-on-Buff sherds.

SUMMARY

The excavations around the northern terminus of the sacbe and the southern entrance to the quad-

rangle known as Group R-95 to -99 reveal a series of architectural changes that presumably have to do with the growth of the quadrangle and the creation of a major southern approach, as witnessed by the building of the sacbe. Owing to the limited extent of our digging, little is known of the function, or the relationship to the rest of the group, of the walls and platforms uncovered. The relative time of erection of those constructions touched by our excavations is, however, in general outline clear. The sacbe is one of the latest constructions exposed by our digging, and if one is to hazard a guess, the road was built when Group R-95 to -99 had come close to attaining its final form. The finding beneath the sacbe of sherds of effigy incense burners and of Red-on-Buff vessels, pottery that first appears at Mayapán during a late phase of the principal occupation of the site, confirms the relative lateness of the road.

A ROUND TEMPLE AT MAYAPÁN, YUCATÁN

EDWIN M. SHOOK

Since the exhaustive study of round structures in aboriginal Mesoamerica by Pollock (1936), a number of these specialized units have been discovered and a few of them excavated. The round form in pre-historic architecture occurs sporadically throughout Mesoamerica; its use ranges from pre-Classic times up to the Spanish conquest. Despite the wide geographical and temporal distribution, round structures are rare except in the Huasteca region of northern Veracruz, southern Tamaulipas, and eastern San Luis Potosí. There, in certain places where excavations have been undertaken, round units outnumber all other architectural forms (Ekholm 1944:500). The normal rectangular structure elsewhere remained the predominant type.

In Yucatán, since Pollock's report, a round structure has been reported from Caucel (R. H. Thompson 1951:234), one in Kantunilkin (W. T. Sanders, verbal information), another at Chichén Itzá (Ruppert 1952:7), and several in Mayapán (Morley 1938:142;

Adams 1953:158–161; Shook 1954:259, 260). Patton, while mapping the site of Mayapán in 1938 (Morley 1938:142), discovered three circular buildings besides the large one, Str. Q-152, which was made known first by Stephens (1843:1:136). Except for platforms, some containing burial cists, no additional round structures have been encountered by either Jones (1952) or the Carnegie staff during four seasons of intensive study at Mayapán. The largest of the four round temples in Mayapán was standing in fair state of preservation until sometime after Brasseur de Bourbourg's (1867:241–43) visit. It has since fallen, leaving exposed only traces of the circular walls. The temple rests on a large square platform with a much destroyed stairway on the west side (Proskouriakoff 1953:267, Fig. 1). The three additional round units discovered by Patton, Strs. Q-126, Q-214, and H-18, also were fallen. The true form of the last two buildings was most difficult to discern because of the advanced state of ruin.

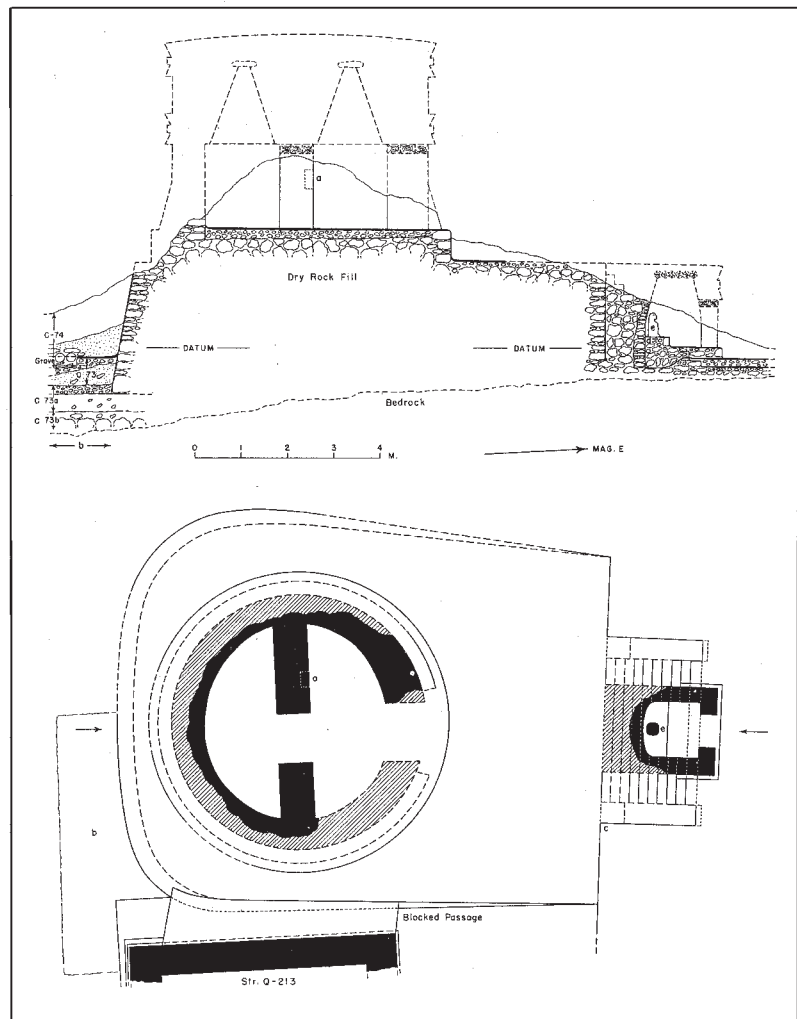
Str. Q-214, the first round temple to be excavated in Mayapán, is in the central ceremonial group about 100 m south of the Castillo (Jones 1952, map, 325 S, 300 W). The building faces east across a plaza to a temple with serpent columns (Str. Q-218) on the opposite side. The plaza is bordered on the north and south by long colonnaded buildings and on the southwest by another colonnaded unit (Str. Q-213) which abuts the south side of the platform supporting the round temple (Fig. 16.1).

Before excavation, Str. Q-214 appeared as a cone-shaped mound of rubble, heaped on the rear half of a crumbling stone platform. Closer inspection disclosed several stones of the circular plinth on which the temple rests, and traces of a medial wall. Strömsvik, early in the 1954 field season, cleared part of the plinth and enough of the substructure to define the corners. I extended the excavations to include the temple interior, most of the exterior, and the substructure.

The substructure apparently was erected on a prepared level overlying bedrock. Our excavation did not extend to bedrock, although an outcrop in the plaza east of the unit and the depth of the excavations in front of and behind Str. Q-214 proved the westward slope of the natural level under the substructure. The lowest stratum exposed (Fig. 16.1b) consisted of brown earth and rocks which elsewhere in Mayapán normally represent the thin sod mantle overlying bedrock. This stratum underlay the substructure, and the cultural material (Lot C-73b) in the soil predated the construction of Str. Q-214. All the material recovered from this level pertained to the Mayapán period. Therefore, it is certain that the building of the round temple took place sometime during the main occupation of Mayapán, from the ceramic evidence probably in the early half or middle of the period.

The substructure has square corners in front and is faced with a plain vertical wall. The sides of the platform range from vertical at the front to sloping as the widely rounded rear corners are approached.

A broad stairway with flanking balustrades originally provided access from the plaza level to the spacious terrace before the temple. Subsequently a section was cut from the center of the stairway and a miniature shrine built there (Figs. 16.1; 16.2a-c).



16.1. Plan and Section of Structure Q-214.

a. Wall niche. b. Excavated area of stratified middens. c. Cache of warrior figure (see Fig. 16.2j). d. Cache of effigy tripod cup (Fig. 16.2i) containing a jade fragment, jade and shell beads. e. Female idol in stairway shrine.

The thin masonry walls of the shrine and the nature and depth of fallen debris suggest that the small chamber may have been roofed with wood timbers capped with lime concrete. On excavation we discovered *in situ*, on a raised level against the rear wall of the shrine, a crude stone statue of a female (Figs. 16.1e; 16.2a-e). It faced east to the shrine doorway. Prior to the installation of the sculptured figure, a dedicatory cache had been buried below the raised section of the shrine (Fig. 16.1). The cache consisted of a miniature tripod cup bearing a human face on the side (Fig. 16.2i). The cup contained four small jades and two shell beads. The sculpture (Fig. 16.2b-e), crudely wrought in an inferior grade of fossiliferous limestone, depicts a bare-breasted female, seated

with knees tightly drawn up, and wearing a sphinx-like expression. The poor quality of the natural stone may have been overcome by the addition of plaster over the whole, for traces of a white plaster coating still adhered to the surface. There was no evidence of paint on the remaining bits of plaster. The presence of broken, human-effigy-type censers and burned areas on the shrine floor directly in front of the idol further suggested ceremonial activities in association with the statue, shrine, and round temple.

Another cache had been placed in a small hole cut through the final plaza floor in the corner formed by the platform and the south stairwall (Fig. 16.1c). The cache consisted of a miniature pottery figure bearing a large circular shield in the left hand and a poised spear in the right (Fig. 16.2j). The male figure is crouching on the left knee, in an aggressive posture. His protruding upper teeth, the sharply slanted left eye, and features of dress may eventually permit the identification of this warrior figure.

The temple of Str. Q-214 rested on a round plinth (Fig. 16.1). This created a single high step from the terrace to the temple floor level. All of the exterior wall facing except a segment north of the doorway had fallen. Fortunately, here was preserved another architectural trait. There were two stones (Fig. 16.2f) *in situ*, laid on an incline, indicating the presence of a sloping basal zone around the exterior of the temple wall. It was not possible to determine if the sloping basal zone carried a molding at the top. The interior of the round temple was divided into two small semicircular chambers by a heavy medial wall. This stood to a maximum height of 1.55 m, and fallen building material, consisting principally of large blocks and slabs, filled the single doorway in the medial wall to the same height. The fallen debris sloped off sharply on all sides from the medial wall and doorway. The amount of stone and lime mortar in the debris indicated a vaulted masonry roof, possibly like that shown as restoration in the section (Fig. 16.1).

The masonry of the temple and the substructure conformed to the block-and-slab type most common in Mayapán. In Str. Q-214, roughly trimmed blocks and slabs were laid horizontally in poor quality mortar of lime, earth, and gravel. Spalls for leveling were employed frequently, and stone coursing was so irregular and haphazard as to appear accidental rather than purposeful. Rarely was a cut and dressed Puuc-type stone used in the interior walls of the temple. These re-used stones occurred more frequently on the exterior and in the steps and balustrades of the stairway. A number of carved Puuc-type stones clustered in the building debris on the south side, probably having fallen from a decorative

panel in the façade of the round temple. Also, several small death's-head and animal-head sculptures with horizontal tenons occurred at intervals in the debris around the structure. These may have been tenoned into the façade at intervals.

The excavation of the temple interior produced few significant features. A rectangular niche or cupboard (Fig. 16.1a) was found in the medial wall north of the doorway. The floor and walls of the temple has been evenly surfaced with lime plaster. Little remained of the wall plaster, but the fragments recovered bore red and blue paint. A burned area, 50 cm in diameter, on the floor at the center of the rear chamber, and fragments of human-effigy-type censers (Lot C-75) provided evidence of some ceremonial activity within the temple. The amount of such activity, based on the quantity of censer fragments, copal and ashes, was small compared to that which took place in Strs. Q-58, -82, and -95 (Shook 1954) and many other units excavated in Mayapán. Another feature in Str. Q-214 which may indicate infrequent copal burning within the temple was the evidence of only one floor and a single layer of wall plaster. Most structures so far excavated in Mayapán have had many floors and layers of wall plaster, implying that frequent refurbishing was deemed necessary. It may be that in the case of Str. Q-214 the major ceremonial activities, involving heavy burning and the use of large censers, took place on the terrace before the temple doorway rather than inside.

Our excavations at the southwest corner of Str. Q-214 to determine the architectural relationship between it and the colonnaded building, Str. Q-213, abutting the south side, disclosed not only a sequence of construction but a stratified midden (Fig. 16.1b). Here the lowest level, as mentioned earlier in this report, predates the construction of the round temple (Lot C-73b). The second stratum of homogeneous earth, small stones, and refuse (Lot C-73a) also was laid down prior to the erection of Str. Q-214. This material, however, may have been spread for leveling purposes immediately preceding masonry construction. The substructure, the erection of which followed, rested directly on this stratum. Overlying it and abutting the base of the terrace wall was another thin, compact layer of small rocks, earth, and potsherds (Lot C-73a). This layer apparently served as foundation leveling for a structure adjoining the south side of Str. Q-214 and older than the colonnaded building, Str. Q-213. While the early building and the round temple were in use, a midden accumulated in the corner formed by their junction. The midden (Lot C-73) consisted of ashes, charcoal, animal and bird bones, pottery, artifacts,

16.2. Structure Q-214.

a. Looking northwest to south half of shrine, stairway, and substructure. Note sculptured figure in shrine at lower right. Low wall at upper left is round plinth of temple and at upper center may be seen the medial wall. b. Detail of stairway shrine with female idol in situ. c. Looking northwest to stairway shrine. d. Female figure from stairway shrine. Max. ht. 51 cm. e. Rear view of female figure. f. Looking west through doorways of temple. Round plinth shows in lower foreground two remaining stones of sloping and basal zone of the temple wall at right. g. Doorway in medial wall of temple, from southwest. h. Rounded southwest corner of substructure mostly buried by secondary construction of Str. Q-213 at center and right in photograph. Stratified rubbish deposits were discovered in this corner (Fig. 16.1b). i. Porous gray tripod cup from cache under female sculpture in stairway shrine (Fig. 16.1d). On exterior vessel bears prime coat of white lime beneath outer layer of light greenish blue. Human face was cast in mold. Solid conical vessel supports. Max. ht. 12 cm. j. Porous Gray Ware figure of warrior found in corner south of stairway (Fig. 16.1c). Body and head are hollow with single large perforation in back of shoulders. Exterior is coated with white lime on which are painted details of the figure. Headband, ear pendants, collar, point and butt of spear are red; slanting left eye, blade of spear, and shield are orange; brow of right eye is blue. Max. ht. 12 cm.

and several fire hearths, the last evidently serving for cooking purposes. The midden subsequently had been covered and sealed by a lime concrete floor laid at the time the earlier building was partly razed and the colonnaded unit, Str. Q-213, erected over it. Again a thick bed of refuse accumulated on the lime floor behind the round temple and the colonnaded building. This midden postdated the construction of both units, and while it accumulated, graves were cut into it from time to time. One grave (Fig. 16.1b) held the flexed skeletons of two adults, without mortuary furnishings. This upper midden (Lot C-74) eventually was covered by rubble from the collapsed walls of Strs. Q-214 and -213. It contained, besides human, animal, and bird bones, and artifacts, a high percentage of pottery from human-effigy-type censers, a type not found in the material below the lime floor.

The heaviest concentration of human-effigy-type censers occurred on the latest floors around the base of the substructure of Str. Q-214. This presumably indicates that the temple and terrace were kept clean and that the copal, ashes, and broken censers were swept or thrown over the platform edges, particularly toward the rear of the building. It is unlikely, however, that the refuse in the southwest corner came entirely from the round temple. Some undoubtedly had been thrown there from the colonnaded building, Str. Q-213, but the quantity of bird and animal bones, Mayapán Red jars and bowls, and unslipped utilitarian pottery indicates either that Q-213 was a residence or that other living quarters were close by.

The plan of Str. Q-214, its position on a platform over 2 m high facing a plaza, the shrine set in its stairway and containing a carved stone idol, and the abundance of censer fragments are all factors indicating the religious function of the unit. That the statue may represent the Maya goddess Ixchel, and that she may have been the patron deity of the round tem-

ple, can be mentioned only as possibilities. Certain round structures in Mesoamerica were assuredly associated with the worship of Quetzalcoatl, either as the Feathered Serpent or in his aspect as the wind god, Ehecatl. In Str. Q-214 at Mayapán, however, other than the fact that the temple was round, there were no features disclosed in the excavations that would seem to associate the unit with the worship of Quetzalcoatl.

MATERIALS RECORDED

LOT C-73B: from deepest stratum (see Fig. 16.1b) at the southwest corner of Str. Q-214, deposited before the construction of the temple: 10 fragments of animal and bird bones, several partly burned; 2 obsidian flake-blades.

Total sherds: 156, 100 percent Mayapán period (unslipped vessels, 40.4; noneffigy-type censers, 0.7; Mayapán Red, 53.8; Black-on-Cream, 5.1).

LOT C-73A: from two strata (see Fig. 16.1b) associated with the primary construction of Str. Q-214: 46 fragments of animal and bird bones, including 1 cut deer bone; charcoal; ashes; 6 obsidian flake-blades.

Total sherds: 537, 0.6 percent Puuc period, 99.4 percent Mayapán period (unslipped vessels, 31.6; noneffigy-type censers, 1.5; Mayapán Red, 59.4; Fine Orange, 0.9; Black-on-Cream, 6.0).

LOT C-73: from midden sealed below a lime floor (Fig. 16.1b) and postdating the construction of a building buried under Str. Q-213: 54 fragments of animal and bird bones, including deer and turtle; fire hearths; charcoal; ashes; 4 obsidian flake-blades; a small, crudely carved human head of limestone.

Total sherds: 546, 0.4 percent Puuc period, 99.6 percent Mayapán period (unslipped vessels, 41.8 percent; Noneffigy-type Censers, 9.3 percent; Mayapán Red, 45.9; Fine Orange, 0.2; Black-on-Cream, 2.4).



a



b



c



d



e



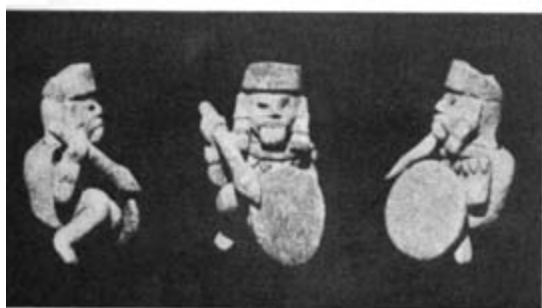
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i



j

LOT C-74: from postconstruction midden above lime floor (Fig. 16.1b), mixed with a few sherds from the collapsed walls of Strs. Q-214 and -213: 2 adult skulls; 18 fragments of human, animal, and bird bones; red-painted plaster; 3 stalactites from modeled stucco figures; 2 obsidian flake-blades; 1 flint chip; 1 unworked univalve shell.

Total sherds: 1,647, 0.3 percent Puuc period, 99.7 percent Mayapán period (Unslipped vessels, 22.0; Noneffigy-type Censers, 2.5; Human-effigy-type Censers, 35.7; Mayapán Red, 38.1; Red-on-Cream, 1.0; Fine Orange, 0.2; Black-on-Cream, 0.2).

LOT C-76: from surface and general excavation of the substructure of Q-214 on the east and south sides: 2 caches—one, an effigy warrior (Fig. 16.2j) in the corner formed by the south stairwall and the platform, the second, below the female statue in the stairway shrine—an effigy tripod cup (Fig. 16.2i)

containing 1 jade fragment, 3 jade and 3 shell beads; 3 fragments of modeled stucco painted red and blue; 2 stalactites from modeled stucco figures; 31 fragments of animal and bird bones, several partly burned; 4 flint chips.

Total sherds: 1,749; 0.1 percent Puuc period, 99.9 percent Mayapán period (Unslipped vessels 13.3, Noneffigy-Type Censers, 2.6; Human-Effigy-Type Censers, 56.1; Mayapán Red, 27.0; Red-on-Cream, 0.3; Fine Orange, 0.3; Black-on-Cream, 0.3).

LOT C-75: from surface of floor and in fallen masonry within the rooms of Str. Q-214: fragments of wall plaster painted red and blue.

Total sherds: 489, 0.2 percent Puuc period, 99.8 percent Mayapán period (Unslipped vessels, 4.7; Noneffigy-Type Censers, 1.2; Human-Effigy Type Censers, 82.4; Mayapán Red, 10.3; Red-on-Cream, 1.0; Black-on-Cream, 0.2).

EXCAVATIONS IN HOUSE MOUNDS AT MAYAPÁN III

KARL RUPPERT AND A. LEDYARD SMITH

Excavations in the 1954 season were confined to a relatively thorough examination of Group A-3 and Str. Q-62 and to spot digging in nine other structures. The spot digging was done at likely places for encountering tombs and cists noted during the survey and surface examination of the areas.

R. E. Smith, as in the past, examined the collection of sherds and furnished for them the data given in this report. Of the 8,622 sherds recovered, 7,067 (98.6 percent) are of Mayapán period, 81 (1.13 percent) are of Puuc wares, and 1,474, due to weathering, were unidentifiable. Among the Mayapán sherds those from effigy censers number 1,410 and Fine Orange, 31. The highest percentage of Puuc sherds appeared in Lot A-140 (tomb beneath passageway of Str. AA-37).

When complete contents of a Lot are not given under the description of a structure, they will be found in the caption of the drawing of the construction. Surface material recovered during the survey

of Squares Y, Z, and AA not mentioned in the text but shown in Figure 17.8 as follows: b. fragment of lime-stone *metate*, unusual in that it has legs and is grooved, Lot A-104; e. copper bell, Lot A-94; f. fiber beater, Lot A-92; f. stone plug, Lot A-96.

At the close of the excavations all pits and trenches were filled, in conformance with agreement with the Mexican Government. Str. Q-62 was solidified under the direction of Gustav Strömsvik.

GROUP A-3 (551 N, 1386 W)

Group A-3 is within the area of projected Square A but not on the map or in the area examined by Jones. Str. A-3f lies 62 degrees west of magnetic north of the Castillo and 252 m outside the city wall.

The group was of particular interest because it was enclosed within a wall (Fig. 17.1). It rests on a hillock with the wall at its base except on the south and southeast where the wall appears rather high

on the slope of the natural rise. The area enclosed is approximately 900 m².

For the most part the wall rises from bedrock to a height of no more than 1.3 m. It is made of large unworked stones on the inner and outer face, with fill of small stones and mortar (Fig. 17.6d). The wall thickness varies from 1 to 1.4 m. A single gateway, 70 cm wide, is located at a low point at the north end of the group (Figs. 17.1,1; 17.6c). The entrance is faced with large unworked stones much as is the wall itself. No trace of a plaster floor was noted. In the excavations of the gateway and the area directly north and south, the material recovered is listed as Lot A-90 and includes eight sherds, one unidentifiable, the others Mayapán period.

East of the gateway and on the inside of the wall are two large stones set on end (Fig. 17.1,2). They rise an average of 70 cm above the present surface level.

In this group are five structures within the wall and one, A-3f, outside to the south. Str. A-3a is now represented by a section of terracing with no trace of a superstructure. It forms the highest part of the group within the wall (Fig. 17.1a).

Str. A-3b is a platform, averaging 30 cm in height on the south, which supports a building having a single bench rising 30 cm above the floor (Fig. 17.1b). A wall 60 cm high extends the entire length of the north side and continues on the west side to within 70 cm of the south edge of the platform. The west wall is made of two large stone slabs. The north wall is of large stones roughly worked and set on end to form a facing on both sides of the wall. Its east end terminates with a single jamblike stone.

The large terrace supporting Strs. A-3b, -c, and -d has a height at the back (west) of Str. A-3c of 1.2 m. The platform directly supporting Str. A-3c is clearly indicated on the east and has a height of 40 cm. The building had two chambers (Fig. 17.1c). The front, or outer, had a single doorway in the medial wall. There were probably two benches although they are now only indicated by fill material in the corners formed by the medial and end walls. The back room probably did not have an exterior opening.

A pit was opened at the north end of the outer chamber in what may have been one of the benches. The pit measured roughly 1.5 m square; bedrock lay at a depth of 1.27 m below the floor of the building. From this pit (Lot A-89) 34 sherds, all Mayapán period, were recovered.

A trench, opened in the passageway and extended into the back room, exposed a tomb. The walls of the tomb are lined with rough masonry; the floor, 1.2 m below the building platform, is of plaster. Bedrock was reached 20 cm below this floor. The material from the tomb (Lot A-88) included frag-

ments of two human skeletons found on the floor at the north side with heads to the east, 1 broken bone awl (Fig. 17.8g), 1 piece of coral, and 6 sherds, 2 unidentifiable, the others Mayapán period.

A masonry-lined cist lay beneath the remains of the bench in the southwest corner of the outer room (Fig. 17.3a). Irregular in shape, it has a length of 2.1 m and was in poor repair. A secondary plaster floor was exposed 88 cm below the platform supporting the structure. The original floor, also of plaster, sloped downward from east to west (Fig. 17.3a,2) and is 12–27 cm below the secondary floor. Bedrock lies from 5 to 20 cm beneath the primary floor.

In the south wall of the cist and at the west end is a niche 35 cm deep and 60 cm wide. It is masonry lined and roofed with a stone slab. Both floors extended into the niche.

Material from above the secondary floor (Lot A-86) consisted of 40 sherds: 5 could not be identified; the others are all of Mayapán period.

LOT A-87 represents the area between the floors. The sherds recovered number 6: one unidentifiable, the others Mayapán period.

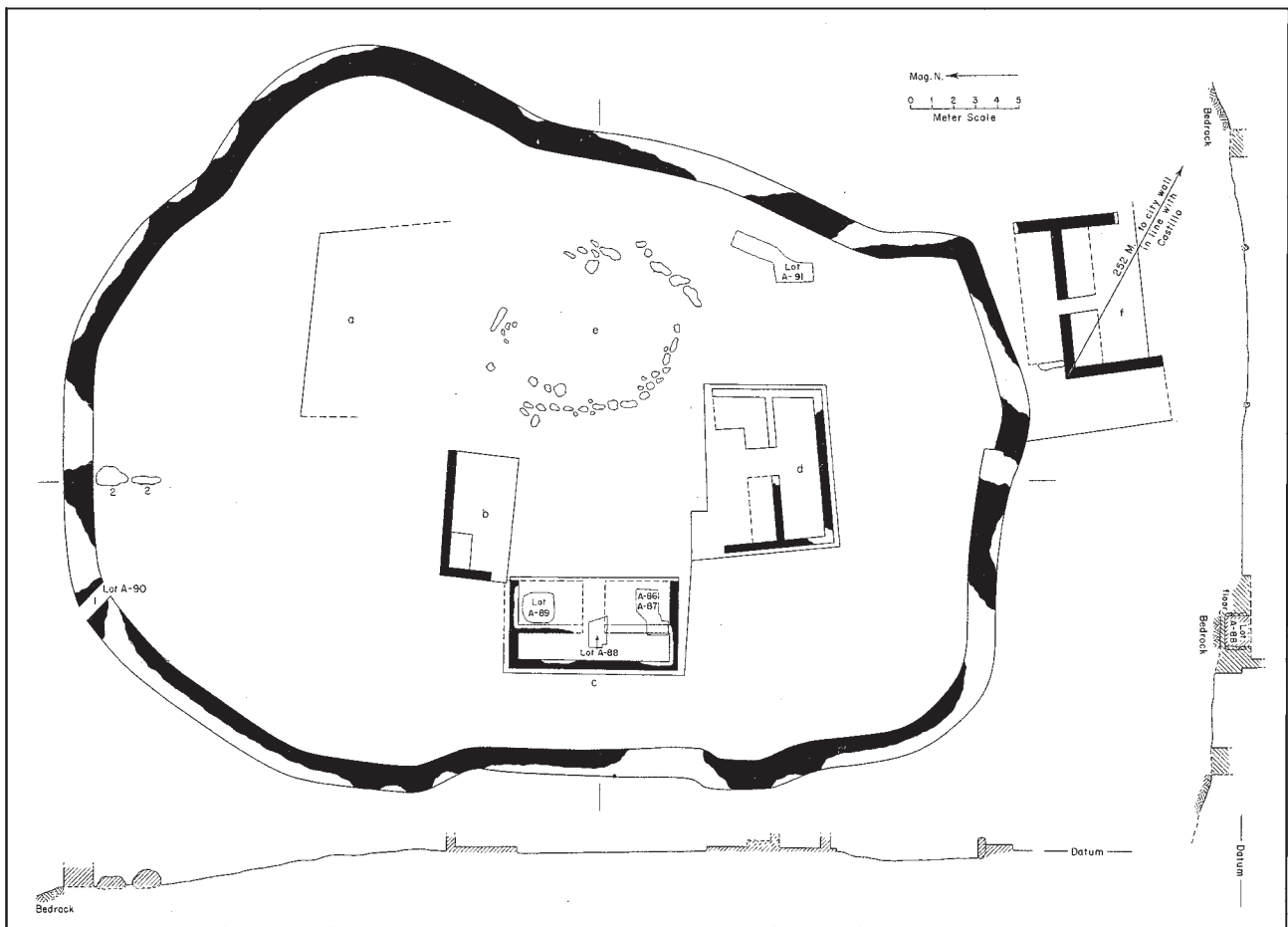
Str. A-3d (Fig. 17.1d), in poor state of preservation, shows an outer and an inner chamber rising from a platform 20 cm high on the north. The outer chamber had two benches, the one to the east being L-shaped and now rising not more than 20 cm above the platform floor. No facing remains of the west bench. A single doorway led into the inner room, where the masonry of the back wall has a height of 60 cm.

Str. A-3e, formed of unworked stones lying on the surface or slightly embedded but not in a definite arrangement, roughly suggests an arc of a circle (Fig. 17.1e). To the south of Str. A-3e and in a hollow, a trench was made for pottery samples. Sherds (Lot A-91) total 311: 154 unidentifiable, the others Mayapán ware (3 of possible Unslipped Effigy Censer ware).

Str. A-3f (Fig. 17.1f) lies just south of and outside the wall of the group. It rises from bedrock at the highest part of the hillock. The remains of a two-room structure show a platform on the south 15 cm high. The outer room had two simple benches with sections now standing 25 cm above the platform. The medial wall rises 50 cm above the top of the bench. The back room is poorly defined although the end walls are indicated in part.

STRUCTURE Q-62 (93 S, 270 W)

The structure is located on the northern edge of the main ceremonial group approximately 100 m directly north of the Castillo. The platform rises from the great, artificially leveled area supporting struc-



17.1. Group A-3, Plan and Sections.

a. Str. A-3a, terrace. b. Str. A-3b, platform with wall along north and west sides and bench in northwest corner. c. Str. A-3c, house foundation. d. Str. A-3d, house foundation. e. Str. A-3e, rough circle of stones. f. Str. A-3f, house foundation. 1. Entrance into Group A-3. 2. Stones set on edge. Lot A-86: From tomb under south bench of Str. A-3c, above Floor 1 (Fig. 17.3a): sherds. Lot A-87: From tomb under south bench of Str. A-3c, between Floors 1 and 2 (Fig. 17.3a): sherds. Lot A-88: From tomb under passageway of Str. A-3c: broken bone awl (Fig. 17.8g); piece of coral; remains of two adult skeletons; sherds. Lot A-89: From pit under north bench of Str. A-3c: sherds. Lot A-90: Sherds from around gateway into Group A-3. Lot A-91: From trench in east side of Group A-3: sherds.

tures in this section of the city. The long axis of the structure is more or less east-west, with the building facing south. Str. Q-64 lies to the east. Owing to the ruined condition of the two structures, from weathering and tree roots, no connection by floors could be determined.

To the south, Str. Q-61a may be a small shrine, now represented only by several stones rising a few centimeters above ground level.

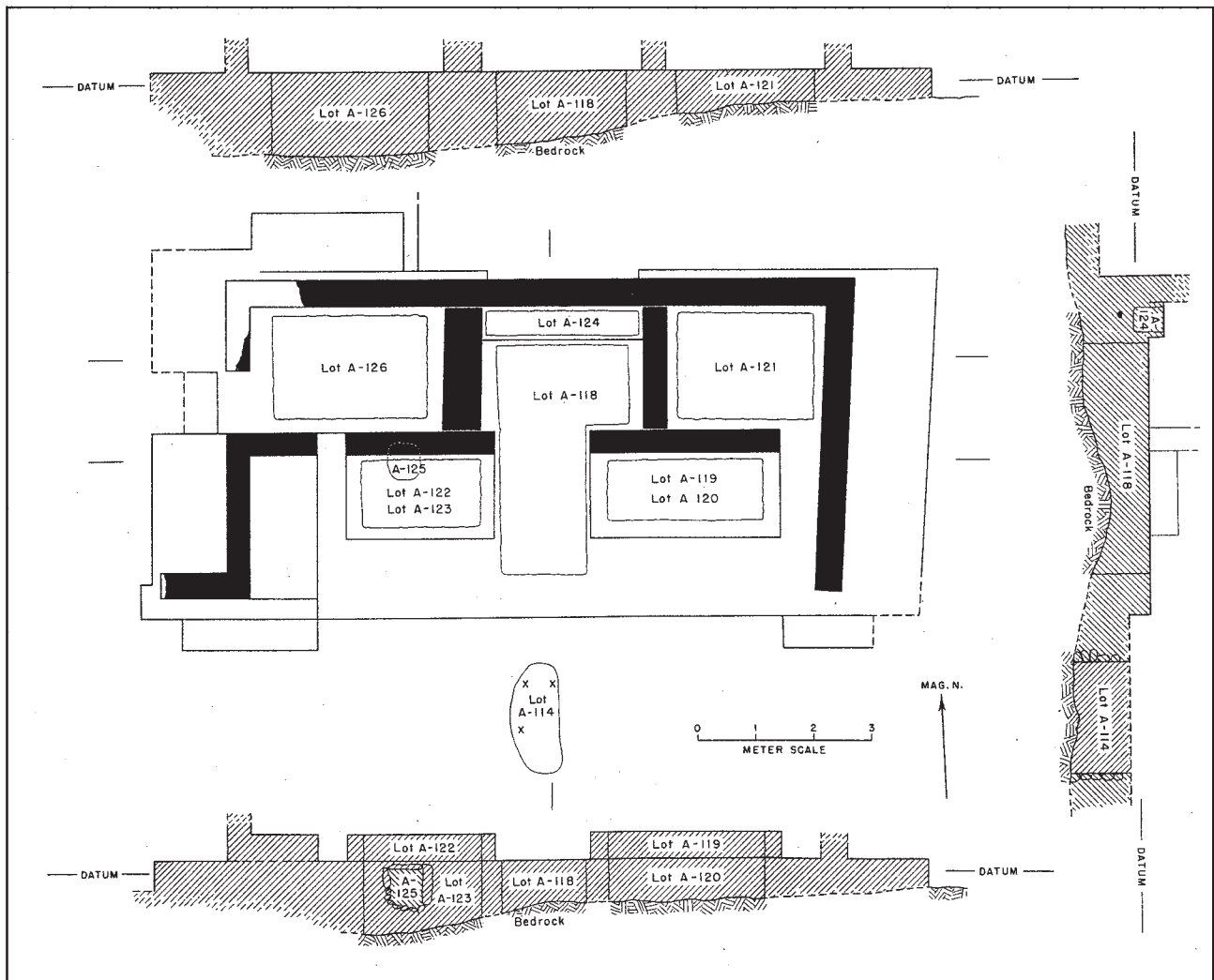
Three meters to the north is a small platform (Q-63) with a masonry wall on the east side. This construction may have served for some household pursuits in connection with Str. Q-62.

A test trench made directly south of Str. Q-62 and in line with the central passageway (Fig. 17.2) exposed a stone-lined tomb. The masonry of

the tomb is rough and irregular. The floor, formed of bedrock, was encountered 80–90 cm below the surface. Material recovered (Lot A-114) is listed under Figure 17.2; also see Figure 17.7a. The sherds numbered 1,876: 313 unidentifiable, 4 Puuc ware, remainder Mayapán period (1,059 of censers; 1 of Fine Orange).

Before excavation only small sections of the platform were exposed. At no place did it rise more than 20 cm above the debris. When excavated, the platform showed a height on the south of 40 cm. On the same side and near either end was built a masonry block (Figs. 17.2; 17.6a,b), rising approximately to the height of the platform level.

The facing of the platform proper is mostly a single course of roughly worked stones set on end.



17.2. Structure Q-62, Plan, Sections, Excavations.

Lot A-114: From tomb directly south of center of Str. Q-62: 3 large effigy censers (Fig. 17.7a-f); whetstone; polishing stone; 4 flint chips; flint point (Fig. 17.8g); shell tinkler (Fig. 17.8g); piece of worked shell (Fig. 17.8g); piece of shell; obsidian core; fragment of obsidian core; 14 obsidian chips; fragment of cylindrical *mano*; remains of 3 adult skeletons (for a position of skulls, see X); sherds. Lot A-115: Surface pottery and objects from Str. Q-62: stone polisher (Fig. 17.8f); fiber beater (Fig. 17.8f); 2 hammerstones; hammerstone, tufa polishing stone (Fig. 17.8f); grinding stone; fragment of used stone; stone pot lid; cylindrical *mano*, tufa (Fig. 17.8d); tripod metate, tufa (Fig. 17.8d); pottery bird whistle (Fig. 17.8h); flint blade; obsidian arrow point (Fig. 17.8g); fragment of flint (Fig. 17.8g); shell bead; worked shell, tinkler-type; small fragment of stalagmite; 6 tinkler-like shells; 9 pieces of shell; 20 flint chips; 42 fragments of obsidian blades; 3 fragments of obsidian cores; carved animal bone (Fig. 17.8g); fragment of flint blade; miscellaneous animal bones; fish bone; sherds. Lot A-118: From pit below floor level of central passageway and central back room: bone awl (Fig. 17.8g); human tooth perforated for suspension; 2 perforated shell tinklers (Fig. 17.8g); tinkler-like shell; 2 polishing stones; 2 fragments of shell; flint chip; fragment of obsidian blade; sherds. Lot A-119: From pit in east bench: sherds. Lot A-120: From pit below floor level under east bench to bedrock: flint chip; sherds. Lot A-121: From pit in east back room, floor level to bedrock: sherds. Lot A-122: From pit in central bench: tinkler-type shell; sherds. Lot A-123: From pit below floor level under central bench, floor level to bedrock: fragment of worked shell; tinkler-type shell; human vertebra. Lot A-124: From pit in bench along back wall of central back room: sherds. Lot A-125: From tomb under central bench: fragment of copper; pottery whistle, iguana (Fig. 17.7n); pottery whistle, dove (Fig. 17.7n); pottery whistle, owl (Fig. 17.7o,p); 2 pottery whistles, jaguars (Fig. 17.8a); pottery whistle, human figure (Fig. 17.7i,j); small pottery effigy censer (Fig. 17.7g, h); small pottery effigy censer (Fig. 17.7k,l); pottery cup (Fig. 17.8c); spiked pottery cup (Fig. 17.8c); pottery effigy censer, figure mostly gone (Fig. 17.8c); upper half of pottery whistle, woman (Fig. 17.8a); pottery whistle, monkey head (Fig. 17.8a); pottery bird head; tinkler-type shell; 3 small sea shells; 3 fragments of obsidian blades; 22 shell beads (Fig. 17.8e); 3 child skeletons; sherds. Lot A-126: From pit below floor level of west back room: 4 fragments of obsidian blades; worked tinkler-like shell; 3 sea shells; miscellaneous animal bones; sherds.

On the north side, in the area behind the central room, the platform facing and that of the building are in the same plane. Here extremely large slabs of unworked limestone are set on end, the stone of the platform facing rising above the level of the platform and forming part of the facing of the back wall of the building proper.

At the northwest corner of the building the platform facing extends southward a short distance and then, as if a change had been made in the plan, the platform enlarges.

At the west end the platform is in very poor repair. Some additions seem to have been made and there are indications of a narrow flight of steps. On the north an exterior low platform has been added.

In plan the building proper shows three benches in the front room, and the back divided, by two walls, into three chambers.

The masonry of the walls varies somewhat but in general is of large, roughly shaped blocks and slabs. The stones had been embedded in lime mortar and were set on end to form a rough facing on both sides of the wall. Single large stones were used for the jambs.

At no place did the masonry of the walls rise more than 70 cm. The benches are faced with stones similar to those used in the walls. The benches of the outer room have a height of 50 cm. Although no traces of a plaster capping remained at this level, it is presumed that this was the original height of the benches.

The two walls dividing the long back room into three chambers are built against the back and front walls of the long room and rest on a well-plastered floor extending under them.

Built against the back wall of the central chamber, which may have served as a shrine, is a bench or altar 60 cm wide and now rising to a height of 25 cm. The floor is here much destroyed; no traces of it were seen extending under the altar facing.

The building probably had wooden posts along the front of the platform and was covered with a thatch roof. The upper walls were surely made of perishable materials rising from the masonry foundations.

All the material recovered from excavation in the structure is listed according to Lots under Figure 17.2. The following analysis of the pottery is furnished by R. E. Smith:

LOT A-115: surface material. 3,047 sherds: 684 unidentifiable, 11 Puuc type, remainder Mayapán period (228 of censers and 23, Fine Orange).

LOT A-118: from pit below floor to depth of 75 cm where bedrock was encountered. The fill was of

large stones, sweepings, and some ash. 245 sherds: 8 unidentifiable, 13 Puuc type, and 224 Mayapán period (5 Fine Orange and 16 of censers).

LOT A-119: from east bench to floor level. 69 sherds: 5 unidentifiable, remainder Mayapán period (4 of censers).

LOT A-120: below LOT A-119 from floor to bedrock at depth of 70 cm. 94 sherds: 5 unidentifiable, 89 Mayapán period (10 of censers).

LOT A-121: from pit in east back room, floor level to bedrock at depth of 60 cm. 103 sherds: 6 unidentifiable, remainder Mayapán period (22 of censers).

LOT A-122: in central bench. 17 sherds: 2 unidentifiable, 15 Mayapán period (2 of censers).

LOT A-123: below floor of central bench to depth of 1.15 m (bedrock not encountered). 278 sherds: 7 unidentifiable, 1 Puuc ware, remainder Mayapán period (5 of censers).

LOT A-124: from shrine room bench to depth of 25 cm below floor. 70 sherds: 9 unidentifiable, remainder Mayapán period (10 of censers).

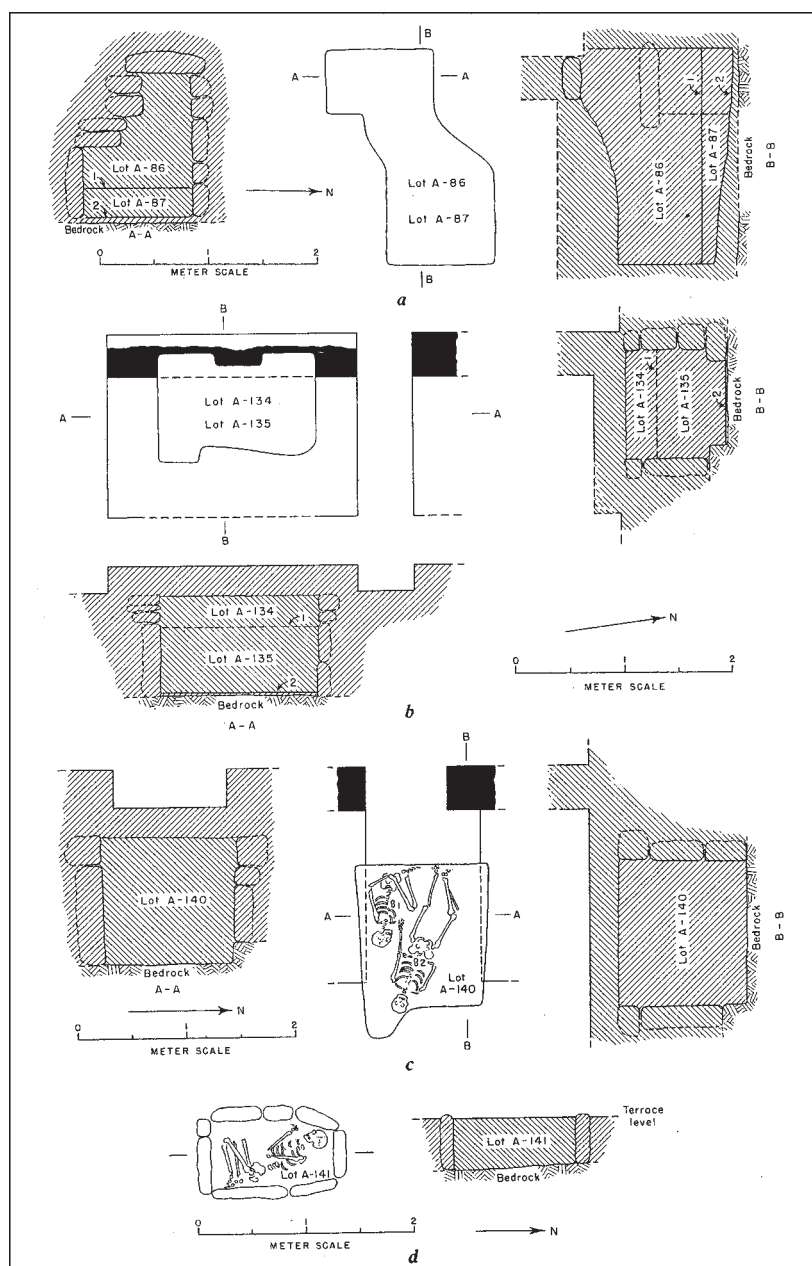
LOT A-125: from irregularly shaped stone-lined tomb under central bench and partially under wall of bench. Base of tomb 75 cm below floor level (Fig. 17.2). In the tomb were remains of three children's skeletons so fragmentary that their position in the tomb could not be determined. It is of interest to note that much of the furniture is in the nature of toys. 16 sherds: all Mayapán period.

LOT A-126: from the west back room to depth of 1.15 m but not to bedrock. 185 sherds: 10 unidentifiable, 2 Puuc ware, remainder Mayapán period (2 Fine Orange and 20 of censers).

STRUCTURE Z-4B (593 S, 490 W)

Str. Z-4b faces north and lies on the south side of a group of four constructions. It is an elaborate dwelling-type building with two masonry columns and the inward-turning end walls dividing the open side of the front room into three entrances. There are three benches in the front room, those at either end being L-shaped. Two passageways lead into the back room, which has a doorway in the rear wall.

An opening under the west bench, showing part of a vaulted chamber, led to the excavation of a stone-lined room. Built at the time of the construction of



17.3. Excavations in Structures A-3c, AA-13c, AA-37, and AA-112a.

a. Str. A-3c, cist under south bench, plan and sections. 1,2. Floor. Lot A-86: From fill above Floor 1 in cist: sherds. Lot A-87: From fill between Floors 1 and 2 in cist: sherds. b. Str. AA-13c, cist under central bench, plans and sections. 1. Line dividing Lots A-134 and A-135. 2. Floor. Lot A-134: From fill in cist above Line 1: obsidian flake-blade; animal bone; sherds. Lot A-135: From fill in cist below Line 1; miscellaneous animal bones; sherds. c. Str. AA-37, tomb under central passageway, plan and sections. Lot A-140: From tomb. 1. Pottery figurine made for articulated arms and legs (Fig. 17.8h). 2. Fragment of pottery female figurine (Fig. 17.8h); 2 adult skeletons; sherds. d. Str. A-112a, tomb in terrace, plan and section. Lot A-141: From tomb. 2 small flints; adult skeleton.

the building, the room was entered by means of a passageway in the south end of its west wall (Fig. 17.5b).

The passageway, below the level of the terrace floor, started on the west side of Str. Z-4b and continued eastward, passing under the west wall of the structure to open into the sub-bench chamber. Where the passageway extends under the west wall, the masonry of the wall projects 10 cm to form a panel.

The rectangular sub-bench chamber has a rough floor of packed earth to level the uneven surface of the bedrock. The north part of the chamber is roofed with two flat, horizontal capstones; the south part by large flat stones, three on the east side and two on the west, set on edge and leaning inward to touch at the apex so as to span the gap. These last rise from a course of projecting stones that also support the capstones at the north end. On the east side the offset forming the spring line of the vault is 80 cm above the floor; the vault soffit is formed of three steps. On the west side the spring line is 1.1 m above the floor, and there is only a single course of projecting stones. The wall at the north end of the room is vertical; the one at the south end, also vertical, projects 5 cm at a height of 1.1 m above the floor. The chamber had been filled with earth and stones to 1.1 m above the floor. Of special interest among the artifacts and pottery in the fill (Lot A-148) were several pottery arms and legs, made to articulate, and the torso of a pottery figurine made to receive such arms and legs (Fig. 17.8h).

The material recovered in Lot A-148 is listed under Figure 17.5b. The 1,022 sherds contain 90 unidentifiable and 929 Mayapán period, including 41 of censers, 2 of Fine Orange (1 Black-on-Red and 1 Polychrome Veracruz type), and 1 Puuc Coarse Striated ware. Besides the material listed in Figure 17.5b as from Lot A-149, there were 256 sherds: 30 unidentifiable, 226 Mayapán period (26 of censers).

STRUCTURE AA-13C (543 S, 605 W)

Str. AA-13c lies on the west side of a terrace supporting three constructions. The terrace is poorly defined

and rises to a height of less than a meter on the north side. Although in a poor state of preservation, the plan of Str. AA-13c shows two L-shaped benches separated by a simple rectangular bench and two passageways. The back room is much destroyed. The platform directly supporting the structure is 50 cm high on the east, where fragmentary remains of two steps were noted.

Excavations in the north passageway, where a sunken area suggested a likely place to dig, exposed the exterior wall of a cist under the central bench. The masonry-lined cist (Fig. 17.3b) has a well-defined plaster floor 2 cm above bedrock. The floor slopes down 10 cm from north to south. The masonry of the walls is mixed, some large stones set on end combined with rectangular blocks. No plaster was noted on the walls.

LOT A-134, from surface above the cist, contained 1 obsidian flake, 1 animal bone, and 75 sherds, 7 unidentifiable, the rest Mayapán period (1 Fine Orange effigy foot in form of human head).

LOT A-135, from the cist below Lot A-134, yielded miscellaneous animal bones and 125 sherds, 11 unidentifiable, the remainder Mayapán period.

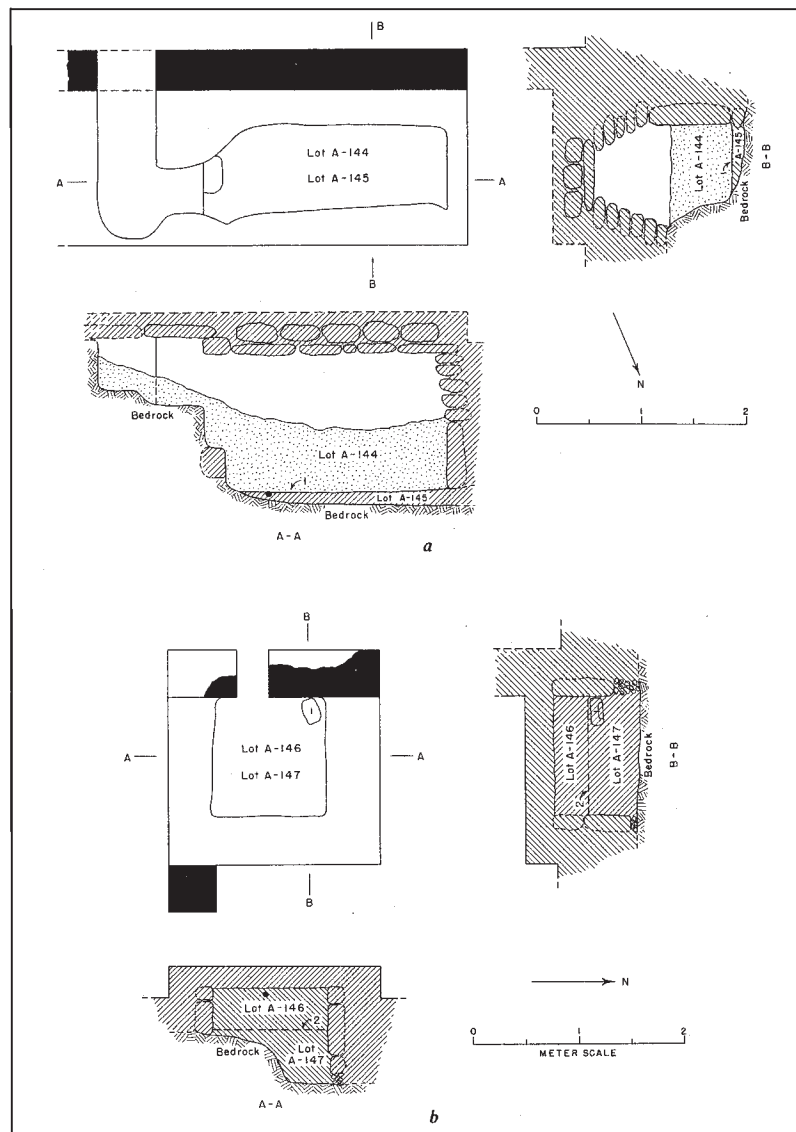
STRUCTURE AA-24C (553 S, 765 W)

This construction is an altar associated with Group AA-24 and located 10.7 m north of Str. AA-24a. The altar, which measures 1.2 by 2.5 m and has its long axis east-west, is formed of large stone slabs at each end that rise 1.5 m and have an average thickness of 20 cm. Between the ends, the floor of the altar is the same level as the terrace on which the construction rests.

Excavations in the altar showed the bedrock 10 cm below the floor, with a 55 cm deep cup-shaped depression in the bedrock. Material from the depression (Lot A-136) consisted of 23 sherds: 5 unidentifiable, 15 Mayapán period, 3 Puuc type (1 Medium Slate).

STRUCTURE AA-31D (530 S, 880 W)

Str. AA-31d consists of a front chamber with three benches and of two rear rooms. Two passageways

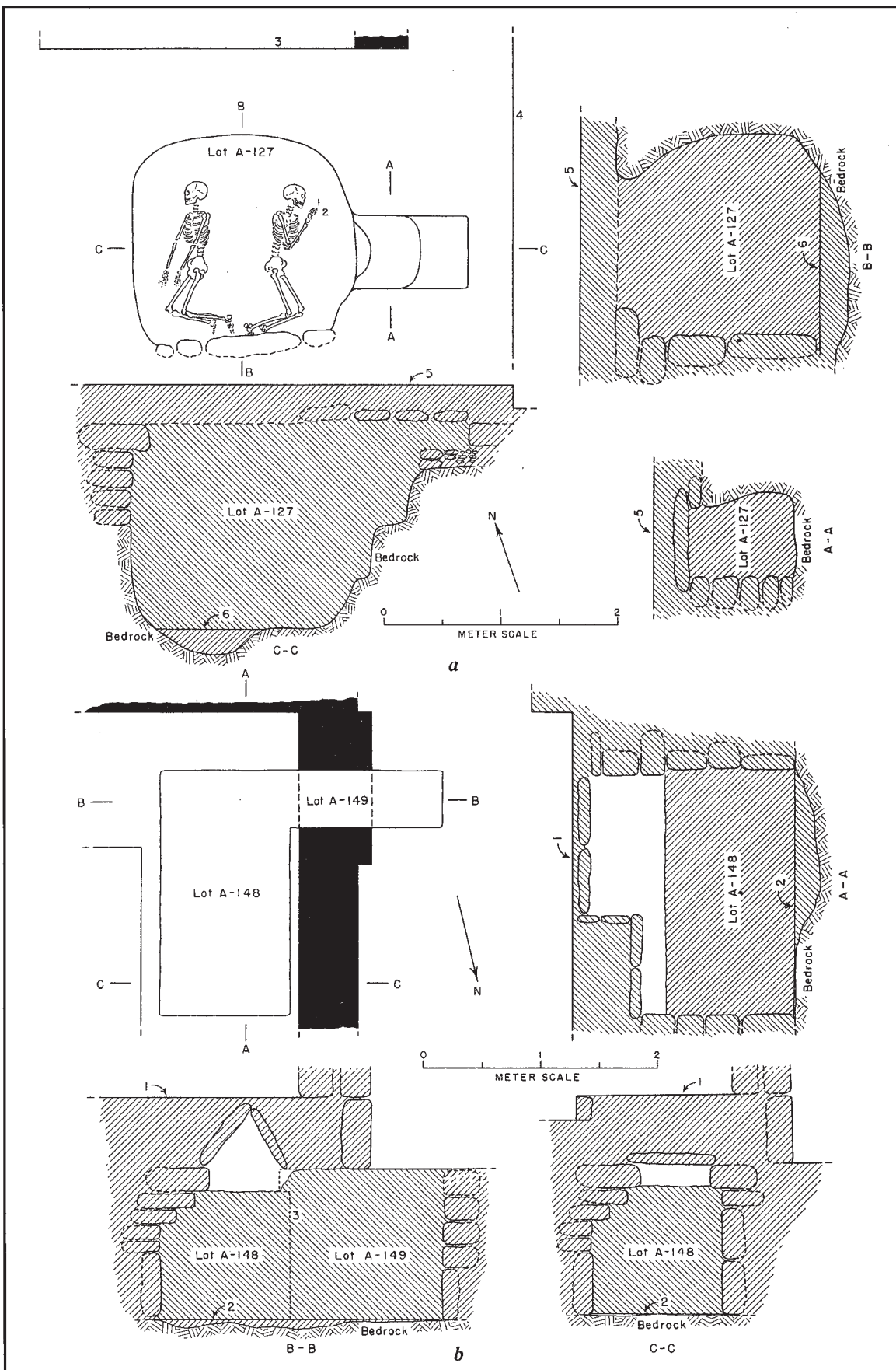


17.4. Excavations in Structures AA-60a and AA-94.

a. Str. AA-60a, vaulted chamber under west bench, plan and sections. 1. Floor. Lot A-144: From vaulted chamber above floor: sherds. Lot A-145: From fill below floor: sherds. b. Str. A-94, cist under south bench, plan and sections. 1. *Metate*. 2. Line dividing Lots A-146 and A-147. Lot A-146: From cist above Line 1: sherds. Lot A-147: From cist below Line 1; metate; worked bone (Fig. 17.8g); 4 *manos*; 3 rubbing stones; 4 stone pounders; flint chip; 2 animal bones; sherds.

lead between benches from the front chamber to the rear rooms. A test trench was made in the east passageway and extended part way into the back room.

LOT A-137, from above the floor, yielded 1 obsidian end scraper, 1 fragment of an obsidian blade, and 12 sherds, 5 unidentifiable, 7 Mayapán period.



17.5. Excavations in Structures AA-103a and Z-4b.

a. Str. AA-103a tomb under platform at south end of structure, plan and sections. 1. Position of three copper rings on phalange of skeleton. 2. Position of shell bead (Fig. 17.8g). 3. Outside bench at south end of Str. AA-103a. 4. East edge of platform of Str. AA-103a. 5. Level of platform of Str. AA-103a. 6. Rough floor to level bedrock. Lot A-127: From tomb nos. 1 and 2 above; 2 pottery figurine heads; fragment of pottery figurine; copper tweezers (Fig. 17.8e); fragment of obsidian blade; 2 animal bones; fragment of tripod metate, tufa; 2 adult skeletons; sherds. b. Str. Z-4b, vaulted chamber under west bench, plan and sections. 1. Level of west bench, Str. Z-4b. 2. Rough floor of packed earth and stone to level bedrock. 3. Line of west wall of chamber north of passageway leading into chamber. Lot A-148: From vaulted chamber: hammerstone; fragment of copper bell; fragment of metate, tufa; fragment of obsidian core; 3 fragments of obsidian blades; 7 flint chips; 2 pieces of shell; torso of pottery figurine made for articulated arms and legs (Fig. 17.8h); 2 fragments of pottery legs made for articulation (Fig. 17.8h); fragment of pottery arm made for articulation (Fig. 17.8h); fragment of pottery figurine (Fig. 17.8h); sherds. Lot A-149: From passageway leading into vaulted chamber: fragment of grooved metate; 2 flint chips; light greenstone axe (Fig. 17.8c); rectangular stone, hole in center (Fig. 17.8c); stone plug (Fig. 17.8f); pounding stone, piece of stalagmite; oval polishing stone; 4 miscellaneous animal bones; sherds.

Lot A-138, from floor level to bedrock at depth of 95 cm, contained 1 copper ring (Fig. 17.8e), 2 flint flakes, 1 shell fragments of obsidian blades, 1 fragment of a flint point, and 175 sherds, 13 unidentifiable, 7 Puuc type, remainder Mayapán period (1 Fine Orange, 15 of censers).

STRUCTURE AA-37 (637 S, 917 W)

Str. AA-37 rests on the west slope of a hillock supporting Strs. AA-38, -39, -40, and -41. The plan of Str. AA-37 shows a platform on which rests a building composed of an L-shaped bench to the north, a passageway, and a simple rectangular bench with end wall to the south. An exterior south bench has been added. The back room is 1.85 m wide. The section of its back wall remaining is formed of a single row of large stones rising 55 cm above the floor.

Excavations in the single passageway between the benches revealed a masonry-lined tomb (Fig. 17.3c). The floor of the tomb, of bedrock, is 1.4 m below the floor of the building. The masonry of the walls is mixed; in places bedrock is exposed, but for the most part it is large slabs set on end with some blocks laid in courses.

On the floor of the tomb were two human skeletons. One, an adult, with head to east, was lying on its back. A headless pottery figurine (Figs. 17.3c, 2; 17.8h) may have been held in the right hand. In the southwest corner of the tomb was the skeleton of an adolescent lying on its right side with knees flexed. Associated with this skeleton was a clay figurine which had had articulated arms and legs (Figs. 17.3c, 1; 17.8h). Other material in the tomb, Lot A-140, included 61 sherds: 10 unidentifiable, 16 Mayapán period, 35 Puuc type.

Lot A-139, surface material, included 1 portion of a tufa *metate* (Cat. no. 54-179), 1 hafted flint

point, 3 flint chips, 1 obsidian chip, and 43 sherds, 4 unidentifiable, 36 Mayapán Period, 3 Puuc type.

STRUCTURE AA-60A (655 S, 595 W)

Str. AA-60a is on the north edge of a terrace supporting a group. It rests on an independent low platform that is partially exposed on the south side. The building is in poor state of repair. Much of the back room and the entire back wall have fallen down the north talus. There is definitely an L-shaped bench to the east, and the bench to the west may also have been L-shaped.

Exposed capstones and vaulting under the west bench led to the excavation of a cist. The entrance to this cist was by a covered passageway having its opening in the south wall of the back room (Fig. 17.4a).

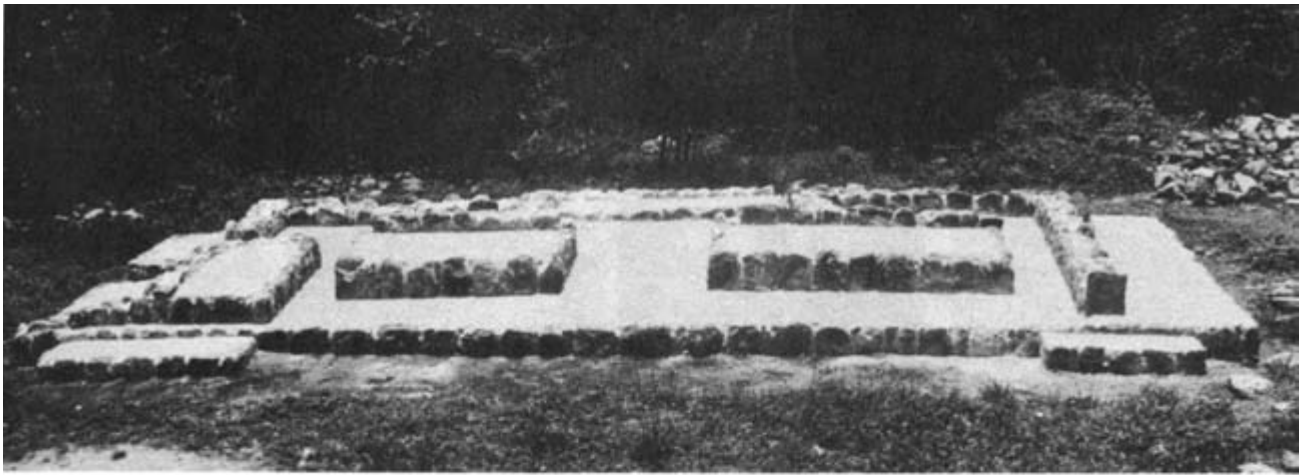
The floor of the passageway and that of the back room are on the same level. The walls are of large faced stones. From its entrance the passageway, now covered in part with large slabs, extends 1.6 m to the south where it continues eastward a short distance to open into the cist proper.

The south and west sides of the cist, which rise to a height of 60 cm or to the spring line, are of bedrock. The north and east sides are of large slabs. The vault is built of six courses of irregularly cut stones and is closed by large capping blocks.

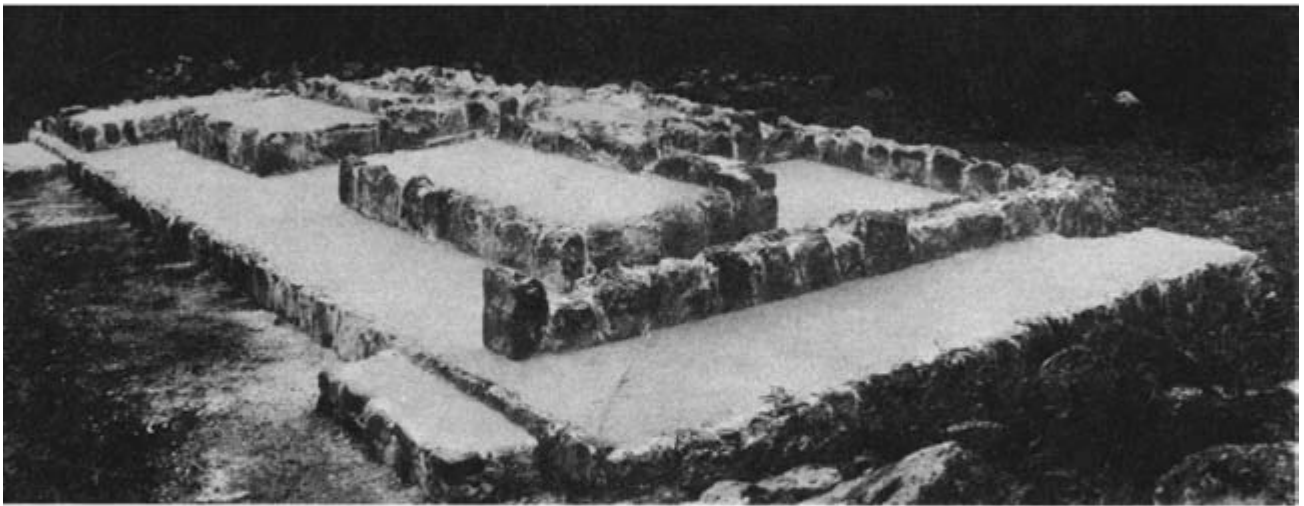
The cist was partially filled with material that had sifted and washed in. Lot A-144, from the cist and passageway, contained 133 sherds; 25 unidentifiable, 108 Mayapán period (3 of censers). The floor is of roughly worked plaster. The material between floor and bedrock, averaging 25 cm, includes Lot A-145 with 3 sherds of Mayapán period.

STRUCTURE AA-94 (723 S, 675 W)

This is a two-bench structure resting on a platform having a height of 20 cm on the east side. The



a



b



c



d

17.6. Str. Q-62 and Group A-3.

a. Looking north at Str. Q-62 (Fig. 17.2). b. Looking northwest at Str. Q-62 (Fig. 17.2). c. Looking north through entrance to Group A-3 (Fig. 17.1). d. North face of wall at south end of Group A-3 (Fig. 17.1).



17.7. Pottery Objects Recovered from Tombs Associated with Str. Q-62.

a-f. Front and side views of heads of effigy censers, Lot A-114 (Fig. 17.2). g,h. Front and side views of effigy censer, 18 cm high, Lot A-125 (Fig. 17.2). i,j. Front and side views of human figurine whistle, 17.5 cm high, Lot A-125 (Fig. 17.2). k,l. Front and side views of effigy censer, 13 cm high, Lot A-125 (Fig. 17.2). m. Dove whistle, 14 cm long, Lot A-125 (Fig. 17.2). n. Iguana whistle, 16 cm long, Lot A-125 (Fig. 17.2). o,p. Front and side views of owl whistle, 16.5 cm high, Lot A-125 (Fig. 17.2).

17.8. Pottery Objects and Artifacts Recovered During Excavation in Strs. A-3c, Q-62, Z-4b, AA-31d, AA-37, AA-94, and AA-103a, and on the Surface of Strs. Q-62, Y-26b, Y-92a, Z-74a, and AA-57a.

a. Pottery objects, Lot A-125 (Fig. 17.2), left to right, upper half of female-figure whistle, 10 cm high; 2 jaguar whistles, 9 cm high; monkey-head whistle, 6.5 cm high. b. Fragment of *metate*, limestone, 28 cm wide, Cat. no. 54-107, Lot A-104 (surface, Str. Y-92a). c. Pottery vessels, Lot A-125 (Fig. 17.2), left to right, spiked cup, 7.5 cm high; pottery cup, 8 cm high; effigy censer, figure mostly gone, 9.5 cm high. d. *Mano*, tufa, 24 cm long, diam. 8 cm, Cat. no. 54-157, Lot A-115 (Fig. 17.2, caption); three-legged *metate*, tufa, 30 by 22 cm, Cat. no. 54-158, Lot A-115 (Fig. 17.2, caption). e. Top, left to right, copper bell, Cat. no. 54-9, Lot A-94 (surface, Str. Q-74a); copper ring, diam. 1.5 cm, width 1.2 cm. Cat. no. 54-13. Lot A-138; 3 copper rings, average diam. 2 cm on phalange of skeleton, Cat. no. 54-175, Lot A-127 (Fig. 17.5a,l); copper tweezers, length 5.5 cm, diam. of end 3 cm, Cat. no. 54-176. Lot A-127 (Fig. 17.5a. Bottom: 22 shell beads, Cat. no. 54-173, Lot A-125 (Fig. 17.2). f. Top, left to right; polishing stone, 10 by 8 by 3.2 cm, Cat. no. 54-141, Lot A-115 (Fig. 17.2, caption); fiber beater, 6.8 cm wide, 5.5 cm thick, Cat. no. 54-6, Lot A-92 (surface, Str. AA-57a); fiber beater, smooth one side, 9 by 9 by 3.5 cm, Cat. no. 54-150, Lot A-115 (Fig. 17.2, caption); polishing stone, 9.5 by 7.5 by 3.5 cm, Cat. no. 54-149, Lot A-115 (Fig. 17.2, caption). Bottom, left to right, rectangular stone, 7 by 6.1 by 2.6 cm hole in center, Cat. no. 54-263, Lot A-149 (Fig. 17.5b); stone plug, 6.2 by 4.2 by 3.2 cm, Cat. no. 54-80, Lot A-96 (surface, Str. Y-26b); stone plug, 7 cm long, greatest diam. 2 cm, Cat. no. 54-264, Lot A-149 (Fig. 17.5b); green stone axe, 9 by 6 by 2 cm, Cat. no. 54-262, Lot A-149 (Fig. 17.5b). g. Top, left to right, flint blade, 8 by 4 cm, Cat. no. 54-159, Lot A-115 (Fig. 17.2, caption); fragment of flint point, 5.3 by 3.7 by 1 cm, Cat. no. 54-161, Lot A-115 (Fig. 17.2, caption); flint point, 4.2 cm long, Cat. no. 54-148; Lot A-114 (Fig. 17.2); carved bone, Cat. no. 54-164, Lot A-115 (Fig. 17.2, caption); bone awl, 10 cm long, Cat. no. 54-165, Lot A-118 (Fig. 17.2); worked bone, 9.5 cm long, Cat. no. 54-181, Lot A-147 (Fig. 17.4b); broken awl, Cat. no. 54-38, Lot A-88 (Fig. 1). Bottom, left to right, perforated shell tinkler, Cat. no. 54-169, Lot A-118 (Fig. 17.2); perforated shell tinkler, Cat. no. 54-170, Lot A-118 (Fig. 17.2); worked shell, Cat. no. 54-145, Lot A-114 (Fig. 17.2); obsidian arrow point, 3.5 by 1.2 cm, Cat. no. 54-160, Lot A-115 (Fig. 17.2, caption); perforated shell tinkler, Cat. no. 54-146, Lot A-114 (Fig. 17.2); shell bead, Cat. no. 54-177, Lot A-127 (Fig. 17.5a,2). h. Top, left to right, pottery figurine made for articulated arms and legs, 12 cm long, Lot A-140 (Fig. 17.3c,l); fragment of pottery female figurine, 6 cm long, Lot A-140 (Fig. 17.3c,2); fragment of pottery figurine, Lot A-149 (Fig. 17.5b); fragment of pottery figurine made for articulated arms and legs, 5.5 cm long, Lot A-148 (Fig. 17.5b). Bottom, left to right, pottery bird whistle, 5 cm high, Lot A-115 (Fig. 17.2, caption); fragment of pottery arm made for articulation, Lot A-148 (Fig. 17.5b); first fragment of pottery leg made for articulation, Lot A-148 (Fig. 17.5b); second fragment of pottery leg made for articulation, Lot A-148 (Fig. 17.5b).

benches rise 35 cm and are in fair condition. Little remains of the medial wall. There are remnants of an altar or shrine in the inner chamber in line with the passageway between the benches. It was probably built against the now fallen back wall.

A depression in the south bench suggested a likely place for exploration and led to the opening of a cist. This cist (Fig. 17.4b) has a depth from top of bench stones varying from 0.7 to 1.15 m. The masonry of the walls in some places is cut from bedrock and supplemented with roughly worked stones. The base of the cist is formed of bedrock which is very irregular, at one place having a pocket extending 50 cm inward and 70 cm down. This must have been open at one time, for a *mano* was found partially embedded in the earth in the pocket. No definite floor was seen.

Lot A-146, from top of bench to a depth of 60 cm, yielded 40 sherds: 6 unidentifiable, 34 Mayapán period (8 of censers).

Lot A-147, from base of Lot A-146 to bedrock, yielded the material listed under Figure 17.4b. The 14 sherds are all Mayapán period.

STRUCTURE AA-103A (795 S, 858 W)

Str. AA-103a, of the dwelling type, lies on the west edge of a large terrace. There are three benches in the front room and an exterior south bench. The bench to the north is L-shaped. Two passageways lead into the back room which, though not in poor repair, shows a doorway at the south end.

The building rests on a platform, approximately 20 cm high on the east, which extends 4.4 m south of the exterior bench. It was in this southern extension of the platform that the capstones of a possible vault were seen and led to the excavation of a tomb.

The tomb, roughly circular, had for the most part been cut out of bedrock. As the bedrock sloped down to the south, this side and the upper part of the west side were built of roughly worked stones (Fig. 17.5a).

Entrance to the tomb was by a narrow passageway on the east. Rough steps cut out of the bedrock on this side facilitated access down to the chamber, where a rough floor had been built to level off the uneven surface of the bedrock.

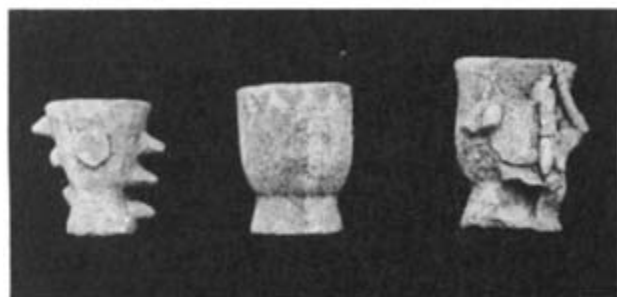
The passageway had been covered by four large capstones. One, not in position, had fallen and was resting on a fill of earth and stones which came to within a few centimeters of the top of the tomb.



a



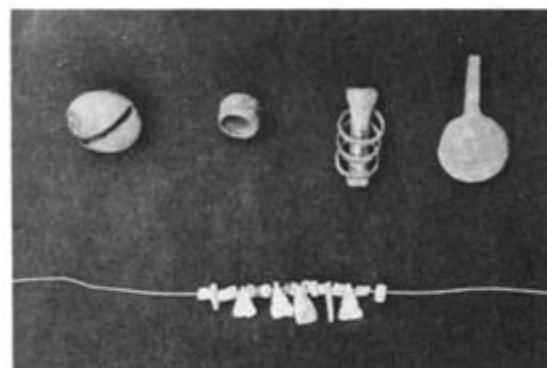
b



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g



h

How the remainder of the tomb was roofed is not known as no large stones which could have spanned the opening were found. It is possible that wooden beams were used. If the tomb had no roof and was filled level with the platform after deposition of the skeletons, there was little reason for the passageway and its capstones. Also, there must have been a space between the fill and the top of the tomb as one of the capstones of the passageway rested on this fill.

The tomb held two young adult skeletons lying on the floor, their long axis north and south. The skeleton in the western side of the tomb, that of a male, had its legs partially flexed and its arms extended, hands below the pelvis. It lay on its right side and faced west. The skeleton in the east side of the tomb, that of a female, had its legs partially flexed and its arms flexed. It lay on its left side and faced east. The latter skeleton had three copper rings on one of its phalanges (Figs. 17.5a,l and 17.8e). A pair of copper tweezers was also found with the burial (Fig. 17.8e).

Material from the tomb (Lot A-127) is listed in the caption to Figure 17.5a. The 235 sherds include 56 unidentifiable, 179 Mayapán period (8 of censers).

STRUCTURE AA-112A (867 S, 746 W)

This structure is formed of a platform 10.65 m long, built on two levels. The section to the east is 5.1 m wide. The western section, 6.1 m wide and 35 cm higher than the portion to the east, supports, in its northwest corner, the remains of an L-shaped bench. Set in this west part of the platform, 1 m and 3.5 m respectively, from the east and south edges, is a masonry-lined tomb (Fig. 17.3d).

The tomb has a depth of 50 cm. The floor is of plaster directly on bedrock. The masonry of the walls is of slabs set on end, averaging 5–6 cm in thickness. Some of the slabs lining the tomb rise a few centimeters above the present level of the terrace. No means of covering the tomb was indicated; it may be that it was filled with earth as found.

Within the tomb, lying on the floor, were remains of a human skeleton in very poor state of preservation. Fragments of the skull were at the north end of the tomb, the body lying on its right side with legs semiflexed. Material from this excavation (Lot A-141), besides the skeleton, included two flint fragments.

EXPLORATION ON THE OUTSKIRTS OF MAYAPÁN

ROBERT E. SMITH

The excavation of a small site near a large one, such as Mayapán, often adds valuable information, confirmatory, supplementary, or explanatory, to the archaeological findings at its sizable neighbor. And further, a study of the ruins in the immediate environs of Mayapán helps to explain what was going on outside that metropolis during different periods of its occupancy.

SANTA CRUZ

The first small site investigated was Santa Cruz, about 1.5 km by trail southeast of Cenote Ch'en Carro, which is in the south-central part of Mayapán (Jones 1952, map, Square Y). These ruins, which occupy a relatively small area, roughly 200 by 300 m, part of which is used for pasturage and part for growing corn, squash, and peppers, were discovered and mapped (Fig. 18.1a) by Gustav Strömsvik in November 1953. There are in all eight platforms

and a small pyramidal structure. The pyramid and five of the platforms are clustered around a sizable jug-shaped cenote, which supplies water to the farmers of Tecoh and Telchaquillo who own and work the land of Santa Cruz. The platforms have been lettered from A to H; the pyramid is I (Fig. 18.1a). The term "platform" refers to the basal-platform type defined in Satterthwaite (1943:16). Only three were investigated: Platform A, because early sherds were found on or near the surface; Platform B, because it supported a number of house platforms of the simple type (Pollock and Strömsvik, 1953:90); Platform C, because it sustained two single-room shrines which looked as though they might harbor burials or caches. The other structures offered little prospect of either ceramic stratigraphy or rewarding architectural disclosures, at least without more protracted excavation than was planned. All were badly eroded. Some showed traces of what may have been house platforms or, in the case of Platform G,

a single-room shrine, but in many places bedrock showed above the surface, thus eliminating them as likely repositories of sequent cultural material.

PLATFORM A, originally L-shaped, is now Z-shaped owing to an addition to the west side extending about 15 m west and about 7 m south. The original projection to the north that made the L contains a badly ruined, single-room shrine from the back wall of which the Castillo in the Main Group at Mayapán may be seen well to the north. This shrine, the only recognizable structure on the platform, conforms closely to the Mayapán shrines described by R. M. Adams, Jr. (1953:148–155), save that it may have had a dais centered against the rear wall and it did not include an ossuary cist. The identifiable surface pottery associated with the shrine tends to place it late in the Mayapán period because of the large proportion of effigy-censer sherds, the scarcity of Mayapán Red ware, and the lack of all other types associated with earlier Mayapán period phase.

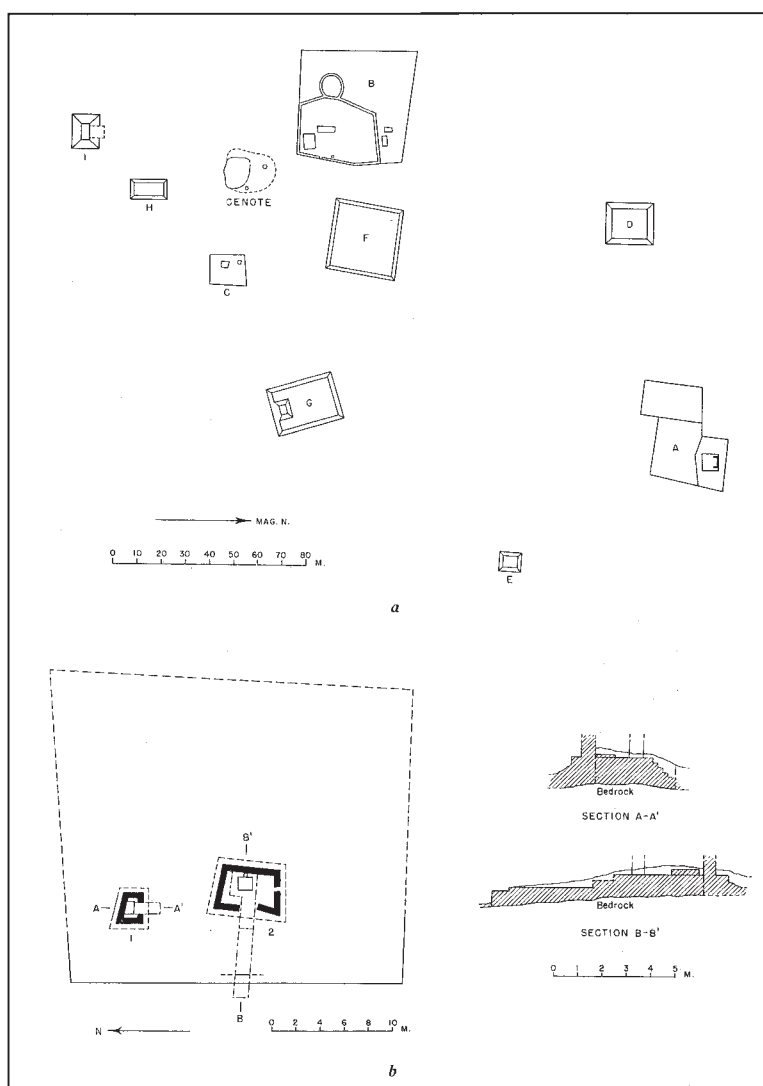
The investigation of Platform A consisted in digging three trenches and making a plan and sections. The West Trench disclosed the original west wall of the platform to a depth of about 1.5 m. This wall was constructed of large and medium-size stones (Fig. 18.5d) and was probably built during the Puuc period; both the appearance of the wall and the ceramic evidence from inside the original platform support this suggestion. The strata in the trench, including two below a floor which turned up to the wall, contained all pre-Mayapán period pottery save for one possible effigy-censer fragment found in the top strata. The proportion of Formative to Puuc period types increased from top to bottom. Percentages are:

Top level: Mayapán, 0.2; Puuc, 62.3; Classic, 3.0; Formative, 0.5; Unidentified, 34.0

Middle level: Puuc, 63.6; Classic, 5.2; Formative, 8.4; Unidentified, 22.8

Bottom level: Puuc, 18.0; Classic, 4.0; Formative, 54.0; Unidentified, 24.0

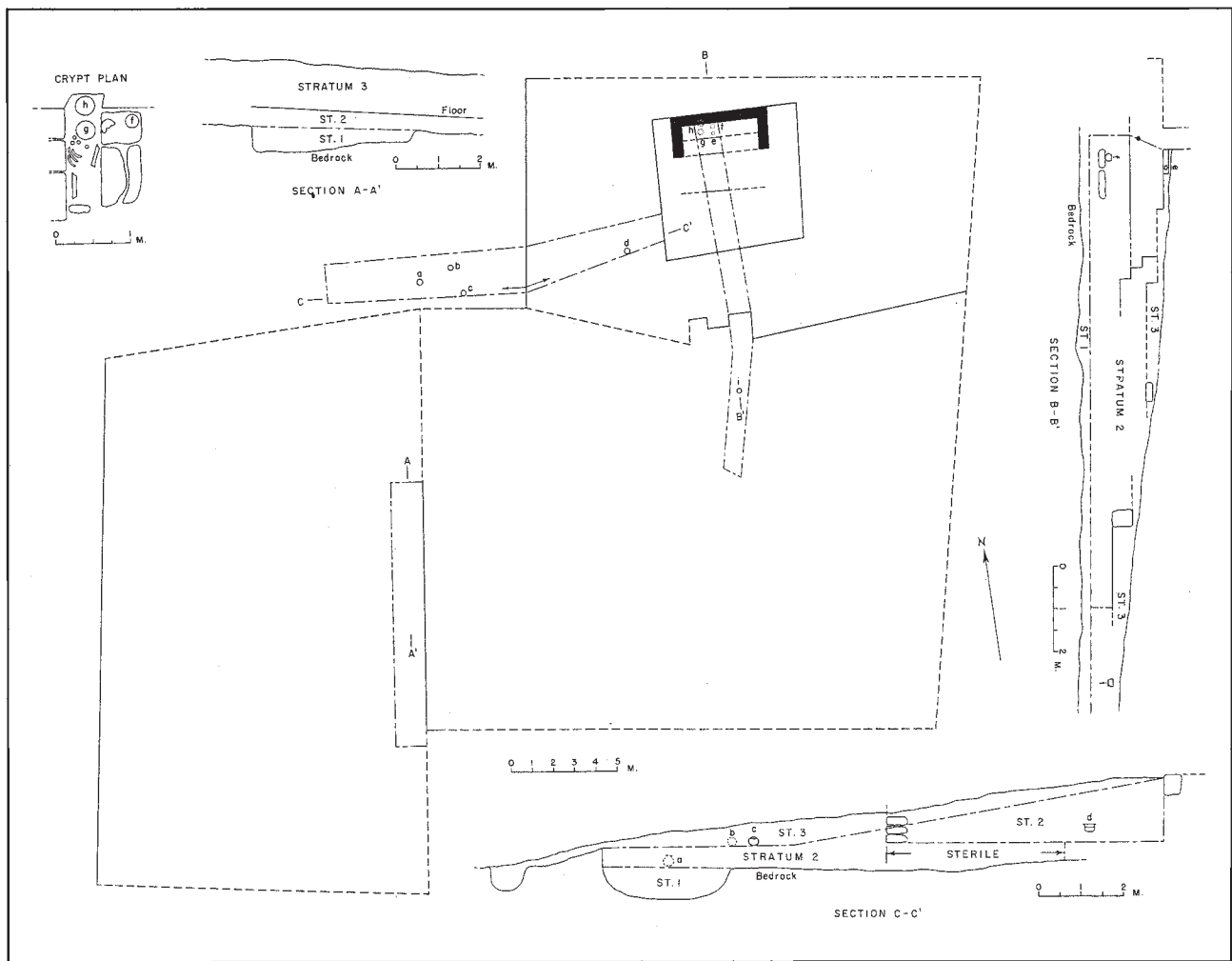
The artifacts found in this trench comprised a flint chip, a flint point, and a shell ornament, all from Stratum 3.



18.1. Santa Cruz.

a. Plan of site. b. Plan and sections of Platform C, showing House Platforms 1 and 2.

Perhaps the most instructive of the excavations was the North Trench, dug alongside, but not directly next, the north wall of the platform. After sinking an exploratory pit well to the west, and finding only Puuc and Formative pottery types but for a single effigy-censer sherd, the pit was prolonged into a 1.8 m broad trench that reached the west wall of the northern extension. Two infant burials, both in Puuc-type jars (Fig. 18.2b,c), were encountered in Stratum 3; another infant burial (Fig. 18.2a) and two Puuc Medium Slate bowls (Fig. 18.6g,f), one on top of the other and apparently associated with an adult burial, were recovered from Stratum 2. The ceramic pattern resulting from the three levels excavated closely resembles that of the West Trench, with a greater abundance of early types. Percentages are:



18.2. Platform A, Plan and Sections.

a. Jar containing infant burial found in Stratum 2 of North Trench; b,c. Jars containing infant burials found in Stratum 3 of North Trench. c is illustrated in Fig. 18.6j. d. Two Puuc Medium Slate vessels (Fig. 18.6g,h) apparently associated with an adult burial, recovered from Stratum 2 of North Trench. e. Miniature Mayapán Red jar (Fig. 18.6f). f. Polished Black Classic bowl (Fig. 18.6k). g. Puuc Medium Slate Tripod dish (Fig. 18.6i). h. Puuc Medium Slate tripod dish (Fig. 18.6l). i. Small crude tripod bowl (Fig. 18.6e).

Top level: Mayapán, 0.5; Puuc, 62.4; Classic, 4.7;
Formative, 2.0; Unidentified, 30.4

Middle level: Puuc, 38.9; Classic, 0.7; Formative, 15.1;
Unidentified, 45.3

Bottom level: Puuc, 2.2; Formative, 67.2;
Unidentified, 30.6

The artifacts from the North Trench included a doughnut stone (Fig. 18.6s, right) and a univalve shell from Stratum 2, and a shell pectoral from Stratum 3. Both the West and North Trenches were outside of Platform A.

The East Trench, 17 m long from south to north, passed through several terraces and finally bisected the single-room shrine at the north edge of the plat-

form. A number of floors at different levels were encountered. Close to the surface at the south end and above the top floor in the shrine at the north end, two rather crudely made, small Mayapán Red vessels (Fig. 18.2i,e, respectively) were found, whereas about 1.3 m below the top floor and sealed beneath the earliest and best-preserved floor a formal crypt burial (Fig. 18.2, crypt plan and Section BB') of Puuc period was encountered. The burial contained an adult male skeleton, three pottery vessels, which include 2 Puuc Medium Slate plates (Fig. 18.6i,l) and 1 polished black Classic bowl of Uaxactun type (Fig. 18.6k), 3 perforated jade discs, 1 spherical jade bead, 2 perforated shell discs, 1 cylindrical shell ornament, 1 univalve shell, 3 cylindrical bone sections cut at

both ends, and 5 jaguar (?) teeth (Fig. 18.6r). Other artifacts associated with this trench were a flint point from the top level, and 4 flint points, an obsidian flake-blade, a bone awl, and a univalve shell from the middle level. The ceramic pattern derived from the three levels in the East Trench differs considerably from that of the West and North Trenches. More Mayapán types occur in the top level and fewer Formative types in the bottom. A percentage summary of types follows:

Top level: Mayapán, 31.6; Puuc, 26.8; Classic, 0.5; Formative, 0.5; Unidentified, 40.6

Middle level: Mayapán, 5.4; Puuc, 38.8; Classic, 2.7; Formative, 8.7; Unidentified, 44.4

Bottom level: Puuc, 35.4; Classic, 14.5; Formative, 7.4; Unidentified, 42.7

In the final analysis it appears that, except for a short late occupation, Platform A was laid down in Puuc times amid Formative remains, as suggested by the earliest levels inside and just outside of the platform.

PLATFORM B, approximately square, measuring 45 by 48 m, supported several house platforms, two of which, and an altar, were investigated. House Platforms 1 and 2 and the small altar were enclosed within a walled area on the southeast part of the platform. For the most part the walls appeared to be of postconquest construction, possibly quite recent, but with some sections presumably dating from ancient times. In order to determine the manner in which Platform B was built, as well as to collect a pottery sample, a broad trench (about 1.3 m wide by 10 m long) was cut into the north side. This North Trench uncovered at least three terraces and two floors. The ceramic pattern resulting from the four levels excavated resembles that of the West Trench in Platform A. A percentage summary of types follows:

Top level: Mayapán, 8.4; Toltec Chichen, 0.6; Puuc, 83.2; Classic, 0.6; Unidentified, 7.2

Middle levels (Strata 2 and 3): Puuc, 69.7; Classic, 5.5; Formative, 1.2; Unidentified, 23.6

Lowest level: Puuc, 77.4; Unidentified, 22.6

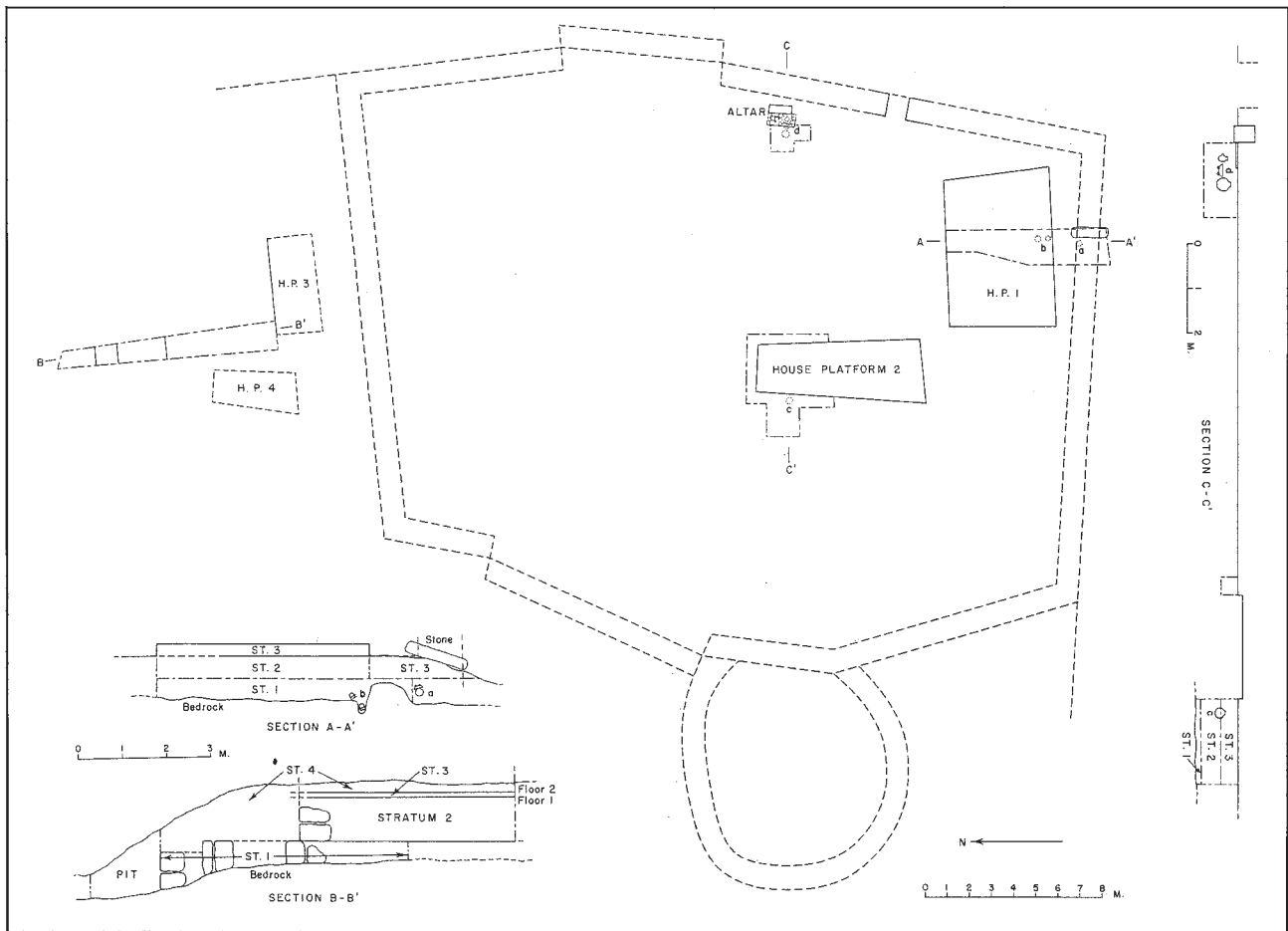
Very few artifacts (4 flint chips, 1 flint scraper, 1 obsidian flake-blade, and 2 univalve shells) were found and all came from the surface level.

HOUSE PLATFORM 1 (Fig. 18.3), rectangular in plan and located in the southeast corner of Platform B, was bisected by a trench (1.5 m broad) reaching to bedrock. Just south of the house platform a cache was encountered 68 cm below a large rectangular fallen stone (1.48 m long, 54 cm wide and 30 cm thick

at mid-point), which may have been a monument or a jamb. It was not carved and showed no trace of paint. The cache contained two small vessels, one a lustrous streaky brown jar (badly broken, no illustration), the other used as its cover, a Puuc Medium Slate tripod dish with red floor design (Fig. 18.6m,n). Near the cache, but above and to the west of it, two flint points or blades were discovered, one especially well made. Within the house platform there was a fairly good floor 32 cm below the surface; 80 cm below this floor, just inside the south edge of the house platform, a burial with three pots was found. Most of the skeleton, an adult, was lodged under an enormous rock. The vessels, one of which covered the skull, consisted of two tripod dishes (Fig. 18.6p,q) and a cuspidor-shaped bowl (Fig. 18.6g), all Puuc Medium Slate types. The pottery found in the trench totaled only 185 sherds and owing to a cave-in during the removal of the burial vessels some late sherds were mixed with material from Stratum 1. However, Stratum 2, which was removed prior to the cave-in, held no pottery later than the Puuc period. The only artifacts encountered, all in Stratum 3, were 6 flint chips, 1 flint point, and 7 obsidian flake-blades.

HOUSE PLATFORM 2 (Fig. 18.3), rectangular in plan and located just northwest of House Platform 1, was examined by means of a narrow 40 cm deep trench skirting its northern half. Later, a pit was sunk off the west side to bedrock, a depth of 94 cm as compared to 1.32 m in House Platform 1. In the upper 40 cm a quantity of Mayapán period Porous Gray jar sherds were uncovered. They rested in ash and were surrounded by medium-sized stones as if some ceremony had been performed, but the sherds were not burned. All levels associated with House Platform 2 had a preponderance of Mayapán types. A few artifacts were found in the surface level, including a crude pottery spindle whorl (?), 18 flint chips, 1 flint point, 1 skin scraper (Fig. 18.6s, center), 1 hammer-stone (Fig. 18.6s, left), 3 obsidian flake-blades, and 1 univalve shell.

Approximately 9.5 m due east of House Platform 2 a small altar-like arrangement was investigated. This comprised a roughly cut rectangular stone (1 m long, 50 cm high, 35 cm thick) resting on its long edge and embedded about 12 cm into the soil. In front of this stone to the west was a crude form of paving (Fig. 18.3), about 1.25 m by 55 cm, made of uncut small flattish stones. Beneath the paving and extending farther west a cache of five Mayapán-type vessels was found buried 20–70 cm below the surface. The vessels included a large Porous Gray jar, a red tripod dish with effigy feet (human head with turned-up nose), a small red jar, a red cylindrical tri-



18.3. Platform B, Plan and Sections.

a. Cache under rectangular stone just south of House Platform, including a Lustrous Streaky Brown jar badly broken, with a Puuc Medium Slate tripod dish (Fig. 18.6m,n) as cover. b. Burial below floor of House Platform 1, including remnants of an adult skeleton and 3 Puuc Medium Slate vessels (Fig. 18.6o-q). c. Mayapán period Porous Gray jar with low neck, wide mouth, and lightly striated body. One badly damaged but probably whole jar of this type, plus a considerable quantity of body fragments of other like jars, was found. d. A cache of 5 vessels associated with an altar. Four vessels are illustrated (Fig. 18.6a-d).

pod vase, and a complicated, badly damaged effigy vessel (Fig. 18.6a-d; the Porous Gray jar is not illustrated). The only artifacts represented were 4 flint chips, a spherical limestone bead, and a flint point.

PLATFORM C (Fig. 18.1b) originally may have supported three single-room shrines, two of them nearly square, opening north and south, respectively, and between them a larger, rectangular construction that faced Cenote Santa Cruz to the west. There is at present no trace of a shrine at the south, but there is ample space on the platform for it. Each existing shrine originally had a beam-and-mortar roof and a centrally located altar or dais (Fig. 18.5a,b). On the floor between the dais and the back wall of the larger shrine, there was centered a stone ring formed of two semicircular stones and some

mortar. An opening on the south side of this shrine was puzzling. It was too small for a doorway and unnecessarily broad and high for a drain. However, it may not originally have extended clear through the wall but have been a recessed space or niche. The main difficulties of reconstruction hinge upon the fact that the outer part of the wall on that side had fallen and the shrine floor near the inside of the wall had been destroyed. In most respects these shrines resemble the one on Platform A, but there were no burials or caches associated with either. The pottery collected in the two trenches which cut through the doorways of the shrines and descended to bedrock was predominantly of Mayapán period type with little change from top to bottom. Therefore it may be assumed that this platform was a late construction belonging to the Mayapán period, in contrast to

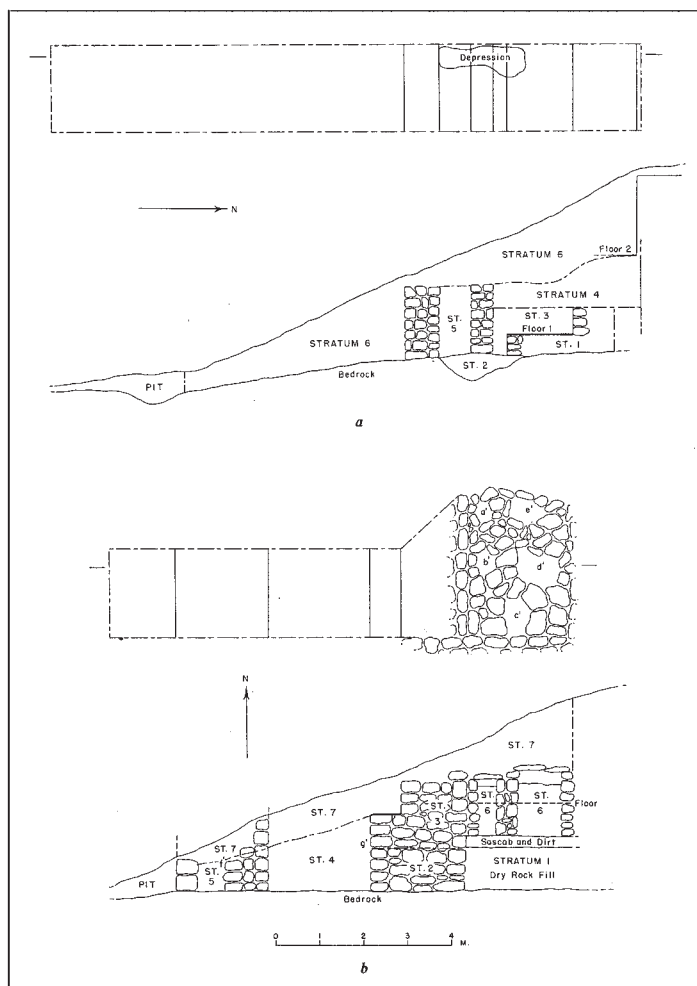
Platforms A and B, which were in all likelihood built during the Puuc period.

Cenote Santa Cruz (Fig. 18.5c) was cursorily investigated but not mapped. In size and general shape of the mouth and area immediately below, it was comparable to Cenote X-Coton (Smith 1953), without an artificial platform but with a retaining wall to hold back the mound of soil and debris and with a stairway leading to a semicircle of water along the northeast side. A pit dug into the accumulated debris showed that the ceramic pattern in the three levels excavated was one of increase in early types at the expense of late types as the pit progressed downward.

From the ceramic evidence, then, it would appear that Platforms A and B were originally constructed during the Puuc period upon the remains of a Formative living level, and that both were subjected to later building activity. Platform C suggested only late Mayapán period construction. In other words, Santa Cruz was occupied in Formative times, saw considerable construction activity in the Puuc period, and seemingly was used ceremonially during the late Mayapán period.

TELCHAQUILLO

The next work undertaken was at the large mound in the village of Telchaquillo. This ruin, situated south of the cenote in the plaza and still standing after years of robbing of stone for property walls and house foundations, remains an impressive mass of masonry. At one time these ruins may have been connected with the east entrance to the cenote by means of various constructions, now largely destroyed, ending at a stairway leading down to a natural ramp which was joined by a broad stairway descending to the water hole. The principal aim in trenching into this large complex was to determine something of its history through its growth, both horizontal and vertical. It was by reason of the horizontal accretions with their time-sensitive pottery inclusions that a chronological sequence developed. That the sequence did not evolve into something more conclusive is probably because the mound was not sufficiently penetrated, owing to excessive outlay in time and labor. The two trenches, one on the south, the other on the west, each penetrated several terrace walls. In the pottery lots Puuc types were usually more abundant than Mayapán. Actually, the farther into the mound we progressed the greater became the predominance of Puuc over Mayapán types. The fact remains, how-



18.4. Trenches Into Large Mound in Telchaquillo.

a. Trench into south side. b. Trench into west side. a'-e', stone-constructed cells (Fig. 18.5f); f', latest terrace wall; g', early terrace wall showing plastered floor 1.75 m above-bedrock (Fig. 18.5e).

ever, that Mayapán wares were always present. The ceramic trend suggests that farther inside the mound a pure sample of Puuc pottery might have been encountered.

THE SOUTH TRENCH (Fig. 18.4a), 2 m wide and 13.35 m long, began with a shallow exploratory pit and penetrated several terrace walls of varying heights, the one farthest north being 4 m high. Because of this height and the loose rock fill, we were forced to slope the trench sides in order to avoid land-slides or serious cave-ins. In the digging of the trench, levels were not taken until the first terrace was encountered, since everything south of that quite obviously was fall. Just beyond this first terrace wall a dip in the bedrock (Fig. 18.4a, Stratum 2) provided a repository for somewhat earlier material than that encoun-



a



b



c



d



e



f

18.5. Views of Santa Cruz and the Large Mound in Telchaquillo.

a. Small single-room shrine on north end of Platform C, Santa Cruz, viewed from south and showing dais centered on back wall. b. Single-room shrine on Platform C, Santa Cruz, viewed from west and showing centrally located dais. c. Cenote Santa Cruz in center foreground. Viewed from east. d. Original west wall of Platform A, Santa Cruz. Viewed from west. Note size of stones. e. Two terraces on west side of large mound in Telchaquillo. Viewed from west. f. Stone-constructed cells (Fig. 18.4b,a',-e'). Viewed from north.



a *b*



c



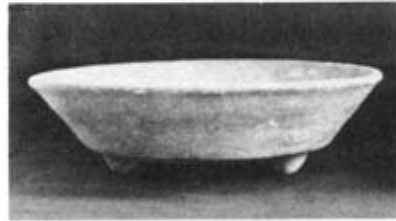
d



e *f*



g



i



j



h



k



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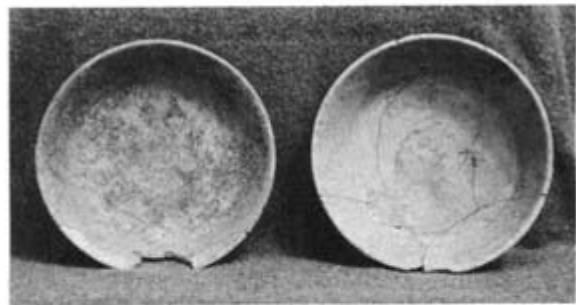
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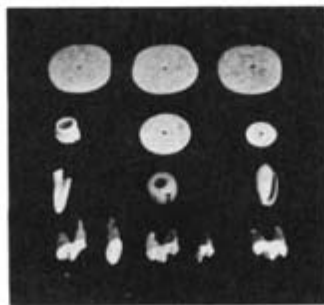


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s

18.6. Pottery and Other Artifacts from Santa Cruz.

a–d. Altar cache vessels (large badly broken Porous Brown, lightly striated jar, not included here but shown in Fig. 18.3d, right, Section C–C'. Lot E-78. a. Mayapán Red tripod vase, lip diam. 4.4 cm, overall height 6.8 cm. b. Small Mayapán Red effigy jar, lip diam. 6.0 cm, height 12.0 cm. c. badly damaged unslipped effigy vessel, overall height 25.5 cm. d. Mayapán Red tripod dish with effigy feet (human head with turned-up nose), lip diam. 23.5 cm, overall height 12.0 cm. e. Small crude tripod bowl, may have had red slip although none showing (Fig. 18.2i), lip diam. 8.0 cm, overall height 5.8 cm. Lot E-60. f. Miniature Red jar with horizontal handles (see Fig. 18.2e for location), lip diam. 3.5 cm, height 5.0 cm. Lot E-51. g. Puuc Medium Slate hemispherical bowl (Fig. 18.2d, bottom), lip diam. 17.5 cm, height 9.0 cm. Lot E-56. h. Puuc Medium Slate tripod dish (Fig. 18.2d, top), solid slab feet, lip diam. 25.5 cm, height 6.0 cm. Lot E-56. i. Puuc Medium Slate tripod dish (Fig. 18.2g), solid conical feet, lip diam. 25.3 cm, overall height 7.1 cm. Lot E-59. j. Puuc Streaky Brown jar with neck broken off to make room for infant burial (Fig. 18.2c). Cover is a fragment of Puuc coarse striated jar. Lot E-49; k. Polished Black Classic bowl of Uaxactun type with incised line encircling exterior just below lip (Fig. 18.2f), lip diam. 16.5 cm, height 8.8 cm. Lot E-59. l. Puuc Medium Slate tripod dish, everted rim, solid slab feet, black decoration on interior and no slip on exterior (Fig. 18.2h), lip diam. 25.7 cm, overall height 8.0 cm. Lot E-59; m,n. Profile and interior view of Puuc Medium Slate tripod dish, red (black in some places) design on floor, solid slab feet (Fig. 18.3a), lip diam. 24.0 cm, overall height 6.1 cm. Lot E-687. o. Puuc Medium Slate cuspidor-shaped bowl, evidence of pink stucco coating (Fig. 18.3b, highest of three vessels and on left), lip diam. 18.3 cm, height 10.1 cm. Lot E-79. p. Puuc Medium Slate tripod dish, red (some places black) scroll surrounded by dabs as floor decoration, solid slab feet (Fig. 18.3b, under cuspidor-shaped bowl), lip diam. 23.3 cm, overall height 5.9 cm. Lot E-79. q. Puuc Medium Slate tripod dish, red (some places black) scroll surrounded by dabs as floor decoration, solid conical feet (Fig. 18.3b, lowest of three vessels and on right), lip diam. 23.0 cm, overall height 6.8 cm. Lot E-79. r. Artifacts from crypt burial, Platform A. Lot E-59. Top row: 3 perforated jade discs (Cat. no. 54-50), diam. ca. 4.0 cm, thickness 0.3–0.5 cm. Second row: cylindrical shell ornament (Cat. no. 54-54), diam. at top 1.2 cm, height 1.0 cm; two shell perforated discs (Cat. no. 54-52), diam. of larger is about 3.0 cm, smaller about 2.0 cm, thickness 0.1–0.15 cm. Third row: left, fragment of shell (Cat. no. 54-53); center, spherical jade bead (Cat. no. 54-51), diam. 1.9 cm; right, perforated tinkler shell (Cat. no. 54-53), height 2.5 cm. Bottom row: 5 jaguar (?) teeth. s. Stone objects. Left, hammer stone (Cat. no. 54-46), diam. 6.0 cm, Lot E-73. Center, skin scraper (Cat. no. 54-45), diam. 11.6 cm, Lot E-73. Right, doughnut stone (Cat. no. 54-47), diam 10.5 cm, Lot E-56.

tered in the other strata, even including Stratum 1. A percentage summary of ceramic types follows:

Stratum 1: Mayapán, 17.7; Puuc, 68.8; Formative, 0.4; Unidentified, 13.1

Stratum 2: Mayapán, 12.0; Puuc, 76.6; Unidentified, 11.4

Stratum 3: Mayapán, 55.1; Puuc 36.7; Unidentified, 8.2

Stratum 4: Mayapán; 42.8, Puuc 39.9; Unidentified, 17.3

Stratum 5: Mayapán, 28.2; Puuc 43.0; Formative 0.4; Unidentified, 28.4

Stratum 6: Recent, 1.9; Mayapán, 28.7; Puuc, 37.5; Formative, 1.0; Unidentified, 30.9

Artifacts associated with the South Trench were very scarce. They included a deer antler from Stratum 2, a *mano* fragment from Stratum 4, a conch shell ornament (?) fragment from Stratum 5, and an obsidian flake-blade from Stratum 6.

THE WEST TRENCH (Fig. 18.4b), 2 m wide and 10.35 m long, uncovered at least two terrace walls (Fig. 18.5e) and a floor mostly removed to make space for a cluster of stone-constructed cells giving the impression of a honeycomb. Originally the floor probably belonged to a room, the interior faces of the south

and west walls of which were located. Most of the cells which were covered with one or two capstones and reached down to a *sascab*-and-dirt binding level, contained nothing but dirt and a few late sherds. Cell c', however, included a considerable amount of ash. The dry rock fill below the binding level contained some early and late sherds. As was the case in the South Trench, the surface level was removed as soon as the digging of the exploratory pit showed up the first terrace wall. From then on the progress was eastward, and vertical strata were established when and where possible. A percentage summary of ceramic types follows:

Stratum 1: Mayapán, 35.1; Puuc, 54.5; Classic 2.6; Unidentified, 7.8

Stratum 2: Mayapán, 22.7; Puuc, 63.6; Unidentified, 13.6

Stratum 3: Mayapán, 37.1; Puuc, 40.0; Unidentified, 22.9

Stratum 4: Mayapán, 25.6; Puuc, 31.9; Unidentified, 42.5

Stratum 5: Mayapán, 48.0; Puuc, 42.0; Unidentified, 10.0

Stratum 6: Mayapán, 73.9; Puuc, 12.8; Unidentified, 13.3

Stratum 7: Recent, 5.5; Mayapán, 56.2; Puuc 5.5; Classic, 1.4; Formative, 1.4; Unidentified, 30.1

In the West Trench artifacts were even less frequent than in the South Trench. They comprised two obsidian flake-blades, one from Stratum 1, the other from Stratum 7.

The pottery from the ruins of Santa Cruz and Telchaquillo indicates the presence of a considerable population during the Puuc period as well as in the Mayapán period, and points to a lesser occupation in Formative times. These sites show the same dearth of artifacts, other than pottery, found at Mayapán. Architecturally, little was learned from the cursory explorations. However, the findings do corrobo-

rate the lateness of single-room shrines. They also confirm the practice of building within *cenotes* and establish the use in this area of the basal platform in the Puuc period. The burial practices of Puuc times appear to be more elaborate as well as different from those of the Mayapán period. The Puuc types are illustrated by the reasonably rich burial under the shrine on Platform A and the infant urn burials from the North Trench of the same platform. Contrasting types at Mayapán include multiple shaft burials and probably cremation.

A PRESUMED RESIDENCE OF THE NOBILITY AT MAYAPÁN

J. ERIC S. THOMPSON

Str. Q-208, situated some 80 m south of the apparent southern edge of the ceremonial center at Mayapán (390 S, 335 W), was chosen for excavation because the surface remains, principally the arrangement of the rooms and the fine masonry, suggested that the building probably had been the residence of some family of consequence, for certain of the *Relaciones de Yucatán* inform us that important chiefs lived in stone houses.

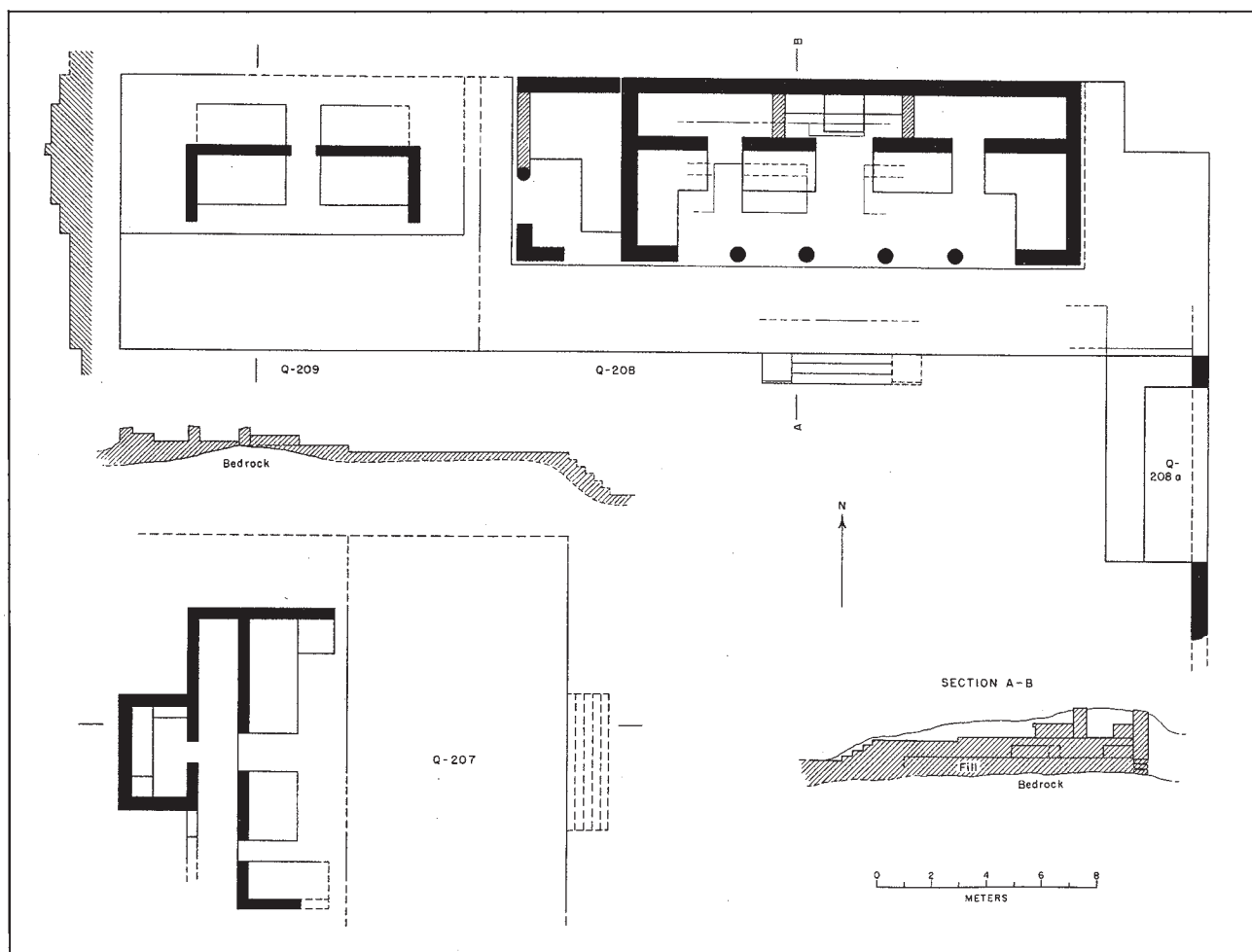
Str. Q-208 was not completely excavated. The center and the eastern half of the front room, the center and east back rooms, and the floor area of the east room were cleared; minor excavations established details of the platform on which the building stood and of the stairway which gave access to it (Fig. 19.1). Excavation below the floor brought to light part of an earlier residence, named Q-208-sub. The adjacent structures, Q-208a, Q-207, and Q-209, were examined in view of their contiguity to see if any functional relationship between any of these and Str. Q-208 could be established.

STRUCTURE Q-208

A single long room, with an open front in which are set four columns and flanking sections of wall, forms the front of the house. Doorways in the back wall of this room lead to three small and narrow rear rooms. At the east end of the structure is a fifth room, added later, without direct communication with the other rooms.

MASONRY. The drums of the columns, like most of those at Mayapán, were poorly shaped, so that the ill-fitting drums seemed like large-scale reproductions of gladioli corms placed one above the other. Presumably, all irregularities in the drums were hidden beneath heavy coats of stucco, as observed in some cases, but of this there was no evidence in Str. Q-208, although stucco was general on walls and bench faces.

Well-dressed stone of Puuc style of workmanship was largely used to face the walls and benches.



19.1.
Plans and Sections: Strs. Q-207, Q-208, Q-208a, and Q-209.

Many of these stones were of excellent quality and appeared to have been carefully chosen for re-use in this building. Generally, they were set upright in the walls, and that was particularly evident in the faces of the benches and in the parts of the walls visible behind benches. Doorjamb stones were commonly of considerable size (average 60 cm high, 50 cm wide); in one case the butt pierced the floor and rested on a bed of heavy stones and mortar 39 cm below. Walls in no place stood to a height of more than 1.10 m (Fig. 19.2a-d).

CEILING. Debris on the floor was 50–55 cm thick in the center of the front room, where accumulation from falling wall should have been minimal. Save for a top layer of about 15 cm, representing humus mixed with rock and mortar, and some wall stones, the debris comprised mortar, some small rocks and pebbles, and large quantities of charcoal and ash. For the most part, the mortar was pulverized but

in places it lay in solid masses, up to 25 cm thick, just as it had fallen. A number of sherds were scattered through the mortar. Some of these were deeply embedded in hard mortar, and there is no doubt that they were mixed in it by the masons. In this way it would be perfectly plausible for early sherds to be found above the floor of a late building.

Many pieces of charcoal retained the original form of the wood. Sections of pole, about 7 cm in diameter, could be recognized, although it was difficult to remove them intact; large masses of pulverized charcoal suggested beams of considerably greater diameter. The positions in which the charcoal lay gave no sure indication of the original arrangement of the wood, for the beams and poles had fallen in various directions. The typical flat roof of Tulum had transversal beams (four in the room described by Stephens) 15 cm in diameter, above which poles, 5–7 cm in diameter, were laid at right angles. The whole was surmounted by a rubble cap 30 cm or

more thick in the center (Lothrop 1924:34–36, 115). There seems no reason to doubt that the roof of Str. Q-208, believed to be contemporaneous with flat-ceilinged buildings at Tulum, was of the same type. No imprints of poles were found in the mortar, but it is reasonable to suppose that the mortar cap was applied wet so that the mortar squeezed between the smaller poles, thereby adding to the fireproof quality of the roof.

BURNING OF THE BUILDING. In some areas charcoal rested immediately on the floor; elsewhere layers of charcoal were separated from the building by as much as 15 cm of fallen mortar. Clearly, we are dealing with a beam-and-mortar roof which caught fire and collapsed. Some of the burned wood fell to the floor, followed by the parts of the mortar ceiling immediately above, with the result that the charcoal rested on the floor below the mortar. Other pieces of wood, perhaps the larger beams, were slow in burning, and did not collapse until fallen rubble and charcoal had accumulated to a height of some 15 cm above the floor.

Similar conditions were found in the central and eastern rear rooms (the western rear room was not excavated), but no ash was above the floor of the eastern semi-detached room, and there was no evidence that the roof had been burned.

As it must have been quite difficult for a flat beam-and-mortar ceiling to catch fire accidentally, it is a fair assumption that this building was deliberately burned. As, moreover, material (notably effigy censers) beneath the floor shows that even Q-208-sub was erected late in the history of Mayapán, it is reasonable to infer that the later Q-208 was deliberately burned by those who overthrew and sacked Mayapán. The fact that no excavation was made in the ruins to recover the fine sculpture found at the entrance to the center rear room (Fig. 19.31–n) would suggest that the owner of the house or his family was not at hand to attempt this simple salvage, and this, in turn, would strengthen the supposition that the burning took place at the time of the fall of Mayapán, when, according to tradition, the inhabitants were driven forth and the site was abandoned.

BENCHES. The long front room is furnished with four benches or daises faced with well-dressed stone of Puuc style of workmanship and carefully stuccoed. Two are rectangular and are placed between the doorways leading to the rear rooms; the other two are L-shaped and occupy the two ends of the room. The center rear room, which clearly served as a shrine, had a narrow low bench and a dais. The east rear room had no bench; the west rear room was

not excavated but, to judge by the debris level, it, too, lacked a bench. An L-shaped bench occupied the greater part of the semi-detached east room. One end of it stretched across the south half of the east doorway, an arrangement which does not appear to have been satisfactory, for a secondary wall was built across that part of the entrance, perhaps to give the occupants of the bench more privacy or better shelter from inclement weather than a curtain would have supplied.

The rectangular bench immediately east of the passage to the central rear room was built of particularly fine Puuc stone and, in addition, was decorated on the north and west faces with pairs of engaged colonnades of the type called “spools” (Fig. 19.2a,b). This decorative element is typically Puuc, and is very common on the exteriors of structures in that architectural style. It is virtually certain that these spools had been brought from some building in Puuc style. Perhaps only enough were found to decorate two sides of one bench; more probably, the source was too distant to justify more trips to fetch others.

EARLIER STRUCTURE. Excavation below the floor of Q-208 brought to light parts of an earlier building, Q-208-sub, which largely duplicated those of the later building (Fig. 19.1). The rear wall of Q-208-sub later became the rear wall of Q-208. The rear room (or rooms) of Q-208-sub was 1.04 m wider than those of the later building. Two rectangular benches flanked the entrance to the rear (central?) room, and the western face of what was probably an L-shaped bench flanked another entrance residence than the later structure, but the masonry was inferior. However, the walls of Q-208-sub were left standing to a height of only 75 cm when Q-208 was erected, and it is therefore possible that well-dressed stone was removed for incorporation in the later building, although the stones of the earlier benches which were still in situ were not well dressed. Sherd material showed that Q-208-sub antedated Q-208 by a relatively short period.

MATERIAL FOUND ON THE FLOORS OF Q-208. In the center of the doorway leading to the central rear room there was a hollow, perhaps 5 cm deep in the center and about 40 cm in diameter, where the floor had been destroyed, apparently by constant wear. In this hollow, which was partially filled with a mixture of fine ash and dark mold (decayed vegetal remains?), were two pottery vessels. Both were broken in many pieces but kept their shape, indicating that debris had covered them before they broke. Each had a figure of the diving god in relief. One stood on a pedestal shaped as an animal, perhaps



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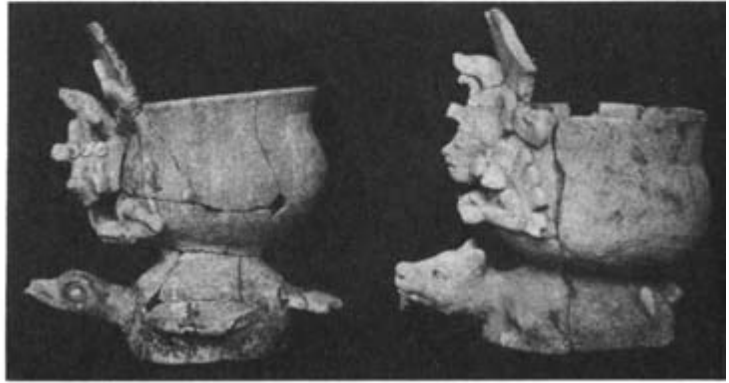
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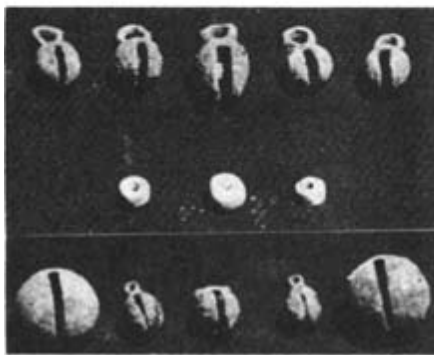
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19.2. Str. Q-208 and Pottery Vessels.

a. Front room from west end with doorway columns on left. b. Eastern of pair of quadrangular benches showing pairs of re-used Puuc "spools." c. Central rear room with bench and step. d. Central rear room from west. Note jamb of doorway; e.g. Two effigy vessels of diving god found in entrance to rear room. Height of that on bird pedestal 22.5 cm. This has secondary coat of blue all over except for area at back of bowl and on bird's tail where primary white coat is exposed. Tertiary touches of olive-green on cap, nose, collar, beads of bracelet, headband, and cone in hand. Red ring around bird's eyes and red stripe on each wing. "Dog" pedestal vessel painted greenish blue all over. All paint gone from animal except for traces of red on nostrils, lips, and tongue. Lot A-95. f. Head of Xipe Totec from effigy censer. Children's burial. Face, creamy white; lips, red; earplug, blue; hair, black and purple. Height approximately 15 cm. Lot A-110. h. Ten copper bells and three shell beads from anklets with child's burial. Two largest bells (length 2.8 cm, diameter 1.9 cm) are cone-shaped with rounded bases; remainder (length 1.8 cm, diameter 1 cm) drop-shaped. All have loops for attachment. Shell beads 5–7 mm in diameter. Cat. nos. 54-108, -109. i. Monkey whistle with worn black slip. Apparently of Fine Orange Ware. With children's burial. Height 5.5 cm. Lot A-110. j. Pottery vessel comprising five joined cups. Poorly fired polished red. With offertory vessels, e.g. Height 6.5 cm. Lot A-95.

a dog; the other was supported by the effigy of a bird with out-spread wings (Fig. 19.2e,g). The dog effigy vessel was upright and in line with the north edge of the doorway. Immediately west of it were the incomplete fragments of a ladle-shaped pottery brazier. The bird effigy was on its side, south of the dog effigy and separated from it by a chunk of ceiling plaster, but the bird's beak rested against the brazier handle. It is difficult to understand how the bird effigy could have fallen as it did, with the bird's beak 30 cm away, unless it was dislodged from the step of the central rear room or was knocked over during the fighting or by looters. Both effigy vessels had been painted blue, apparently after firing, and in addition smaller areas were painted green and red. Over half the ladle brazier of a simple type lacking decoration (cf. Shook 1954, Fig. 10), was missing; it may have been kicked to one side before the house was burned. The parts recovered were coated with soot.

Behind these vessels and resting against the step of the rear room was a stone sculpture, perhaps representing a variant of the diving god (Fig. 19.3l–n). This was tilted sideways and forwards but nearest the position shown in Figure 3n. It may have fallen from the step.

On the east end of the step was inverted a peculiar pottery vessel, badly smashed, formed of five small cups (Fig. 19.2j). Perhaps associated with this were what are believed to be two shark's teeth found on the bench of the rear room (Cat. no. 54-68).

Clearly the three vessels, the ladle brazier, and the stone figure pertain to the religious practices of the inhabitants of the building. In view of the importance of the diving god in the later history of Yucatán, it is significant that both painted vessels carry figures of that deity, and it is not improbable that the stone sculpture reflects the same cult. Consequently, it is a fair assumption that the occupants of Str. Q-208 were devotees of the diving god, and that this

central rear room served as a religious shrine. The absence of effigy-censer fragments in the central rear room or in any other excavated part of Str. Q-208 (except below the floor, as noted under BURIALS, may have a significance not now apparent; it might perhaps be related to the social rank or religious position of the residents of the structure, or might be due to the presence of the diving-god vessels.

The center of the surface of the central bench of the back room was broken. Lumps of carbon and apparent roof mortar occurred to a depth of about 25 cm below the broken surface, indicating that the center of the bench had been excavated, presumably by looters searching for a dedicatory cache, before the roof fell.

Scattered over the front room were the following objects: (1) A finely polished greenstone celt, about 45 cm south and a little east of the east central column, and apparently 5 cm above floor level (Fig. 19.3j). (2) A well-made polished stone celt, about 40 cm south-southeast of the east column, and either directly on the floor or not more than 10 cm above it (Fig. 19.3k). (3) A pressure-flaked flint point, blue-gray and 9.7 cm long, 40 cm northeast of the east rectangular bench. Cat. no. 54-41. (4) Two obsidian arrowheads (Fig. 19.3g,i). (5) A piece of obsidian (Fig. 19.3h). (6) Two-thirds of an oval bark-beater partly imbedded in mortar, a condition which strongly suggested it had been re-used in the construction of the roof. Width 5.2 cm; original length about 10 cm. One surface finely striated, the other coarsely striated. Medial groove, Cat. no. 54-61. (7) A shell tinker with top cut off. Hole made by sawing. Cat. no. 54-62. (8) A small honey-colored pebble with groove. Perhaps polisher. Cat. no. 54-42. (9) A small irregular piece of mother-of-pearl. Cat. no. 54-63.

The two polished celts were valuables one would not expect to find on the floor of a house believed to have been first looted and then burned. I did not see either of these *in situ*, but our foreman and best field

19.3. Artifacts from Q-208.

a. Effigy vessel with three solid legs. Unslipped. Face probably made in mold. Painted after firing in brilliant colors. Overall color is turquoise blue. Area around mouth from base of nose to chin and upper eyelids, bright orange. Eyes are white with black pupils and black outline. Lips and ears, red. Remnants of earplugs show green. Height 10.3 cm. With children's burial. Lot A-110. b. Effigy vessel with pedestal base. Unslipped. Face probably made in mold. Painted after firing in brilliant colors. Tapering of mouth of jar, orange. Face, blue-green. Lips and ears, red. Eyes, white with black pupils and black outlining. Black outlining of tusks and black X design on blue of earplugs. Height 11.4 cm. With children's burial. Lot A-110. c. Effigy vessel of unslipped pottery with arms, legs, and mantle added later. Painted, after firing, dull blue. Net pattern on mantle and groups of spots on arms, legs, and cheeks in black. Handle and inner circle of insigne, blue. Outer ring, red with V-shaped rays in black. Lips to base of nostrils are pinkish red. With dedicatory cache beneath floor. Height 13.5 cm. Lot A-110. d. Figure of very poorly fired and unslipped pottery with elaborate geometric design in light blue on white applied after firing. Seat missing. Line of three holes on top of head perhaps to hold feathers. Holes in ear lobes and through nasal septum. With children's burial. Height 30.5 cm. Lot A-110. e. Arrowhead of buff-colored flint with basal notches. Flake chipped on both sides. In cache with c. Length 3.4 cm. Cat. no. 54-88. f. Arrowhead of gray obsidian with basal notches. Perhaps belongs with c in cache. Length 3.5 cm. Cat. no. 54-89. g. Arrowhead of gray obsidian. Flake chipped on one side only. Above floor of room. Length 4.5 cm. Cat. no. 54-79. h. Chipped piece of gray obsidian, perhaps badly-made arrowhead. Above floor of front room. Length 2.6 cm. Cat. no. 54-66. i. Arrowhead of gray obsidian with basal notches. Apparently made from flake pressed off core. Above floor of front room. Length 2.4 cm. Cat. no. 54-65. j. Polished greenstone celt, perhaps of jade, with slightly flared sides. Above floor of front room. Length 11.5 cm. Cat. no. 54-40. k. Polished very dark gray-green celt, with slightly flared sides. Above floor of front room. Length 8 cm. Cat. no. 54-60. l-n. Limestone sculpture, conceivably of diving god, with headdress of long-nosed god. Above floor at entrance to central rear room. Height 16.8 cm. Cat. no. 54-69.

worker excavated the green celt. He is reasonably sure that it was separated from the floor by about 5 cm of fallen mortar. The same may be true of the second celt. There is, accordingly, a strong probability that the two celts reached their present position after the roof started to fall, but before it had completely collapsed. It is a fair assumption that the two celts were out of view, perhaps on a shelf or ledge above the central doorway, and so were missed by the looters. Presumably, when the building started to burn, they fell to the ground. Shelves are common in present-day Maya huts, and the Maya commonly tuck small objects between poles and thatch. The flint point, the obsidian arrowhead, and the shell tinkler may have been overlooked or, being of less value, ignored by the looters.

DEDICATION CACHE. This was in loose fill 20 cm below the floor immediately in front of the center of the center doorway of the front room. It comprised: (1) A pottery seated figure wearing a mantle, blue with an over-all net pattern in black, and holding an ornament or implement in his right hand. He was painted blue, and on each cheek, on his left arm, twice on his right leg, and probably on his left leg he has a black spot set within a circle of six other spots (Fig. 19.3c). In the codices, gods wear similar netted mantles and sometimes hold objects resembling the implement in question (e.g., Dresden 26a, 27b; Madrid 22a,d, 23a. Somewhat similar body decoration is to be seen on the Santa Rita murals. (2) An arrowhead (Fig. 19.3e). (3) A minute seashell of cowry shape.

About 50 cm north of the cache and at approximately the same depth below the floor was another arrowhead, 3.5 cm long, but of obsidian, with secondary flaking on each edge, and a nicked stem (Fig. 19.3f). Fill below the floor was loose, and so, conceivably, this arrowhead may once have pertained to the cache.

BURIALS. Beneath the floor of the central passage-way between the rectangular benches of Q-208-sub were the bones of four children, covered by a great mass of fragments of censers. It was not possible to separate the burials in proper fashion. Two, which were in better condition, had artifacts with them.

Burial 1 was of a child about ten. The skull was to south. The body had been laid on its left side with legs flexed and knees to west of base of ribs and arms flexed with hands before chest. Immediately behind the skull was a large hollow pottery figurine so lightly fired that it easily crumbled. Subsequent to the light firing it had been painted blue on white (Fig. 19.3d).

Slightly lower and about 20 cm west of the above lay in extended position an infant of less than six months. Around each ankle there had been a cotton band to which had been attached by thread five copper bells (Fig. 19.2h). The bells of the left anklet were separated by minute shell beads (diameter of largest 0.7 cm). The textile fragments owe their preservation to contact with the copper bells. Fragments of cord, preserved in position by oxidization of the copper, passed through the loops of several bells, and one piece held together two bells and an intervening shell bead.



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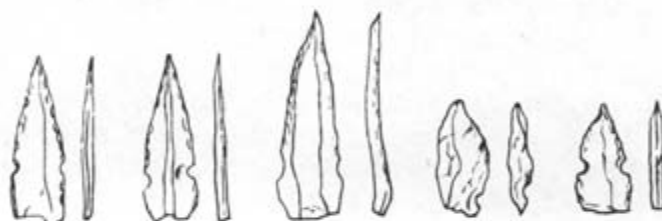
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With this burial, or perhaps with the first, were: (1) Three moldmade figurines of unbaked clay, which crumbled into pieces. (2) The tip of an antler polished and showing some evidence of wear. (3) A small pottery whistle shaped as a spider monkey with tail curled around back of head and with mouthpiece in rear (Fig. 19.2i). (4) A pottery vase on a low pedestal base with face of the long-nosed god on the front (Fig. 19.3b). (5) A tripod vase with face of the long-nosed god on the front (Fig. 19.3a). A very similar vessel (Shook 1954a, Fig. 2j) was in a cache of Str. Q-214.

TEXTILE FRAGMENTS. Miss Joy Mahler, who was so kind as to examine the fragments of textile, reports as follows: Fragments from two separate fabrics are present. Both are constructed with cotton yarn (verified by John Paxson of the Botanical Laboratory). The yarn is single ply, Z-spun for both warp and weft of both fabrics.

A. This is a plain weave with single warp and paired weft, compactly woven. The count of warp to weft in $\frac{1}{2}$ inch is $13 \times 9\frac{1}{2}$ pairs. The yarns are spun approximately evenly and are fine and rather hard spun. One fragment is a side edge, which has no special treatment of the warp in this area.

B. This is a double-cloth variant, patterned with floats on one face. One side appears as if it were a plain weave, but ridges can be seen where warp and weft shift from one face to another; the other side clearly shows the floats. The count of warp to weft in $\frac{1}{2}$ inch is 16×13 , but decision as to which is warp and which is weft is not necessarily correct.

C. A bundle of Z-spun yarns have been twisted together in the opposite direction. This cord has obviously been wrapped around a cylindrical copper object and shows evidence of having been tied or knotted.

CENSER FRAGMENTS. As noted, these were piled indiscriminately above the burials. Examination of the recovered fragments, numbering over 1,800, made it clear that the vessels had not been complete when they had been deposited over the bones. Many of the fragments retained bright colors applied after firing.

Four of the six identifiable fragments of faces, six of nine feet, and seven of ten arms belonged to figures of the god Xipe Totec. These faces were painted creamy white and showed the eyes as crescentic slits, the noses flattened with prominent alae, and mouths outlined in red with a similar red oval inside the mouth (Fig. 19.2f). The color and the crescentic eyes are typical of representations of Xipe; the human skin he wears is usually shown

as yellow. Arms and legs, however, leave no doubt that they belong to figures of Xipe, for they show the wrists and ankles, painted red to represent the natural color of the live skin or the normal color of Xipe, protruding from the sleeves or leggings of the garments of human skin. These sleeves and leggings are white or cream white. In some cases the change in color marks the join of donned skin garment and the natural skin; in other cases the skin garment is in relief over the natural skin. Two fragments of Xipe legs show gold bells pendant from knee-bands. Landa describes the wearing of flayed skins by the Maya, but as this was an element in the cult of other Mexican deities, there has until now been some doubt as to whether Xipe Totec was worshipped in Yucatán. There is no longer any doubt on this matter, but it is difficult to explain the presence of these censers representing Xipe Totec with buried children. The children may have been sacrificed, but, so far as is known, the rites of Xipe Totec involved the sacrifice only of adults. He was also a god of certain diseases; particularly those of the skin, and conceivably the children had died of some such disease.

OTHER ARTIFACTS. Animal and bird bones scattered through the fill below the floor of Q-208-sub included 13 skulls identified by Maya workers as of iguanas. There were also a broken bone awl, 7.5 cm long (cat. no. 54-110) and half a jaguar tusk, 5 cm long, cut or split longitudinally and with two cross incisions near the root (cat. no. 54-111). Above this floor was a damaged musical rasp made of a human femur (?) with 10 transversal cuts (cat. no. 54-87).

STRUCTURE Q-208A

This (Fig. 19.1) is earlier than Q-208, for the platform on which it stands continues beneath Q-208. The platform of Q-208-sub was not encountered, and therefore presumably did not extend so far to the west.

The flat superstructure, which had a maximum height of 40 cm above the platform, was faced with a line of undressed stone, for the most part out of position. Presumably there had been a floor on the summit of the mound, but the minor excavation across the center of the mound failed to reveal evidence of it. Below the surface, the mound consisted of artificial fill.

The original purpose of this structure is not easily conceived. The breadth (only 1.74 m) appears to rule out a residential function. The structure might have served as a kitchen or storeroom, or even a beehive shelter (Wauchope 1938:128) for the residents

of Str. Q-208. Detached kitchens are commonly used by the present-day Maya but generally stand behind the main hut.

As Q-208a had no walls, accumulated debris would not have sufficed to cover a metate and mano, best evidence for a kitchen, but in households of the nobility these might have been of superior workmanship, and therefore likely to be robbed after the fall of Mayapán. No metate was recovered, but as possible evidence in favor of use of this structure as a kitchen, it is worth noting that a small fragmentary mano, 9 cm long and 5 cm greatest diameter (Cat. no. 54-222), was on the surface of the mound. It is of dark gray porous volcanic stone, and shows signs of abrasion on two sides. Metates and manos of volcanic stone are somewhat rare at Mayapán, but an imported mano of this material is to be expected in the kitchens of persons of rank such as the occupants of Str. Q-208 are assumed to have been.

STRUCTURE Q-209

This lies directly east of Q-208 and was erected subsequently to the present platform on which the latter stands (Fig. 19.1). As a person in Q-209 could have seen clearly into the end room of Q-208, provided no curtain was across the doorway, and could easily have overheard conversations there, it is a fair assumption that the residents of Q-209 were members of the household or group resident in the large house. Q-209 is a simple and unpretentious structure, composed of two rooms, each supplied with two benches. Despite considerable robbing of stone, the plan is not open to serious doubt. The structure was open back and front, the only walls being the medial dividing the two rooms and the end walls of the front room. The end walls in the back room and the corresponding edges of the benches no longer exist; the stones supposedly forming them may have been robbed to make colonial walls.

The benches are 32 cm high, and the medial wall rises only 22 cm above them. From the very small amount of surface debris it is clear that the stone walls could not have stood more than 30–40 cm higher, and that the roof was of perishable materials, presumably thatch. If this is correctly identified as a residence, obviously it was the house of persons of less social consequence than the owners of Q-208. Nothing which might have thrown light on this problem was found. Two broken limestone *metates* had been incorporated in the foundations of the platform, but no evidence of the preparation of food in the rooms or on the platform was found. The rarity of fragments of incense burners or ritualistic pottery

may be suggestive. Perhaps dependents, such as we have supposed to have occupied this residence, did not engage in private cults.

Masonry in Q-209 was of poor quality. Facings of the platform and of the benches were of undressed stones set on end. Wall stones were also undressed.

STRUCTURE Q-207

This (Fig. 19.1) was examined because of its position on the top of a hillock immediately behind and overlooking Q-208, to see if any relationship could be established between it and the latter structure. No evidence of any such relationship was forthcoming. On the contrary, sherds associated with the two structures suggest that Q-207 may have been abandoned before Q-208 was occupied. Unfortunately, complete evidence of this is not available. The position of Q-207 facing east also argues against a relationship with Q-208.

The small amount of debris (there were only 10 cm of debris on the bench in the shrine room) makes it certain that Str. Q-207 had a roof of perishable materials. As can be seen in the section (Fig. 19.1), parts of the structure rested almost directly on bedrock. Masonry was similar to that of Str. Q-209, and, as in the case of the latter structure, stone had been robbed presumably to build other walls.

The position of the structure on the hillock and the quite elaborate stairway leading to it are indicative of the importance attached to this building. The shrine room, projecting at the rear, alone supplied evidence of structural alteration. The bench in it had undergone two changes. It had originally occupied the northwest end of the room, leaving a gap 73 cm long at the south end. Later, this gap was filled so that the bench extended across the back of the room for its whole length. At some time the small projection against the north wall was built.

The shrine room supplied no evidence, such as quantities of censer fragments, of having served a religious purpose. However, as the structure may have been abandoned before the fall of Mayapán, religious vessels might have been removed when the building was deserted. Conceivably the structure fell in to disuse before the great upsurge in manufacture of effigy censers.

SUMMARY AND DEDUCTIONS

Str. Q-208, a five-room building of stone with a flat beam-and-mortar roof, almost surely was the residence of a family of consequence, whose private devotions were centered on the diving god. It is probable that Strs. Q-209 and Q-208a functioned as

elements in the household of the occupants of Q-208. The former may have housed dependents of the main house, possibly servants or even married children; the latter was not a residence but may have served as a kitchen or, less probably, as a storeroom or beehive shelter. Str. Q-207 probably was quite independent of the complex and may, indeed, have been abandoned before Q-208 was built.

Str. Q-208 was destroyed by fire. It is likely that the destruction was deliberate and occurred at the fall of Mayapán. The house was looted before it was burned as an ash-and-mortar-filled hole in the bench of the shrine room bears witness. However, the looters did not bother to remove the effigy vessels of the diving god or the stone sculpture. Objects found on the floor of the excavated area (more than half of the structure) imperishables in use when the building was destroyed. It is surprising how few these are. Neither *metate* nor *mano*, nor water jar, nor even obsidian blades were found. All of these might have been in the unexcavated part of the building, but it

is probable that food was stored and prepared elsewhere (in Str. Q-208a?). A water jar might have been expected, but may have been kept in a cooler spot outside the building. Obsidian blades are portable and might have been taken by looters. The polished celts may have been partly out of sight on a shelf; had they been in view they would, I think, have been stolen. The absence of rougher tools may be due to the rank of the residents. Food receptacles may have been of gourd (as they still are to a large extent in many present-day Maya homes).

The mass of fragments of effigy censers representing the god of flaying, Xipe Totec, above the burials of children beneath the floor of the lower structure supplies the first full evidence of the cult of that deity in Yucatán.

The fact that more Puuc-type stone and even decorative elements were re-used in Str. Q-208 than in structures which were clearly for religious use is surely indicative of the rise of secular life at the expense of organized religion.

THE TEMPLE OF KUKULCAN AT MAYAPÁN

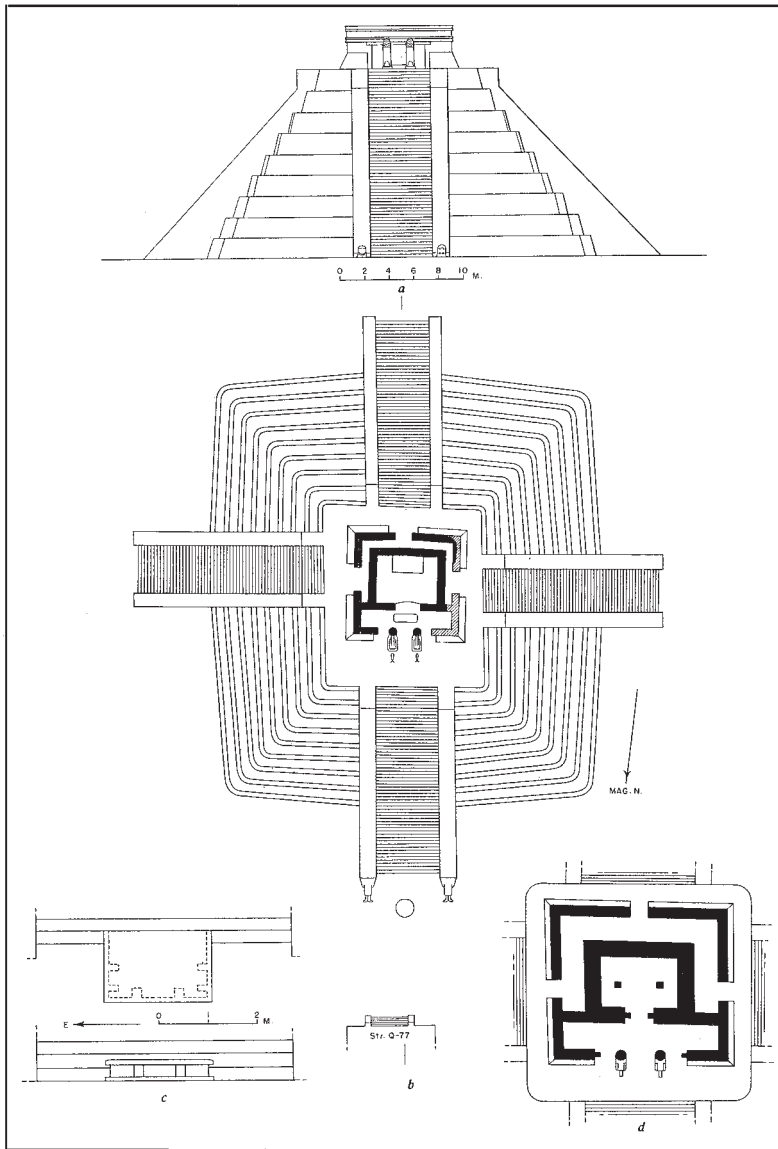
EDWIN M. SHOOK

Even a casual inspection of the ruins of Mayapán would enable one to state that the temple of Kukulcan (Str. Q-162), popularly known as the Castillo, was the most important architectural unit of the site. Situated on the northwest edge of Cenote Ch'en Mul, it occupies the central position in a tight assemblage of lesser temples, shrines, colonnaded halls, and buildings of diverse types. The terraced pyramid and the temple on its summit tower above the surrounding structures, and the flatness of the land for leagues in all directions tends to magnify the Castillo's height. In ancient times the white stuccoed temple and pyramid must have gleamed like a beacon above the forested land for the Maya approaching or leaving their walled city.

The general architectural features of the Castillo were apparent without excavation despite the destruction wrought by centuries of exposure to the elements and by man. The visible terraces and stair walls indicated a terraced pyramid approximately

15 m high with a balustraded stairway on each of its four sides (Fig 3a-c). A low mound on the pyramid summit showed traces of walls, doorways, and columns which suggested a nonvaulted temple similar in plan to the Castillo in Chichén Itzá. Also, a fallen section at the southeast corner of the pyramid exposed the buried terraces of an older pyramid, Str. Q-162a.

Investigations during the 1954 field season were conducted by Pollock and Shook (1954:271-273, 277, 278). The former concentrated on establishing the relationship between the Castillo and several colonnaded halls and minor units abutting or overlying the lower terraces of the pyramid. Shook excavated the Castillo temple, the base of the north stairway, and cut a wide trench from the latter point northward to the south stairway of Str. Q-77, a ceremonial platform previously studied and reported by Adams (1953:155-158). The trench disclosed a succession of 13 plaza or court floors between bedrock and the



20.1. Castillo or Temple of Kukulcan (Str. Q-162) and at Chichén Itzá.

a,b. Elevation and plan of Str. Q-162, partly restored. The plan does not include the numerous later additions around the pyramid base. c. Plan and elevation, partly restored, of masonry altar at base of north stairway, Str. Q-162; also see Figs. 20.2a,11; 3i. d. Plan of Castillo temple, Chichén Itzá.

surface (Fig. 20.2a); their construction and use, we believe, spanned the whole period of the site's major occupation. The following description, based principally on this floor stratigraphy, will deal with the evidence in chronological order rather than as recovered by excavation.

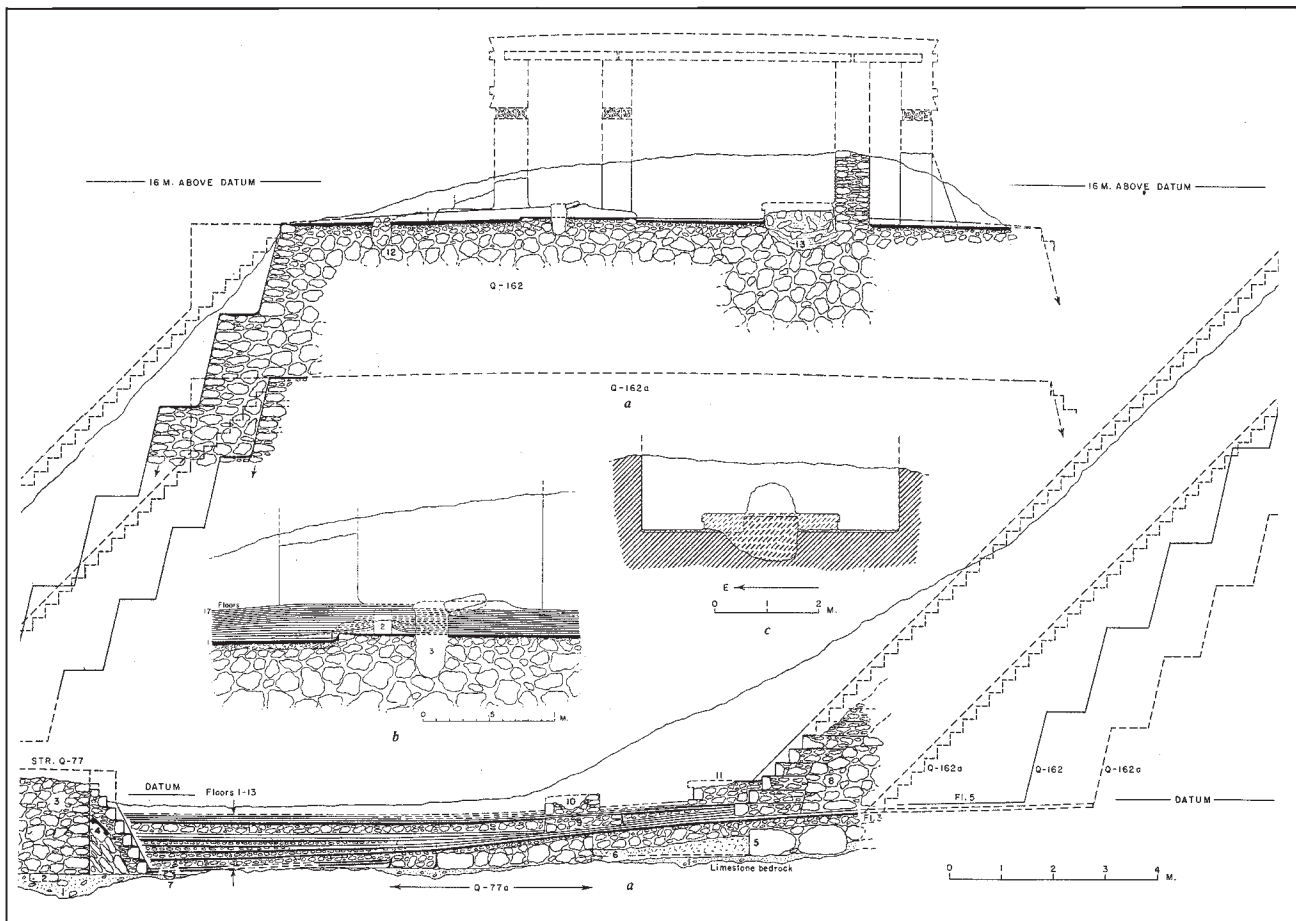
At the inception of building activities, presumably soon after the area around Cenote Ch'en Mul had been chosen for the location of the religious and civic center of Mayapán, the city planners

encountered the usual rough terrain of this region. Typically, low hillocks of limestone outcrops are closely spaced. The hillocks are almost bare of soil, but the shallow depressions between have soil varying in depth. Normally, a thin mantle of dark brown earth overlies a red soil, known locally as *kancab*, which occurs commonly in depressions and pockets in contact with native limestone. A profile of the bedrock taken through the plaza north of the Castillo and on the axis of that structure discloses a hillock at the north edge, a depression under the plaza and Str. Q-77, and a slow rise to the south, evidently to another hillock beneath the Castillo (Fig. 20.2a).

The thin layer of topsoil overlying bedrock (Fig. 20.2a,1) and sealed by the earliest constructions contained potsherds, stone artifacts, animal and bird bones, charcoal, and ashes from human occupation before the beginning of building in the Mayapán period. Among the sherds were a few pre-Classic and Early Classic pottery types. Somewhat more frequent (4.2 percent) were Puuc ceramic types, including Medium Paste Slate. The sherds of these early types bore the effects of weathering to a greater degree than did the remaining pottery fragments (about 94 percent), which pertain to Mayapán period types. The evidence may be interpreted as indicating a light occupation in the area, probably not continuous, during pre-Classic and Late Classic times. A larger population in the Late Classic period is shown by the Medium Paste Slate and other

Puuc types. This is substantiated by the presence in Mayapán of many finely cut and dressed stones from Puuc-style buildings. These stones were frequently re-used by the Mayapán people in their structures. That a city of Puuc type formerly existed in the immediate environs is clearly evident from the quantity of plain dressed and carved stones and the amount of Puuc ceramic types distributed through the area enclosed by the Mayapán city wall.

Most of the material remains recovered from the soil (Fig. 20.2a,1) cannot be distinguished typologically from those found above Floors 1 and 2. Approximately 94 percent of all the sherds in the soil layer were of Mayapán period types, most of which continued in use with minor changes until the abandonment of the site. The types already in



20.2. Sections of Mayapán Castillo.

a. Detailed north-south section from Str. Q-77 to south edge of pyramid summit, Strs. Q-162 and -162a. 1. Pre-building surface brown soil with underlying pockets of red earth (*kancab*). 2. Child, 4–6 years, burial in shallow grave. 3. Cache of pottery censer, Noneffigy type, with ashes from burned copal incense. 4. Fragment of limestone metate in rough stone backing for stairway. 5. Platform of enormous stones at base of primary pyramid, Str. Q-162a. 6. Deposit of ashes, charcoal, animal and bird bones; pottery and stone artifacts. 7. Cache of two pottery vessels (Fig. 20.5k,l), one inverted over the other, the lower containing small amount of ashes. 8. Stairway backing of large, rough stones laid without mortar. 9. Circular altar. See Fig. 20.3j,k. 10. Rectangular altar. See Fig. 20.3i. 11. Masonry altar against steps of Castillo. See Fig. 20.1c. 12. Cist containing fragments of sculpture (Fig. 20.5d) and pottery censers of human-effigy type. 13. Extent of ancient cut in sanctuary altar, presumably by looters of altar cache. b. Detail section of floor sequence in north room and terrace of Str. Q-162. All 17 floors are blackened from burning. 1. Layer of hard-packed ashes and unburned copal around circular shaft. 2. Circular shaft, possibly original location of a broken sculpture similar to one found in cist on north terrace (Fig. 20.2a,12). 3. Circular shaft for stone sculpture (?). c. East-west section through altars of sanctuary. First construction shown in dark, second in light, hachure. Profile of late altar obtained from outline in wall plaster. Irregular patch above altar, where plaster is missing, may indicate that altar supported a seated figure modeled in stucco. Cut in altar made in ancient times before collapse of beam-and-mortar roof.

vogue were Mayapán Red, Black-on-Cream, Fine Orange, Unslipped Noneffigy censers, and lightly striated service wares.

Strs. Q-77, -77a, and -162a, connected by Floor 1, were the oldest constructions encountered in the trench (Fig. 20.2a). In the case of the primary Castillo, Str. Q-162a, some uncertainty exists because our excavations failed to reach the stairway. Nevertheless, it appears that this early temple of Kukulcan was the central feature around which the main ceremonial

group had been planned from the beginning. We exposed an east-west retaining wall of enormous boulders (Fig. 20.2a,5), which seemingly formed the edge of a basal platform in front of the early Castillo stairway.

Str. Q-162a, being a major undertaking, probably required more time to construct than Strs. Q-77 and -77a, which may have functioned as completed units during the building operations. If our interpretation is correct, the laying of Floor 3 (Fig. 20.2a)

marked the completion of the primary Castillo. This floor effectively sealed the partially razed Str. Q-77a and a rich deposit around it. The gross contents of culture materials, Lot C-64, found between Floor 3 and bedrock are listed. Though not included in this report, a finer stratigraphic division of Lot C-64 has been recorded for purpose of ceramic ordering of the Mayapán period.

Str. Q-77 for a full description of this unit, see Adams 1953:155–158), an almost square platform 2 m high, was built directly on a level surface of bedrock and soil. Prior to its construction the body of a child (4–6 years old) had been placed without furniture in a shallow grave cut into the brown earth (Fig. 20.2a,2). The body lay in a flexed position with head to the north. Directly over the grave had been heaped the dry rock fill of the platform, retained by vertical walls of fairly large uncut blocks laid without mortar. In the upper portion of the fill, placed on the north-south axis, a pottery cache had been inserted (Fig. 20.2a,3). The cache consisted of a Noneffigy-Type censer containing ashes of burned copal incense.

The square platform was completed to its full height before the placement of a wide balustraded stairway on each of its four sides. The investigation of the south one in 1954 disclosed that a sloping buttress of stones first had been erected against the platform wall, then the stairway was added. Among the tilted slabs forming the buttress was half of a limestone *metate* (Fig. 20.2a,4). The stairway risers were faced with well-cut and dressed Puuc-type wall stones, re-used in Str. Q-77 (Fig. 20.4a,b). Similarly treated but larger stones faced the balustrades. Finally, the exterior of the structure received a heavy coat of lime plaster.

Floor 1 joined the base of Str. Q-77 and extended southward around Q-77a, probably to the basal platform of the primary Castillo (Fig. 20.2a). Our excavations exposed only the west base of Str. Q-77a (Figs. 20.3l; 20.4c). Its eastern half extended beyond the limits of our trench, and the upper part of the unit work had been destroyed in ancient times for the laying of Floor 3. The structure was incredibly crude, even for Mayapán builders. It appeared to be a platform with vertical walls and a balustraded stairway on the west side. Large untrimmed stones, utilized evidently as taken from the quarry, formed the platform walls. A single Puuc-type wall stone was found re-used in the stairway balustrade. The shoddiness of the masonry had been partially disguised by a surface coat of plaster. This structure apparently served an important function in the early stage of the Mayapán period. There were ashes and broken non-effigy censers heaped against the south

wall, clearly indicating prolonged ceremonial activity which involved the burning of copal incense. Also, on Floors 1 and 2, extending from the base of Str. Q-77a, were quantities of bones from small animals and birds, and a few human bones. The bones lay mingled with broken pottery; sculpture (Fig. 20.5j); artifacts and ornaments of stone, shell, and bone; ashes and charcoal. This deposit, (Fig. 20.2a,6) around Str. Q-77a, and the latter's central position on the north-south axis of Str. Q-77 and the primary Castillo suggests that the structure served a religious or ceremonial purpose rather than a domestic one.

Later, the unit was partly razed and the remainder buried by Floor 3 (Fig. 20.2a) which at the same time covered the basal platform of Str. Q-T2a (Fig. 20.2a,5) and the lowest step of Q-77. Just prior to the laying of Floor 3, an offering or cache had been placed at the foot of Str. Q-77 (Figs. 20.2a,7; 20.5k,1). It consisted of a cream-colored bowl, set upright, containing ashes and covered by an inverted tripod "grater" bowl.

As previously stated, the presence of an inner Castillo was discovered where a section of outer pyramid had fallen at the southeast corner. Here were exposed the corners of five terraces of the earlier unit. The data obtained on the pyramid and terrace heights, degree of batter, and section of masonry have been transposed to the north-south section (Fig. 20.2a) for purpose of illustration. The same relationship of the two pyramids has been maintained as it was at the southeast corner. An unsuccessful attempt was made to uncover part of the early Castillo temple by digging a pit through the dry rock fill beneath the later temple (Fig. 20.2a,13). The probing reached nearly 2 m below the topmost floor when the danger of a cave-in became too great to continue.

The early Castillo terrace walls are constructed of roughly trimmed blocks and slabs bedded in mortar of lime and gravel. The stones are laid in irregular courses and leveled with spalls. Terrace corners are built of slightly larger and more carefully worked blocks set one upon the other and rounded on the outer faces. The rounding of terrace corners is not an uncommon practice in Mayapán period architecture. Terraces bear a heavy cap of lime concrete and the walls a smooth coat of white plaster without trace of painted or stucco decoration.

The information obtained on the primary pyramid suggests that it differed only in size from the final one. It may well have supported a temple similar in plan and style to the later building (Fig. 20.1b).

Plaza Floors 4 and 5 (Fig. 20.2a) represent further renovations around the early Castillo and are evidence that the unit functioned for some length

of time. Eventually, a major rebuilding took place, during which the old temple presumably was torn down and its pyramid completely buried by a new one, Str. Q-162. This undertaking was a notable effort. The construction of the Castillo pyramid with four great stairways, each of approximately 60 steps and with massive balustrades, required a considerable amount of labor. A new temple also was erected on the enlarged substructure, and at the base the plaza level was again raised with the laying of Floor 6 (Fig. 20.2a).

The new pyramid rose in nine terraces like the Castillo at Chichén Itzá. Terrace walls were plain and sloped like those of the buried unit, and constructed of typical Mayapán block-and-slab masonry (Figs. 20.2a; 20.3a–d). A detailed comparison between the masonry of the two pyramids revealed more irregularity in coursing and a tendency towards thinner stones in the walls of the outer unit.

Each of the four stairways of Str. Q-162 bore wide flanking balustrades faced with re-used Puuc stones (Fig. 20.3g–j). The north stairway had a plastered masonry block at the foot of the balustrade (Fig. 20.3g) similar to ones uncovered at the base of each doorway column of the temple (Fig. 20.4e,f). In neither instance were stone serpent heads found but a bifurcated serpent tongue had been modeled in plaster on the terrace floor in front of each block attached to the temple columns.

We therefore feel quite certain that serpent heads modeled in stucco over a rubble core originally stood at the bases of the doorway columns and the balustrades of the north stairway.

Some of the construction methods used in the pyramid stairways came to light in our excavation of the north stairway and in sections of the east and south ones exposed by the destructive action of tree roots. The south stairway had been erected as a unit with the pyramid terraces, whereas on the east side the terraces had been built and plastered before the stairway was added. It could not be ascertained by surface inspection which technique had been employed on the west and north stairways. The latter, from our excavations, did show that the builders first erected a sloped backing of dry rock (Fig. 20.2a,8) over which the steps were laid. Each riser was set and the space behind it filled and leveled with stones bedded in lime mortar. The next step was then built in the same manner, before another was started.

The vertical side walls of the Castillo stairs carry stone pegs irregularly spaced and projecting about 20 cm. Their purpose is uncertain but one possibility is suggested by the stone pegs in building walls at Tulum where they often support modeled stucco figures. It seems more probable, however, that here

the pegs were used for suspending or anchoring temporary scaffolding needed by the artisans while plastering, painting, or refurbishing the sheer surfaces of the stair walls.

The Castillo temple is set towards the rear of the pyramid summit, leaving a narrow terrace on three sides and a wide one on the north before the main entrance (Fig. 20.1d). Here a triple doorway with serpent columns leads to a chamber extending the full width of the temple. This north room appears to have served as an antechamber for an almost square inner one. The latter, apparently the temple sanctuary, is accessible only by a single doorway from the north room. Around three sides of the sanctuary runs a narrow continuous gallery with three doorways in the exterior wall, each facing a cardinal point and a stairway of the pyramid.

This specialized temple plan (Fig. 20.1b) is virtually the same, except in size, as that of the Castillo at Chichén Itzá (Fig. 20.1d). The Chichén temple, being larger and vaulted, has stone columns supporting the masonry vaults in the sanctuary. Such supports are lacking in the Mayapán unit probably because none were required with a flat beam-and-mortar roof. In plan, elevation, and perhaps in function the two Castillos, or temples of Kukulcan, are remarkably similar. Differences between the two structures, however, are evident. The older unit, erected during the apogee of Toltec influence in Chichén Itzá, stood impressively isolated from other buildings on a great terrace. The temple and the pyramid terrace walls are faced with finely cut stone set in excellent lime mortar, the terrace walls decorated with recessed panels and the upper zone of the temple with carved friezes. The principal doorway has carved lintels, jambs, and columns, the last realistically depicting the feathered serpent. Also, at the foot of the main stairway huge sculptured snake heads terminate the balustrades.

At Mayapán, both the primary Castillo, Str. Q-162a, and the outer one, Q-162, postdate the Chichén example by a considerable margin. Neither of these Mayapán temples ever had the grandeur of isolation from lesser buildings, and the surrounding assemblage became progressively more crowded (Fig. 20.3a–h) with later additions of colonnaded halls, shrines, and numerous minor constructions abutting or overlapping the pyramid base. The masonry of the temple and pyramid shows deterioration in technique from that employed on the Chichén Castillo. The pyramid masonry has been described, that of the temple is of rough block-and-slab type interspersed with re-used Puuc-type stones. Here, also, the mortar of lime mixed with dirt and gravel is considerably inferior in quality to that at Chichén.



a



b



c



d



e



f



g



h



i



j



k



l

20.3. Str. Q-162.

a–c. Views of Castillo from northeast, north, and west. d. Looking north to shrine built secondarily against lowest terrace wall of pyramid at southwest corner. e. View of shrine, showing remains of jaguar figure in doorway at top of stairs. f. Jaguar modeled in stucco over core of large stones and lime mortar. Animal seated, facing south through shrine doorway. g. North stairway of Castillo, showing base of west balustrade and masonry block which evidently supported a serpent head modeled of stucco and rubble. h. North balustrade of west stairway at left with many successive lime floors joining it, and at right the later constructed colonnaded hall, Str. Q-163, which left only a narrow passage between the units. i. Rectangular masonry altars at base of north stairway. Both are associated with late plaza floors (Fig. 20.2a,10,11). Altar against steps is shown in restored plan and elevation in Fig. 1c. j. Looking south along trench between Strs. Q-77 and Q-162, after removal of upper five floors and the uncovering of round masonry altar (Fig. 20.2a,9) and base of pyramid stair way. k. Cache below circular masonry altar, containing jar (Fig. 20.5n), animal tooth, and fragments of burned shell, coral, and other marine objects. 1. Looking southwest to remains of Str. Q-77a, footed on bedrock and covered by Floor 3 (Fig. 20.2a).

The excavation of the temple of Str. Q-162 (figs. 1b; 2a,b; 4d–f) disclosed that the original unit had undergone numerous refurbishings. Seventeen superimposed floors were traced from the front terrace through the north chamber. The exterior and interior walls and the doorway columns also bore many layers of white plaster, each surface with a different painted design. Colors noted included red, orange, yellow, green, blue, and black. The floors had no trace of paint but each had been grayed and blackened from burning. The heaviest concentration of burning was on the north-south axis of the building from the front terrace to the altar of the sanctuary. Between the doorway columns Floor 2 (Fig. 20.2b,1) was covered with a hard-packed layer of burned and unburned copal. A heap of ashes, copal, and fragments of human-effigy-type censers lay on Floor 4, around a small circular shaft (Fig. 20.2b,2). Many of the later floors turned up and ended at a similar shaft (Fig. 20.2b,3). These holes probably marked the position of miniature sculptured stone idols. One such idol, a puffed-cheek human figure, had been broken in ancient times and its fragments placed in a cist, covered by later floors, on the front terrace (Figs. 20.2a,12; 20.5d). Other pieces of broken sculpture lay in the surface debris at the base of the north stairway.

The temple sanctuary in its primary stage had a rectangular masonry altar against the rear wall centered opposite the entrance. A later renovation added a thin floor and a larger altar which buried the earlier one (Fig. 20.2a,c). The new altar carried a rectangular band molding around tie top and may have supported a seated figure modeled in stucco. Both altars had been destroyed by a pit dug through them to a depth of 50 cm below floor level. The rubble from the excavation was then tossed back into the pit. Over the pile of rubble and top floors of the temple lay a continuous 2–10 cm layer of dark earthy material suggesting dust, dirt, and leaf mold. This deposit accumulated after abandonment of the temple and before the roof timbers rotted and col-

lapsed. We recovered the size and form of the two altars from their outlines left on the floor and wall plaster.

The evidence here clearly indicates another case of vandalism in Mayapán, probably at the time of destruction and abandonment of the city. The looters obviously were in search of offerings buried beneath the altars. Some haste in their search was evident from the breakage of pottery objects and articles overlooked in the rubble back-fill. We found obsidian flake blades, flint blades and chips, shell beads, tinklers and ornaments, unweathered fragments of painted pottery figures and vessels. There were animal and human effigies, some of the latter from censers, and many restorable, miniature tripod bowls. These, of Mayapán Red and Red-on-Cream, showed burning on the bowl interior as if lumps or balls of copal had been burned in them. With all evidence pointing to a hasty job of looting, it is puzzling why the diggers bothered to refill the pit.

The floor of the temple's north room, in its initial stages, was elevated a few centimeters above the level of the front terrace and the sanctuary (Fig. 20.2ab). Later floors eliminated the slight but abrupt change in elevation at the front but not the step down into the sanctuary. One of the final renovations witnessed the building of a low rectangular platform in the center of the north chamber (Figs. 1b; 2b). The purpose of the platform may have been to accentuate the centrally placed sculptured idol which, we believe, originally stood in the circular shaft penetrating the temple floors (Fig. 20.2b,3). Marks of heavy burning were concentrated around the shaft. Perhaps here certain rituals involving the burning of incense took place before one entered the more sacred inner chamber.

Search was made on the north-south axis of the Castillo for a deep burial shaft of the type found in Strs. Q-58, Q-95 (Shook 1954a), and several shrines. None was found in Str. Q-162, and our excavations did not reach sufficient depth to test the primary unit, Str. Q-162a.

20.4. Strs. Q-77 and Q-162.

a. Looking north along trench, cleared to bedrock, to south stairway of Str. Q-77. b. Junction of 13 successive plaza floors with east stairway of Str. Q-77. c. Looking northeast along trench between Strs. Q-162 and Q-77, partly razed Str. Q-77a with balustraded stairway is in foreground and Q-77 in background. Note irregularity of bedrock, and various plaza floors along east edge of trench. d. Castillo temple, looking north through doorway of sanctuary to stumps of plastered columns of north doorway. Hole at center (Fig. 20.2b,3) may have held stone sculpture comparable to one illustrated in Fig. 20.5d. e. East serpent column of north doorway, showing bifurcated tongue modeled in plaster on terrace floor. f. Castillo temple looking southeast, showing remains of two serpent columns of north doorway. At right workman stands against east wall of sanctuary.

The exterior walls of the temple have a sloping basal zone (Fig. 20.1a,b) at least 90 cm high. However, nowhere was it preserved to its original height. The basal batter and all doorway jambs were built of re-used Puuc-type stones. Present temple walls of rough block-and-slab masonry range up to 1.4 m high, and the shallowness and type of debris within the rooms provide evidence for a flat roof constructed of timbers capped with a thick layer of lime concrete. We found the temple floors covered with a thin mantle of earthy material, as already described, then a 40–50 cm layer of lime, gravel, and scattered stone slabs, which we consider debris of a beam-and-mortar roof. Above this thick layer to the surface, the debris consisted principally of rough stones, with some lime mortar and plaster, from the collapsed upper walls of the building. There was a marked lack of debris on the west and north sides of the temple. This condition and the finding of column drums and carved serpent tails (Fig. 20.5c) in the debris along the north base of the pyramid suggest willful destruction of the temple.

The two columns of the north doorway are typical of Mayapán period columns. They are built of roughly trimmed stone drums stacked one upon another and the surface finished smoothly with a thick coat of plaster. In front of each column, a low rectangular masonry platform or pedestal extended 1.2 m northward. Beyond this platform and separated from it by 10 cm, another very narrow one projected 60 cm more and terminated with a bifurcated serpent tongue modeled in plaster on the terrace floor (Figs. 20.1b; 20.4,e,f). The upper portion of each platform was missing but it is fairly certain that the larger supported serpent heads or grotesque figures with serpent figures wrought in stucco over a rubble core, and the narrow platform represented the extended tongue. Further evidence that the temple had serpent columns were stone rattle tails (Fig. 20.5c) such as those which normally rest on top of each column, as shown in the restored elevation (Fig. 20.1a).

A long succession of building activities followed the construction of the outer Castillo. These additions were represented in the north-south trench

by the seven upper plaza floors (Fig. 20.2a) and on the four sides of the pyramid by similar floors, colonnaded halls (Fig. 20.3h; Pollock 1954:277, 278), single-room units, and a shrine. None of these later structures which abut or overlap the lower terraces of the pyramid has been shown on the plan (Fig. 20.1b). The shrine built against the pyramid wall at the southwest corner consisted of a tiny room with the remains of a seated jaguar facing outward through the doorway. The figure had been realistically modeled in stucco around a core of large stones and lime mortar (Fig. 20.3d–f).

The north-south trench excavations disclosed that after Str. Q-162 the first renovation had been a new plaza floor, Floor 7, and a round masonry altar (Figs. 20.2a,9; 20.3j). This plain altar was erected over a cist cut through the earlier floors (Fig. 20.3k) and containing a Mayapán Red jar (Fig. 20.5n), an animal tooth, burned shell, coral and other marine objects. The next floor, Floor 8, turned up to the circular altar while the 9th and 10th floors covered it. Each of these and the later plaza floors probably were associated with architectural changes around the base of the Castillo or elsewhere in the north plaza. The 11th floor was built at the same time as another masonry altar, this one square instead of round (Figs. 20.2a,9; 20.3j). The square altar continued in use during the final stages, Floors 12 and 13, and being in an exposed location, nothing remained of its top surface. It could not be determined if the damage had been caused by weathering or by pilaging at the time Mayapán was abandoned. Floor 12 marked the addition of a third altar, this time against the lower steps of the Castillo (Figs. 20.1c; 20.2a,10; 20.3i). The altar differed from the earlier round and square ones in having a plinth, spaced niches in the wall, and a rectangular cornice molding. A restored plan and elevation are shown in figure 20.1c. The final building activity recorded in the north-south trench was Floor 13. The upper four floors, 10–13, were found badly disrupted from tree roots except where protected by building debris near Strs. Q-77 and Q-162. On the surface, lying along the east and south edges of the square altar (Fig. 20.2a,10) were two large stones, one a tapered



a



b



c



d



e



f



a



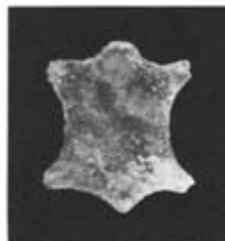
b



c



d



e



f



g



h



i



j



k



l



m



n

20.5. Material Recovered from Excavations.

a. Plain, tapered, sacrificial altar from surface debris at base of north stairway, Str. Q-162, ht. 72 cm. b. Carved column altar from surface debris at base of north stairway, Str. Q-162. Ht. 75 cm, diam. 40 cm. c. Stone sculpture representing tail rattle of serpent, in surface debris at north base of pyramid. Probably from one of the serpent columns of Castillo temple. d. Front and profile of small statue (Cat. no. 54-27) broken in ancient times and deposited in cist (Fig. 20.2a,12) on terrace in front of Castillo temple. Ht. 20 cm. e–g. Chipped flint artifacts; eccentric (Cat. no. 54-31; Lot C-65, from debris in sanctuary altar), blade (Cat. no. 54-22) and arrowhead (Cat. no. 54-25; Lot C-64). Blade length 6 cm. h. Tinkler shell (Cat. no. 53-162), carved to represent human skull, from surface debris near base of pyramid. Ht. 5.1 cm. i. Human tooth (Cat. no. 54-36; Lot C-62) perforated for suspension. j. Human head from miniature statue (Cat. no. 54-21; Lot C-64). Ht. 10 cm. k,l. Cache vessels (Lot C-64) found at base of south stairway, Str. Q-77 (Fig. 2a,7); k, allover cream slip, low polish, diam. 19.8 cm. Bowl lacks any evidence of black paint decoration but in other respects is same as Black-on-Cream, a type common at beginning of Mayapán period. l. Mayapán Red Ware tripod “grater” bowl. Feet hollow, cylindrical, round bottom, each with clay pellet rattle and single circular vent. Diam. 20.3 cm. m. Miniature jar (Lot C-64), Mayapán Red Ware, with neck and two opposite horizontal strap handles cut off in ancient times. Max. diam. 7.2 cm. n. Mayapán Red Ware jar (Lot C-63) from cache below circular burned shell, coral and other marine objects. Ht. 14 cm.

sacrificial block and the other a carved column altar (Fig. 20.5a,b). Either or both originally may have stood on the masonry altars at the stairway base, or they may have fallen or been thrown down from the Castillo temple. Both stones represent types fairly common in Mayapán.

MATERIAL RECORDED

Lots C-61 through C-64 came from the 3–4 cm wide stratigraphic trench between Strs. Q-77 and Q-162 (Figs. 20.2a; 20.3i–1; 20.4a,c). The material bears lot numbers in the order of excavation from surface to bedrock, the reverse of the stratigraphic order. However, plaza floors are numbered in chronological order, Floor 1 being the most ancient, Floor 13 the last one built.

Lot C-61: mostly from surface debris in area of trench, and a minor amount from fill between Floors 13 and 19: 100-plus fragments of modeled and painted stucco bearing colors in red, orange-brown, yellow, green, blue, and black; stalactites from modeled stucco figures; fragments of 2 small sculptures; 4 obsidian flake-blades; 3 flint chips; 1 unworked and 1 carved tinkler shell (Fig. 20.5h); sherds.

Total sherds: 982: 0.2 percent Puuc period; 99.8 Mayapán period (Unslipped vessels, 12.2; Non-effigy-Type censers 6.2; Human-Effigy-Type censers, 68.4; Mayapán Red, 11.7; Red-on-Cream, 0.2; Fine Orange, 0.1; Black-on-Cream, 1.0).

Lot C-62: sealed fill between Floors 9 and 8: 2 fragments of modeled stucco; 23 human, animal, and bird bones; 1 perforated human tooth (Fig. 20.5i); 1 obsidian core and 1 flake blade; ache of miniature tripod cup containing 2 shell beads; 1 unworked univalve shell; sherds.

Total sherds: 413: 14 percent Puuc period, 82.8 Mayapán period (Unslipped vessels, 34.4; Noneffigy-

Type censers, 2.9; Human-Effigy-Type censers, 3.8; Mayapán Red, 39.0; Black-on-Cream, 2.7).

Lot C-63: sealed fill between Floors 8 and 4: 3 fragments of human bone; 5 obsidian flake-blades; 1 flint chip; cache of Mayapán Red jar (Figs. 20.3k; 20.5n) containing animal tooth, burned shells, coral and other marine objects; sherds.

Total sherds: 313: 3.5 percent Puuc period; 96.5 percent Mayapán period (Unslipped vessels, 26.2; Non-effigy-Type censers, 2.3; Human-Effigy-type censers, 0.9; Mayapán Red, 60.4; Fine Orange 0.3; Black-on-Cream, 6.4).

Lot C-64: sealed fill between Floor 3 and bedrock: large quantity of bones from small animals and birds, and a few human bones; charcoal; ashes; fragments of a miniature sculpture (Fig. 20.5j); 2 obsidian flake-blades; 4 flint chips, 1 point, 1 blade (Fig. 20.5f) and 1 arrowhead (Fig. 20.5g); 1 hammerstone; 3 unworked shells; 1 bone awl; cache of 2 bowls (Figs. 20.2a,7; 20.5k,1) and ashes; sherds.

Total sherds: 5,510: 5.9 percent Puuc and earlier periods, 94.1 Mayapán period (Unslipped vessels, 26.8; Noneffigy-Type censers, 10.0; Mayapán Red, 40.4; Fine Orange, 0.3; Black-on-Cream, 16.6).

Lot C-65: from surface and general excavation of Castillo temple: fragments of plaster bearing designs painted in red, orange, yellow, green, blue, and black; 6 bird bones; charcoal; ashes; copal; 6 fragments of a miniature sculpture (see Fig. 20.5d); 13 obsidian flake-blades; 4 flint blades, 1 eccentric (Fig. 20.5e) and 8 chips; 1 limestone manor 13 univalve shell tinklers; 3 discoidal beads, 5 ornaments, 2 unworked shells; sherds.

Total sherds: 1,907: 100 Mayapán period (Unslipped vessels, 1.8; Noneffigy-Type censers, 1.2; Human-Effigy-Type censers, 63.5; Mayapán Red, 31.5; Red-on-Cream, 2.0).

EXCAVATIONS IN THREE CEREMONIAL STRUCTURES AT MAYAPÁN

PHILIP E. SMITH

During the 1953 field season a program of intensive excavation was begun in selected ceremonial structures in the Main Group at Mayapán. This area clearly had been the ritual heart of the city, and it was considered that careful digging in certain types of structures, followed by analysis of the results and comparison with other types, might throw light not only on the function of the structures but also on the activities carried on in the ceremonial center and perhaps on the stages of growth of the center.

This plan was continued in the 1954 field season. Among the structures chosen for attention were three within a stone's throw of the Castillo, the largest structure in Mayapán (Jones 1952, map, Square Q). All three have small single-room buildings. Two of them are designated, whether correctly or not, as "shrines." The term "temple" seems to be more appropriate for the largest, Str. Q-153. Since the three structures are close to each other, it was felt that in addition to increasing our knowledge of the building types they

might give some idea of the degree of diversity which might be permitted in so crowded an area.

STR. Q-153 AND ADJACENT CONSTRUCTIONS (247 S, 258 W)

The first to be investigated was Str. Q-153, sometimes referred to as the Cenote Temple, which is situated on the edge of the ceremonial center's principal cenote (Fig. 21.2a). This sink, Chen Mul ("well-mound"), is jug-shaped under the surface and has a jaggedly circular mouth about 10 m in diameter; its proximity to the Castillo and the large round temple, Str. Q-152, indicates its significant ritual position and emphasizes the importance of excavations in any structure connected with it. A low platform on the east side of the cenote and connected with the temple was also included in the investigation.

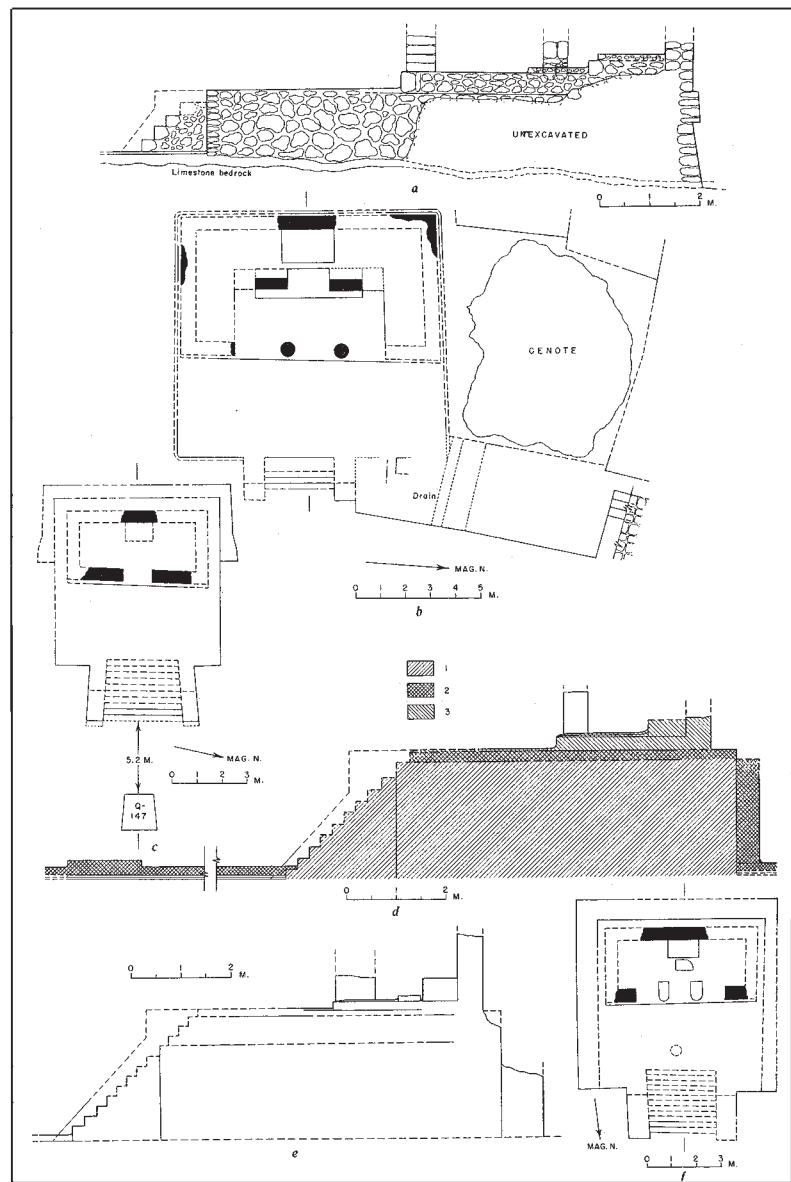
The main question raised by Str. Q-153 was whether or not there had been a cenote cult in

Mayapán as at Chichén Itzá. There is some documentary evidence in favor of the existence of such a cult. The Spanish missionary Fray Alonso Ponce, who visited Mayapán in 1588, less than 50 years after the final conquest of Yucatán and about a century and a half after the traditional date of the city's abandonment, reported that, "Near the foot of this same mound [the Castillo] there is a very deep *zonote* with a very smooth stone on the edge of its mouth, from which (it is said) they used to throw those whom they sacrificed to their gods" (Noyes 1932: 355).

The reliability of this report is open to question. The context does not indicate if the missionary himself inspected the cenote. Also, one wonders whether the account of the sacrificial rite was delivered to him by the natives of the district or if he attributed it to this cenote because of knowledge of a similar practice formerly popular at Chichén Itzá. As Bishop Landa's writings show, the clergy at this time were well aware of this traditional mode of sacrifice and of its continuation even after the conquest (Tozzer 1941). Nor does the missionary say whether the victims were cast into the cenote living or dead; at Chichén Itzá, the victims were thrown alive into a water-filled cenote, but the absence of water in Chen Mul, except for small hidden pools, might suggest that only corpses were thrown in and that the more sanguinary part of the rite took place in or near the adjoining temple.

In the 1953 season some trenching inside the cenote (R. E. Smith 1953) disclosed water holes some distance from the mouth; the pottery showed that these holes had been used in the Classic as well as in the later Mayapán period. Animal and human bones, including carved and ornamental ones, were recovered at that time but nothing indicated that corpses had been systematically disposed of here. There remains of course the possibility that any bodies thrown in were later brought out for disposal elsewhere. There is no "very smooth stone" to be seen near the mouth of the cenote at the present time, nor was anything recognizable as such observed in last season's excavations inside.

The temple, Str. Q-153, was built on the south side of Chen Mul less than a meter from the present



21.1.

a. Str. Q-153, section. b. Strs. Q-153 and Q-153a, plan. c. Strs. Q-149 and Q-147, plan. d. Strs. Q-149 and Q-147, section. e. Str. Q-148, section. f. Str. Q-148, plan.

rim, and part of the debris from the collapsing walls has fallen into the cenote.

Its plan is approximately about 8 m square (Fig. 21.1b). The structure faces east, away from the Castillo, where there was a balustraded stairway of which only the lower courses remain in place. The platform walls were standing to an average height of about 2 m, and near the top a molding or cornice 25 cm high ran around the sides and rear. Below this molding the walls did not drop vertically but were steeply battered (Fig. 21.1b). The temple building occupied the rear half of the platform; the open,

gently sloping front terrace provided an area for ceremonies at the head of the stairway. Across the front of the building was a low plinth, the well-cut stones of which contrast with the rough block-and-slab masonry of the rest of the structure. Just behind this plinth, but not accurately centered on the stairway, are two columns constructed of flat and extremely crudely shaped limestone drums. Some of the drums were still in place; clearing revealed patches of the thick coatings of plaster which had been applied to disguise the shoddy stonework. The building is rectangular with fairly thick masonry walls now standing to a maximum height of 50 cm. The front wall, which stood a few centimeters behind the plinth, ended in door jambs 1.6 m on either side of the columns. Thus a triple-entrance doorway, widest between the columns, led to the interior of the building (Fig. 21.2 b).

Although most of the temple room had collapsed, it was surprising in a structure of this size to find so little rubble and debris. In particular there was a noticeable absence of the thick layer of fallen plaster usually found on the floor surface. It may be that the building was roofed by pole-and-thatch instead of the more usual beam-and-mortar construction. No idea could be obtained of the original height of the walls. Fallen flakes of red-painted plaster indicate that they probably were colored.

Around the sides and back of the room ran a wide bench, the original height of which was estimated to be about 40 cm. It was best preserved on the north side. Roughly 2.5 m inside the doorway was a low platform, from which rose two stone piers, each about 50 cm high at present and constructed of rough blocks and slabs (Fig. 21.2c). There was no indication of the original height of the piers. Half of an anthropomorphic sculptured limestone turtle was found in the debris at this point, and the other half was recovered farther back near the altar (Fig. 21.3q).

The altar was intact, with its plastered surface in fair state of preservation (Fig. 21.2d). It had been built on the bench along the back wall, and was centered on the doorway. Its height was only about 8 cm above the bench surface, the sides being formed by a single course of low stones. A cache was located in the center a few centimeters below the surface. It consisted of two small Red ware tripod bowls, both badly crushed but capable of restoration, laid lip to lip and enclosing a partly burnt ball of copal (Fig. 21.2f).

Last season a number of burial cists were located in the substructure that the absence of skeletal remains in the cenote enhanced the possibility that this structure held a similar cist. A pit was therefore excavated beneath the front terrace, taking in the area between

the plinth and the stairway. Nothing of the kind was found although the stone fill forming the core was removed as far as the thin layer of sterile red earth covering the bedrock. So the problem of the disposal of the victims of the supposed cenote cult still remains unsolved.

Further excavations and trenching inside the room and under the stairway gave an idea of the building periods of the structure. There were at least two main periods of construction, and renovations took place from time to time. Investigation under the stairway revealed that the terrace wall had been built directly on the thin layer of earth overlying bedrock and that both levels of the plaza floor turned up against the sub-structure walls (Fig. 21.2e). The stairway, however, was laid on the upper floor of the plaza and presumably is a later feature, probably belonging to the second period of construction to be mentioned below. Not enough of the balustrades remained to indicate their design with the section (Fig. 21.1a) shows them with upper vertical elements or blocks to accord with a type common during this period and for this kind of structure.

A few centimeters beneath the present surface of the terrace were found the remnants of an earlier flooring which, unlike the later one, extended under the plinth stones. It was laid on the rubble fill and no earlier level was encountered. The floor was followed some distance inside the building until it finally turned up and ended just under the piers. The turn-up leads to the belief that there may have been an earlier altar below the present one.

There is the suggestion, then, that the substructural platform of Str. Q-153 once supported some earlier construction of which only the floor (see Fig. 21.1a) remains. The plinth and foundations on which the present building is based were built on this early floor. As noted above, it is probable, but not certain, that the stairway to the platform is a feature of this second period. The piers, too, were added at this time, but originally they stood free in the floor in front of and flanking the altar. Further renovations created a low platform at their bases; later the piers were joined to the front, and later still to the sides, of the interior bench by short walls which were filled in and plastered over to bring them up to the bench level. A view from the doorway in the last period therefore would have shown the altar framed by the two piers, which perhaps rose as high as the roof.

A trench, which was followed for several meters along the west wall of the substructure, showed that here too the terrace had been built on the thin soil layer covering bedrock. This excavation indicated that the northwest corner of the temple at the cenote



a



e



b



f



c



g



d



h

21.2.

a. Strs. Q-153 and Q-153a from northeast during excavation, showing ramp, platform, and cenote. b. Str. Q-153 from east during excavation. c. Str. Q-153, altar and interior piers from east. d. Str. Q-153, altar and pier from north. e. Str. Q-153, excavations under stairway from east. f. Str. Q-153, altar cache in situ. Two Mayapán Red tripod bowls containing copal. g. Str. Q-149, shrine doorway from east. h. Str. Q-149, secondary wall of platform, north side.

rim had been used as a kind of rubbish dump. Besides a great number of bird and animal bones, there were many sherds from both utilitarian ware vessels and effigy-type censers. Parts of one censer could be reassembled (Fig. 21.3r). The most interesting object from this midden was a small turtle of a green jadelike stone. It was unbroken and well polished, with a rather stylized head (Fig. 21.3g).

The low platform, Str. Q-153a, on the east side of the cenote extends 9.85 m from the north balustrade of the temple to a ramp which is built against the colonnaded hall, Str. Q-151 (Fig. 21.2,a). Investigation of the platform yielded little indication of its original function, although presumably it had some role in the ceremonies connected with the cenote. Before clearing began, the surface was littered with large stones which might conceivably have been from walls of some sort. In a few places under these stones patches of a plastered surface were still preserved. It was hoped that the construction sequence of the temple and platform could be ascertained.

A small amount of excavation revealed that the platform represents two periods of construction. About 3.1 m from the north balustrade of the temple stairway a drain, lined and roofed with rough slabs, was discovered under the platform. It was choked with debris and earth, and no attempt was made to clear it entirely. A large number of sherds and some large lumps of partly burned copal were recovered from the cenote end of the aperture. About 1 m north of the drain a well-faced juncture in the platform was uncovered; it showed that at one time the north section of the platform had stood clear, and that the closing of the gap between it and the temple corner had created the necessity for the drain as an outlet for water accumulating on the plaza floor. A small excavation around the face of the juncture disclosed that the north section of the platform, like the temple, had been built on earth rather than on the plaza flooring. Further clearing at the end adjoining the ramp revealed a set of steps which the later ramp had covered, and the masonry joint here indicated that the steps and the north section of the platform were contemporary.

The south section of the platform, which joins the north-east corner of the temple, was more puzzling; the building sequence here is still not entirely understood. At first this part of the platform was

thought to be merely an addition which had been built around the corner of the temple terrace, thereby giving the latter structure a rather unbalanced asymmetrical appearance. An attempt was made to follow the front terrace wall towards the point where the corner was assumed to be, but the wall unexpectedly petered out in the loose rock fill which makes up the area where the platform merges with the temple terrace. The two seemed to have been built, or perhaps rebuilt, at the same time. One possible explanation is that at some time after the temple was erected, but before construction of the south section of the platform, the water from the plaza escaping into the cenote seriously weakened the masonry at this corner. It and the south section of the platform were then built as a single unit, including the drain, so that the gap between the north section of the platform and the temple was closed. The present stairway of the temple was probably built at this time also. This explanation of course is conjectural.

Another unexplained feature was a small slightly raised and plastered area on the south section of the platform (Fig. 21.1b). It was roughly halfway between the north balustrade of the temple stairway and the drain and on the same level as the terrace. Evidently it had been rectangular, for two walls, each 50 cm long and composed of a single course of stone, met at a right angle to enclose part of the plastered surface. Its relationship with the temple and platform is not clear, and digging underneath uncovered nothing. There is the possibility that it may have been part of a small altar or the base for an idol.

The last constructions to be investigated were the retaining walls around the mouth of the cenote. On the south and east sides the terrace wall of the temple and the platform, respectively, enclose the rim, but on the other two sides simple masonry walls are still standing in fair state of preservation. An abrupt jog in the west wall indicates that the builders took advantage of the ragged outline of the mouth, whereas the nearness of the walls to the lip in some places suggests how the cenote mouth has been eroded throughout the years. The average height of the retaining walls at the present time is about 1.40 m. A few weathered sherds were collected during the clearing in the northwest corner, and a femur, in all probability carried there by scavengers, was found on the surface in this section.



a



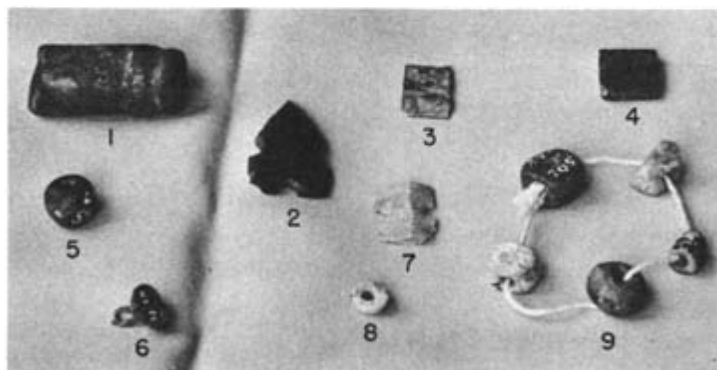
b



c



d



e



f



g



i



k



l



h



j



m

n

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p



q



r

21.3.

a. Str. Q-147 (in foreground) from west, after clearing. b. Str. Q-148, entrance pillars and altar after excavation, from north. c. Str. Q-148, plinth and pillars from northeast. d. Str. Q-148, altar and step after excavation, from west. e. Artifacts from Str. Q-148. 1. Fragment of burned jade bead from altar, Cat. no. 54-211. 2. Obsidian arrowhead from surface of front terrace, Cat. no. 54-215. 3. Gold flake from room debris, Cat. no. 54-210. 4. Iron pyrite mosaic flake from beneath step to altar, Cat. no. 54-212. 5. Burned stone bead from beneath step to altar, Cat. no. 54-213. 6. Copper bell from room debris, Cat. no. 54-208. 7. Fragment of flint arrowhead from surface of front terrace, Cat. no. 54-216. 8. Pink shell bead from surface debris near altar, Cat. no. 54-209. 9. Two jade and three shell beads from altar cache, Cat. nos. 54-203, -39-49-50. f. Sculptured stone at head of stairway, Str. Q-148. g. Polished greenstone turtle from midden at northwest corner of platform, Str. Q-153. Cat. no. 54-74. h. Effigy vase from altar cache, Str. Q-148. Lot C-81. i. Chipped flint knife from surface of terrace at head of stairway, Str. Q-148. Cat. no. 54-214. j. Sculptured limestone hand from surface of terrace, Str. Q-148. Cat. no. 54-220. k. Chipped flint fragment from surface of terrace, Str. Q-153. Cat. no. 54-94. l. Tubular jade bead from surface of building, Str. Q-153. Cat. no. 54-75. m. Worked univalve shell tinkler from surface of building, Str. Q-153. Cat. no. 54-78. n. Chipped flint blade fragment from surface of building, Str. Q-153. Cat. no. 34-73. o. Obsidian core from surface of terrace, Str. Q-153. Cat. no. 54-71. p. Sculptured limestone head from surface of front terrace, Str. Q-149. Cat. no. 54-221. q. Sculptured limestone anthropomorphic turtle from building debris, Str. Q-153. Cat. no. 54-70. r. Reconstructed fragment of incense burner, possibly a lid or cover, from midden at northwest corner of platform, Str. Q-153. Lot C-81.

It was not difficult to establish a relative sequence for the retaining walls, since fortunately a number of the junctures showed order of construction (Fig. 21.1b). The north wall, which is the longest, antedates both the north section of the east platform, Str. Q-153a, and the wall along the west side of the cenote. The northern half of the west wall in turn precedes the southern part which approaches but does not join the north-west corner of Str. Q-153. It was not possible to relate these retaining walls directly to the building periods of the temple, and the precedence of the north wall over the north section of Str. Q-153a is the only indication of their age.

In general, the temple by the cenote is reminiscent of a similarly located building at Tulum on the east coast of Yucatán (Lothrop 1924:109–111) and of the Xtoloc Temple at Chichén Itzá (Ruppert 1952:76). There is nothing to point to any unusual antiquity but there is some indication that at least the earlier period of the temple might go back to a fairly early phase of the so-called Mayapán period. As mentioned before, the platform walls seem to be earlier than the plaza floor. In addition, the pottery samples from sealed deposits, such as the area under the stairway between bedrock and the lowest plaza flooring, showed a rather high percentage (about 12) of Black-on-Cream sherds; this is a class of pottery usually associated with the beginning of the Mayapán period. The percentage diminished in the upper levels and Black-on-Cream sherds are extremely rare in the surface collections and in the sealed deposits in the building. The usual Mayapán Red pottery was found in largest proportions at all levels. A few Fine Orange and Puuc Medium Slate sherds were also collected. Although many of the sherds were from utilitarian wares, the greatest number, as might be expected in a structure of this type, were of ceremonial wares. Of these latter, the

fragments of effigy censers, considered a late development, predominated. No vessels were recovered intact but it was possible to reconstruct several partially. One of these (Fig. 21.3r) is an unusually shaped fragment which may be the lid or cover of an incense burner.

STRS. Q-149 (263 S, 243 W) AND Q-147

Str. Q-149 is a small single-room shrine about 10 m southeast of the Cenote Temple (Fig. 21.1c,d). The building is based on a platform 2.4 m high and is entered by a single doorway facing east. A balustraded stairway on that side leads to the terrace before the building. About 5 m east of the stairway, and centered almost directly on it, is a small low platform, Str. Q-147, built on the plaza floor. Its purpose or function was uncertain before excavation began (and still is) but it was decided to include it in the investigation as it appeared to be associated with the shrine (Fig. 21.3a).

The shrine room of Str. Q-149 had been 4.75 m long and 2 m wide, with rough masonry walls averaging 50 cm thick. Only on each side of the doorway and immediately behind the altar site, however, were there still remnants of the walls. The doorway was formed by large monolithic jambs still in place (Fig. 21.2g); traces of the original plaster coatings on the lower parts of one showed designs painted in red, black, and green. Possibly the interior walls had been decorated in the same way. The room was piled high with debris and this, in association with a thick layer of fallen plaster on the floor surface, makes it probable that the building had been topped with a beam-and-mortar roof. The altar, which was centered on the back wall, had been ripped out entirely. Its outline could be traced by the turn-up of the plastered floor around its sides and front. Evidently

the shrine had been looted, for a hole had been dug below the base of the altar, perhaps in the search for a cache.

While we were clearing the area before the doorway a large sculptured limestone head was uncovered on the terrace. It is 60 cm high and has a conical headgear (Fig. 21.3p). In appearance and size it closely resembles two similar heads found near the northwest corner of the mound in a previous season, and it is conceivable that originally the three were parts of sculptured figures placed, perhaps, over the doorway or on the roof. A hand and a leg of the same proportions were found on the front terrace, as well as a number of carved Puuc-style stones and mask elements.

In addition to the topmost floor, two earlier ones were revealed by trenches cut inside the building. The top floor was composed of two plaster coatings, showing that it had been resurfaced. The second floor, on which the top one was based, ran under the altar site. This indicates that the altar was a late addition. The first floor, about 30 cm lower, extended under the plinth from the stairway to the back wall of the terrace. Some 20 cm below this was a layer of *sascab* or coarse mortar laid directly on the stone rubble forming the core of the substructure; probably this had been the original surface before the top of the platform was subsequently raised. A pit excavated into the fill of the terrace between plinth and stairway revealed no burial shaft or ossuary cist.

Digging around the north side of the platform revealed a secondary wall of rough block-and-slab masonry about 60 cm thick and still standing to an average height of 1.65 m (i.e., almost to the top of the platform). Trenching showed that it ran around the rear half of the structure, enclosing all the original back platform wall and half of the north and south walls. Its purpose is debatable. It might have been intended as a buttress for a weakened substructure, or it might have been a device to alter the original shape or style of the shrine (Fig. 21.2h).

The stairway was balustraded but only the lower stones were in place. The base of the north balustrade had been constructed by using a Puuc-type vault stone. The reconstruction of the balustrade shown in the section (Fig. 21.1d) is, like that for Str. Q-153, hypothetical. It is estimated that the original stairway had 10 steps.

Investigation around the base of the stairway disclosed that the plastered surface of the plaza had been laid on a 10 cm thick layer of stones which extended all around the structure. This stone layer, in turn, rested on the original plaza floor, which had been renewed several times. The stone layer and the topmost surface covered the entire first step of

the stairway and part of the second. These excavations also revealed that the stairway antedated all the plaza floors, being built on a thick layer of earth overlying bedrock. Both the secondary wall of the substructure and the small neighboring platform, Str. Q-147, had been constructed on top of the intermediate stone layer.

Str. Q-147 is a low square platform, 1.5 m on each side, with a small earth-filled depression in the middle. At present the sides are composed of a single course of stones about 15 cm high and give no clue to the original height. The depression in the center was cleared as far down as the stone layer on which the platform was built, but no artifacts and only a few weathered sherds were recovered. Sacrificial stones are known sometimes to have been placed before stairways, and the platform may have been the foundation for such a stone; on the other hand it may have been some altar-like construction or the base for a figure.

Evidently Str. Q-149 had three main stages of growth, as indicated in the section (Fig. 21.1d). In the first, the substructure was slightly lower than at present, but no idea can be formed about the nature of any building on it. In the second, the stone floor was laid on the plaza, the secondary wall of the substructure was built on it, the terrace walls were heightened about 20 cm, and the flooring which runs under the plinth was made. Str. Q-147 also belongs to this period. The third period saw the plinth built and the building erected on it. A few minor renovations took place later, in the form of new floors and probably the installation of a new altar.

The pottery reflects a late Mayapán period. Only two Black-on-Cream sherds were identified, along with two pieces of Fine Orange and two of Puuc Medium Slate. The rest of the slipped sherds represented the common Mayapán Red wares. In the unslipped range, the vast majority of fragments was from censers, both human-effigy and hour-glass types, with many ornaments. Most of these censer sherds came from excavations outside the platform, when the secondary wall on the north side was cleared, rather than from the surface of the structure.

STR. Q-148 (255 S, 235 W)

The second shrine, Str. Q-148, faces north and is centered on the main stairway and altar of the large colonnaded hall, Str. Q-151 (Fig. 21.1e,f). Possibly there was some relationship between the two, since a distance of only about 12 m separates them. The distance of Str. Q-148 from the Cenote Chen Mul is about 30 m.

Even before clearing was begun some details of the structure could be observed. A breadnut tree had grown around the rear wall of the building, destroying much of it but with the roots so entwined about other stones that part of the wall was preserved to a maximum height of 1.5 m. The wall was about 50 cm thick, which seems to be the average for this type of structure. A number of Puuc-type mask elements, some badly shattered, were strewn around the front terrace and on the sides of the mound. An unusually shaped stone, seemingly imbedded at the head of the balustraded stairway, also attracted attention since it was thought that it might be a sacrificial stone or variety of column altar. However, the excavation showed that it was resting on the plastered surface of the platform, where it had fallen or been placed. There was no sign of a foundation or indication that it had been fixed or set in place, but its position near the center of the stairway may be significant. It is 40 cm high and 36 cm in diameter (Fig. 21.3f). The circular base has a two-member molding, and the upper portion, now badly weathered, may originally have been ball-shaped. It resembles certain larger sculptured stones in Mayapán which possibly represent a peculiarly local type, the significance of which has not yet been determined. Last season one such stone with three-member molding and globular top was encountered near the stairway of the Castillo (Str. Q-162). A similar sculpture with ball-shaped top but no molding was also found on a level space near Str. Q-113. In the 1954 season two such rounded stones, one with a three-member molding, were recovered during excavations in the group represented by Strs. R-85 to -90. The origin of the piece found on Str. Q-148 is uncertain, but it seems to be of a type similar to the examples noted above.

The lower sections of two pillars were revealed when the area behind the plinth and between the door jambs of the shrine was cleared. These pillars were faced with the previously mentioned Puuc-type mask stones. All of them are elements that typically occur above or below the eyes of facade masks. Each stone is the sector of a circle in plan, averaging 13 cm high and 45 cm across the curved face. Four were still in place in each pillar, and 12 more were recovered nearby; thus the original height of the pillars, which presumably supported the door lintels, was at least 1.5 m and may have been higher. The rear of each pillar was rectangular, constructed very crudely of flat masonry slabs and mortar chinked with smaller stones. Some of the mask stones were plain and others had circular and curvilinear designs. This made little difference as they were used here, however, since they had been covered with a thick coating of

plaster. From the outside this must have given the effect of a triple-entrance doorway divided by round columns (Fig 3b,c).

The altar inside the building was centered against the back wall and was faced on the front and sides with large cut stones about 45 cm high (Fig. 21.3d). A thick, irregularly shaped stone slab had been laid immediately before the altar, presumably to act as a step. Under this were found a gray shell bead, a small iron pyrite flake, a lump of copal, and several censer and other pottery sherds. Several large pieces of charred wood, apparently from beams, lay near the altar. These, and the amount of fallen plaster on the floor, indicate that the building had a beam-and-mortar roof.

After recovering from the debris a small square flake of gold about the size of a fingernail and bearing a faint stamped design, a small copper bell, and a shell bead (Fig. 21.3e), we were not surprised to find that the altar surface had been destroyed. However, the looters, if there had been such, overlooked a small effigy vase representing God B between two of the front stones of the altar (Fig. 21.3h); it contained two jade and three shell beads, a tiny fleck of copper, and a jadeite flake possibly from a mosaic (Fig. 21.3e). The presence of more charred wood inside the altar suggests that the altar was open when the roof was burned, findings in accord with the old tradition of the destruction of Mayapán before its abandonment. The altar had been built on top of the latest flooring. This floor was found to be covered inside the altar with a heavy coating of copal about 2 cm thick, in which were imbedded a tubular stone bead (Fig. 21.3e) and some burnt sherds. The copal burning evidently took place after the altar was altar sides (Fig. 21.1e). About 25 cm below this floor was a second one of cracked plaster corresponding to an earlier floor of the terrace. At a depth of about 45 cm beneath this second floor there was a rough layer of sascab overlying the rock fill.

A trench was cut through the several floors of the terrace and into the rubble core of the substructure. As in the case of the other shrines, no burial cist was discovered. A broken flint blade or projectile point (Fig. 21.3i) lay on the surface near the stairway, together with an obsidian arrowhead (Fig. 21.3e). A limestone hand (Fig. 21.3j) and *mano*-like stone were also recovered here.

Digging around the exterior of the substructure brought to light a secondary wall about 75 cm thick still standing to an average height of 1.5 m. It had the same rough masonry as the original terrace wall. Unlike the secondary wall on Str. Q-149, it extended completely around the sides and rear of the substructure, although it did not enclose the front. As

with the similar feature on the other shrine, its purpose or function was not clear.

The stairway balustrade is hypothetically reconstructed in the section (Fig. 21.1e) similar to the previous two. Investigation under the stairway showed that Str. Q-148, unlike the others, had been built on the lowest plaza floor and consequently, if the plaza floor is continuous, is a later construction.

A tentative building sequence can be outlined as indicated by the limited excavation below the surface of the shrine. There appear to have been at least three periods of construction.

In the first, the original platform walls were built and a floor (about 20 cm below the plinth) was laid from the stairway to beneath the present altar. The *sascab* layer which was found in the rock fill may have been laid during this period, when the work perhaps was temporarily halted, but it is doubtful that this rough level was in itself the culmination of a building period. We uncovered no evidence of a superstructure or building on the surface in this period of the shrine. Presumably the stairway was built at this time.

In the second period the finished flooring, which now runs directly under the plinth, was built. Excavation revealed that it terminated directly beneath the front of the present altar, and this may indicate, although it is by no means certain, that a former altar was located immediately below the latest

one. It was not determined whether or not the back wall of the building was based on this second floor.

In the third period the plinth was built, the columns and presumably the rest of the building were constructed on it, and a finished floor was laid to the rear wall. A little later the altar and step were put in place and a final plaster coating was laid over the floor to cover the irregularities and joints. The section (Fig. 21.1e) shows the rear wall of the building in relation to the floor on which the altar is based, but conceivably this wall could have been of an earlier period.

It was not possible to determine the period to which the secondary wall around the substructure belongs. Almost certainly, however, it is a feature of the second or third periods.

The ceramic picture bears out the late date of Str. Q-148. A few Fine Orange and Puuc Medium Slate sherds were collected, mainly from the surface, but there was no Black-on-Cream to indicate an early stage of the Mayapán period. Of the slipped wares Mayapán Red jar sherds predominated; of the unslipped, the vast preponderance represented censers and ornaments, only a handful being from jars, bowls, etc. A number of fragments of painted and modeled stucco in red, white, and black with parallel lines and oval shapes, some indicating hands and feet, were uncovered below the floor of the shrine room.

COLONNADED BUILDINGS AT MAYAPÁN

EDWIN M. SHOOK AND WILLIAM N. IRVING

INTRODUCTION

EDWIN M. SHOOK

The work of Carnegie Institution in the prehistoric political capital of Mayapán has among its broad objectives the study of each type of architectural unit occurring within the confines and immediate environs of the ancient walled city. One major phase of the undertaking required the close scrutiny of several thousand remains of houses and their associated structures enclosed by the city wall, and the excavation of typical examples of these dwellings. A collateral investigation involved the survey of other kinds of architectural remains at the site and the excavation of a representative number of these, which includes the city and property walls, gateways, roads, platforms, and secular and religious buildings.

The interpretation of the function of a particular architectural unit is determined normally by the

unit's position in the city or group, its association with other structures, its plan, style, decoration, and the type of remains associated with it. Some buildings in all probability were intended, when erected, to serve dual purposes, whereas the function of others changed in the course of time. One type of structure in Mayapán, the long colonnaded hall, presents an outstanding example of the problem involved in interpreting the use of a building.

Colonnaded halls are more prevalent in the Main Group of Mayapán than any other major type of structure. There are at least 23 among approximately 130 architectural units of diverse types which tightly cluster around the central feature of the city, the Temple of Kukulcan or Castillo, Str. Q-162. Though common in the Main Group, only three colonnaded halls occur elsewhere at the site, and these form an integral part of a small ceremonial center at Cenote Itzmal Ch'en (Jones 1952, map, Square H). Therefore, the distribution of such units links them

with the civic and ceremonial architecture of the city rather than with the domestic. Landa describes city or town planning in Yucatán prior to the arrival of the Spaniards (Tozzer 1941:62–64): “. . . in the middle of the town were their temples with beautiful plazas, and all around the temples stood the houses of the lords and the priests, and then (those of) the most important people. Thus came the houses of the richest and of those who were held in the highest estimation nearest to these, and at the outskirts of the town were the houses of the lower class.” Further along (Tozzer 1941:124) Landa speaks of “a large house, whitened with lime, open on all sides” where young men lived until they were married. These Men’s or Bachelors’ Houses provided comparative isolation of young men from their elders and married people. It has been considered a possibility that the Mayapán colonnaded halls served as residences either for the lords or nobles, or as Men’s Houses.

These structures at Mayapán vary in size, plan, and details, but characteristically they are long buildings on low substructures, normally composed of two parallel galleries running the length of the structure, the front and medial supports being of columns and the rear a wall of masonry. Typically, a bench runs along the rear and end walls, and in the majority of colonnaded halls an altar or shrine occurs at the center against the back wall. Occasionally a shrine is present in the center of the substructure stairway. The unit may consist of only the two long galleries, or there may be a transverse room at one or each end. There are several examples in which a third gallery parallels the masonry wall on the side opposite the principal galleries. None of the colonnaded halls in Mayapán were vaulted. Most of them had flat beam-and-mortar roofs; [some] undoubtedly had gabled thatch roofs.

Investigation of colonnaded halls at Mayapán was first undertaken by R. T. Patton (Morley 1938: 141, 142); but the full results of his field studies have not been published, nor have those made four years later by E. W. Andrews (1943:261), who partly excavated several colonnaded structures. During the 1953 and 1954 field seasons 22 of the 23 units in the Main Group were studied. The plans of the majority were recovered by surface examination and, when necessary, by superficial digging. Other units received closer inspection; two of these, Strs. Q-97 and Q-151, are described in detail below. Reference to certain features encountered in other colonnaded halls will be mentioned in the description. All are located in the Main Group and may be identified on the site map (Jones 1952) from the coordinates given for each structure.

STR. Q-97 (170 S, 185 W)

EDWIN M. SHOOK

This structure borders the east side of a court situated immediately northeast of the north court of the Castillo. The building faces west towards a shrine, Str. Q-89, in the center of the court and a temple, Str. Q-82, on the opposite side. Another temple, two shrines, several colonnaded halls, a house mound, and two low platforms also pertain to the same court. The excavation of three of these units, Strs. Q-82, Q-95, and Q-90, has previously been reported (Shook 1954:263–271; Adams 1953:154–155).

Attention was first drawn to Str. Q-97 by the presence on the surface of numerous stone column drums aligned in two long rows, and a sculptured monument *in situ* on the transverse axis of the building (Figs. 22.1e; 22.3a,i). The proportions of the unit, which was relatively low and much greater in length than in width, were markedly different from those of architectural types recognizable as temples, shrines, houses, etc. Surface examinations clearly identified the unit as a colonnaded hall similar to many others associated with the principal structures in Mayapán.

The investigation of Str. Q-97 was initiated by Pollock, who uncovered a shrine room in the center of the stairway (Fig. 22.1c). Thereafter, I continued the investigation by excavating the north and south ends and the central area of the building. Subsequently an exploratory east-west trench was opened along that axis. At the same time the stairway shrine of a nearby colonnaded hall, Str. Q-88a (185 S, 210 W), was cleared and a trench dug northward from the shrine to a low platform, Str. Q-88b.

The central trench in Str. Q-97 disclosed that the unit had undergone several alterations after construction of the original colonnaded hall and that a still older building had been razed and remnants of it buried by the colonnade. Only a short section of lime concrete floor remained of the razed structure (Fig. 22.1h), not enough to determine the type of building but sufficient to ascertain that the construction was typical of the Mayapán period.

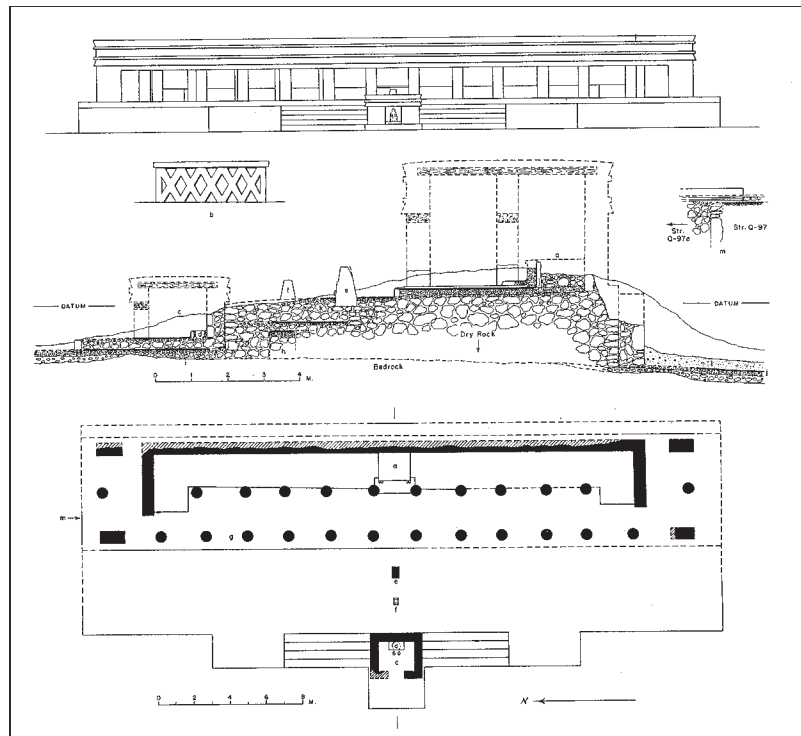
The earliest stage of Str. Q-97 consisted of a low substructure and the building which basically remained unchanged thereafter (Fig. 22.1j). Prior to construction a dedicatory offering had been made. Apparently an animal had been sacrificed in a ceremony involving considerable burning, the animal and charcoal deposited in a large pottery jar, and the latter covered by a smaller, inverted vessel (Fig. 22.7h). The cache then was placed on bedrock on the central axis of the building and buried by the primary court floor (Fig. 22.1i). Sherds recovered below

this floor, Lot C-35c, and those in the fill of the earliest terrace, Lot C-35d, place the deposition of the cache and erection of the primary colonnaded hall fairly early in the Mayapán period.

There came to light no evidence in the narrow central trench of a lower flight of stairs to the front terrace. The lack of steps in the center suggests either that the stairs had been removed for later additions or that separate flights existed to the north and south of the building's axis. Traces of a stairway were recovered leading from the front terrace to the colonnade. The steps lay below and east of the sculptured monument (Fig. 22.1e).

A later renovation of Str. Q-97 witnessed the raising of the front terrace approximately 60 cm (Fig. 22.1k), the erection of a carved monument and a plain sacrificial altar upon the new terrace level (Fig. 22.1e,f), and a major rebuilding of the west face of the substructure. This consisted of a broad flight of steps with a rectangular masonry block at each end and a central shrine (Fig. 22.1c and plan). The shrine room was elevated one step above court level and had a narrow doorway leading into the single, small chamber. The thinness of the masonry walls and the shallowness of debris within the shrine room point either to a roof thatched with perishable material or, more likely, to a low, flat ceiling of wood beams supporting a cap of lime mortar as suggested in the restored section (Fig. 22.1).

Opposite the shrine doorway against the back wall, Pollock encountered a low masonry dais with evidence of a human figure modeled in stucco seated upon it (Figs. 22.1c; 22.3c). There remained only the feet of the figure on the floor in front of the dais and the turn-up of plaster to the buttocks of the idol on the dais top. Here was a shallow, ragged hole (Fig. 22.1d) which provided fairly conclusive evidence that the stucco idol had been purposely destroyed, and that the cache below the figure had been looted. This vandalism took place before the collapse of the shrine roof, and quite likely at the time of abandonment and destruction of Mayapán. The looters of the cache apparently carried away whatever they considered valuable such as ornaments of jade or metal, and discarded pottery objects. A small unbroken tripod cup (Fig. 22.7j) found on the shrine floor next



22.1. Structure Q-97, Plan, Section, Elevation, and Architectural Details.

a. Central altar of the colonnaded hall. b. Restored elevation of central altar, second phase. Design modeled in plaster (Fig. 22.3g,h). c. Shrine room with remains of modeled stucco human figure seated on dais (Fig. 22.3c). d. Position of cache looted in ancient times. e. Sculptured stone monument (Fig. 22.3i). f. Sacrificial altar. g. Scattered fragments of assembled sculpture (Fig. 22.6,l) possibly depicting Mexican god Ehecatl. h. Terrace of early structure torn down to build colonnaded hall. i. Cache consisting of large jar covered by inverted (Fig. 22.7h) and containing animal bones and charcoal. j. Earliest phase of colonnaded hall. k. Second phase of colonnaded hall. l. Postconstruction midden. m. Section at north end showing successive alterations to primary colonnaded hall.

to the dais may have been part of the cache. This miniature vessel is identical to one recovered under similar conditions in Str. Q-82 (Shook 1954, Fig. 10s), and to others from the main altar of Str. Q-151 (Fig. 22.7i). Miniature plain or effigy tripod cups often accompany dedicatory offerings in altar or shrine caches at Mayapán.

Human and animal figures modeled in stucco over a core formed of stalactites appear to far outnumber those carved in stone. These statues may occur on the plaza floor in front of structures, on terraces, or inside buildings. Human figures seated on a masonry altar or dais placed against the rear wall at the center of a temple or shrine and facing toward the entrance have been encountered in this unit, Str. Q-97, in the shrine room of another colonnaded hall, Q-151, and in one of the X-Coton temples (Shook 1953:213, Fig. 1d).

The colonnaded hall of Str. Q-97 is elevated by a plinth one step above the broad front terrace. Excavations at the north end of the building (Fig. 22.1m) disclosed the plinth continuing to the substructure edge instead of following the building plan. The structure consists of two very long parallel halls or galleries with a transverse room at either end. A bench, 75 cm high, fills the floor space the rear gallery. The bench is interrupted in the center by a masonry altar built against the back wall of the building (Fig. 22.1a). Three successive stages of construction on the altar were recognized. The first, built contemporaneously with the original colonnaded hall, projected slightly above the adjoining benches and bore no evidence of decoration. The next stage, however, carried an attractive design modeled in plaster (Fig. 22.1b). The front of the altar had been built forward 25 cm with all stones and lime mortar, and a geometric pattern modeled in high relief on the front. (The design has been restored in the drawing, Fig. 22.1b; traces of the original may be seen in Fig. 22.3g,h). The third and final alteration consisted of a low step before the altar, the plastering over of the old design, and the addition at each corner of a small standing human figure, excellently wrought in stucco (Figs. 22.1a; 22.3g,h). This figure, wearing a simple loincloth, with legs and feet bare, resembles the Atlantean figures at Chichén Itzá. The latter, carved in stone, frequently are found supporting stone altars in Toltec-style buildings in Chichén Itzá.

Willful destruction and looting are again suggested by the condition in which we found the main altar of Str. Q-97. The surface of the altar, normally plastered, was missing entirely and a shallow depression existed in the debris over the altar (Fig. 22.1a, section). The destruction may have been caused by tree roots and erosion since the abandonment of the site, but in view of the preserved lime plaster on the surface of the bench at either side of the main altar, and the pillaging evident in the stairway shrine, it seems more probable that both places were sacked at the same time.

The masonry of Str. Q-97 conformed to the typical block-and-slab type common at Mayapán (Fig. 22.3f). Frequently there were well-cut and dressed stones in the front terrace wall, stairway, plinth, and bench face, and sporadically elsewhere. We believe these stones had been salvaged by the Mayapán builders and re-used from older Puuc-style buildings. Among them were wall, vault, and cornice stones, and occasionally a carved facade element similar to those from Str. Q-151 (Fig. 22.5). In Str. Q-97 and throughout the site these well-finished stones are particularly conspicuous in the normal Mayapán

period masonry of roughly trimmed blocks and slabs. The ancient masons re-used them almost exclusively in the front parts of structures, although the effect of well-dressed stones was entirely lost by the application of a heavy surface coating of lime plaster. In many instances the plaster, especially on the interior of buildings as in the case of Str. Q-97, bore paint in several colors.

The building columns also were typical of Mayapán architecture. Each had been built of roughly trimmed circular stones resembling biscuits, laid one on top of another in layercake fashion (Figs. 22.3e; 22.4e). The irregular upper and lower surfaces were adjusted by the liberal use of a poor quality of dirt-and-lime mortar and small stone chips.

The columns, we must assume, because no example now is preserved to its original height, were erected to the level desired and wood lintels spanning the intercolumnar space laid directly upon the top drums. In Str. Q-97, as well as in all Mayapán buildings studied to date where columns were employed, there is no evidence of the use of stone capitals. The lack of such capitals on round columns is a distinct break in architectural tradition in northern Yucatán. Stone capitals had been in common use in the Late Classic Puuc and in Early Post-Classic Toltec-Chichén Itzá periods. In Mayapán each column was surfaced with a thick coat of lime plaster, often excellently smoothed, producing a monolithic appearance. In two instances: Strs. Q-163 (Fig. 22.3j,k) and Q-156 (225 S, 325 W, and 290 S, 290 W), the front row of columns bore large standing human figures modeled in high-relief stucco on their outer faces. This practice may have been more common at the site than our present evidence indicates, as the majority of the buildings are severely damaged.

The surface debris over Str. Q-97 was fairly evenly distributed (Fig. 22.1, section), its contours indicating the major features of the plan. The shallowness of debris excluded any possibility of a vaulted ceiling, and the presence of a 10–20 cm layer of gravel and chunks of lime concrete over the floor and benches clearly indicates that the building had a flat beam-and-mortar roof.

From time to time, further additions were made to Str. Q-97. The substructure at the south end was extended 2 m southward and on the north end another colonnaded hall, Str. Q-97a, was erected (Fig. 22.1m). These alterations greatly increased the total length of the building. The plan (Fig. 22.1) does not show these later changes.

Fragments of an assembled stone idol were found on the floor and above in the fallen debris of the front gallery at the position marked g on the plan (Fig. 22.1). The carved elements were scattered

over the area excavated (1 by 2 m) and we failed to recover the entire figure. It originally sat, apparently, on the bench of the rear gallery and had toppled forward or had been thrown down. The sculpture depicts a seated human body having a part-human, part-bird head, and animal claw feet, perhaps a representation of the Mexican god Ehecatl. The figure had been carved in sections and assembled. The foot and knee pieces have circular holes into which fitted the tenons at the top and bottom of the lower leg section (Fig. 22.6l). Another example of an assembled stone sculpture was discovered by Strömsvik (1953, Fig. 3f,g) associated with a temple, Str. Q-127a.

A carved monument, severely eroded, stands *in situ* on the front terrace and central axis of the colonnaded hall (Figs. 22.1e; 22.3i). The prominent position of the sculpture, the quantity of broken censer fragments around its base, and the presence of a sacrificial altar before it signify the importance of the monument. The sacrificial altar is a plain, tapering stone block of the type depicted in murals at Chichén Itzá where an individual, held by attendants, is stretched supine over the block and a priest cuts out the heart with a knife. These stone altars are numerous in the Main Group at Mayapán, occurring on the terraces or on the plaza level in front of temples and colonnaded halls; several are associated with the large, round platform, Str. Q-84 (Adams 1953, Fig. 8d). The altars and the number of skeletons placed in shrine and temple burial shafts provide strong evidence that the gruesome practice of human sacrifice prevailed during the Mayapán period.

Fragments of human effigy-type censers lay on the stairway and on the court, terrace, and colonnade floors. The heaviest concentration of these sherds, however, occurred in and around the shrine room, and particularly near the sculptured monument on the terrace and before the colonnade altar. In other words, the major burning of incense in large, effigy containers took place on the central axis of the building. This fact was dramatically illustrated in Str. Q-151 and in Str. Q-81 (160 S, 260 W). Large quantities of Human Effigy-Type censers littered the floor in and around the colonnade altars of each unit. The censers from Str. Q-81, excavated and repaired by Winters (Pollock 1954:264), provide the best examples so far recovered of these ornate and exceedingly fragile objects (Fig. 22.7n).

Exploration directly behind Str. Q-97 disclosed a post-construction midden (Fig. 22.1l) above the court floor and below the fallen masonry from the terrace and back wall of the building. This midden contained pottery fragments, animal and bird bones, stone artifacts, charcoal and ashes (Lot C-35f). It differed in contents from the other surface lots (C-35,

-35a,b) recovered along the front and within the colonnaded hall. There were relatively few censer fragments, and many animal and bird bones, suggesting that the midden had accumulated from nearby houses rather than from religious ceremonies. Several low platforms just east of Str. Q-97 may be the remains of the kitchen and living quarters for the attendants serving the occupants of the building. House structures and deep deposits of domestic refuse were encountered behind another colonnaded hall, Str. Q-99 (Bullard 1953:262), and many of these halls in the Main Group have associated house units.

To Str. Q-97 and other colonnaded buildings in Mayapán we may ascribe one, or a combination of two or more, of the following possible functions:

1. The spacious, well-ventilated and well-lighted, colonnaded halls, each with a wide bench along the rear wall, were the palaces of lords, priests, and leading families. Mats were spread on the benches for sleeping; the central altar was a place for family devotion; and the houses behind the hall served as kitchens and quarters of servants tending the needs of the ruling class.
2. The colonnaded buildings were Men's or Bachelors' Houses, as described by Landa, where young men lived apart from their elders until they were married.
3. These structures were not primarily residences but public buildings, perhaps comparable to the *tecpan* of the Mexican highlands, in which the multitudinous affairs of government were conducted. The rear quarters were homes for the staff performing services in the colonnaded hall.
4. These buildings originally were intended for secular use but toward the final days of Mayapán their function changed to a religious one. Human sacrifice, worship of idols, and constant offering of copal incense in ornately modeled and painted human-effigy censers became as prevalent in colonnaded halls, as in temples and shrines.

STR. Q-151 (230 S 225 W)

WILLIAM N. IRVING

The colonnaded hall, Str. Q-151 (Figs. 22.2, 22.4), is in the main ceremonial group just east of the Castillo, from which it is separated by a small court some 20 m across. With its long axis oriented roughly east and west, it parallels the south side of the high substructure of Q-152, the largest of the round buildings at Mayapán. The rear wall of Q-151 is separated from Q-152 by a narrow passage now filled with refuse and *sascab*.

Just a few meters beyond the southwest corner of Q-151 lies the edge of Cenote Ch'en Mul, which

22.2. Structure Q-151, Plan, Sections, and Architectural Details.

a. Plan. b. Section C-C': retaining wall, stairway, and ramp associated with fill of east court of Castillo. c. Section A-A': stratigraphic cut through passage between Q-151 and Q-152, and shrine, galleries, terrace, stairway, and stairway shrine of Q-151. A: cache (Lot C-85b, Fig. 22.7a,b). B: rifled cache in altar step. C-H: passage behind rear wall; excavation levels do not wholly coincide with actual stratigraphy (see Fig. 22.2e). C: soil and fallen debris, grading downward into gravel, mortar, and *sascab* fill with some large rocks; upper part Lot C-92 (Level 1); lower part Lot C-91 (Level 2). D: mostly mortar, lime, and *sascab*, some gravel; clear disconformities between C and D, and between D and E; Lot C-90 (Level 3). E: gravel, large rocks, and light-colored fine soil; possibly several beds in lower part; separation between E and F not clear; Lot C-89 (Level 4). F: bedded, compacted reddish brown soil and *sascab*; Lot C-88 (Level 5). G: reddish brown loose soil and rubble, with large boulders; continuous underneath Q-151; Lots C-86, -87 (Level 6). H: dry rock fill under substructure of Q-152, overlain disconformably by material in G. d. Section B-B': A: fall. B: grouting. C: fill, soil, rocks, and midden; hearth. D: fine gray compacted soil and midden, with hearths, overlying Floor 1. E: red *sascab*, soil, and midden, interbedded with plaster floors. F: soil, *sascab*, and midden. e. Profile of trench in passage between Q-151 and Q-152, taken along rear wall of Q-151, looking north (see Fig. 22.2c for identification of lots and levels). f. Plans and elevations, showing sequence and transposition of altars in middle of hall; datum to Floor 9 (see Fig. 22.2c for section).

is bordered by low masonry retaining walls on all sides. A ramp leads between the colonnaded hall and the cenote, from the level of the east court of the Castillo down to the floor just above bedrock in front of Q-151. Several small shrine and temple mounds lie south and east of the hall within a radius of 30 m. Immediately to the east is a medium-sized temple-like structure that has not been excavated. It is possible that Str. Q-148, a shrine directly in front of the central stairway, is oriented with respect to the hall.

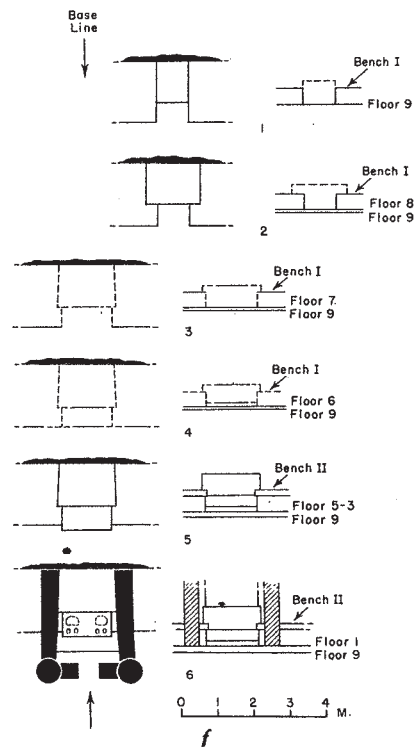
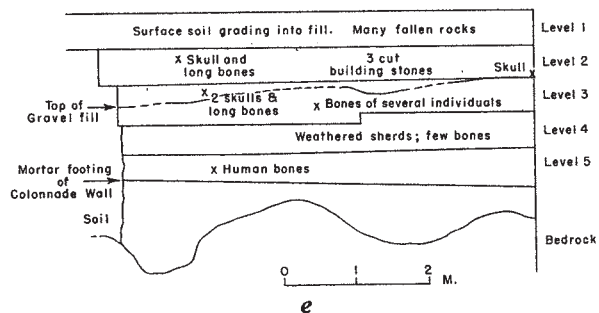
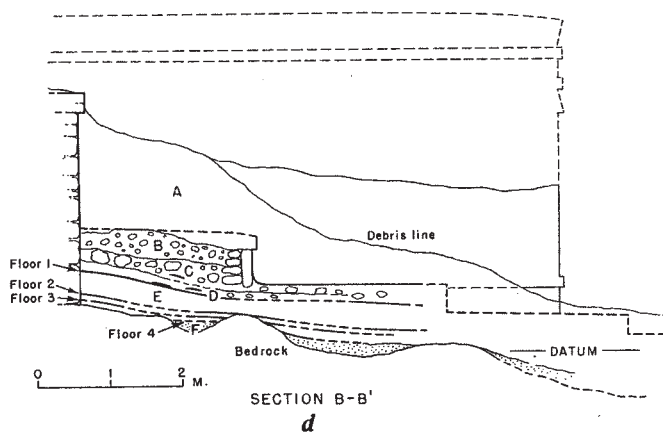
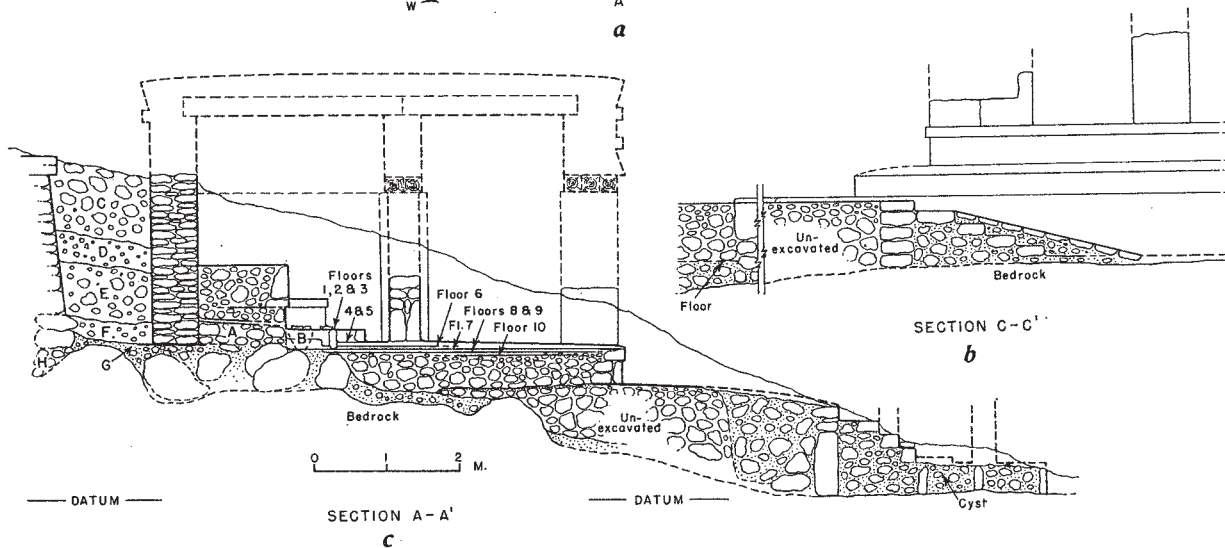
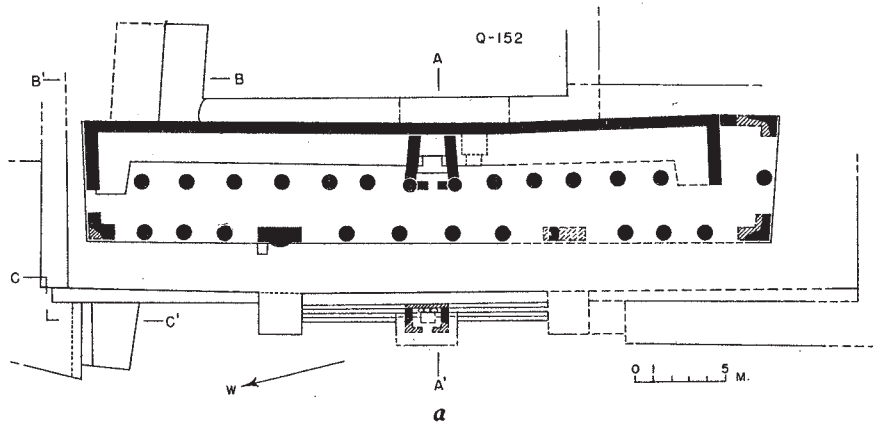
Excavation of Str. Q-151 was decided upon mainly because of its importance as a prominent member of the main ceremonial group. It was expected also that, being covered by a fairly deep deposit of debris, enough of it would be preserved to show something of its appearance while it was still in use. This was of particular interest, since the function of colonnaded halls is still a matter for speculation, and is a problem to which special attention is being given in the current program of work at Mayapán. An ancillary objective was to get sherd samples from stratigraphic trenches in order to broaden the basis for refining the ceramic sequence at Mayapán. This section of the report will deal mainly with excavation procedure, architectural features, and the construction sequence. The ceramic material is described briefly in a subsequent section and will be treated more fully in a future report on Mayapán pottery.

A thick mantle of fallen building material and soil covered the hall before excavation was begun. It sloped downward from the terrace of the round temple, which had helped prevent the rear wall from caving in, to ground level some 30 cm above bedrock in front of the central stairway, becoming progressively thinner towards the bottom. Exposed were several column drums still in place, the corners of some of the wall sections and piers, and parts of the stairway. Small trees were growing over most of

the building, but the vegetation was not thick, and it is quite possible that the building had been cleared of brush within a decade or so.

Work on the structure was begun by P. E. Smith and myself. Within a few days Smith transferred his operations to a nearby temple, and I completed the excavation with the advice and assistance of Shook and Pollock. The excavated portions of the building were partially restored and consolidated by Strömsvik. Several test excavations had been made in and around Str. Q-151 before the present work was begun. Proskouriakoff, in the course of mapping the Main Group, had located the principal corners of the building and some of the important features. Pollock had uncovered the southwest corner, which carries a Puuc-style serpent mask (Fig. 22.4a,d), and had investigated the relationship between the hall and Str. Q-152, in the eastern corner formed by the walls of the two structures. These preliminary excavations, made in 1953, meant that excavation could be carried out more efficiently than would otherwise have been possible. Excavations made by an unknown person or persons in the central part of the structure were of distinctly less help, but did not seriously affect the results of the current work.

The building, including the substructure and adjacent court floors, was cleared of debris from its west end to a line 3 m east of the medial shrine (Fig. 22.2a). A stratigraphic trench 1.3 m wide was dug along the short axis of the building from the stairway altar through the medial shrine to the rear wall. Another trench (for ceramic samples) was dug in the stratified fill between the back of the hall and Q-152. The west corner between Q-151 and Q-152, where a bench had been built over a deposit of stratified midden material, was also partially excavated; the 2 m next the stairway of Q-152 were left undisturbed. In addition, several small test pits were sunk in places where it was thought that evidence





a



b



c



d



e



f



g



h



i



j



k

22.3. Str. Q-97 (j,k, Str. Q-163)

a. Looking east to shrine room, stairway, and central portion of colonnaded hall during excavation. Note sculptured monument (Fig. 22.3i) on axis of building. b. Shrine room in stairway, looking northeast. c. Remains of modeled stucco figure seated on dais in shrine room. d. Looking south along interior row of columns showing excavated central area, and carved monument at extreme right. e. Building plinth, columns, and altar in center of rear bench of colonnaded hall, looking southeast. Note well-cut and dressed Puuc-type stones re-used in plinth. Roughly trimmed column drums with thick bed of mortar and stone spalls between are typical column construction in Mayapán period. f. View of north end of colonnaded hall, from northwest. Masonry pier in foreground forms northwest corner, and wall behind separates long galleries from transverse end chamber. To right of wall may be seen wide bench which fills rear gallery. Typical Mayapán block-and-slab masonry is illustrated; also two stones, X, X, one a carved dentate element, other a boot-shaped vault stone, re-used from older, vaulted Puuc-style building. g. Looking east to main altar of colonnaded hall. At south corner is lower half of stucco Atlantean (?) figure, at north corner in front of squared stone are feet of similar figure. Between figures may be seen traces of lattice pattern on second phase altar partially covered by plaster of third phase. h. Human figure modeled in stucco at south corner of main altar. i. East side of carved monument on axis of colonnaded hall. j. Building plinth and doorway column of Str. Q-163. Note legs and feet of standing human figure modeled in stucco on outer face of column. k. Fragments of stucco figure from doorway column, Str. Q-163.

of structural relationships might appear, and spot excavations were made at the east end of the building to discover major architectural features in and around the end room.

Sherds and artifacts from above construction levels, and where stratigraphy was not clear, were segregated and field-catalogued according to horizontal provenience and relationship to features within the building. Where provenience could be determined in vertical stratigraphy below construction levels, they were catalogued on this basis as well as on the basis of their association with specific features.

ARCHITECTURE

The earliest feature associated with the building is an irregular terrace of boulders and reddish brown soil, possibly once covered with plaster, which extends along the south side of Q-152 (Fig. 22.2c). Presumably it was intended to cover irregularities in the bedrock. Near the southwest corner of the building substructure fragments of an early floor were found overlying the rocky soil and sparse cultural debris which fill a shallow depression in the bedrock (Fig. 22.2b).

The substructure is composed of dry rock fill held in place by retaining walls of dry masonry. A building level marked by a thin layer of soil separates this fill from that of the upper portions of the structure (Fig. 22.2c). The retaining wall along the south side (front) is made of large stones fitted with some care, some of which may have been shaped. This wall was probably covered with plaster. The top is nearly a meter above the paved floor in front, which rests on bedrock.

The broad central stairway is bordered on either side by large masonry blocks, which rise to the level of the top of the substructure and may be part of the

original construction. Vertical, dressed flat stones form the base of the retaining wall of the west blocks. The upper parts of the wall are made of heavy slab masonry, now somewhat disrupted by roots and possibly by prior digging.

The stairway consists of five steps, the lower four of which are 25 cm wide and made of stones dressed on the upper and outer faces (Fig. 22.2c). The top step, more than twice as wide as the others, is faced by dressed stones and filled with rubble in back. The stairway now rests on dirt and rubble fill where the vertical section was taken. This is thought to be back-fill placed in an earlier excavation (see Lot C-85d, from disturbed portion of substructure and stairway).

In the middle of the stairway is a small platform with walls about 40 cm high made of vertical slabs of undressed stone. Inside the platform an irregular cyst of vertical slabs the same height as the platform was found to contain only dirt and rubble. Like the stairway, the platform and the cyst appeared to have been disturbed prior to excavation. An altar, consisting now of three flat stones laid on the third step from the bottom, formerly may have extended a short distance over the platform. Below and in front of it were traces of a plastered surface, which may represent the floor of the platform. Several pieces of stalactite and stucco found on the platform probably are the remains of a modeled figure. Low walls on either side of the altar indicate some sort of enclosure but there was no evidence that the altar was covered by a roof.

Along the front of the substructure, between the west block and a point 0.55 m from the west end, a secondary retaining wall was built. Its construction is the same as that of the primary wall, but it rises only to a level 40 cm below the top of the substructure; it is thus about on a level with both the top step



a



b



c



d



e

22.4. Str. Q-151.

a. West end of building after excavation, looking northeast. Note remains of Puuc-style mask at southwest corner; retaining wall for upper level of substructure terrace; retaining wall for lower level does not show (see Figs. 22.2b; 22.4c). b. Ramp, stairway, retaining wall for court fill; secondary and primary retaining walls of substructure, looking west (see Fig. 22.2b). c. West end of substructure, showing retaining wall covered by fill of east court of Castillo, and rough retaining wall to hold fill during construction, looking northeast. d. Front after restoration; secondary substructure retaining wall removed to show primary retaining wall near masonry block; looking north. e. View after restoration, looking northeast. East court of Castillo raised to level of lowest terrace of substructure Q-152 (round building) in the background.

of the central stairway and the lower part of the west end of the substructure. Strömsvik, in the course of his repair work, noted that the primary retaining wall is bowed outward, as though in a state of partial collapse, but the secondary wall is straight. This suggests that the secondary wall was added to reinforce the original construction, which for some reason had begun to give way.

At the west end of the substructure, the retaining wall, here also made of dry masonry, is very rough in appearance. It is concealed by the dry rock fill of the east court of the Castillo, the top of which is about 10 cm below the top of the retaining wall. Traces of plaster on top of the court fill may represent a floor, which would have brought the level of the court nearly to that of the substructure. There is nothing to indicate that the lower part of the retaining wall was ever plastered, and it is unlikely that it was ever intended to stand exposed. The implication is that the filling of the court was planned at the time the substructure was built. A very poor retaining wall which extends westward at right angles from the substructure was probably built to hold fill in place while work on the east court was in progress.

At the west end, the substructure is built in two levels, the lower of which is nearly flush with the secondary retaining wall along the front. The upper one, held in place here by a wall of slab masonry, is the one on which rests the plinth of the building. The details of construction could not be determined at the northwest corner where the floor may have merged with that of the court.

The top of the substructure is covered by thick plaster floors. Just in front of the west pier between Columns 3 and 4 (see below) were found two flat stones set into the floor; their purpose is unknown.

The change in grade between the filled east court of the Castillo and the floor just above bedrock in front of the hall is traversed by a stairway built against a retaining wall at right angles to the front of the substructure (Figs. 22.2b; 22.4b). These features are structurally later than the secondary retaining wall along the front of the building. If it is accepted that the secondary retaining wall was added after construction of the hall was completed, and there-

fore after the east court was filled, it is necessary to postulate some earlier construction which held the fill of the east court in place and permitted easy passage over this important route from the Castillo to the southeastern parts of the city. The alternative is the possibility that the existing stairs and retaining wall behind them are part of the original construction, and were cut through at the time the secondary retaining wall of the substructure was built. No evidence for this was seen.

The retaining wall supporting the fill of the east court passed behind, and is earlier than, a low platform, Str. Q-153a, that runs along the east side of the cenote. The platform appears to be contemporaneous with the stairway mentioned above. These stairs were ultimately covered by a stone-paved ramp, which rises to a level one step below the east court of the Castillo (Fig. 22.2b).

The upper portions of Q-151 will be described as they appeared after the last stages of rebuilding. The construction sequence will then be reviewed as it shows in the medial trench from the plinth through the central shrine to the rear wall. The majority of the changes in plan during the use of the building are plainly visible in the vicinity of the shrine.

A plinth course of upright flat stones dressed on one face (Figs. 22.2c; 22.4d) rises some 50 cm above the substructure and is topped by a rectangular band molding 15 cm high. This form is carried along the entire front and both ends of the building, although at the east end the top of the plinth was found to be about 15 cm lower than it is elsewhere. The molding stops at the northwest corner, but the plinth continues along the back at least as far as the corner of Q-152. No plinth was found at the bottom of the stratigraphic trench dug in the passage between Q-151 and Q-152 (see below; Fig. 22.2c), where bedrock rises to about the level of the floor of the building.

The superstructure consists essentially of two rows of plastered columns, made of drums averaging 15–20 cm in thickness and 75 cm in diameter, and a rear wall of Mayapán slab masonry cemented with mud mortar (Fig. 22.4d,e) that once supported a beam-and-mortar roof. The rear walls and columns

22.5. Str. Q-151 (f, Str. Q-88a).

a. Mask in west pier before restoration. b. Mask in west pier after restoration. c. Carved elements from front and west end. d. Stairway shrine before restoration. Note cyst inside plinth form. e. Stairs and stairway shrine after restoration. f. Looking southeast to shrine in center of stairway of colonnaded hall, Str. Q-88a. g. Medial shrine before restoration, looking northwest. h. Plastered column (no. 3) and bench, looking north. Note absence of flat upright stones typical of bench in central part of building. i. Stratigraphic trench, showing rear wall of Q-151 and substructure of Q-152; looking west. j. Corner between Q-151 and east side of Q-152, looking west, showing bedrock, wall blocking passage, rear wall Q-151 resting on plinth, upright stones of facing of bench and stratified midden. k. Rear wall of Q-151, looking south, showing features in corner between Q-151 and Q-152. l. Corner between Q-151 and Q-152, looking southeast, show 1 Floor 1 and wall blocking passage between buildings.

are supplemented by wall sections at the corners of the building and by piers carrying Puuc-style masks between Columns 3 and 4 and Columns 7 and 8 of the front row (Fig. 22.5a,b). The wall sections at the southwest and southeast corners carry similar masks (Fig. 22.4a,g).

The east end is separated from the rest of the building by a transverse wall which is contemporaneous with the rear wall. The extension of the rear wall between the transverse partition and the northeast corner wall section is secondary to the main rear wall. It may also be secondary to the northeast corner wall section, in which case it indicates a doorway that was blocked. If, on the other hand, it is contemporaneous with the corner wall section, then this corner of the superstructure and probably the southeast corner as well were built after the original construction.

The main part of the hall is divided into two long galleries by the inner row of columns. A broad bench, faced with flat upright dressed stones and provided with a rectangular band molding like that of the plinth, runs the entire length of the rear wall and extends along the transverse partition and the wall at the west end. It is unlikely that there was a bench in the end room, since the debris line here is considerably lower than it is over the benches in the main part of the building.

In the middle of the inner gallery is an altar. During the last stage of construction this was enclosed by walls of variable thickness made of block masonry and mud mortar, which incorporate the two columns standing directly in front (Fig. 22.5g). The altar consists of a raised block of plastered, dressed stones on the bench and an indentation in the bench, at the bottom of which is a low step. Remnants of the buttocks and feet of two seated human figures in stucco are preserved on the altar (Fig. 22.2f,6); they rest on the next to last layer of plaster. A small spot of black paint surrounded by an outline of red was seen on the side of the bench which protrudes through the east wall into the shrine. Other features of the shrine are discussed subsequently.

In the reconstruction of the building (Fig. 22.2c) a beam-and-mortar roof supported by the rear wall, a continuous wall section above the inner row of columns, and a facade with a solid upper zone have been indicated. The wall section and upper facade are thought to have rested on lintels of wood laid across the tops of the columns. Sufficient evidence for this type of roof was seen in the mass of lime mortar and slabs of rock on the floor inside the hall; restoration of the supporting members above the columns is conjectural, as in the case of Str. Q-97 (Fig. 22.1).

The quantity of carved stone and sculpture found on the terrace in front of the hall indicates that the upper zone carried some ornamentation; however, no attempt has been made to reconstruct it in detail. Some elements of moldings were found near the building (see below), but the arrangement in the reconstruction is again largely conjectural.

Stones carved in the Puuc style were found throughout the building, incorporated into the structure and lying in the debris. Enough elements were still in place on the piers in the front row of columns and the corner wall sections to indicate that serpent masks of undoubted Puuc style had been assembled here with the component elements properly arranged (Fig. 22.5a). Enough elements were nearby on the ground to permit complete restoration of the mask between Columns 3 and 4 by Strömsvik (Fig. 22.5b).

Other carved stones in or near the building do not appear to be parts of these serpent masks (Fig. 22.5c). Some may have rolled down from the high platform of the round building in back of the hall or from one of the nearby small temples. Others may have been incorporated into the facade of the building. Some pieces of band and apron molding are plastered and painted red, so that the consecutive disc or crescent motifs are wholly covered.

Three sculptured stone hands with forearms attached, from in front of the hall, have the fingers curved as though for grasping staves. These range from 20 to 35 cm in length from knuckles to elbow.



a



b



c



d



e



f



g



h



i



j



k



l

Two of them have spool wristlets. It has been suggested that they may have been parts of stone-and-stucco figures in the form of diving gods; however, no two of the hands are the same in size or form. Other pieces of sculpture or cut stone in front of the hall include a colonnette (16 by 13 cm); three broken stone cylinders (ca. 16 cm diam.); several small roughly carved, barely recognizable faces of men and animals; a larger face, perhaps representing a death's head, which has a long tenon at the back; and fragments of stucco human figures.

Several pieces of carved stone lay just outside the east door of the end room; the number is unusual when it is considered that only enough dirt was moved to reveal some of the architectural features. The sculptured pieces are fragments of human figures: two arms, a shoulder, and a foot. The arms match but do not fit the shoulder. Each hand has the fingers curled as though to grasp a staff, in the manner of the hands found in front of the hall. In addition to these, there was a bas-relief element which resembles a sort of plumed headdress, about 30 cm high by 20 cm across, and a tenoned full-round bird-head figure about 40 cm long.

Direct evidence for major changes in plan shows up most clearly in the central part of the building. Here, 10 separate floor surfaces were distinguished in the neighborhood of the shrine; some of these, however (e.g., Floor 10), are discontinuous and difficult to relate to the construction sequence. The top of an early bench, 45 cm above Floors 8 and 9, with which it is associated, is some 25 cm lower than the present bench; the earliest altar is situated just east of where the shrine is now located (Fig. 22.2a,f). This altar was modified once by enlargement of the raised block on the bench in back of the indentation.

After Stage 2 (Fig. 22.2f,2), the altar was moved to its present position. At about this time (i.e., between the laying of Floors 5 and 7) many, if not all, of the columns were moved a few centimeters from their former positions, which must indicate a major reconstruction of the upper portions of the building; this is attested by a layer of rubble between Floors 5 and 7. The plinth molding appears to have been raised a few centimeters about this time. The top of the early bench was later raised 25 cm to a height 60 cm above Floor 5 and provided with a molding. There followed a sequence of development and elaboration that culminated in the building of the walled shrine (Fig. 22.2f).

Consideration of the plan of Q-151 shows that the northeast corner of the building is not in line with the primary rear wall, and the plaster floor in the end room is some 15 cm below the floor level in the middle of the colonnade. As was pointed out, the

segment of the rear wall that borders the transverse end room is secondary to the rear wall of the main part of the building and may be continuous with the northeast corner wall section, whereas the partition wall (north-south) is part of the original construction. It is therefore possible that the end room is of later construction than the original colonnaded hall. If the original hall, thus conceived with the present partition wall forming the east end of the building, was symmetrical with respect to the early altar, the wall at the west end passed just to the west of Column 3 of the inner row. This would make the original building more nearly centered on the substructure than is the present one. Such a plan requires for symmetry an arrangement of superstructure and stairway features entirely different from the existing one. Some evidence for this is seen in the fact that some of the columns were moved from their original positions after Altar Stage 2.

If the earliest building was oriented as postulated, the piers and wall sections carrying Puuc-style masks were also put in their present positions after the original construction; whether or not they were present at all in the early building is a matter for conjecture. The stairway shrine and masonry blocks were also placed differently. In this connection it is significant that a line drawn from the center of the round temple, Str. Q-152, to the column altar in front of Q-148 directly opposite Q-151, passes through the middle of the late altar and stairway shrine of the colonnaded hall. The early altar of Q-151 does not appear to be oriented with respect to any features outside the colonnaded hall that are now visible.

The combined evidence of stratigraphy, changes in the building plan, and existing asymmetries indicate a major rebuilding of Str. Q-151, perhaps during the latter part of the first half of its period of use. It would be extremely interesting if the introduction of human-effigy censers, which occurred about at the halfway point in the deposition sequence recorded in the passage behind the hall (Lots 86-92), coincided chronologically with the revision of the plan of the building and with the construction of Q-148. It seems likely that the use of noneffigy censers began at about the time the colonnaded hall was first built.

DISTRIBUTION OF CULTURAL MATERIAL

Cultural material referable to the final period of occupation or use of Q-151 is sparse except in the neighborhood of the medial shrine. In the shrine, quantities of burned and unburned copal, scattered fragments of several large Human Effigy-Type censers (see Fig. 22.7n), two filleted Noneffigy-Type censers (Fig. 22.7k), a plain dish (Fig. 22.7g), a min-

ature tripod cylinder (Fig. 22.7f), and fragments of a Red ware bowl lay in positions showing that they were used just prior to the abandonment of the building. The balance of the noneffigy pottery was on or above the step of the altar, near the bench; censer fragments were concentrated near the door of the shrine. Fragments of stucco, all very small, which may have come from walls or from the seated human figures mentioned previously, are painted red, yellow, blue, black, or white. Several of obsidian flake-blades were in the shrine, two of them very sharp and with fine points.

A carved stone turtle (Fig. 22.6a,b) lay between the stucco figures, over a hole that had been dug through the floor into the bench presumably to get at a cache (Fig. 22.2c,B). One side of the turtle (the back) is covered with a thick coating of lime mortar and small gravel; it appears to have been set into masonry. In a cavity covered by a stone disc and sealed by the mortar on the back was a cache that included fragments of sting-ray spines and two obsidian flake-blades.

An undisturbed cache (Fig. 22.2c,A) was inside the altar block, apparently placed there after Altar Stage 3, consisting of two Red ware pots (Fig. 22.7a,b), nested one inside the other, which contained two obsidian-flake-blades, a spine, a flake of clear obsidian or rock crystal, and a small rectangular piece of jadelike green stone with slightly convex sides. A small shell tinkler, a convex obsidian end scraper, and several obsidian flake-blades were in the fill around the cache (Lots C-85a,b,c).

Outside the shrine were fragments of censers and burned and unburned copal, some of them near the front row of columns and plinth. It seems unlikely that this is their proper place so it is presumed that they were thrown there. To the east of the shrine, between the nearest column and the bench, were animal bones, wood charcoal, and a large limestone metate. The *metate* was resting on the floor of the hall, in upright position; the other remains were scattered through the fall from the roof. Presumably these reminders of culinary activity represent campers or temporary residents who used the building after its abandonment.

The same applies to a small charred corncob on the bench near the west end of the hall. A miniature tripod cup like the one from inside the shrine (Fig. 22.7i) stood on the bench immediately to the west of the shrine.

An unworked conch shell and some charcoal lay in fall along the plinth just outside the east door of the end room.

Sherds from both utilitarian and ceremonial vessels occur in great quantities in the fallen material

that covered the building (Lots C-93, 94). The majority are typical of the Mayapán period, but they do not necessarily represent the normal activities that took place in the colonnaded hall.

Obsidian flake-blades, an occasional obsidian point or scraper (Fig. 22.6d,e), and more rarely one of flint, and a very few ceramic implements complete the inventory of artifacts above construction levels inside or in front of the building. The ceramic articles consist of a small clay spindle whorl without ornamentation, and what appears to be a cylinder seal (Fig. 22.6i). Both were in surface debris on the steps of the colonnade.

Pollock's excavation in the corner between Q-151 and Q-152 at the east end of the latter building produced a vast quantity of ceramic material, presumably from a pottery dump. This and the artifacts are listed under Lot C-59.

STRATIGRAPHIC TRENCH

A section 6 m long of the deep, rich deposit of stratified refuse between Q-151 and the substructure of Q-152 was excavated for ceramic samples (Fig. 22.2c,e). Artifacts from six levels, each of which approach 50 cm thickness, were segregated into lots. The levels are numbered from the top down.

Disconformities between the different kinds of deposit are indistinct, but they appear to indicate intermittent filling with rubble, rocks, gravel, and lime. Seriation of the sherds further indicates that the deposit accumulated over a length of time, apparently the greater part of the Mayapán period. Human-effigy-type censers first appear in significant numbers in Level 3; thereafter they quickly become numerically predominant. Below Level 3, to the foot of the rear wall, noneffigy censers are the dominant type of ceremonial vessel.

The sherds from all depths except the surface (Lot C-92) and the very bottom (Lots C-86,-87) are in excellent condition, and many can be fitted together. A few vessels have been restored and are illustrated (Fig. 22.7c-f).

From the foot of the wall to bedrock the matrix is red-brown soil rather than fill. This extended under Q-151 and is continuous with the soil covering the early terrace mentioned in connection with the substructure. This same soil rests on top of the dry rock fill that underlies Q-152, which indicates priority of building for the round temple.

The head bones of at least five individuals, all adults, were in the trench, along with a quantity of long bones. The majority of the human bones came from the second and third levels from the top (Lots C-90, -91) near the transition from rubble fill to lime



a



b



c



d



f



g



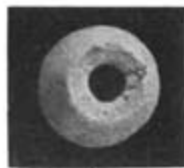
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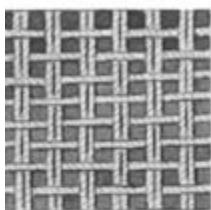
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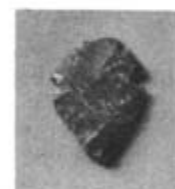
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v

22.6. Str. Q-151 (l–n,p,u, Str. Q-97; q, Str. Q-88a).

a. Limestone turtle, 41 by 35 by 11 cm, bottom, showing mortar on reverse face, Lot C-93a, Cat. no. 54-293. b. Reverse face of (a), mortar removed, showing covered cavity. c. Sculptured stone-head, Lot C-107. d. Implements of obsidian: left, steep end scraper, Lot C-90, Cat. no. 54-226; middle, end scraper on flake blade, Lot C-94, Cat. no. 54-260; right, end scraper on flake blade, Lot C-90, Cat. no. 54-227. e. Implements of obsidian: left, small retouched blade or point; broken side-notched point made on flake blade, edge retouched only, both Lot C-106; right, 2 points made on flake blades, with steeply retouched edges, Lot C-94, Cat. no. 54-254. f. Obsidian flake-blade with 2 longitudinal spalls removed from left edge so that it resembles a burin, Lot C-106, Cat. no. 54-289. g. Spent obsidian blade core, striking platform ground, 4.3 cm long, Lot C-94, Cat. no. 54-259. h. Perforated shell ornament, 3.5 by 1.9 cm, Lot C-87, Cat. no. 54-241. i. Ceramic hollow cylinder seal, Lot C-94. j. Pottery spindle whorl, undecorated, ca. 2.5 by 1.0 cm, Lot C-94. k. Shell disc, 3.0 by 0.3 cm, Lot C-90, Cat. no. 54-230. l. Sketch illustrating method in which the sculptured figure (Fig. 1g) from Str. Q-97 was assembled. m. Bone rasp from surface, Str. Q-97; length 11 cm, Lot C-35, Cat. no. 53-231. n. Perforated animal tooth from postconstruction midden behind Str. Q-97, Lot C-35f, Cat. no. 53-230. o. Flint blade, 28.2 by 4.6 by 1.6 cm, Lot C-59, Cat. no. 53-214. p. Drawing illustrating one-by-two variation of plain weave technique used in the textile impressed on stucco fragment from surface of Str. Q-97 (see [u] below). The double warp element is crossed by a single, weft element. q. Shell ornament incised with hieroglyphs, Str. Q-88a; length 6 cm, Lot C-58, Cat. no. 53-213. r. Flint point, edges bifacially retouched, 3.5 by 1.9 by 0.3 cm max. dimensions, Lot C-93, Cat. no. 54-270. s. Dark chert point with light patina broken by retouch, 3.6 by 2.0 by 0.4 cm, Lot C-59, Cat. no. 53-215. t. Flint point, Lot C-107. u. Textile impression on fragment of stucco found on surface of colonnaded hall, Str. Q-97, Lot C-35. Textile finely woven, having 11 warp pairs (22 threads) and 16 single weft elements per square centimeter (see [p] above). v. Ceramic mold, and impression; mold approximately 7 cm long, Lot C-88.

and *sascab*. However, a mandible, several vertebrae, and some tarsal bones were near the bottom of the trench (Lot C-89). In two cases, the skull was found with one or two vertebrae still articulated, unaccompanied by long bones and with the mandible lying a short distance away. None of the other bones were in any semblance of their proper relationship except for a few vertebrae and ribs in Level 3. The implication is that the bodies were beheaded, the jaws removed, and perhaps were further dismembered before they were thrown into the passage. No evidence of burial rites was seen. It seems likely that the passage was filled with rubble and mortar in order to cover the putrefying corpses or bones.

Among the ceramic artifacts, the frequency of utilitarian over ceremonial or ornamental objects in the upper levels is not noticeably different from that found elsewhere in the general excavations. However, several whole pots had been thrown into the passage, which further indicates that it was used for something other than just routine dumping.

CORNER MIDDEN

An interesting deposit of stratified midden material and fill, containing the remains of four plaster floors, was found in the corner between the west end of the rear wall of Q-151 and the substructure of Q-152 (see Figs. 22.2d; 22.5j,k). Much of this was laid down after the passage between the two buildings had been blocked by a rough wall of uncut stones. A bench with rectangular band molding was built over the midden during a late stage; it runs from the rear wall of the colonnaded hall to the staircase of Q-152.

The lowest distinguishable horizon consists of reddish brown soil containing some artifacts but little organic material, lying in pockets in the bedrock. This is overlain by a badly weathered plaster floor (Floor 4), which follows the gentle slope of the rock down towards the east court of the Castillo. Identifiable artifacts are few and have been included with those from the next layer above.

The layer above is a deposit of gravel, soil, and closely packed, reddened *sascab*, in which were sherds, animal bones, obsidian flake-blades, and fragments of charcoal. One floor (Floor 3) was laid during the course of deposition at this level, but is now barely perceptible. Floor 2, which rests on top of the level, has been used as the upper limit for Lot C-104, which includes all the material that comes from below that floor.

The midden deposit between Floors 2 and 1 (Lot C-105) consists of much the same sort of material. The fact that more animal and bird bones are present here than in the lot from below Floor 2 does not necessarily indicate a change in the manner or kind of activity, since bone is preserved in only a part of the lower level.

Floor 1 is covered by 3–6 cm of close-packed fine gray soil, in which there are several lenses of charcoal representing small hearths (Fig. 2d,D). Bones and sherds are included in this matrix. Above it lies a deposit of mixed midden material and rubble (C), which also contains a hearth. This has the appearance of having been deposited rather quickly and may be debris from some nearby construction project.

It is apparent that the deposition of midden material in the corner continued over a long period

of time; it may have begun before Q-151 was built. What functions were carried on there and why the refuse was allowed to accumulate in such an exposed spot, in full view of some of the principal public buildings of the city, is not immediately clear. It has been suggested that the corner was used as a sort of kitchen in which meals for priests were prepared. Another possibility is that it was used intermittently for the same purpose by workmen on construction projects in the main ceremonial group. If the latter were the case, and the refuse, mixed with building debris, was covered after each period of use, the anomaly of an exposed garbage dump in the middle of the main group would disappear. However, there is no direct evidence to support either of these explanations, and it is possible that the bones and charcoal are the remains of sacrificial rites rather than of the preparation of food.

Inside the bench, a layer of grouting (B) overlies the rubble deposit. It also contains sherds and bones, perhaps residual or perhaps brought in with the grouting material. Outside the bench, the previous layer C was leveled to make a base for the most recent floors (two), which turn up to the bench. Lot C-106 includes material from the deposit between Floor 1 and the presumed top of the bench. The upper limit is an area of disintegrated flooring and fallen plaster that represents the top of the bench in which bones and some charcoal 148 were found. The charcoal may indicate that the early use of the corner, which entailed the deposition of charcoal, was continued after the bench was built. Lot C-107 comprises material from surface debris above the bench and the floor in front.

It is clear that the greater part of the midden accumulated after the hall was built. The passage may have been blocked at about the time Floor 2 was laid, but the floors are completely disintegrated along the sides of the buildings, so the relationships are obscure. Traces of an early floor are to be seen in the reddened *sascab* and gravel bed on which the wall closing the passage was built, but these could not be identified with any of the floors under the bench.

All the floors could be traced for about 3 m in front of the bench; beyond this point they are disrupted. It is likely that the top floor ended in a step down to the level of the top of the substructure of Q-151.

If the inference regarding the late extension of the colonnaded hall toward the west is correct, the bench in the corner, which is secondary to the exterior of the rear wall of the hall, was built during the latter half of the use of Q-151. It is possible that some of the earlier midden material accumulated between the time the primary hall was built and the period of extensive rebuilding mentioned above.

FUNCTION

The question of the principal function of Str. Q-151 is not to be answered without reference to data besides that from this excavation. However, on the basis of information presented here, certain inferences can be drawn about the nature of activity in the colonnaded hall during its final stage. There is substantial evidence, in the form of pottery, sculpture, and architecture, that the central part of Q-151 was used primarily for ritual purposes. More than this, the greater portion of the pottery from this section is specifically associated with the burning of copal; the few artifacts of other classes, ceramic and nonceramic, from around the shrine give no certain clue to any other activity, unless one would assume that the small, sharp flake-blades inside the shrine were used for scarification, bloodletting, the sacrificial killing of animals, or the like.

No concentration of debris either of ritual or domestic origin was found to indicate what went on in the rest of the building. The few artifacts outside the transverse end room suggest the possibility of rituals having been practiced there, but data for this section of the building are incomplete. The floor in front of the medial shrine was resurfaced more often than was the floor elsewhere in the excavated parts of the building. On the whole, it would seem that the shrine was used a great deal, the remainder of the building relatively little.

There is no indication that the kind of ritual performed at the medial altar was very elaborate. The burning of copal is widely known as an essential part of many Mayapán undertakings and does not necessarily imply important public ceremonies. It does seem likely that the shrine and altar were used regularly by a large number of individuals or small groups. Presumably, they had some reason for visiting Str. Q-151 rather than one of the many other colonnaded halls with shrines. The reason might be some civil or political function regularly carried on there for a closed group, but the possibility of the activity being religious in character cannot be dismissed. The way is open for speculation, based on more extensive information, on the type of institution that would fit the situation inferred from archaeological data.

SUMMARY OF MATERIAL RECOVERED

EDWIN M. SHOOK

LOT C-35: from surface and general excavation of Str. Q-97: 32 fragments of painted plaster and modeled and painted stucco, one bearing imprint of a finely woven textile (Fig. 22.6p,u); 2 stalactites from mod-

eled stucco figures; fragments of an assembled stone sculpture representing *Ehecatl* (?); 15 fragments of animal and bird bones; 2 obsidian flake-blades; 2 flint chips; 1 fragment of shell ornament; 1 fragment of an alabaster vessel; sherds.

Total sherds: 2,505: 0.7 percent Puuc period; 99.3 percent Mayapán period (Unslipped vessels, 14.6; Noneffigy-Type censers, 1.8; Human Effigy-Type censers, 56.5; Mayapán Red, 22.4; Red-on-Cream, 0.4; Fine Orange 0.8; Black-on-Cream, 2.8).

LOT C-35A: from unsealed fill of terrace pertaining to the second phase, Str. Q-97 (Fig. 22.1k); 4 fragments of modeled and painted stucco; 1 carved architectural ornament; 4 obsidian.

Total sherds: 177: 100 percent Mayapán period (Unslipped vessels, 9.6; Noneffigy-Type censers, 1.8; Human Effigy-Type censers, 39.4; Mayapán Red, 39.0; Black-on-Cream, 10.2).

LOT C-35B: from unsealed fill of shrine room floor of Str. Q-97 to early plaza floor (Fig. 22.1, section); sherds.

Total sherds: 252: 0.8 percent Puuc period; 99.2 percent Mayapán period (Unslipped vessels, 27.4; Noneffigy-Type censers, 4.0; Human Effigy-Type censers, 19.0; Mayapán Red, 45.6; Black-on-Cream, 3.2).

LOT C-35C: from sealed fill below early plaza floor to bedrock under shrine room, Str. Q-97: 34 animal and bird bones; 4 fragments of a bone rasp (Fig. 22.6m); 5 obsidian flake-blades; 1 flint chip; cache (Figs. 22.1i; 22.7h); sherds.

Total sherds: 605: 0.8 percent Puuc period; 99.2 percent Mayapán period (Unslipped, 44.0; Noneffigy-Type censers, 1.3; Mayapán Red, 33.2; Fine Orange, 1.5; Black-on-Cream, 19.2).

LOT C-35D: from sealed fill below terrace floor of early phase of colonnaded hall, Str. Q-97 (22.1j); 2 obsidian flake-blades; sherds.

Total sherds: 87: 3.5 percent Puuc period; 96.5 percent Mayapán period (Unslipped, 13.8; Noneffigy-Type censers, 3.4; Mayapán Red, 44.8; Fine Orange, 1.2; Black-on-Cream, 33.3).

LOT C-35E: from below plaza floor to bedrock, rear center of Str. Q-97 (Fig. 22.1, section): 24 fragments of human skull, animal and bird bones; 3 fragments of lime plaster bearing red, blue, and black paint; 1 stalactite from modeled stucco figure; 3 obsidian flake-blades; sherds.

Total sherds: 570: 0.4 percent Puuc period; 99.6 percent Mayapán period (Unslipped, 39.6; Non-

effigy-Type censers, 1.2; Mayapán Red, 51.1; Fine Orange, 0.4; Black-on-Cream, 7.3).

LOT C-35F: from postconstruction midden (Fig. 22.1l) and building debris above plaza floor east side of Str. Q-97: 12 fragments of painted plaster and modeled stucco; 90 animal and bird bones; 1 perforated animal tooth (Fig. 22.6n); 1 pig or peccary tusk; 1 limestone *mano*; 15 obsidian flake-blades; 5 flint chips; sherds.

Total sherds: 1,587: 0.4 percent Puuc period; 99.6 percent Mayapán period (Unslipped, 35.5; Noneffigy-Type censers, 1.2; Human Effigy-Type censers, 3.6; Mayapán Red, 53.9; Red-on-Cream, 0.4; Fine Orange, 0.8 Black-on-Cream, 4.2).

LOT C-58: from surface to bedrock in north-south trench between stairway shrine of Str. Q-88a (Fig. 22.5f) and a rectangular platform, Str. Q-88b: 5 animal bones; 1 shell ornament incised with glyphs (Fig. 22.6q); 1 obsidian flake-blade; 2 flint chips; sherds.

Total sherds: 957: 2.4 percent Puuc period; 97.6 percent Mayapán period (Unslipped vessels, 25.2; Noneffigy-Type censers, 1.7; Human Effigy-Type censers, 29.0; Mayapán Red, 34.7; Black-on-Cream, 7.0).

LOT C-59: from surface excavations in passage behind Str. Q-151 at east corner of Caracol platform (Str. Q-152); 41 fragments of human, animal, and bird bones; burned and unburned copal; charcoal; ashes; 1 shell ornament; 1 fragment of limestone *mano*, round in section; 1 broken volcanic (porous gray lava) stone *metate*; 1 obsidian flake-blade; 1 flint blade and 1 arrowhead (Fig. 22.6o,s); 1 flint chip; sherds.

Total sherds: 1,839: 0.2 percent Puuc period; 99.8 percent Mayapán period (Unslipped vessels, 8.0; Noneffigy-Type censers, 1.5; Human Effigy-Type censers, 72.8, Mayapán Red, 16.2; Red-on-Cream, 0.9, Fine Orange, 0.1, Black-on-Cream, 0.3).

LOTS C-84, -84A, -85: from sealed fill of primary colonnaded hall, Str. Q-151, between floor and bedrock in central trench (Fig. 22.2c); 17 fragments of human, animal, and bird bones; 1 stalactite from modeled stucco figure; 2 obsidian flake-blades; sherds.

Total sherds: 795: 17.5 percent Puuc period; 82.5 percent Mayapán period (Unslipped vessels, 28.8; Noneffigy-Type censers, 0.3; Mayapán Red, 36.3; Fine Orange, 0.6; Black-on-Cream, 16.5).

LOTS C-85A,B,C: from unsealed fill in colonnade altar, Str. Q-151. Lot C-85a: 7 bone fragments; 1 shell

22.7. Str. Q151 (h,j,l, Str. Q-97; m, Str. Q-164. n. Str. Q-81)

a,b. Red Ware cache vessels from altar, Lot C-85b; [a] is slipped outside except for base and legs, and incised; [b] is slipped outside and inside for 3 cm. below rim. Both found intact. c. Red Ware tripod basal-break bowl, slipped interior, Lot C-90. d. Red Ware tripod basal-break bowl, slipped interior and exterior, Lot C-90. e. Noneffigy censer, coarse paste painted white, ca. 40 cm high, Lot C-go. f. Red Ware jar, 29.5 cm high, Lot C-90. g. Unslipped coarse paste dish, painted dull tan, Lot C-93. h. Cache vessel of unslipped, light gray pottery coarse paste, from below primary floor (Fig. 22.1i) under shrine room, Str. Q-97, Lot C-35c. i. Miniature tripod cup, unslipped, coarse paste, Lot C-93. j. Miniature tripod cup, unslipped, coarse paste, light gray pottery; ht. 7.5 cm; from floor of shrine room, Str. Q-97, Lot C-35. Probably thrown where found by looters of cache in the dais below seated stucco idol. k. Noneffigy censer, unslipped coarse paste, painted dull tan, Lot C-93. l. Fine Orange tripod bowl from surface of bench and floor, north end of Str. Q-97, Lot C-35. The hollow feet were not found. This form, common in Mayapán period, normally has mold-made effigy feet. Max. diam. 25.8 cm. m. Effigy vessel with cover from cache in central altar of the colonnaded hall, Str. Q-164, Lot C-1. Vessel of unslipped, coarse paste, light gray pottery bearing on exterior all-over white lime coat on which effigy features were painted red, pale greenish blue, and black. One cover, cut from light gray jar sherd, fits inside orifice and is not seen in photo. Second cover is slipped Mayapán Red Ware. Ht. of vessel, 11 cm. n. Human-effigy-type censer found with many other restorable censers in shrine of colonnaded hall, Str. Q-81, Lot C-72. Total ht. 56 cm, ht. of censer behind figure 40 cm.

tinkler; 7 obsidian flake-blades and 1 tool (Fig. 22.6d); sherds. Lot C-85b: 1 altar cache containing 2 Mayapán Red vessels (Fig. 22.7a,b), 2 small bones, 1 sting-ray tail, 1 unperforated cylindrical jade ornament, 1 obsidian flake-blade and 1 tool (?). Lot C-85c: sherds.

Total sherds: 126: 3.2 percent Puuc period; 96.8 percent; Mayapán period (Unslipped vessels, 23.8; Noneffigy-Type censers, 3.2; Human Effigy-Type censers, 3.2; Mayapán Red, 64.2; Black-on-Cream, 2.4).

LOT C-85D: from unsealed and disturbed fill of front terrace, Str. Q-151; sherds.

Total sherds: 100: 5.0 percent Puuc period; 95.0 percent Mayapán period (Unslipped vessels, 21.0; Human Effigy-Type censers, 25.0; Mayapán Red, 39.0; Fine Orange; 1.0, Black-on-Cream 9.0).

LOTS C-86, -87: from the base of the colonnade wall to bedrock in passage between Strs. Q-151 and Q-152, Level 6 (Fig. 22.2e). Most of the deposit predates the construction of Str. Q-151: 9 fragments of animal and bird bones; 1 stalactite from modeled stucco figure; 1 shell ornament (Fig. 22.6h); 3 obsidian flake-blades; 1 flint chip; sherds including 1 fragment of Tohil Plumbate.

Total sherds: 1,393: 20.6 percent Puuc period; 79.4 percent Mayapán period (Unslipped vessels, 31.9 percent; Noneffigy-Type censers, 1.2; Mayapán Red, 38.3; Fine Orange, 0.3; Black-on-Cream, 7.7).

LOT C-88: from Level 5 (Fig. 22.2e) in passage between Strs. Q-151 and Q-152: 10 fragments of human, animal, and bird bones; 2 stalactites and 2 fragments of modeled stucco painted purple, yellow, green, and red; 1 unworked shell; 1 fragment of stone sculpture; 2 hammerstones; 14 obsidian flake-blades; 1 flint blade and 4 chips; 1 fragment of pottery mold (Fig. 22.6v); sherds.

Total sherds: 1,517: 2.4 percent Puuc period; 97.6 percent Mayapán period (Unslipped vessels, 27.5; Noneffigy-Type censers, 26.0; Human Effigy-Type censers, 1.8; Mayapán Red, 39.1; Fine Orange, 0.4; Black-on-Cream, 2.8).

LOT C-89: from Level 4 (Fig. 22.2e) in Passage between Strs. Q-151 and Q-152: 7 fragments human, animal, and bird bones; sherds.

Total sherds: 404: 4.7 percent Puuc period, 95.3 Mayapán period (Unslipped vessels, 28.7; Noneffigy-type censers, 15.3; Human Effigy-Type censers, 1.0; Mayapán Red, 42.6; Fine Orange, 1.0; Black-on-Cream, 6.7).

LOT C-90: from Level 3 (Fig. 22.2e) in Passage between Strs. Q-151 and Q-152: 118 fragments of human, animal, and bird bones; 1 shark tooth; 1 bone bead; 3 fragments of wall plaster painted blue, orange, red, and black; 1 human head and 1 hand modeled in stucco and painted blue and purplish red; 2 stalactites from modeled stucco figures; 1 unworked and perforated shell ornament; 1 shell disc (Fig. 22.6k); 15 obsidian flake-blades, and 2 end scrapers (Fig. 22.6d); flint point similar to one in Fig. 22.6f, 1 flake-blade; and 5 chips; 1 pottery spindle whorl; sherds.

Total sherds: 2,968: 1.5 percent Puuc period; 98.5 percent Mayapán period (Unslipped vessels, 15.9, Noneffigy Type censers, 44.0; Human Effigy-Type censers, 7.8; Mayapán Red, 29.5; Red-on-Cream, 0.1; Fine Orange, 0.2; Black-on-Cream, 1.0).

LOT C-91: from Level 2 (Fig. 22.2a) in Passage between Strs. Q-151 and Q-152: 14 fragments of animal and bird bones; 5 stalactites and fragments of modeled and Painted stucco; sting-ray tail (?); 4 flint chips; sherds.



a



b



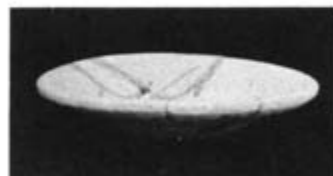
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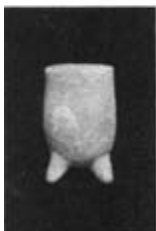
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Total sherds: 9,102: 0.1 percent Puuc period; 99.9 percent Mayapán period (Unslipped vessels, 4.7; noneffigy-type censers, 1.4; Human Effigy-Type censers, 80.3; Mayapán Red, 12.6; Red-on-Cream 0.7; Fine Orange, 0.1; Black-on-Cream, 0.1).

LOT C-92: from Level 1 (Fig. 22.2e) in passage between Strs. Q-151 and Q-152: 2 animal bones; 7 stalactites from modeled stucco figures; 1 hammerstone; 3 obsidian flake-blades; 1 flint arrowhead (?); 3 chips; sherds.

Total sherds: 8,231: 0.1 percent Puuc period; 99.9 percent Mayapán period (Unslipped vessels, 1.5; Noneffigy-Type censers, 0.2; Human Effigy-Type censers, 93.4; Mayapán Red, 4.6; Red-on-Cream, 0.1; Black-on-Cream, 0.1).

LOTS C-93, 93_{A,B}: from surface debris above floors in interior of Str. Q-151; material heavily concentrated in and around shrine: 21 human, animal, and bird bones; 1 charred corn cob; 1 stalactite and fragments of modeled and painted stucco and plaster; 2 unworked shells; 1 turtle sculpture (Fig. 22.6a,b) containing cache of 2 obsidian flake-blades and fragments of sting-ray tails; 1 limestone *mano*, 1 polisher, 1 hammerstone; 9 obsidian flake-blades; 1 flint arrowhead (Fig. 22.6r), 1 blade, 1 triangular adze (?); 8 chips; sherds.

Total sherds: 17,915: 0.2 percent Puuc period; 99.8 percent Mayapán period (Unslipped vessels, 2.9; Noneffigy-Type censers, 0.3; Human Effigy-Type censers, 90.7; Mayapán Red, 5.3; Red-on-Cream, 0.2; Fine Orange, 0.1; Black-on-Cream, 0.3).

LOT C-94: from general surface excavations of terraces, stairway, and substructure of Str. Q-151: 71 human, animal, and bird bones; 9 stalactites, and fragments of modeled and painted stucco; fragments of wall plaster painted purplish red; 1 shell tinkler; 1 fragment of stone censer (?) with ring base; 15 obsidian flake-blades (Fig. 22.6d,e), 2 arrowheads (Fig. 22.6e) and core (Fig. 22.6g); 10 flint chips? 1 pottery spindle whorl (Fig. 22.6j), and 1 hollow, cylindrical seal (Fig. 22.6i); sherds.

Total sherds: 4,441: 0.3 percent Puuc period; 99.7 Mayapán period (Unslipped vessels, 4.9; Noneffigy-Type censers, 0.6; Human Effigy-Type censers, 77.5; Mayapán Red, 15.3; Red-on-Cream, 0.6; Fine Orange, 0.1; Black-on-Cream, 0.7).

LOT C-104: from sealed fill under Floor 2 to bedrock at northwest side of Str. Q-151 (Fig. 22.2d): 19 animal and bird bones; charcoal; 8 obsidian flake-blades; sherds.

Total sherds: 247: 5.3 percent Puuc period; 94.7 percent Mayapán period (Unslipped vessels, 40.5;

Noneffigy-Type censers, 0.4; Mayapán Red, 40.1; Fine Orange, 0.8; Black-on-Cream, 12.9).

LOT C-105: from sealed fill between Floors 1 and 2 at northwest side of Str. Q-151 (Fig. 22.2d); approximately 100 animal, bird, and fish bones; 1 shell bead; 58 obsidian flake-blades and 2 chips; sherds.

Total sherds: 499: 3.4 percent Puuc period; 96.6 percent Mayapán period (Unslipped vessels, 28.3; Noneffigy-Type censers, 5.6; Human Effigy-Type censers, 0.8; Mayapán Red, 57.9; Fine Orange, 0.8; Black-on-Cream, 3.2).

LOT C-106: from unsealed fill of bench at northwest side of Str. Q-151 (Fig. 22.2d); 135 animal, bird, and fish bones; 1 fragment of modeled and painted stucco; 1 limestone *mano*; 5 obsidian flake-blades (Fig. 22.6f); sherds.

Total sherds: 422: 0.5 percent Puuc period; 99.5 percent; Mayapán period (Unslipped vessels, 33.8; Noneffigy-Type censers, 1.9; Human Effigy-Type censers, 17.7; Mayapán Red, 44.5; Red-on-Cream, 0.2; Black-on-Cream, 1.4).

LOT C-107: from general surface excavations above bench at northwest side of Str. Q-151 (Fig. 22.2d); 155 animal, bird, and fish bones; 1 burial of a child's skull; charcoal; ashes; copal; 2 stalactites and fragments of modeled and painted stucco; 1 unworked shell; 1 sculptured stone head (Fig. 22.6c); 21 obsidian flake-blades; 1 flint arrowhead (Fig. 22.6t) and 11 chips; sherds.

Total sherds: 4,628: 0.2 percent Puuc period; 99.8 percent Mayapán period (Unslipped vessels, 10.5; Noneffigy-Type censers, 1.3; Human Effigy-Type censers, 55.0; Mayapán Red, 31.9; Red-on-Cream, 0.3; Fine Orange, 0.3; Black-on-Cream, 0.5).

LOT C-108: from fill in lower half of excavation at west end of Str. Q-151: 50 animal and bird bones; charcoal; 16 obsidian flake-blades; sherds.

Total sherds: 219: 5.0 percent Puuc period; 95.0 percent Mayapán period (Unslipped vessels, 21.9; Noneffigy-Type censers, 2.8; Mayapán Red, 60.7; Fine Orange, 0.9; Black-on-Cream, 8.7).

LOT C-108_A: from unsealed upper fill of excavation at west end of Str. Q-151: 20 animal and bird bones; 1 fragment of limestone *mano*; 14 obsidian flake-blades; sherds.

Total sherds: 62: 1.6 percent Puuc period; 98.4 percent Mayapán period (Unslipped vessels, 32.3; Noneffigy-Type censers, 4.8; Human Effigy-Type censers, 9.7; Mayapán Red, 46.8; Fine Orange, 3.2; Black-on-Cream, 1.6).

EXPLORATION IN QUINTANA ROO

GUSTAV STRÖMSVIK, H.E.D. POLLOCK, AND HEINRICH BERLIN

The explorations described below were carried on by Strömsvik and Pollock between February 23 and 28, and by Berlin and Strömsvik between May 24 and 29, 1954. Previously, one of our workmen from the village of Telchaquillo, Yucatán, had been sent into the area to gather information on the location of ruins and to report on roads and living conditions. His report assured us that we could make the trip by truck and that we could secure food supplies and camp facilities at the village of Ichmul, the site of certain ruins we wished to observe.

The first trip started from Telchaquillo, going by way of Tekit, Teabo, Ticul, and thence to Peto over the newly built highway from Merida to the last-named town. The second trip left from Merida, using the highway to Peto. Beyond Peto, and the end of road normally considered passable by automobile, our course was generally east through the village of Progreso (12 km from Peto), Dzonotchel (24 km), and Calotmul (31 km) to Ichmul (43 km). This

is the old road from Peto to Santa Cruz de Bravo, now known as Carrillo Puerto. Immediately east of Calotmul, we stopped to observe a small ruined site of four mounds. Two of the mounds are each about 8 m in height, one a pyramidal structure apparently facing west, the other probably having been a two- or three-storied palace type of building. At the top of the first mound are remains of walls built of Puuc-style masonry. Near the bottom of the second there is visible part of a vault of very crude construction, and there are stones of Puuc-type lying higher up on the mound. The vault cannot be placed as to style in this relatively unknown area. Its position in the mound suggests that it may be of earlier construction than the Puuc-type masonry that must have stood higher on the structure. The walls below the vault are hidden beneath debris, however, and it is possible that they may be of Puuc type, similar to the veneer masonry walls supporting a crude vault seen subsequently at Ichmul (Figs. 23.1f; 23.2a). The

remaining two mounds at Calotmul are smaller and without notable features showing. Puuc-type stones were again observed on one of them.

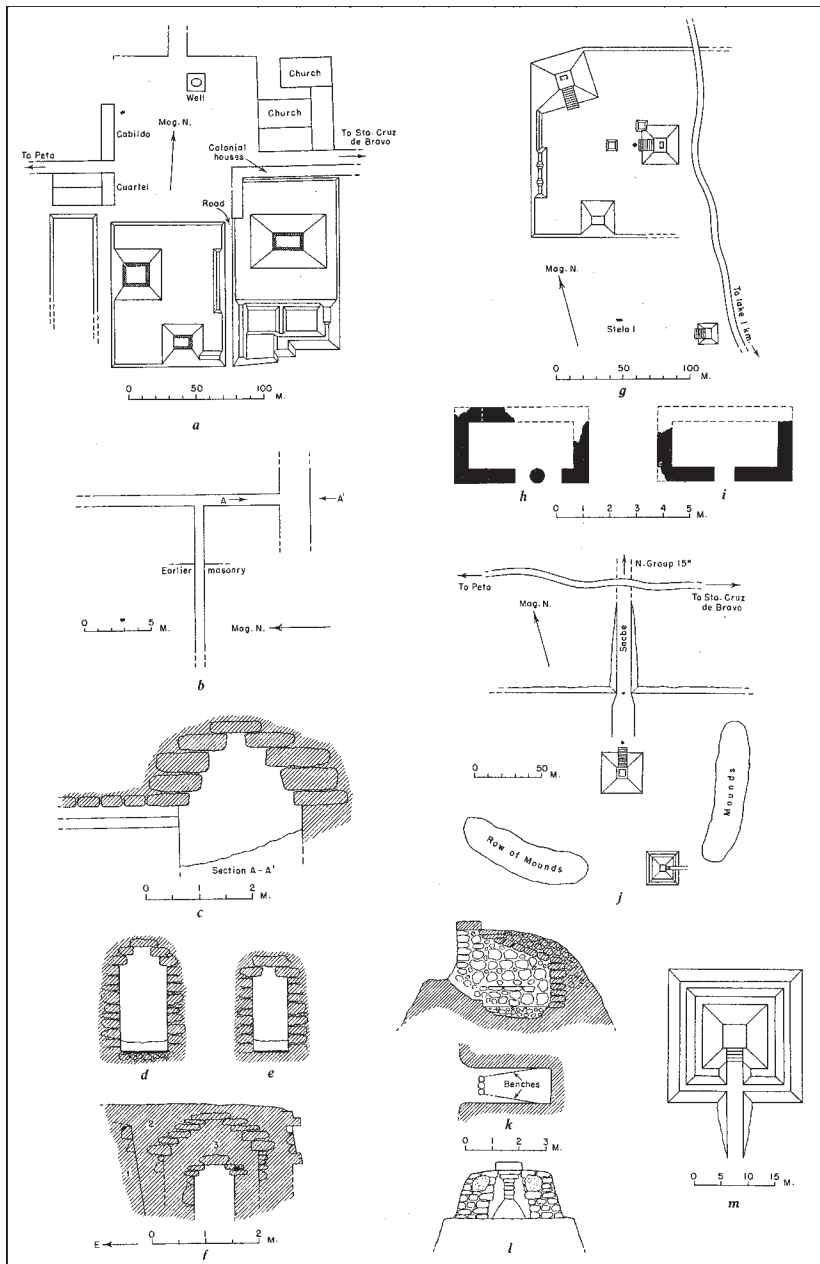
Ichmul, which lies just over the border in Quintana Roo, is an old settlement as shown by Ciudad Real's mention of the town in the 16th century (Noyes 1932:323–325). At present it is more notable for its colonial than for its aboriginal ruins. Overgrown streets and tumbled-down remains of colonial buildings extend a kilometer or more north, east, south, and west from the large central plaza. Two imposing churches—the second and bigger never completed—a cuartel, and an unfinished cabildo face on the plaza. The more important aboriginal remains, consisting of three large pyramidal mounds 8 m or more in height and the ruins of two enclosed quadrangles, all rising from a huge terraced platform, lie just south of the plaza (Fig. 23.1a). A road of colonial or later construction cuts through the ancient platform from north to south. Other terraces, courts, and smaller mounds lie farther south, and another group of ruins was observed about 150 m east of the older, northern church. A short distance north of the well in the plaza is a huge *sascab* cave, mute witness, if such were needed, to the intensive building activity of earlier times. On each of the principal pyramids are elaborate fortifications in the form of head-high walls of stone, clearly of colonial or later origin. Tradition in the settlement, which consists of a schoolmaster and possibly a dozen families that seem only recently to have taken up residence in the abandoned town, is that the fortifications were built at the time of the War of the Castes. The 18th-century date of the unfinished church, however, suggests that the place was abandoned at an earlier time.

As might be expected in a town of the size that Ichmul once was, the ancient Maya structures are in a shocking state of ruin. They were undoubtedly used as quarries to build the impressive colonial structures, and the fortifications on each pyramid have leveled the remains of any buildings that may have stood there. In the eastern and largest of the pyramids, about half way up the north side, we observed and explored a system of vaulted passages that run into the center of the structure (Figs. 23.1b–e; 23.2e). These are of crude construction, built entirely of roughly shaped but otherwise unworked stone. A room, mostly filled with debris but showing a vault which rises to a higher level than the passage vaults, lies at the southern end of the system, near the center of the pyramid. In the western arm of the passages a joint in the masonry indicates two phases of construction, the earlier and slightly better masonry lying to the west.

Toward the western edge of the ruins, just south of the colonial cuartel, a partly buried, vaulted building protrudes from the side of a large platform. This was of interest in showing a sequence of different styles of masonry (Figs. 23.1f; 23.2a–c). The primary vault, which is of crude stonework not unlike the vaults and room mentioned above, rests on walls of veneer masonry comparable to that found in the Puuc or Chenes regions of the peninsula. A small section of the upper zone of the west facade of this building was exposed (Fig. 23.2d) and it exhibits masonry similar to that of the interior walls. The structure just described was built against, and is clearly later than, a battered wall, apparently the old face of a terrace, of well-cut and dressed veneer masonry (Fig. 23.2c), whereas inside of the vaulted building, and secondary to it, is a smaller vault of rough masonry resting on walls of equally rude construction. This sequence suggests a trend from well-cut and dressed stonework to a crude style of masonry. It is possible that the inner vault is of the same period as the seemingly late, East Coast style of architecture subsequently noted at Okop (see below).

We obtained a small and hardly adequate sample of pottery from a single trench off the edge of what appeared to be a house platform just east of the largest pyramid, and from digging around the western vault in Ichmul. The sherds were mostly of colonial and Puuc types. There was a smattering of sherds similar to southern Classic types. Owing to the difficulty of distinguishing Mayapán Red ware from colonial pottery, in the absence of distinctive rim forms, one cannot be certain that Mayapán period ceramics are not represented at Ichmul. Only further excavation can answer this question. On the basis of pottery findings and of architecture, one guesses the major period of the site to be Late Classic.

About 4 km south of Ichmul is the abandoned colonial settlement of Querul or Xkerul, a name one suspects to be a Spanish corruption of a Maya word. Half way along the trail to this site we noted an ancient road, or sacbe, which we followed to its termination at a pyramidal mound north of the ruins of a colonial church. The mound, which stands about 9 m high, is a tumbled mass of fallen stone with no standing masonry showing. It was the only ancient structure, with the exception of the sacbe, seen at Querul. The sacbe is 10–12 m wide and at places, where it crosses low areas, stands at least 2 m high. It was noticed that the side walls, where the road is relatively low and there is no great accumulation of debris, are faced with rather well-shaped but non-dressed stones set vertically. The stones vary in size from about 50 cm square to 50 cm wide by 1 m high and are thin in proportion. We did not trace the road



23.1. Ichmul and Okop, Plans and Sections.

a. Ichmul. Sketch plan of town plaza and main group of ruins. b. Ichmul. Plan of vaulted passages in eastern pyramid. Note early construction at west end of passages. Ends of room at south are obscured by fallen masonry. c. Ichmul. Section of room at southern end of passages in eastern pyramid. d. Ichmul. Section of north-south passage in eastern pyramid (see Fig. 23.2e). e. Ichmul. Section of older part of west passage in eastern pyramid (see b above). f. Ichmul. Section of partly buried building at western edge of ruins. Battered wall at east is earliest construction, small inner vault is latest (see Fig. 23.2a–d). g. Okop. Sketch plan of North Group. h. Okop. Plan of temple on northern pyramid, North Group. Note joint in masonry of rear wall, suggesting building was originally planned with entrance more nearly centered. i. Okop. Plan of temple on eastern pyramid, North Group. j. Okop. Sketch plan of South Group. k. Okop. Section and plan of room in temple on principal pyramid, South Group. Floor of room has been broken by old excavation. l. Okop. Sketch of north wall and interior of temple on principal pyramid, South Group (see Fig. 23.2j).

to its terminus at Ichmul but there is little doubt it runs to that site. There is no reason to think that the pyramid at Querul and the sacbe are not of the same period as the ruins of Okop.

Strömsvik and Pollock made a trip of a single day to the ruins of Okop, or La Aguada, as they are locally known, and the subsequent journey of Berlin and Strömsvik was devoted entirely to that site. The ruins lie southeast of Ichmul on the road to Santa Cruz de Bravo. The only sizable settlement we passed was Sabán, an old colonial town that appears also to have been abandoned and reoccupied, 23 km from Ichmul. Just 11 km farther along one passes a tiny cluster of huts that preserves the name Okop, and 2 km beyond is the small lake that gives the name of La Aguada to the ruins. Slightly over a kilometer north of the lake is a little settlement or ranch consisting of a few thatch houses and a well. A group of a dozen mounds immediately west of the lake and another group about 1 km to the north, near the ranch, make up the ruins so far as they were explored by us. The two groups are connected by a sacbe 12 m wide, and there are reports of another sacbe farther west, but it was not observed by us. It is apparently the southern group that was visited by Mason (1927:299–304) and Spinden 30 years ago.

During the few hours spent at the site by Strömsvik and Pollock, only the northern group was examined, although the existence of the southern was noted. The group consists of three good-sized pyramids, ranging from about 9 to 15 m in height, and several smaller mounds that rest on a large platform some 150 m north and south and that much or more in an east-west direction (Fig. 23.1g). The pyramids are arranged about a plaza on this elevation. To the east of the pyramids there are more mounds, and the ruins undoubtedly extend a considerable distance beyond the central area mapped by us. South of the great platform is a small pyramidal mound on the east edge



a



b



c



d



e



f



g



h



i



j



k



l

23.2. Ichmul and Okop, Views of Architectural Details and Sculpture.

a. Ichmul. Vaults in partly buried building at western edge of ruins, looking south. Note veneer masonry of walls supporting rough, outer vault and crude construction of later, inner vault. b. Ichmul. Partly buried building at western edge of ruins, from northwest. Note section of upper zone of facade at right and battered terrace (?) wall at left of tree in foreground (see Fig. 23.1c). c. Ichmul. Section of battered wall, possibly the face of an old terrace, buried by construction of vaulted building at western edge of ruins, from north. Note excellently dressed, veneer facing stones. Just right of tree trunk are wall and lower courses of vault of later building (see Fig. 23.1f). d. Ichmul. Upper zone of west facade of partly buried building at western edge of ruins, from northwest. Veneer masonry is similar to inner wall facing. Note niche covered by projecting tenon just below upper molding. e. Ichmul. North-south passage in eastern pyramid, looking south. Note entrance to west passage at right (see Fig. 23.1b). f. Okop, North Group. Facade of temple on eastern pyramid, from northwest. Note Puuc-type stone and sunken panel over doorway. g. Okop, North Group. Facade of temple on northern pyramid, from southeast. Note re-used Puuc-type stone, well-cut column stones, rough slab forming west (left) door jamb, and recessed lintels forming panels over entrance. h. Okop, North Group. Interior of temple on eastern pyramid, looking northwest. View shows northern door jamb, lintel, and spring course of vault. Note crude masonry and re-use of Puuc-type stones. i. Okop, North Group. Section of northern side of vault of temple on northern pyramid, looking west. Rough wall and vault masonry is seen in background. j. Okop, South Group. Room in temple on principal pyramid, looking south through doorway. Note capstones sloping down to rear wall (see Fig. 23.1k,l). k. Okop, Stela 1. Stone is 1.25 m high, 1.05 m wide, 0.25–0.30 m thick. l. Okop, South Group. Front wall of temple on principal pyramid, from northwest. Note Puuc-type “spool” element beneath near end of lintel.

of what seems to have been another plaza or court. In this second plaza, Strömsvik discovered a sculptured stela, half-buried and caught in the roots of a huge breadnut tree. In the attempt to extract the stone, our only axe was broken, and it was not until the second trip to the site that the stela was finally brought to full view.

Two of the pyramids, the northern and eastern, support partially standing temple buildings at their summits (Figs. 23.1h,i; 23.2f,g). These are small, single-room structures built of crude masonry with rough vaults that step inward from the four sides of each room (Fig. 23.2h,i). Mixed with the crudely shaped stones of the walls are well-cut stones of Puuc type. The northern building has a single column of nicely dressed stone in its doorway; the western jamb is a single rough slab, the east jamb is a mixture of well-cut and dressed, Puuc-type stones and rough stone (Fig. 23.2g). Over each entrance, in front of the lintel, is a sunken panel, a feature typical of late East Coast architecture. At the foot of the stairway of the eastern pyramid is a large round altar with no trace of carving.

The stela, the only sculptured monument discovered at the site, unfortunately had to be photographed in the rain (Fig. 23.2k). It shows a human figure carved in low relief with a short panel of hieroglyphs to the figure's right and a full-length panel to the left. The top of the stela, carrying the head and neck of the figure and the upper parts of the glyphic panels, is broken off and was not found. The glyphs are too eroded to be legible. A fair amount of detail of the human figure, however, remains. It shows a personage with toes pointed straight outward at an angle of 180 degrees. Across his chest, from lower right to upper left, he clasps a

Ceremonial Bar. Proskouriakoff feels that the style of sculpture is similar to that of a number of the Coba monuments and that the stela can be dated stylistically in the Late Classic period, possibly around 9.9.0.0.0–9.11.0.0.0 in the Maya calendar.

As previously mentioned, the southern group lies about a kilometer distant from the ruins just described and is connected to them by a *sacbe*. About 100 m before reaching the southern end, the ancient road begins a gradual climb to a high terrace built along the northern slope of a natural ridge (Fig. 23.1). On the *sacbe*, in line with the edge of the terrace, is a round stone altar, 1.5 m in diameter, without carving. From this point southward the road climbs more steeply to the foot of the principal structure of the group, a pyramid that rises some 20 m above the terrace and 30 m more above lake level. The pyramid faces north, and at the foot of the stairway is another circular altar, 2 m in diameter, also without carving. On top of the pyramid are the remains of a small single-room temple building (Fig. 23.1k,l). There is at least one step down from the doorway to the floor of the little chamber, and on each side is a narrow tapering bench that merges with the line of the wall toward the rear of the room. The capstones of the vault, which is formed by the side walls of the room inclining inward, slope down from the rather well-shaped door lintel to the rear wall. The relatively heavy walls of the tiny room are built of crude masonry without the frequent re-use of Puuc-type stones seen in the temples of the northern group (Fig. 23.2j). Beneath the west end of the lintel, however, is a single re-used stone, a “spool” element typical of Puuc facade decoration (Fig. 23.2l).

No other standing masonry was noted here. At least a dozen more mounds make up the group, the

most notable being a large quadrangle surrounding a pyramidal mound (Fig. 23.1m). An almost level ramp approaches the latter complex from the east, crossing that side of the quadrangle and ending against what presumably was the stairway of the pyramid.

No pottery that might assist in dating the ruins was recovered at Okop. The character of the

remains, and particularly the stela, suggests that the major period of construction and of occupation of the site was Classic, probably Late Classic. The small temples on top of the pyramids of the North Group seem to be of East Coast style and presumably are of later date, as may also be the temple on the principal pyramid of the South Group.

AN ARCHAEOLOGICAL RECONNAISSANCE OF NORTHERN QUINTANA ROO

WILLIAM T. SANDERS

INTRODUCTION

One of the most important regions of the peninsula of Yucatán for the study of post-Classic Maya history is northern Quintana Roo. We know from Spanish accounts that this area, especially the northernmost part of it, was well populated at the time the Spaniards arrived and that its inhabitants were considered to be more sophisticated and cultured than those elsewhere in northern Yucatán. Lothrop's (1924) study of the architectural style of the east coast of Yucatán indicates quite clearly that post-Classic sites were numerous in the region. "Toltec" influence was evident in many sites, especially at Tulum. Actually, there is very little evidence of Classic occupation of at least the strictly coastal strip. We also know that in post-Classic times Cozumel Island ranked along with Chichén Itzá as a center for holy pilgrimages. Finally, the Spanish accounts indicate that trade along the east coast was extensive and important in the economy of the northern Maya area.

Aside from Lothrop's work and a few brief surveys by archaeologists from the Instituto Nacional de Antropología, very little serious archaeology has been done in this region and next to no excavation. We know that the majority of the archaeological remains are post-Classic but we do not have a refined chronology for this period. We do not know whether major centers, such as Tulum, Tancah, and El Meco, are contemporary with the Toltec-Chichen or Mayapán or post-Mayapán periods.

The primary objective of the 1954 field season was to obtain sherd samples from as large a number of cities as possible for cross-dating with established ceramic sequences of northern Yucatán. Secondly, data were collected on architecture, modern subsistence patterns, and site settlement patterns.

Approximately 40 sites were visited and excavated (Figs. 24.1 and 24.2). The average time spent at a site was about two days. At each place several test excavations were made, principally along the edges

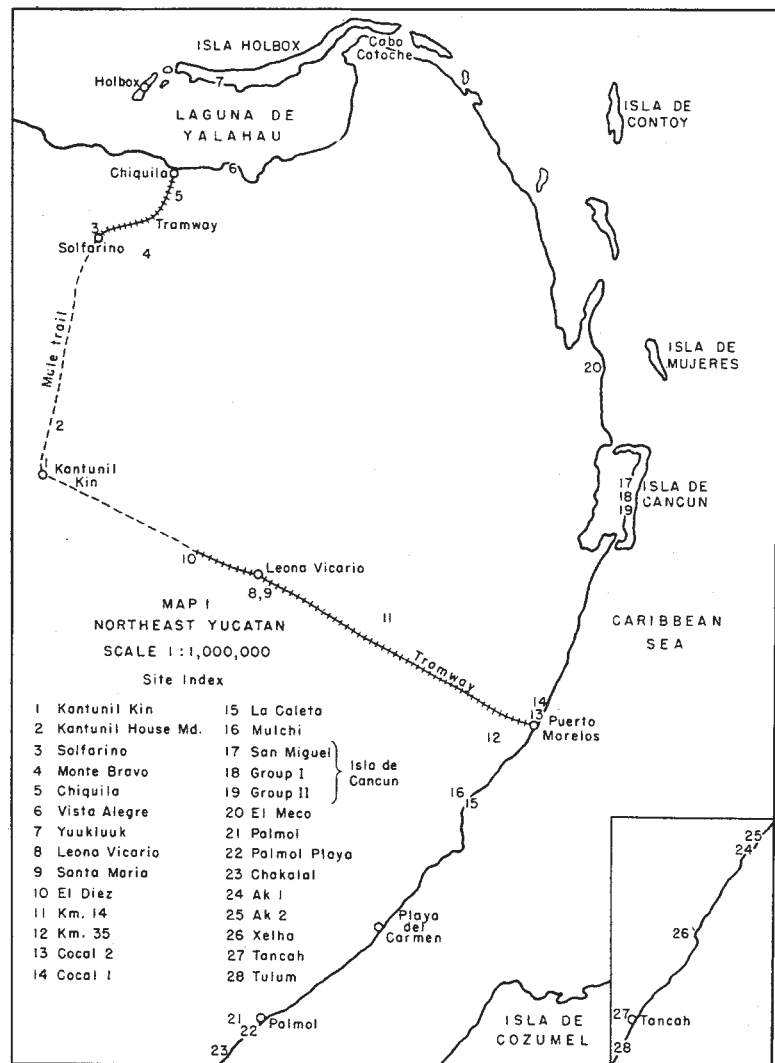
of ceremonial or domiciliary structures, or in clearing out temple floors. Our sherd samples, therefore, are in general equivalent to Ford's (1949) surface collections and only suggest mean possible datings of sites. Aside from excavations, numerous trails were cut in the forest in the vicinity of the ceremonial structures to aid us in site mapping and to give a rough idea of settlement patterns. This work was done by four or five laborers retained for the entire field season; they were taken from the village of Kantunil Kin, where the quality of labor is high. Owing to the sparse population of the Territory of Quintana Roo, it would be difficult, if not impossible, to carry on the kind of archaeology described above without using a permanent crew.

The site plans and architectural drawings do not pretend to be highly accurate. The time at each site did not permit us to make first-class plans, although at some places considerable time was spent in the mapping. Compass bearings are, with few exceptions, rough approximations.

In the first year of our study of the east coast of the peninsula of Yucatán attention was concentrated in that part of Quintana Roo north of a line from Tulum on the coast to Coba inland behind Playa del Carmen. Topographically this area is a vast plain very much like most of the state of Yucatán and obviously a continuation of the same geographical area. There are no ranges of hills or prominent elevations, but the terrain is broken and difficult to travel in. As in the state of Yucatán, there is practically no surface drainage; numerous cenotes and stretches of low areas or *bajos* form dry scrub savannas during the dry season and shallow swamps in the wet season. The soil cover is scanty; large areas of exposed rock have little or no soil.

Rainfall runs somewhat higher than at Merida but is approximately that of Valladolid and Tizimin in eastern Yucatán, between 1,000–1,200 mm a year. The vegetation in general is almost climax, and the effects of agricultural operations are slight. The forest is not impressive in either height or exuberance and looks very much as a climax forest would appear in the state of Yucatán if not heavily exploited by slash-and-burn cultivators.

In stonier sections or in the savannas there is a sparser, more stunted scrub forest cover. True grass savannas are rare. It is my impression that this part

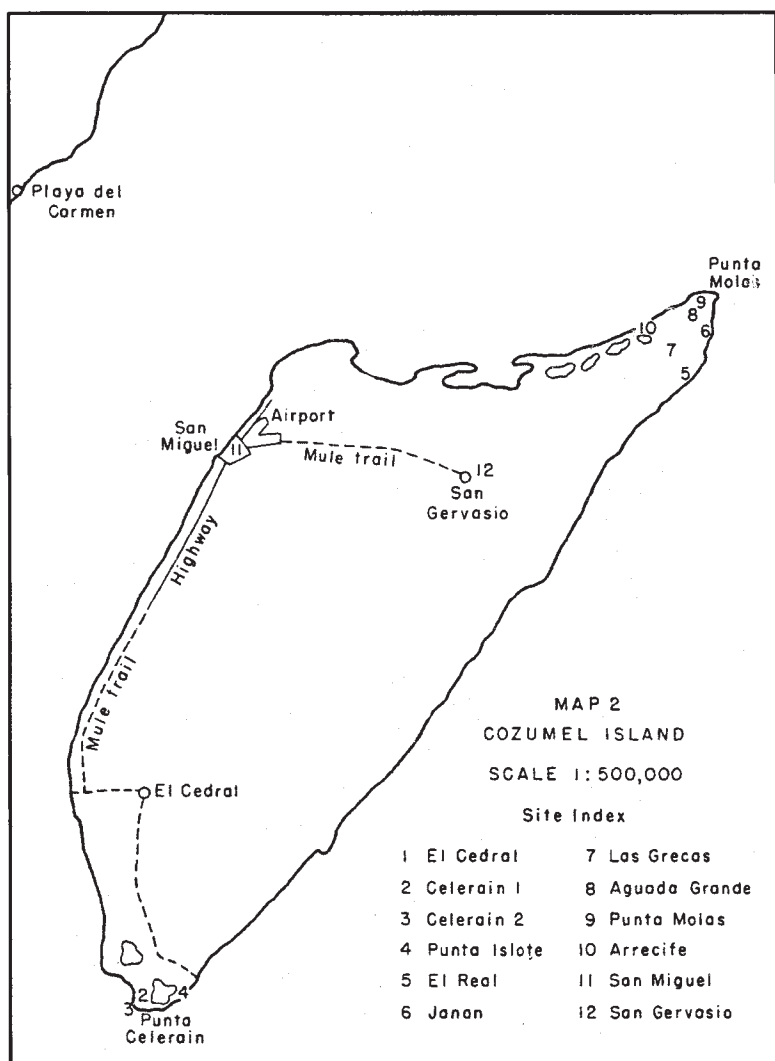


24.1.

Map of Northeast Yucatán, Showing Archaeological Sites Visited, 1954.

of Quintana Roo is simply an extension, climatically, topographically, and botanically, of the state of Yucatán and that the differences in height and exuberance of vegetation are the result of the differing intensity of human alteration of the landscape through slash-and-burn agriculture.

Most of the open coast of northern Quintana Roo is paralleled by sandy beach, used for coconut cultivation. Behind this strip of sand lies a narrow swampy backwater lagoon, occasionally a kilometer wide but usually less and exceedingly difficult to cross. The general elevation of inland Quintana Roo does not vary much except for a sharp drop to this swampy coast. At Puerto Morelos, for example, the land drops 30 m in 0.5 km. The sandy beach backed by swamps is interrupted at intervals by steep lime-



24.2.

Map of Cozumel Island, Showing Archaeological Sites Visited, 1954.

stone bluffs projecting into the sea or by low extensions of surface rock. The latter are often sculptured by the sea into beautiful rock-lined bays. Where the coast is protected by long sandy islands, the lagoon shores behind these islands are usually bordered by mangrove swamps and lack sandy beaches (e.g., Laguna de Yalahau behind Isla Holbox, Laguna de Nisuc behind Isla Cancun).

In the region under discussion, an area of approximately 17,000 km², the total population in 1940 was under 6,000. The region is divided into two districts, Isla Mujeres and Cozumel, each governed by a delegate appointed by the governor at Chetumal. Each settlement of any size within a district has a sub-delegate, also appointed by the governor, who is responsible to the delegates residing at

Isla Mujeres and Cozumel. In this large area the only sizable villages, with their respective populations, are: Cozumel (2,085), Puerto Morelos (63), Playa del Carmen (89), Isla Mujeres (557), Leona Vicario (386), Solfarino (156), Chiquila (152), and Holbox (286). The rest of the inhabitants live in tiny chicle depots, lighthouses, or coconut plantations.

Transportation facilities in most of this area are almost nonexistent. Even mule trails are rare and connect only a fraction of the settlements. Villages and lesser habitations nearly all lie along the coastal strip, the only section where industry (fishing and coconut growing) is developed; only three permanent settlements stand in the entire inland zone between Kantunil Kin and the two coasts. Kantunil Kin, an excellent jumping-off spot for the interior by way of the few mule trails, is a small agricultural village, where both Maya and Spanish are spoken, situated almost exactly on the border between Yucatán and Quintana Roo. Today there is a good dirt road with daily bus service connecting Kantunil with Tizimin. From Kantunil Kin two mule trails lead into the interior (Fig. 24.1). One runs north to the village of Solfarino, 8 leagues or 32 km away, and is passable by jeep its entire length. From Solfarino to Chiquila a typical hacienda type of tramway, about 4 leagues long, completes the route to the north coast. The other mule trail goes

east for 7 leagues to join a tramway at El Diez, so called because it lies 10 km west of Leona Vicario. One difficulty in locating sites in the report of Escalona Ramos (1946) lies in his use of the kilometer numbers. Leona Vicario, the ancient Santa Maria, is considered Kilometer 0. From Leona westward the kilometer numbers run from 1 to 10, ending at El Diez; from Leona eastward the numbers run from 1 to 42, ending at Puerto Morelos. I shall locate sites by kilometer numbers.

The federal government has under construction a highway from Valladolid to Puerto Juarez, opposite Isla Mujeres, which should afford good transportation to interior northern Quintana Roo. Along the coast a few short roads have been built by coconut plantation owners for managing their holdings. The only one of interest to archaeologists is that which runs from the hacienda headquarters at Tancah south to the ruins of Tulum and a little

beyond. To the north it reaches a point 2 leagues from the Bay of Xelha. On Cozumel Island travel is similar to that on the mainland. A dirt highway runs from Cozumel to a bay, now a bathing resort, 6 km south and also runs north of Cozumel 4 km or so to the airport and the bathing resort of San Juan (Fig. 24.2). From this bay south of Cozumel is a mule trail which runs to El Cedral and Punta Celerain, the southern-most tip of the island. Another mule trail connects Cozumel with a series of cattle ranches (Santa Rita, San Gervasio, and San Severo) in the center of the island.

Aside from land transport most of my travel on the coast was accomplished by combination motor and sail boats. A regular boat service connects Progreso to Chetumal, making stops at Holbox, Cabo Catoche, Isla Mujeres, Puerto Morelos, and Cozumel. Boats may be rented at Holbox, Isla Mujeres, and Cozumel.

DESCRIPTION OF ARCHAEOLOGICAL SITES

NORTHERN INTERIOR SITES

Eight sites were excavated in what may be called northern interior Quintana Roo; that is, inland at least 4 km from the beach. One of the sites is at Kantunil Kin, two are in the vicinity of Solfarino, and four lie along the tramway from El Diez to Puerto Morelos (Fig. 24.1). The eighth is probably a separate single-mound site of the big center at Kantunil Kin.

KANTUNIL KIN. With the exception of Tulum, this was the largest site worked during the field season. Escalona Ramos wrote a fairly good, general description of the ruins and took a number of measurements. The main plaza is a block north of the modern plaza in Kantunil Kin. It seems almost entirely Classic, with buildings dating from Early Classic times. I translate what Escalona Ramos (1946:547) says: "The principal group is formed by five mounds around a plaza 120 m by 180 m. The largest are on the north side; one is 70 m on a side and 20 m high, and the other measures 35 m on a side and 15 m high. . . . The mound on the west side is 45 m by 20 m at the base by 3 m in height. That to the south is 140 m by 100 m and 4 m high at the corners; it [the plaza] has the form of a horseshoe open to the east. . . ." Actually, his south mound is on the east side of the plaza and the open end is toward the south.

He (Escalona Ramos 1946:548) describes another site which he calls Oxlalanul, 1 km east of the village, but it is without doubt a secondary group of the first-mentioned site. The architecture is the same, and the intervening area, very small, is occupied by

a number of small mounds, all of which indicate a single site. This second group includes two large buildings, one a high temple-pyramid, connected by a sacbe or causeway.

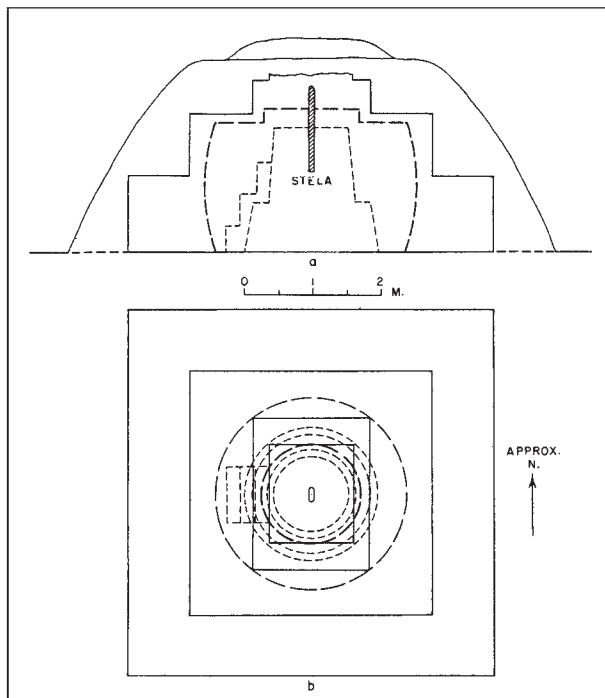
Scattered through the forest near these two groups are at least 20 small conical mounds averaging 2–5 m in height. One was partially excavated and revealed a succession of superimposed structures (described below). A careful examination of trails and cleared areas in the vicinity showed that house mounds are practically nonexistent and that surface pottery is very rare.

The condition of the major buildings is poor. Stone robbing is rapidly reducing them to piles of rubble. No standing walls or vaults were seen. There seem to be three principal types of structure: (1) large pyramidal mounds with vaulted temples on their summits, (2) large low platforms, probably bases for domiciliary structures, built of perishable materials, of the ruling class, and (3) small temple platforms or open-air altars. The quality of stonework, which might be classified as rough block masonry, is from poor to fair, never really fine.

A single isolated house mound was located in a milpa about 6 km north of the village and about 1 km east of the main road from Kantunil Kin to Solfarino. Several pits excavated at the base and on the floor of this house mound produced a sherd sample. A test trench made at the east edge of the west mound of the main plaza gave very little result.

The major excavation at the site was made at one of the small conical mounds about 500 m northeast of the main group. This mound, apparently one of the few not badly destroyed by villagers, was a roughly circular heap of stone about 3 m high. Trenching into the south slope revealed a succession of buried buildings: first a rectangular, three-terraced, white-coated platform; then within this, a single-terraced round platform with a round altar-like elevation on top; and finally within this, a smaller, two-terraced round platform (Fig. 24.3). Both of the inner round platforms were covered by a coat of black paint. The form of the outermost platform was not determinable but there seems to have been a small stone temple on its summit.

Figure 24.3 shows the form and measurements of the structures. The stairways on the rectangular temple platform and the outer round structure were not located in the excavation but that on the innermost structure was discovered during clearing of the west side. Of especial interest was the flat stela-like stone on top of the inner round building, its base deeply set in the building. The construction of these platforms was quite simple. The fill was a solid mass of limestone chunks mixed with cement mortar. A

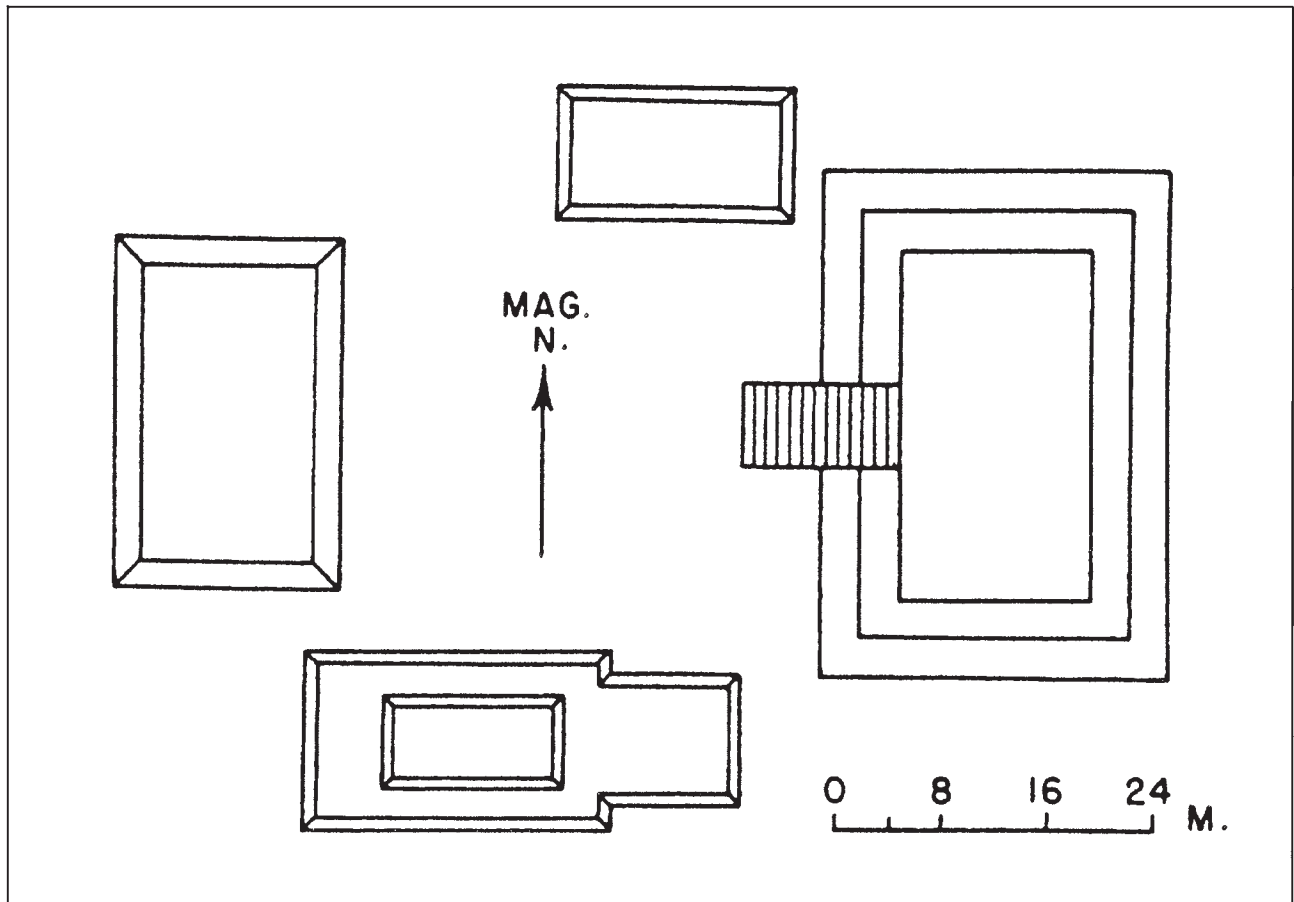


24.3. Kantunil Kin, Excavated Mound.
a. East-west section. b. Plan.

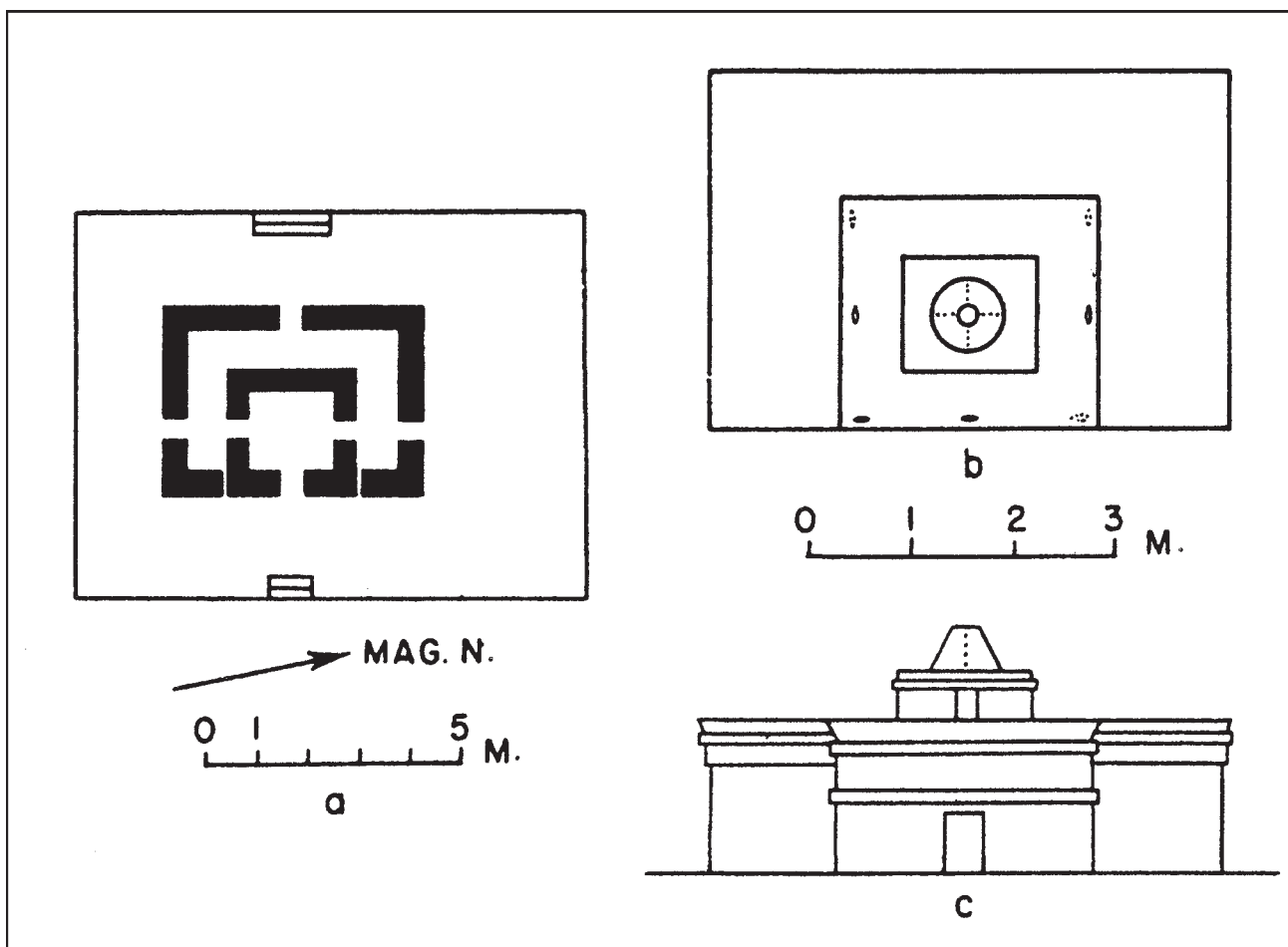
cap of smaller stones and mortar leveled the top of a platform. The walls were faced with roughly hewn blocks covered by a thick cap of mortar.

Small sherd samples were obtained from the inner construction of all three of the buildings. Preliminary study of the sherds indicates that all buildings are Early Classic, Tzakol-like painted pottery occurring in each lot.

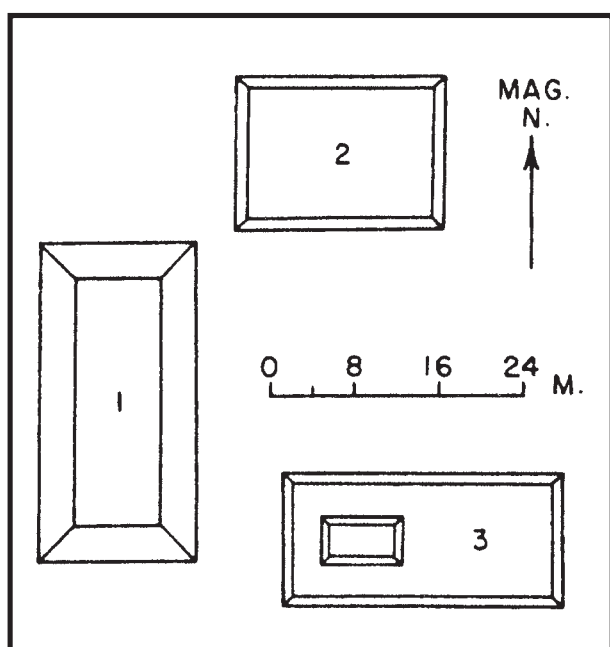
MONTE BRAVO. Situated 2 leagues (8 km) east of Solfarino, this site consists of half a dozen good-sized mounds of peculiar form. The local villagers refer to the area, which they cultivate intensively in milpas, as Monte Bravo because of the height of the forest. The trail is permanent and well defined, and the mounds lie within 100 m of it. The surrounding area is covered by grassland. About 50 years ago the forest was cleared off and grass sown for cattle pasture, which, later abandoned, eventually reverted to forest. A few years ago a forest fire destroyed the new forest, but the dormant grass seed sprouted and took over so completely that the old grassland returned in full strength to over a meter in height.



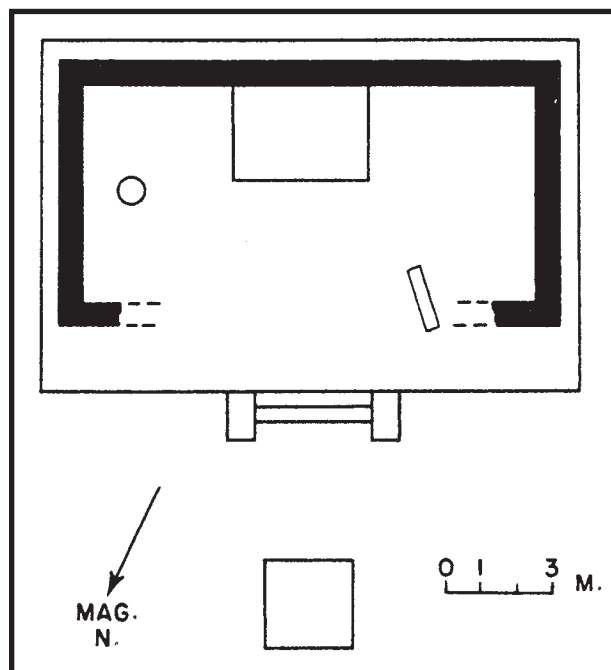
24.4. El Diez, Plan of Site.



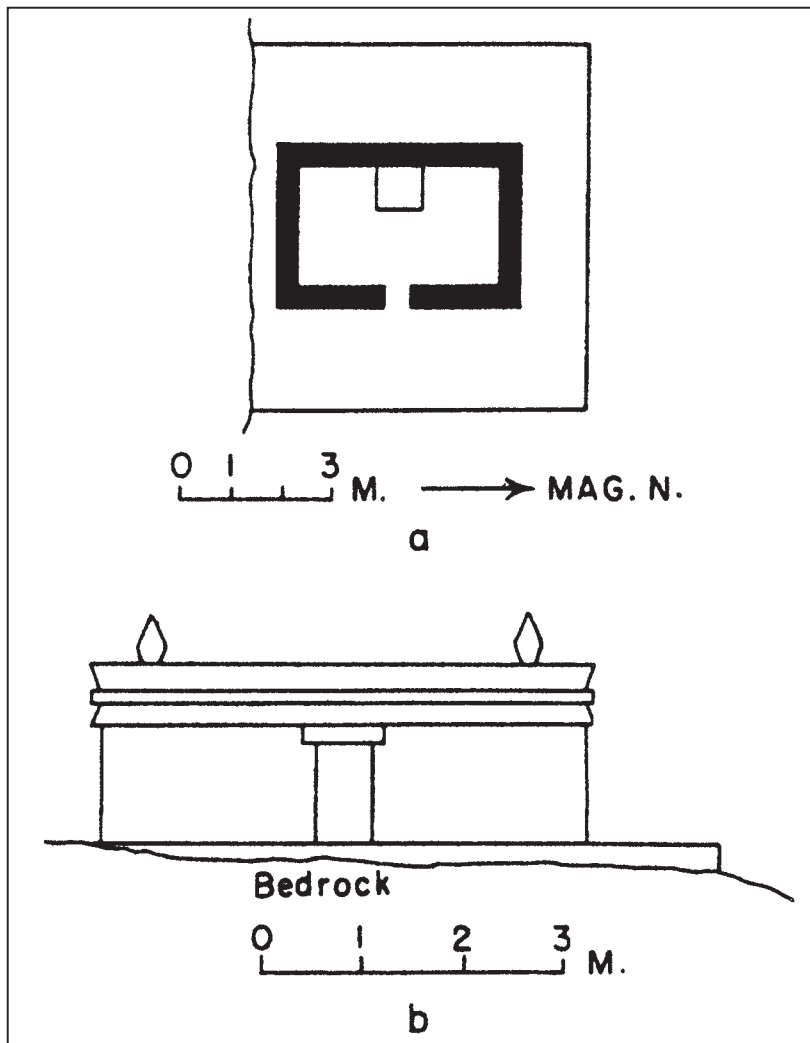
24.5. Punta Islote, Temple of the Four Directions.
a. Plan. b. Roof plan. c. West elevation.



24.6. Leona Vicario, Plan of Site.



24.7. Yuukluuk, Plan of Temple.



24.8. Janan, Temple 2.
a. Plan. b. Façade elevation.

The mounds are scattered through the grassland. There are no pyramids. Four large mounds, averaging 60–70 m long and 15–20 m wide, are low extensive platforms with curious hilly elevations on one end, a type I have not seen elsewhere in Yucatán but common in Vera Cruz. Half a dozen or so smaller platforms complete the group.

Trenching along the base of one of the large mounds and a small one revealed abundant pottery, about 0.5 m deep.

SOLFARINO. This very small site, about 1 km north-northwest of the village, consists of two small pyramidal mounds some 50 m apart. The larger one is about 3 m high with a summit area of 10 m north-south by 5 m east-west. The basal measurements are 20 by 13 m. The front of the mound was probably on the east. No construction details are observable;

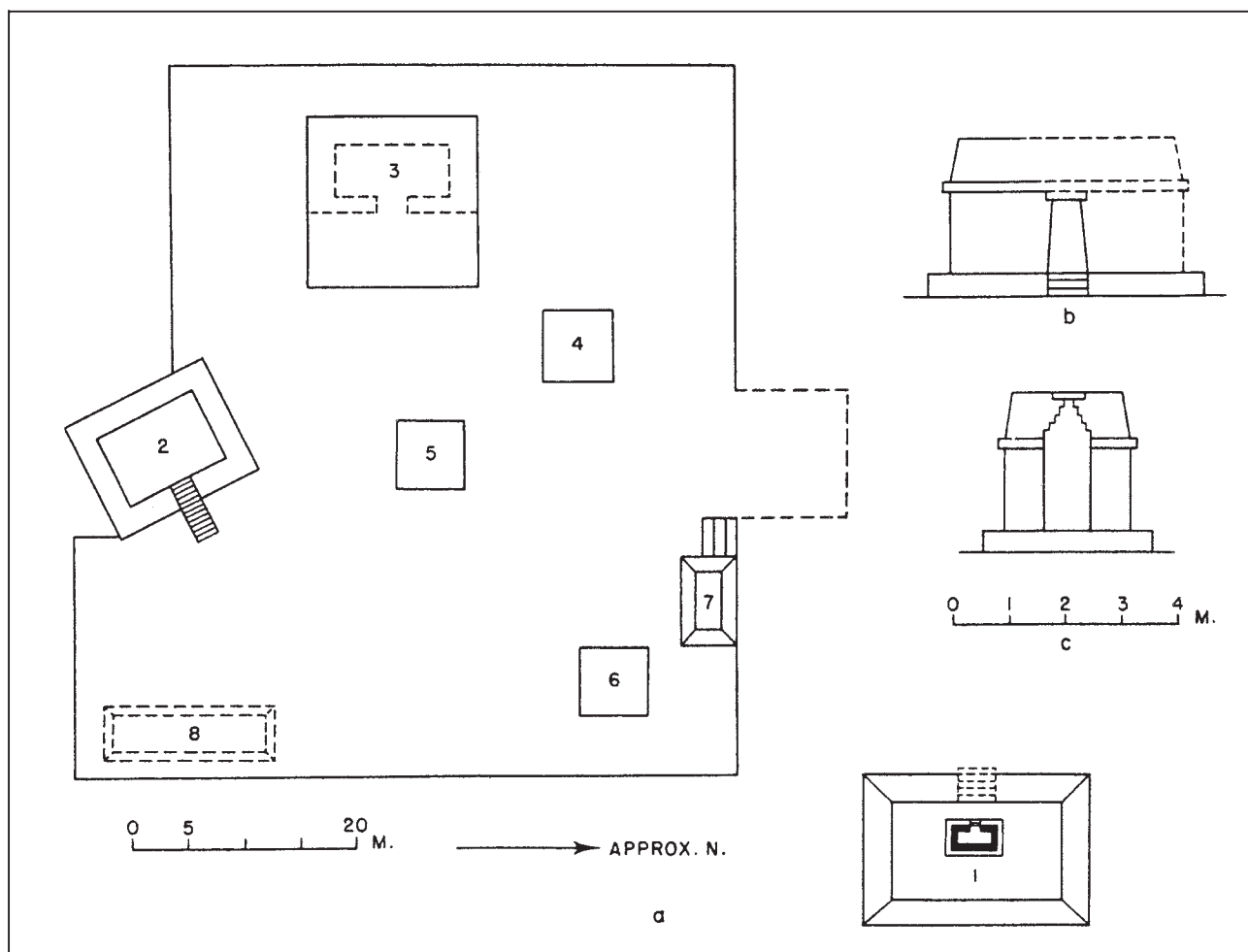
there are traces of a structure on the summit but it is almost completely destroyed. A test trench along the base of the west side revealed sherds in heavy concentration.

LEONA VICARIO. In searching for the site named Santa Maria by Escalona Ramos, I discovered a smaller site, which I shall call Leona Vicario, the modern name of the old center of Santa Maria. Situated about 1.5 km south-southeast of the village and about 100 m west of a large aguada, it consists of a small ceremonial center of three structures (Fig. 24.6) grouped around a plaza, which opens to the east. Mound 1, a pyramid 3 m high and about 30 by 15 m at the base, encloses the plaza on the west side. On top were traces of a temple but no standing walls were left. Mound 2, on the north side of the plaza, is a 1 m high platform about 20 m east-west by 15 m north-south. Mound 3, on the south side of the plaza, is a platform 0.50 m high and 26 by 13 m at the base. The plaza extends some 23 m north-south. Scattered in the surrounding bush are a dozen or so low platform-like mounds. I thought them house mounds at first but trenching along the edges of two of them revealed so little cultural debris that their purpose is uncertain. Several small excavations were also made along the

bases of the three main structures. The sherds were scant.

SANTA MARIA. Since Escalona Ramos, who discovered and named this site, gave an adequate description and plan for preliminary work, I attempted nothing further beyond cutting trails through the surrounding forest. I found only one possible house mound.

Escalona Ramos' description of the site (1946:546) is here translated: "The group is formed by a rectangular platform and two mounds with remains of small buildings on top and stairways on their east sides. The three structures are grouped around a plaza. The buildings are simple rooms, with doors to the east. That to the east has fallen, that to the west lacks the south-west corner. The exterior measurements [of the latter] are 2.45 m by 2.05 m; the



24.9. Kilometer 14.

- a. Plan of site. b. Façade elevation of temple on Str. 1.
c. Section of temple on Str. 1.

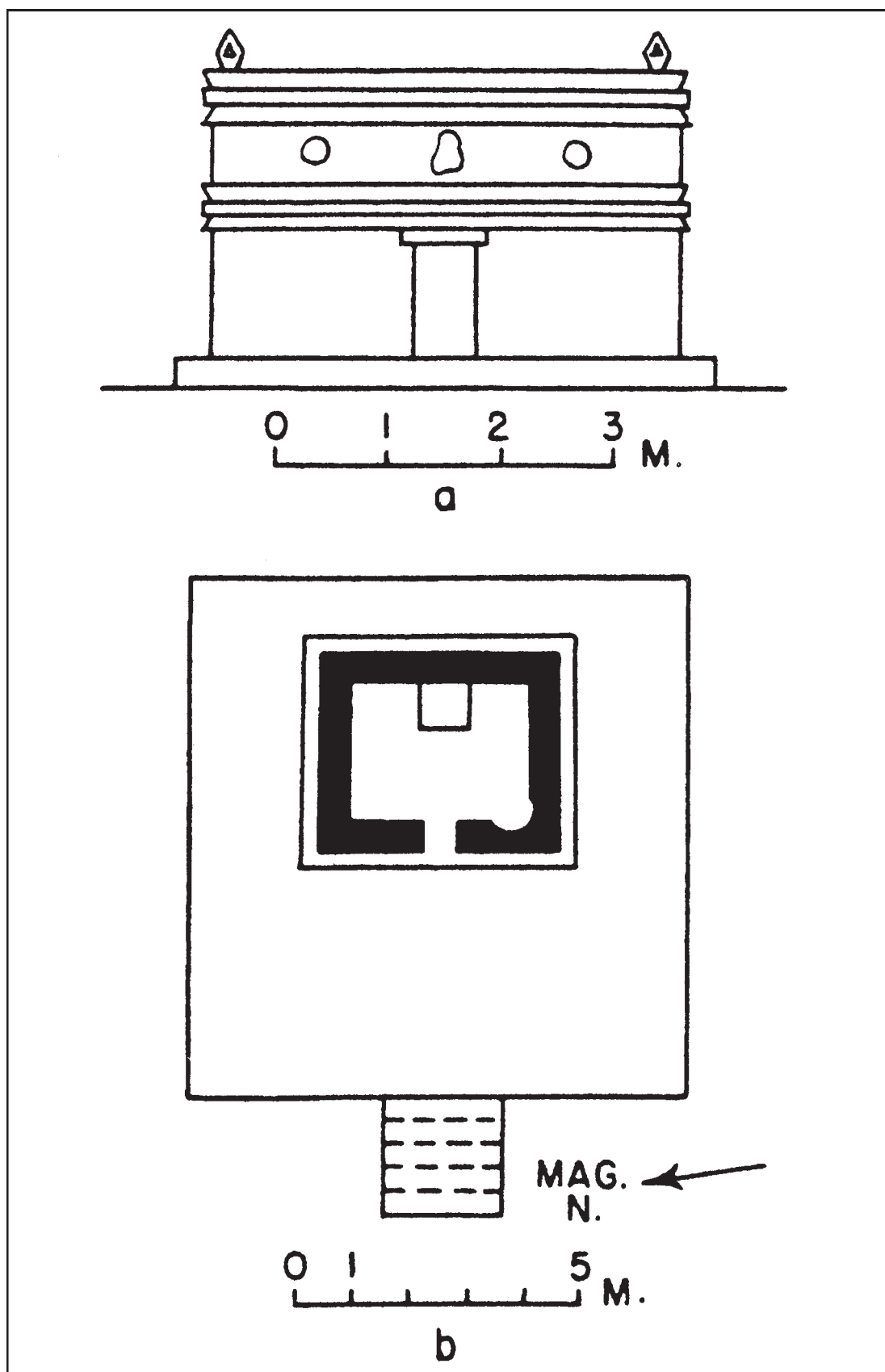
doorway is 0.40 m wide and 1.05 m high; the thickness of the walls is 0.45 m and the roof 0.40 m; the total interior height is about 1.55 m; the arch is of the Maya stepped oval type. These buildings are on a platform which extends 0.90 m on all sides. To the north and south extend other ceremonial platforms about 6 m in length. The mounds, which are 30 m by 20 m, appear to have been constructions of four terraces each about 1.5 m high. The width of the stairways is about 2.5 m and the distance between the two mounds is about 10 m.

"The rectangular platform which encloses the plaza on the north side measures 24 m by 22 m and is separated from the mounds by 25 m; its height is about 1 m. In front of it there are, facing the plaza and 2 m away, 3 small quadrangular altars about 2 m square."

Today, the buildings atop the two pyramids and the three small altars are completely destroyed; the

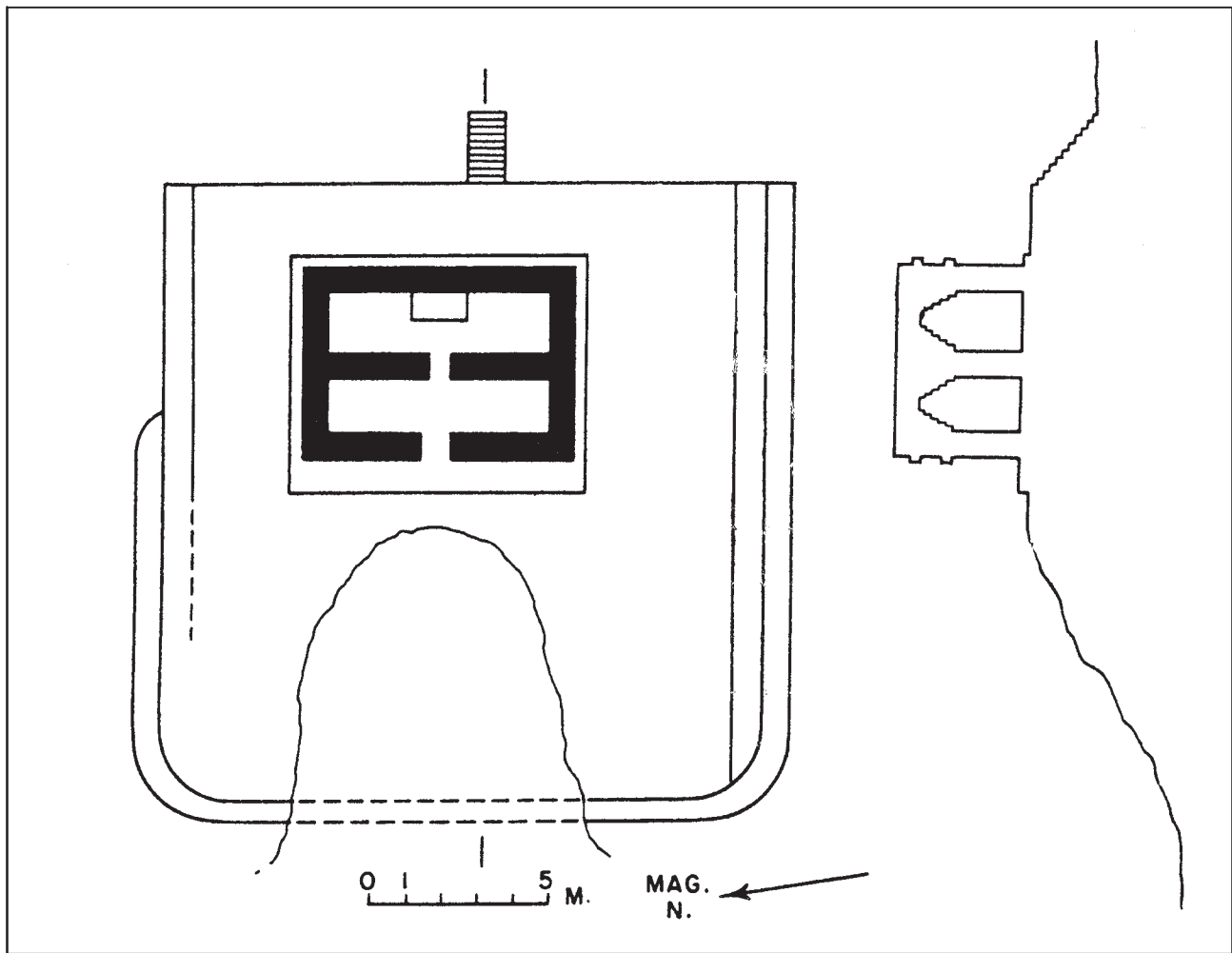
stairways are in ruin. The quality of construction is very much like that of Kantunil Kin. The soil cover is scant, in many places scarcely 10 cm; cultural debris is very rare. Some 200 sherds were picked up in half a dozen excavations in and around the main plaza.

KILOMETER 14. Escalona Ramos (1946) mentioned but did not visit this site. It lies at the end of a well-established milpa trail which runs 2 km due north from the tramway at Kilometer 14, or 14 km east of Leona Vicario. Its condition is poor. Standing structures, with one exception, are mere pyramid bases or low platforms; even these are only heaps of stone. The central group comprises one moderately large pyramid base and a very extensive low platform surmounted by a small pyramid, a fair-sized low platform, and a number of small mounds (Fig. 24.9a). No house mounds or smaller mounds



24.10. Punta Molas.

a. Façade elevation of temple. b. Plan of temple.



24.11. El Real, Plan and Section of Temple.
a. Plan of site. b. North view of site.

were located nearby. Very little worked stone was observed, and the construction of the platforms and pyramids is of very poor quality. On top of the larger pyramid, apparently a single-terraced platform about 4 m high, approximately a third of the walls, including one corner, of the summit temple is intact. It was evidently a vaulted one-room temple of simple plan and design (Fig. 24.9b,c). The entire floor of this temple had been broken through and excavated, numerous sherds being found in the debris from the excavation. The plaza is littered with stones from the surrounding structures. Most of this destruction was done in recent years by *milperos* looking for buried treasure. The smaller pyramid is in better condition, although its temple is completely gone. The stairway is in generally good shape, and the outlines of the two terraces are still clear.

Test trenches were made at the foot of the stairway of each pyramid, and from the debris from the

excavated floor of the temple a good sherd sample was culled.

EL DIEZ. From this terminus of the tramway at Kilometer 10, 10 km west of Leona Vicario, excellent milpa trails lead north and south. The site lies at the end of the south trail, about 700 m from the terminus. The main group is a 28 m square plaza completely surrounded by buildings (Fig. 24.4), now only platforms and pyramid bases, for no stone temples are intact. On the east side of the plaza stands the principal structure, a three-terraced pyramid, about 4 m high, 26 m north-south by 15 m east-west at the top, 50 by 22 m at the base. The stairway, partially intact, faces west to the plaza. The other three structures are low platform mounds, the west one measuring 26 by 17 m, the north 18 by 10 m, the south 33 by 13 m. They rise 1–1.5 m. Several of the terrace walls of the north platform are still intact on its plaza side.

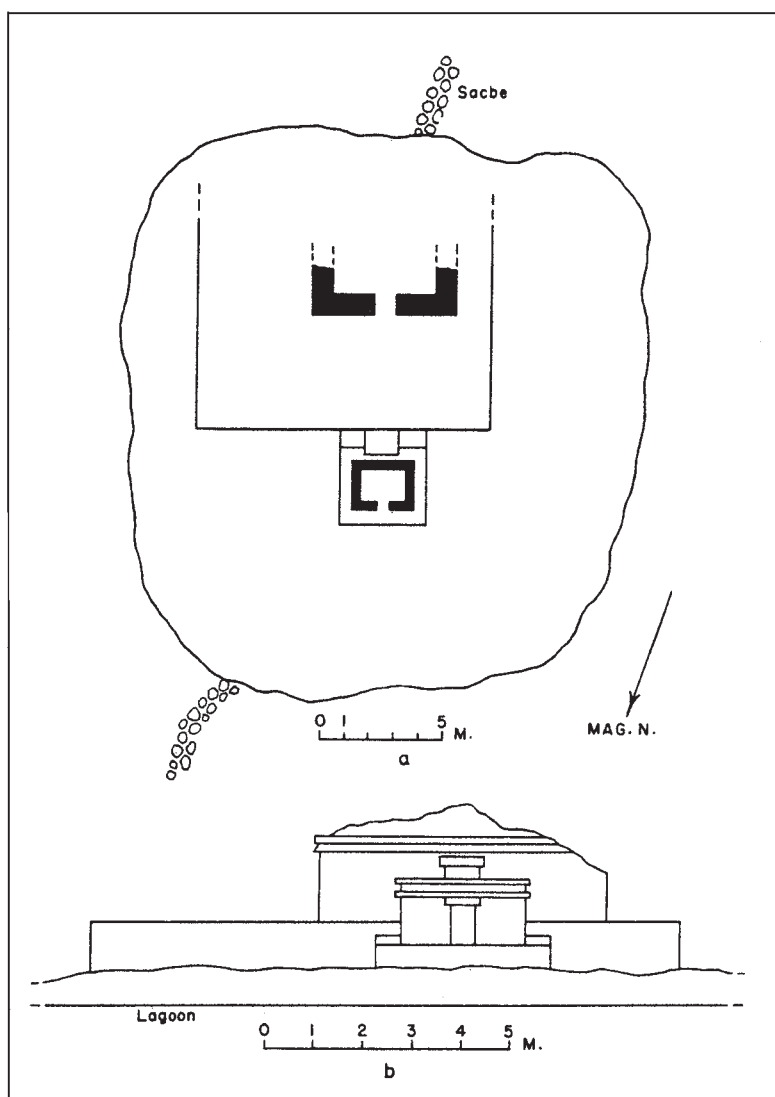
Trail cutting in the neighborhood and examination of nearby milpas failed to reveal any house mounds, smaller ceremonial structures, or surface accumulation of pottery. Several small pits, dug on the plaza side along the edges of the main pyramid and the north and west platforms, produced a good sample from the main pyramid.

SUMMARY. Of these eight sites very little can be said about their architecture, with the possible exception of Kantunil Kin. Practically no standing temples were found; at Kilometer 14 a badly mutilated fraction of the original structure is visible. Construction is very poor; the pyramids and platforms are formed of limestone chunks and mortar faced with roughly cut stone blocks. Except Kantunil, the sites, all in bad condition, are very small and individual buildings unimpressive in size. No stone sculpture, ball courts, or inscriptions were found. Good ceramic samples were obtained from Kantunil Kin, Solfarino, Monte Bravo; fair samples from El Diez and Kilometer 14; and poor ones from Leona Vicario and Santa Maria. The study of stratigraphy was limited to Kantunil Kin, where an excellent succession of building levels was defined.

NORTH COAST SITES

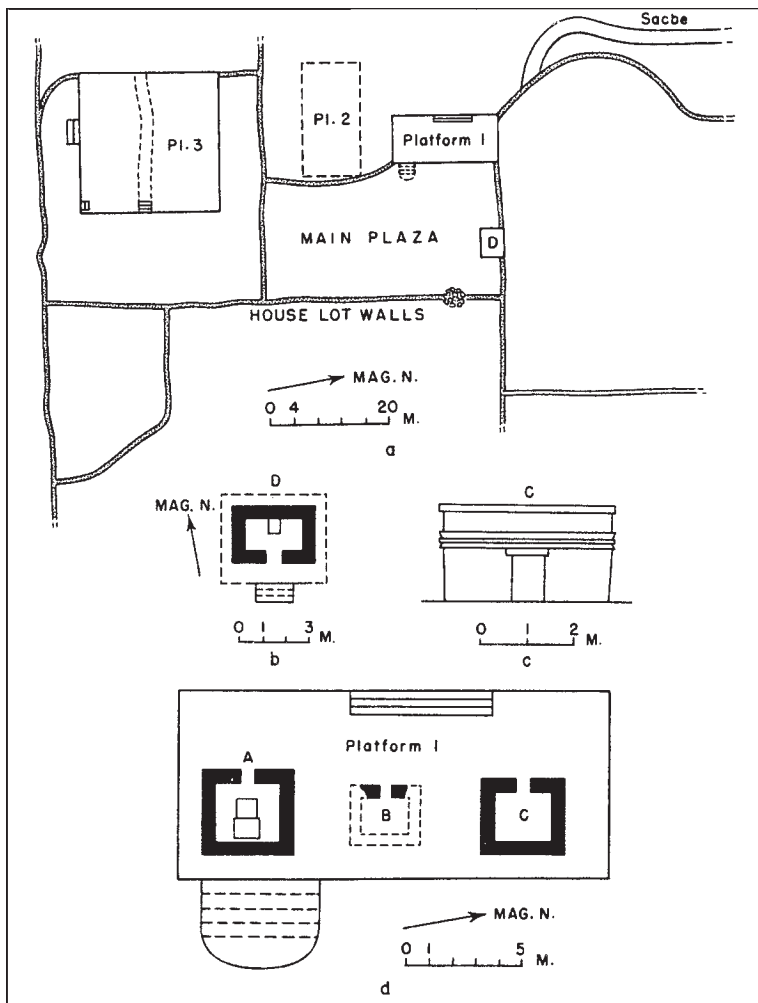
The three sites examined along this coast were situated either on or within 2 km of the shore of the Laguna de Yalahau (Fig. 24.1). Careful questioning of fishermen at Chiquila failed to suggest other sites, although the villagers rarely have a good knowledge of land beyond 100 m or so of the beach. It seems almost certain that the conquest period site of Conil is along the south shore of this lagoon, the west entrance to which is called on modern maps the Boca de Conil. Vista Alegre may be this site.

VISTA ALEGRE. Named after a headland about 5 km east of Chiquila on the south shore of the lagoon, the site begins some 50 m behind a mangrove swamp, which borders a small inlet just east of the headland. It is covered by a low dense spiny thicket of hardwoods that permits only a general impression of size and appearance. Five or six trails were cut through the scrub to locate mounds, which had been robbed



24.12.
Arrecife.

of stone for construction of the Holbox lighthouse. The largest is a pyramid, 12–15 m high, which dominates the entire lagoon and is called locally El Cerro de Vista Alegre. Scattered through the thicket were at least three smaller pyramids, 3–5 m high, and a very extensive low platform which may have served as the base of the cacique's palace. A dozen house mounds were counted and there were probably more, all of good size (one tested for sherds measured 12 by 18 m) and undoubtedly house platforms of well-to-do individuals. No intact buildings were seen, only platforms and pyramids. Special features such as columns or vaulted roofs were not noted. The stairway of the main pyramid may have been on the east side but this could not be determined by surface observation.



24.13. Aguada Grande.

a. Plan of site. b. Plan of Temple D. c. Façade elevation of Temple C. d. Plan of Platform I and associated temples.

Surface indications of pottery, like the house mounds, are fairly frequent, all pointing to the existence of a true town. The size of the house mounds suggests that it was not an agricultural or a laboring-class settlement but probably a merchant community.

A test pit at the base of one of the house mounds turned up sherds in great quantity to a depth of 1.5 m.

YUUKLUUK. This site is on Isla Holbox off the north shore of the lagoon almost opposite Vista Alegre. Questioning did not bring to light any other sites on the island, a curious fact because Holbox is one of the largest islands off the Yucatán coast (exceeded only by Cozumel) and most coastal islands have fairly extensive ruins. Almost the entire island is given

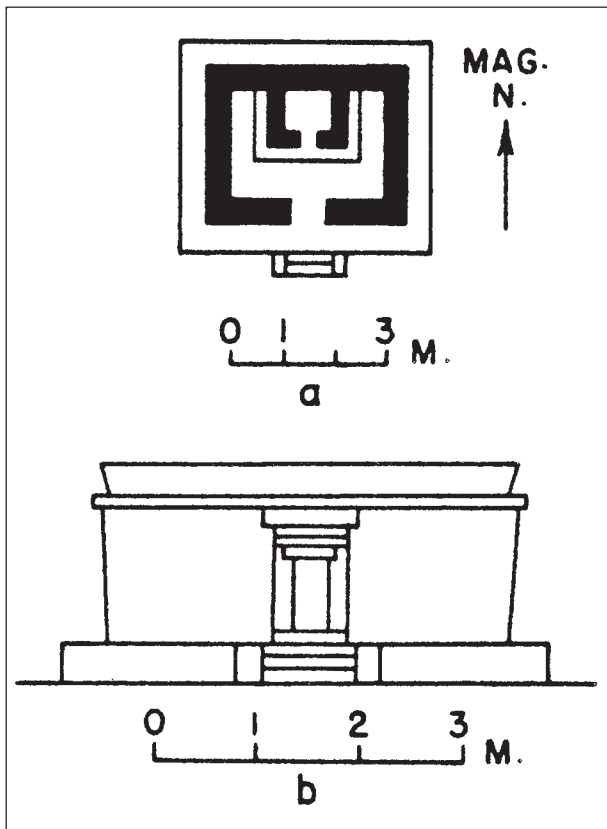
over to coconut plantations, and our information is therefore probably fairly accurate. The ruins consist of a small shrine, of which only incomplete walls and floor remain (Fig. 24.7). It is closer to the lagoon side of the island than to the seashore but faces north to the sea. The building was drawn, and minor excavations were made to clarify its ground plan and to obtain sherds. The temple, 7.25 m north-south and 14 m east-west (exterior), comprises one room. Only the lower parts of the back and side walls remain. The roof, undoubtedly a flat, beam-and-mortar affair, was evidently supported by columns, as the presence of a broken column base and a fallen column testify. One piece of a molding, fallen at the base of the west wall, was discovered and photographed.

An altar, 3.8 by 2.6 m by 0.7 m high and set against the center of the back wall, was found during the clearing of the floor debris. The temple or shrine, like most coastal shrines, is on a low platform, 0.6 m high, ascended by two steps. In front of the platform and aligned with its steps is a small altar-like platform (Fig. 24.7).

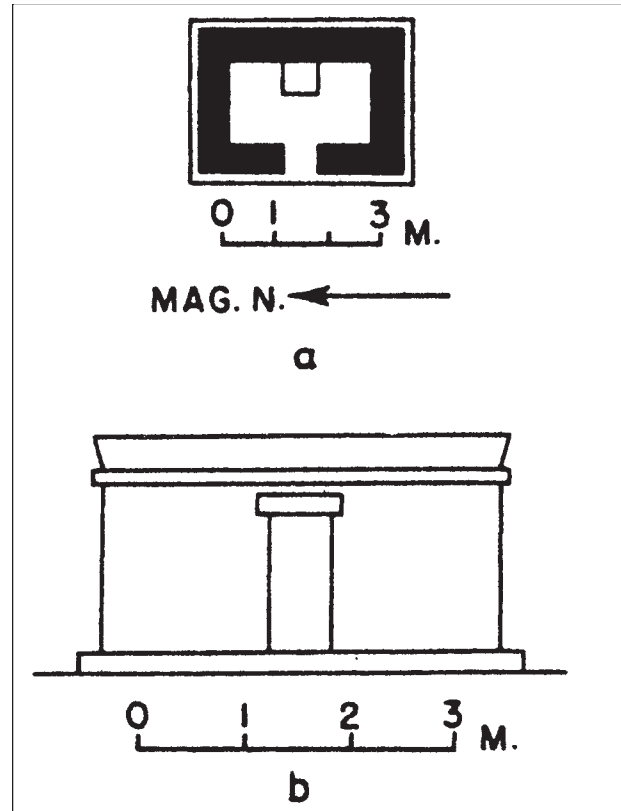
The quality of stone cutting was fairly good, certainly superior to that at Kantunil Kin and other inland sites. An interesting feature of construction here is the insertion of conch shells in the masonry.

The floor of the temple and the platform steps were cleared of debris, from which came a good ceramic sample, almost 100 per cent red censer ware.

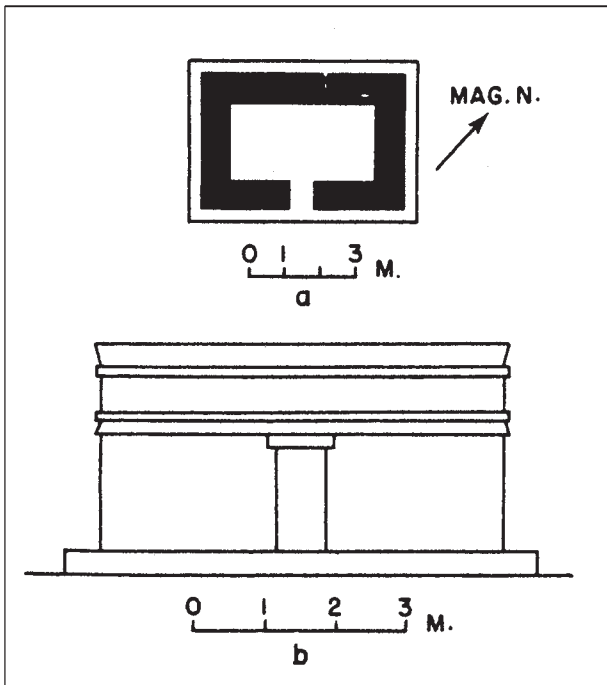
CHIQUILA. This site is easily located because one of its four largest structures is but 50 m west of the tramway about 2 km south of Chiquila. Three of the four structures, although not grouped around a central plaza, form a cluster, all within 300 m of the rail line. Mound 1, first mentioned above, is the smallest and most mutilated by stone quarriers. The original height of this pyramid was probably 5–6 m. About 300 m southeast and 150 m east of the tramway is the largest structure of the cluster, the Great Platform. This is an extensive single-terraced, straight-walled platform 79 m north-south and 68 m east-west at the top and some 7 m high. On top are two pyramidal mounds, one 5 m high and set along the western edge, the other about 3 m high and almost in the center. Both have been reduced to rubble, and no construction details can be ascertained without excavation. About 150 m northeast of this platform



24.14. Ak 1.
a. Plan of temple. b. Façade elevation of temple.



24.15. Ak 2.
a. Plan of temple. b. Façade elevation of temple.

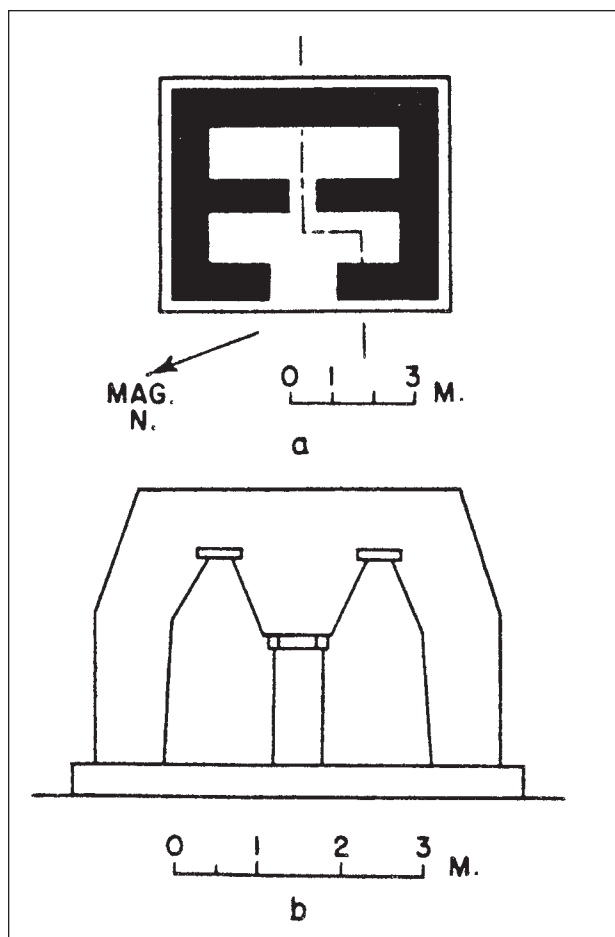


24.16. Chakalal.
a. Plan of temple. b. Façade elevation of temple.

is Mound 2, a large pyramidal structure some 12 m high. We were told of a fourth structure, similar in size and type to Mound 2 and called locally El Cerro de Dolores, about 2 km west of the tramway but we did not visit it.

Extensive trail cutting revealed several smaller structures north of the Great Platform. One is about 50 m distant and another 100 m, both being small conical mounds about 2 m high. A low platform is just south of the Great Platform. No standing walls, vaults, or columns were noted.

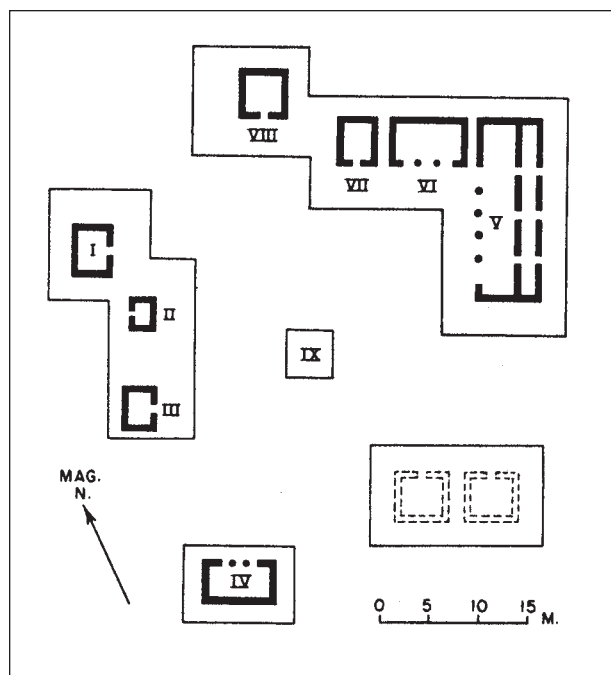
In test pits dug at the base of the front of the two temple platforms or pyramids on the Great Platform a layer of topsoil shifted abruptly to a mass of small stones which had formed the upper floor cap of the construction of the Great Platform. Below this cap the platform fill is composed of large limestone chunks. A sharp distinction in sherd types occurs between those obtained from the topsoil and those from inside the platform construction. The former are almost 100 percent a red effigy-censer ware typologically very close to the buff censer ware from Mayapán, whereas the latter tie in closely with our Classic sample from Kantunil Kin. The test trench at the base of the larger of the two pyramids pro-



24.17. El Cedral, Temple 1.
a. Plan. b. Section.

duced an extraordinary amount of the censer ware. Immediately below this concentration (from the topsoil layer) the sealed mouth of a chultun-like structure was uncovered. It was cleaned out and the floor excavated. A succession of three floors was found below the chultun floor; below this lay the large uncut stone fill of the platform. The chultun was almost empty of cultural debris, and very few sherds turned up from it or from the floor levels below it. The capstone was just about at the junction of the topsoil and the small-stone levels. The opening was 0.4 m in diameter. The floor, about 1.5 m below the capstone, was 0.50 by 0.62 m; greatest horizontal dimensions, 0.72 by 0.91 m, were about 0.72 m above the floor. The walls were built of loose interlocking stone blocks forming a corbelled dome capped with a single stone slab. The floor levels below the chultun floor were 1.66, 1.75, and 1.88 m, respectively, below the capstone.

A test pit at the foot of Mound 2 also gave a fair pottery sample.



24.18.
Mulchi, Plan of Site (after Escalona Ramos).

COZUMEL ISLAND SITES

Twelve sites were examined here (Fig. 24.2). Cozumel Island was a very important religious center at the time of the conquest, being described by the Spaniards as a sort of aboriginal mecca. It has an abundance of small sites; besides the 12 visited, at least seven others are mentioned in the literature and there are undoubtedly many more. The amount of archaeological remains seems far beyond what the economic resources of the island could have supported. Probably the ancient inhabitants, as do the modern ones, made use of the shore waters and nearby mainland coast, and particularly the "tourist trade."

In the southern part of the island four sites were inspected. A fifth, Cinco Puertas, described in the files of the Instituto de Antropología, was not visited.

EL CEDRAL. These ruins have been mentioned several times in the literature. The principal building, Temple 1, is in the center of the modern village of El Cedral, now almost depopulated. It is a two-room temple, one of the largest standing buildings on the island, and looks Classic in date. Sharing a low ancient platform with a modern church, it is now a jail, with the front entrance widened. Its two rooms, one directly behind the other, each measure about 1.3 by 4.6 m (Fig. 24.17a,b). The doorway into

the back room is 0.65 m wide; the walls average 0.85 m thick. The entire structure gives an impression of solidity and simplicity; the masonry is of well-cut stone blocks. The flat roof is supported by a typical stepped vault. The doorway faces west and rises 1.6 m to the lintel, which is inset in typical East Coast fashion, the total height of the building being about 2.7 m, its east-west axis being approximately 15° east of north. Just east of Temple 1 are the badly destroyed remains of a second temple, also in poor condition, on a 3–4 m high pyramid.

Approximately 100 m west of this group and hidden in the forest is a second group connected to the first by a *sacbe*, or artificial road. The principal constructions include a large massive low platform almost completely ruined and the badly preserved Temple 3, very similar in type to the main temple of the site. All that remains of Temple 3 are parts of two parallel walls, plus one corner, but certainly its size and construction were similar to Temple 1. The complete ground plan is not evident from surface examination. The construction is very solid, the walls reaching a maximum thickness of about 1 m, the intervening space measuring but 1.7 m. The standing wall rises 1.6 m to the vault spring. The doorway probably faced east.

The partial clearing of the floor of Temple 3 produced a fair pottery sample. Excavation continued below the floor into the temple platform proved the latter sterile. A second excavation made on the east side of the base of Temple 2 also gave a fair sherd sample.

PUNTA CELERAIN. On this southernmost tip of the island is a lighthouse, within a kilometer of which lie two isolated shrines, Celerain 1 and 2.

CELERAIN 1. This single small temple stands about 0.5 km northwest of the lighthouse in low bush some 50 m southwest of the road to Chun Chakah. Its two rooms, one directly behind the other, have completely intact floors, and walls reaching a maximum height in front of 1.5 m (Fig. 24.21). The walls are constructed of paired tiers of roughly cut blocks placed back to back and set with little mortar; they vary in thickness on from 0.45 to 0.65 m. The front room interior is 1.5 m east-west by 2.65 m north-south, its doorway 0.60 m wide; the back room is 1.0 by 2.6 m, its doorway 0.60 m wide. The roof, the height of which could not be ascertained, was undoubtedly of flat beam-and-mortar type. A special feature is a four step stairway which goes 1.2 m under the floor of the back room and has its entrance in the back room doorway. It descends into what evidently was a cenote below the temple, now filled

with rubble. The doorway of the temple faces north, the building being oriented approximately 2 degrees east of magnetic north.

Clearing of the stairway and floor produced a few sherds.

CELERAIN 2. The second shrine stood on a rocky elevation of the coast about 1 km north-northwest of the lighthouse. Now almost completely destroyed, it probably had one room, with the doorway facing the sea. The interior was some 1.5 m wide and possibly 4 m long. Rough stone slabs were merely broken and piled up without mortar to form the walls; the floor was a layer of flat slabs laid dry. The stone, of fossil origin, came from the beach. A fair-sized sherd sample was obtained during clearing operations.

PUNTA ISLOTE. A kilometer northeast of Punta Celerain stands this rocky headland, so named because of a detached rock or islet just off its point. There is no other headland between it and Punta Celerain and it is therefore easily found. The entire stretch between the two points is sandy beach, backed by a sandy ridge, behind which lies a back-water lagoon. The site is on the lagoon side of the ridge some 300 m southwest of Punta Isote. It is perhaps 100 m from the beach, 200 m from the lagoon.

Of the two structures, one is a beautifully preserved little temple with a rather complex (for an East Coast building) floor plan. A section of the ridge slope had been excavated, leveled off, and paved. This paved area forms a tiny plaza, bounded on the east and south by the slope of the ridge, on the west by the temple, on the north by a badly destroyed temple or, possibly, priests' dormitory.

Temple 1 (Temple of the Four Directions) is on a low platform 10 by 7.5 m (Fig. 24.5). Measuring 5.1 by 3.6 m on the outside, the temple was evidently constructed in two stages. First a tiny temple, 2.7 by 2.5 m by only 1.55 m high, was erected with a 0.40 m wide doorway on each side. Then a continuous corridor was set completely around this building except on the west where the face of the inner building is aligned with and forms part of the west side of the later structure. This corridor, varying from 0.80 to 0.90 m wide, has three doorways, each aligned and identical in width with the doorways of the older building. The west face of the complex presents a curious appearance: the juncture of the inner structure with the added corridor is quite open and well defined, and there is a striking contrast in the moldings of the earlier and the later buildings.

The roof of the inner building is corbelled in typical Maya fashion, running north-south. The corridor

is roofed by a half-corbelled vault, the vertical walls of the inner structure taking the place of the other side of the vault. The doorways of the later building are the typical East Coast T-type, but in the older building the lower member of the molding rests directly on the lintel.

The most curious aspect of Temple 1 is its roof assemblage. The roof structures probably date with the older building, to whose roof area they are confined (Fig. 24.5b,c). A tiny temple-like affair, 1.35 m north-south by 1.15 m east-west by 0.50 m high, was built in the center of the roof of the older structure, with four doorways each about 0.20 m square. On the roof of this tiny temple is a curious cone-shaped ornament of masonry. The peak has been broken off, making its present height 0.40 m, with a base diameter of 0.70 m. Running down the sides of the cone are four lines of snail shells inserted in the masonry and aligned with the doorways of the roof temple and therefore with the doorways of the main structure below. Oriented 5 degrees east of north, the entire complex was obviously closely related to the ritualistic importance of the four compass directions in Maya cosmogony. The roof of the older temple was also adorned by a series of arrowhead-shaped stones inserted in the masonry with the points upward. Four of these still in place show that there was one at each of the four corners and at the midpoints of the sides of the roof, the latter being aligned with the doorways and lines of snail shells of the roof temple. The entire roof assemblage presumably served an astronomical purpose.

Enclosing the plaza on the north are the remains of a badly destroyed one-room structure, which may have served as a priests' dormitory. The back (north) wall and the east wall, about 0.40 m thick, are preserved to the molding and are approximately 1 m high. No traces of molding were found. Very little rubble in the interior points perhaps to a non-masonry roof. The structure is 4.45 m east-west and 2.9 m north-south. The doorway, 2.65 m wide, has a 0.70 m square pier in the center. Along the north, east, and west sides runs a bench, 0.50–0.65 m wide and probably not over 0.05 m high, composed of a single layer of flat stones covered by plaster.

The clearing of the floor of Temple 1 and the stairways ascending the platform, together with trenches at the stairway bases, yielded about 100 sherds, numerous coral and jade beads, are and part of a flint knife. The floor of the second structure char was also cleared but gave little material.

PUNTA MOLAS AREA. Punta Molas is the northernmost tip of Cozumel Island. Within 8 km of the lighthouse is a large number of sites, of which Escalona

Ramos visited and described: Aguada Grande, Las Grecas or Cinco Manos, El Real, and La Expedicion. The first three I revisited and excavated, in addition to examining some new sites now reported for the first time.

EL REAL. The site, probably 6 km south of the lighthouse instead of the 8 km estimated by Escalona Ramos, is on a rocky headland. There is one very large (for Cozumel Island) temple facing east to the sea, plus a small low platform.

Escalona Ramos (1946:606) drew a plan of the temple, but it was remeasured and redrawn. Curiously enough, he indicates side doorways in each of the two rooms, doorways which do not exist. The building, set on a low base only slightly larger than its floor area, has two rooms, one directly behind the other, and a single outer entrance (Fig. 24.11). The back or west wall has been broken into, disclosing construction detail. The walls have a hearting of masonry faced with large beautifully cut square blocks of stone tenoned in, possibly indicating a Classic date. The outer and inner doorways are of the classic East Coast type with sunken lintel. The height of the building is approximately 3.5 m; the outer doorway rises 1.6 m from floor to lintel. This entrance is 0.80 m wide, that to the back room 0.65 m. The walls average 0.80 m in thickness. The interior rooms vary in width from 1.5 to 1.7 m. The front room is 6 m long; the back room, 6.2 m. Against the back wall of the inner room is an altar 1.6 by 0.8 m by 0.20 m high. The temple stands on a large platform. The terrain rises sharply to south and west so that the height of the platform above ground level varies considerably. Relationship to the terrain is shown in a profile drawing by Escalona Ramos. Its sit greatest height, 3.8 m, is on the seaward (east) side; on the north, it measures about 3.2 m. On these two sides the platform is broken into three terraces. An interesting feature is the rounded northeast corner. Lothrop (1924:113) has pointed out that round structures are very rare on the east coast and limited to platforms. The entire center of the east side of the platform has been gouged into a huge hole almost down to base level. The only other structure at the site is a small 0.30 m high platform about 5.4 m west of the temple.

Owing to the rocky terrain, good excavations for pottery are impossible. One could trench into the platform but the chances are that it contains very little cultural debris. The hole in the east side was carefully searched for sherds with little result. In clearing and excavating the base of the stairway I found a few sherds along with modern material, but did not obtain a satisfactory sample.

JANAN. This site is about midway on a well-defined trail along the coast from the lighthouse to El Real. Most of the trail passes through a coconut plantation, within which lie the two buildings, one on each side of the road. They are about 150 m from the beach but behind a scrub-covered ridge and not visible from it. The building west of the trail was a low typical East Coast shrine with two rooms but is almost completely destroyed. The other, a single-room structure, is on the east side of the trail facing the sea (Fig. 24.8). It is in good condition except for the roof, which has recently caved in. That this was a beam-and-mortar affair is evident from the rounded impressions on the under side of the fallen chunks of masonry, which is so hard that the chunks can hardly be broken with pick-axes. The difficulty of moving these masses prevented clearing. Part of an altar against the back wall could be seen under this debris but unfortunately could not be cleared completely. It is of some interest, because, instead of the simple rectangular platform type found in the majority of these sites, it looked like a low table-like structure set on a very low platform.

As at Punta Islote, the roof was adorned on the corners with arrowhead-shaped stones about 0.75 m long, about half the piece projecting above the roof. Trenching in the vicinity of the two temples brought very few sherds.

AGUADA GRANDE. This is the only site seen on Cozumel Island which can properly be labeled a population center and so is important in affording excellent data on settlement patterns. The principal buildings are not impressive in size or quality but the whole complex offers interesting possibilities. The site, 1.5 km southwest of the lighthouse and about 1 km from the east shore of the island, is hidden in the scrub forest covering the cattle ranch of Pepe Cruz Jonastre. For about 500 m along a trail from the ranch house to the site are numerous remains of low dry-stone walls enclosing large corral-like spaces. Escalona Ramos (1946:551) thought they might be ancient property markers. Near the center of the ruins they undoubtedly mark off house lots, but at this distance they probably are milpa boundaries. Just before reaching the site one must cross a swamp, filled with water during the rainy season, by a *sacbe* or causeway made of a single tier of flat stones laid dry, which ends at a street entering the main plaza of the site (Fig. 24.13a).

The unimpressive ceremonial center is in poor condition. The main plaza measures 42 m north-south by 24 m east-west but is not regular in form. It is surrounded by a low dry-laid wall of unshaped stones, similar to the walls just described. On the

northeast is a single platform, 18 m east-west by 8 m north-south by about 0.80 m high, surmounted by three small temples (Fig. 24.13d). The platform is ascended by two stairways, one on the plaza side, the other on the opposite side. Curiously, none of these temples faces south to the plaza. Temple B, in the center, is almost completely destroyed; parts low on the walls of Temple A remain; Temple C, in fair condition, has a corbelled roof (Fig. 24.13c). Temples A and B probably had flat beam-and-mortar roofs. On the north side of the plaza a small temple, D, stands on a low platform (Fig. 24.13b). Only parts of the walls remain.

To the south and east of the Main Plaza are two extensive low platforms, evidently bases for very large dwellings of perishable materials (Fig. 24.13a). Platform 3, the best preserved, occupies a little less than half of a 35 by 40 m walled area which apparently was a house yard. The poor condition of the structure atop the platform obscured details but there seems to have been a single central corridor from east to west with a stairway at the east end. Along this main corridor I spotted at intervals entrances to side corridors and rooms, indicated by lines of unshaped stone (evidently bases of pole walls). This is as much of a plan as is recoverable, the probably even with extensive clearing and excavation. The site evidently does not extend farther south than the south wall of the house yard, which runs on for 500 m east of its junction with the east wall of the yard. Seven or eight side walls run off at right angles from it, all to the north, and probably delimit other yards. North of the Main Plaza is a large corral space, 60 by 70 m, which lacks any house platform and may have been the village market. The corral walls continue north for an undetermined distance. The extent of the walls to the west is not known. Adjoining the yard of Platform 2 is a much smaller yard containing a small house mound. Lack of time prevented further survey, but it is obvious that here is a good-sized village with its ceremonial precinct. The site and what I believe were neighboring milpas should be completely surveyed and mapped.

Temple D was cleared and an altar discovered along the back wall. A trench dug at the base of its platform stairway showed heavy concentration of censer ware. The floor of Temple A was also cleared and a stepped altar found against the back wall. The clearing also produced a great quantity of sherds, mostly ceremonial wares. Test pits along the base of Platforms 1 and 3 gave very little ceramic material.

LAS GREAS. Escalona Ramos (1946:609) visited this site, and drew and measured the principal building, aside from which there is a small low plat-

form about 7 m to the east. A trench at the base of the stairway turned up a fair sample of pottery.

ARRECIFE. Just 3 km southwest of the lighthouse a shallow lagoon lies behind a low scrub-covered sandy ridge paralleling the beach. In this lagoon is a low heavily overgrown island, about 20 m in shortest diameter, on which stands the site, approached by a path paved with a single layer of unworked flat stones. A large platform is surmounted by one temple and has a second, tiny one at its foot, both with corbelled roofs (Fig. 24.12). The complex faces roughly northwest and from the lagoon gives the effect of a two-storied structure.

The platform is about 1 m high and 11.7 m east-west. Its north-south dimension was approximately equal, the south side and entire rear half of the temple having fallen completely to rubble.

The temple on the summit is badly destroyed, retaining only the front wall with both corners. The entire molding cannot be reconstructed as the top member has fallen along with the roof (Fig. 24.12b). Both it and the smaller temple have the typical East Coast doorway. The main terrace or platform evidently had arrowhead-shaped ornaments along its front. Of the smaller temple, 2.5 m east-west by 2.0 m north-south and 1.35 m high, all but the center of the roof is intact. The doorway faces north and is 0.80 m high and 0.50 m wide. The temple stands on a low platform base 0.40 m high and only slightly larger in area than the temple. The back of this platform is flush with the front of the main platform, up which rises a small stairway behind the little temple.

On the other side of the island the path continues southwest beyond the lagoon. My guide assured me that he once followed it through the bush to its end near El Real, about 6 km to the southeast.

The floor of the small temple and the stairway ascending the large platform were cleared, producing about 50 sherds.

PUNTA MOLAS. Here is a single temple in good condition, lacking only a segment of the back wall (Fig. 24.10). The structure is of good size and has a corbelled roof, but the general quality of the masonry is inferior to that at El Real. It stands on a platform 1.5 m high and 9 m square, the stairway and door of the temple facing west. The orientation is approximately 5 degrees east of north. This temple, which is set on a low platform-like base exceeding only slightly the area of the building, is the most ornamented structure found on Cozumel Island and has the most complex molding (Fig. 24.10a). The doorway is 0.55 m wide and, including its lintel, 1.15 m high. Above the lintel is a three-member molding

with a total height of 0.40 m. Above this is a panel, 0.55 m high, surmounted by a second three-member molding, a virtual duplicate of the lower one but 0.45 m high. The total height of the building is 2.5 m. The panel is occupied by three tenoned sculptures, a seated figure in the center flanked by two faces. The style of the faces is very similar to that of a figurine found at Las Grecas. On each corner of the roof were the arrowhead-like decorations reported from Janan, Punta Islote, and Arrecife, but here they are perforated. The room is 2.4 m east-west by 3.3 m north-south; the walls average 0.60 m in thickness. An altar was discovered against the back wall.

The clearing of the floor of the temple and a trench at the base of the stairway gave little result.

CENTRAL COZUMEL ISLAND. About 8 km east of San Miguel and approximately in the center of the island are several cattle ranches, in which the number of sites surpasses even the Punta Molas area. Escalona Ramos located and described four, which he named San Gervasio, San Severo (after the two principal ranches), El Observatorio, and Nohna. There are undoubtedly others. Time permitted the investigation of only one.

SAN GERVASIO. This site was selected because of the presence of large colonnaded platforms, placing the ruins in the Late period or post-Classic period. Escalona Ramos' description (1946:555-557) is translated below (see Fig. 24.19):

"The ruins of San Gervasio are situated 11 km east-southeast of the city of Cozumel (San Miguel) and half a kilometer north of the ranch of San Gervasio.

"The group is formed by six buildings located around a plaza. It seems that that marked as number III is in the pure Maya style, one of the largest, or the largest, of those buildings in existence on the island of Cozumel; it must be the one which formed the beginning or base of the grouping. Its solid, good construction enabled it to stay intact while the others of the later Toltec period (those with columns) have fallen completely. Vegetation of large trees and grass (buildings V and VI) cover the buildings.

"Building I is situated on the north side of the plaza, which measures some 30 m to a side; contains a single room, now without roof; and rests directly on the ground; it measures 5.60 m by 2.80 m.

"Building II, located on a platform 1 m high, is at the northwest corner; it has two rooms which were probably arched; has lost its front and back walls; measures at the base 6.1 m by 4.75 m; two moldings 0.40 m wide decorate it on the outside; at the front there is an off-center stairway 3 m wide with balus-

trades 0.65 m [wide]; on the dividing wall between the two chambers there are prints of red hands.

"Building III is found on a platform 2 m high, on the west side of the plaza; has two rooms both arched, 3.40 m high, 8.20 m long and from 1.50 to 1.90 m wide; the chambers are entered by three doorways 0.80 m wide (near the central one there is a large pit in the floor); the total length and width are 10.20 m and 6.10 m; the front façade is fallen; the platform is ascended by means of a stairway 4.50 m high, with balustrades 0.40 m [wide]. Two moldings 0.65 and 0.55 m wide adorn the outside. The lintels were probably of wood (the cause of the cave-in of the front wall). In the interior may be seen traces of green paint on the walls.

"Building IV is on a platform 2 m high; its floor plan has the form of an L or a carpenter's square; it is open on the plaza side; its roof was probably flat, supported by beams resting on the exterior walls and on columns 0.55 m in diameter, set in two rows; some of those in the inner row are reinforced with square pilasters.

"Buildings V and VI, situated on the east side, are wholly fallen and their stones (as in many other buildings) have been utilized to make fences, including various columns; both open on the plaza; its roof, which was flat, was supported by two rows of columns.

"A large platform 1 m high and 25 m by 7 m at the base joins Buildings I and VI, another 1.5 m high and 8.5 m wide joins the latter with V. Within this platform and near Building Lot IV, there is an arched crypt. In the center of the plaza there is a square altar 1 m high and 4 m on a side."

Buildings 2 and 3 rest on a single platform (Fig. 24.19). Building 3 has the finest stonework found anywhere during the field season, being approached only by that at El Real. Aside from the Main Plaza there is a large colonnaded platform 50 m west of the plaza, a smaller one about 30 m southwest, another 50 m to the south, and several smaller ones to the west. The site at the time of my visit was in the middle of a milpa and pitted by mole holes. No surface pottery was noted even though conditions are ideal to reveal it. No house yard walls were observed or house mounds other than the platforms mentioned. The number and size of the buildings indicate that San Gervasio was one of the most important centers on Cozumel Island.

A good ceramic sample came from a 1 m wide trench dug but along the plaza edge of the platform of Building 4, and a second 1 m wide trench dug from the stairway to this platform to the back wall of the structure, down to floor level. An altar was discovered against the back wall.

In hope of getting a sample from the probably earlier Building 3 a trench was cut into the back of its platform, but very few sherds were found. The condition of the platform wall is so bad that the sample probably is not pure.

SAN MIGUEL. At the time of Escalona Ramos' visit a number of buildings were located within a few kilometers of the modern town of San Miguel Cozumel. During the Second World War and the construction of the airport most preconquest structures were razed to gather building materials. About 400 m north of the dock of San Miguel, on the highway to San Juan, are remains of one of these sites lying about 100 m northeast of the Capitanía del Puerto building on a long north-south rock hillock. Only masses of rubble and building stones remain. On the west for slope of the hillock much pottery was mixed with building debris, from which we took an exceptionally fine sample.

EAST COAST SITES

Along the East Coast (that is, within a league of the beach) from Tulum to El Meco 16 sites were visited and the majority tested for sherd samples (Fig. 24.1). Most of them have been mentioned or worked by Lothrop or by field workers from the Instituto Nacional de Antropología.

Tulum, Tancah, Xelha, and El Meco have been described by Lothrop and the first three almost completely mapped. At the bay of Ak are two isolated shrines: the site published on archaeological maps is probably Ak 2; Chakalal I have not seen mentioned anywhere. At Palmol are two sites: the one published on archaeological maps and described in the Instituto files is what I call Palmol Playa; the second is inland a kilometer or so and may be new.

In the vicinity of Puerto Morelos are a number of small sites. La Caleta, Mulchi, and Cocal have been described by Escalona Ramos. New sites are Cocal 2 and Kilometer 35.

On Cancun Island are a large number of groups and isolated buildings. According to Lothrop, Merwin visited and excavated most of them and discovered several new groups. I visited and tested what Lothrop calls Group 1 and Group 2. I also visited and excavated a third group at San Miguel not mentioned by him but probably described in Merwin's manuscript, which I have not seen.

TULUM. Lothrop's work (1924) covers this site. I spent two days here on minor excavations for a sherd sample, with excellent results.

A number of excavations were made. (1) On advice of the caretaker a west-to-east trench 1 m wide and 10 m long was excavated to bedrock, running up the slope to a point a few meters south of Str. 47. At the base of this slope the cultural deposit ended at a depth of 0.40 m. The earth consisted of a very fine powdery soil, obviously organic, and mixed with a fill of small stones which made up the construction of the slope terraces. The form or number of these terraces could not be determined. A heavy sherd deposit was mixed with obsidian blades and spindle whorls. The whole clearly represents occupational debris, some of it probably washed down from Str. 47. (2) Temple 45 is on a rocky knoll almost bare of soil except for shallow pockets all over its slope. A number of these pockets were cleared out and produced a large sample of buff censer ware. (3) At the base of the stairway and adjoining the platform wall of Str. 22 (one of the colonnaded palaces) a good sample was obtained. The cultural deposit ended with bedrock at 0.40 m depth. A large amount of pottery was also collected from the surface of a milpa in the vicinity of Str. 47.

The site was carefully searched for data on settlement pattern.

TANCAH. As Lothrop has pointed out, this site is strikingly different in architecture from Tulum; it resembles more the ruins along the tramway from Leona Vicario to Puerto Morelos. Lothrop mapped the two principal groups, but the plan is not complete. Approximately 50 m west of Group B is a group of about six small unimpressive platform mounds. Today a road running from the coconut plantation headquarters at Tancah to the site goes beyond the main groups for about a kilometer to the west, where it ends at a cattle ranch. Along the road for about 200 m west of Group B may be seen at least a dozen large platforms. At the cattle ranch is an isolated temple with traces of paintings on the walls. The main sites, A and B, cannot be seen from the road as they are 100 m to the north in dense bush. Half a dozen trails cut in the vicinity of the main groups revealed no definite house structures other than the large platforms. South of the road a huge cleared pasture near the center of the site contained neither house mounds nor occupational debris. The general condition of the buildings at Tancah has deteriorated only a little since Lothrop's visit but complete clearing and conversion to federal ownership are essential if they are not to disintegrate. The site is one of the largest on the east coast and of great importance.

Four small trenches in Group B (at the base of the stairway of Str. 12, at the southwest corner of the same structure, at the base of the stairway of Str.

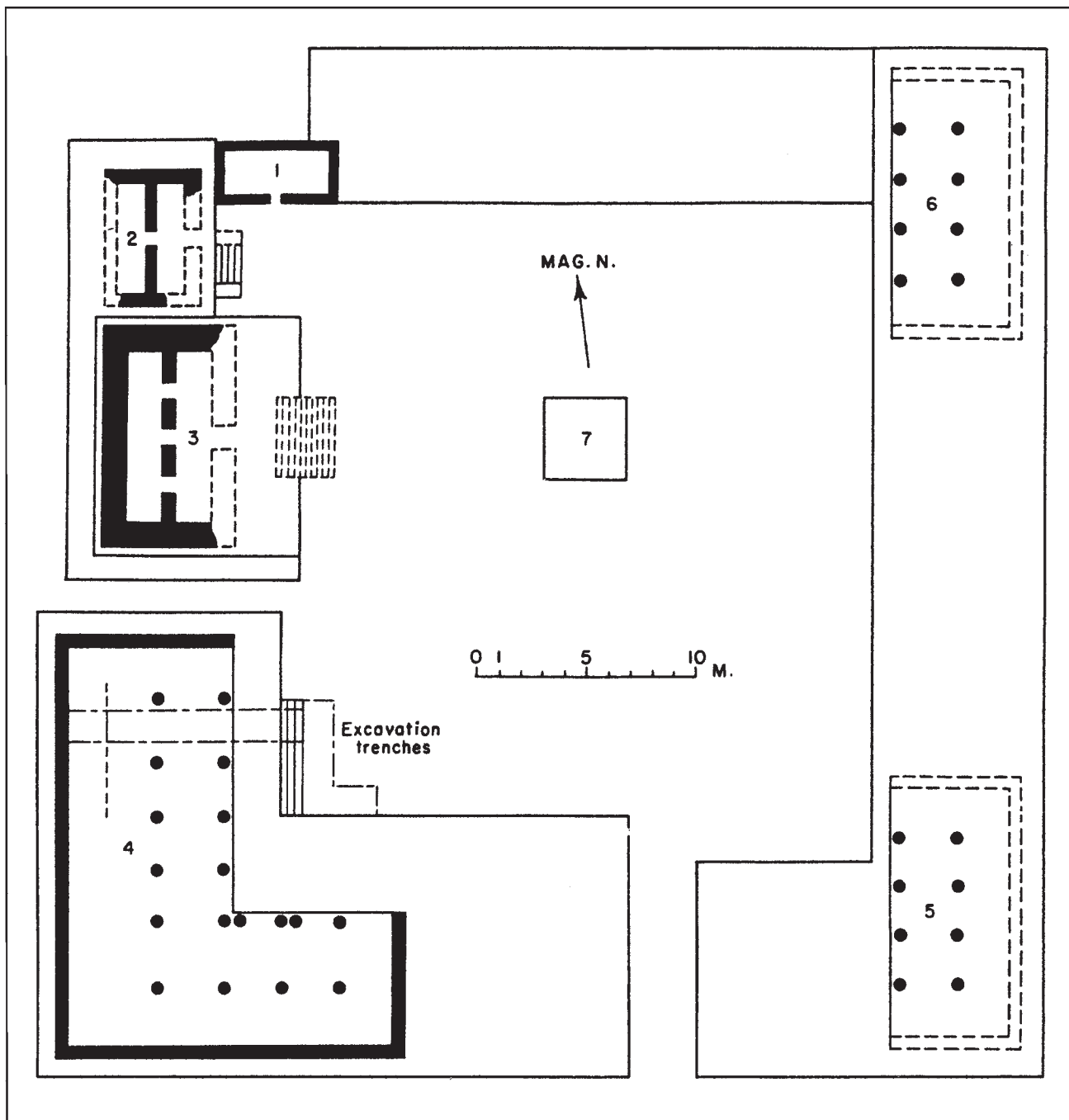
20, and at the northwest corner of Str. 19) produced about 100 sherds. Five small trenches in Group A (at the base of the stairways of Strs. 1, 3, and 6, at the southwest corner of Str. 1, and at the southeast corner of Str. 8) gave the same amount.

XELHA. This site also was adequately mapped by Lothrop. The bay Xelha would make an excellent canoe harbor and undoubtedly served as the port for Xelha. I found the fortified peninsula without difficulty but was misled by Lothrop's directions for the main site. The best way to reach it is to travel due west from the peninsula to the main mule trail from Tancah and continue due west from the trail into the bush for 500 m. The terrain is almost bare rock but near the site a depression containing some soil affords the only good agricultural land in the vicinity; at least part of the site is usually in milpa. For an East Coast site it is not quite so unimpressive as Lothrop's description would suggest; the center is not much less important than Tancah and probably has nearly as many unmapped structures. There are at least half a dozen house mounds north of the center, a section that was in milpa the year of my visit. The milpa has a great amount of pottery on the surface. The site was investigated on a miserable wet day, following a two-hour search to find it, hardly favorable conditions for obtaining accurate data on settlement pattern.

Nearby are a number of corral-like walls which may be house yard walls as at Aguada Grande. The general condition of the buildings is bad.

A series of small pits in the plaza area were sterile, but a good pottery sample was obtained in digging along the base of one of the house mounds, the soil here reaching the extraordinary depth of nearly 1 m. I collected a satisfactory amount also from the surface in the milpa.

CALETA DE AK. Some 100 m from the mainland beach and a like distance from the north shore of the bay is an isolated East Coast shrine almost intact except for the roof, which, from the impressions on the fallen chunks of masonry, must have been of the flat beam-and-mortar variety. The shrine faces south to the bay, which is another of those natural harbors on the east coast. Like most buildings in this area, it is set on a low base and measures 3.1 m by nearly 4 m (Fig. 24.14). One of its peculiarities is the presence of an inner room with its own exterior molding. It looks as if it were an older building, and may have been so, but the ground plan indicates that it was not as its back wall was that of the main structure. This may be an error on my part and should be checked. This inner structure is also peculiar in that it is set on



24.19.

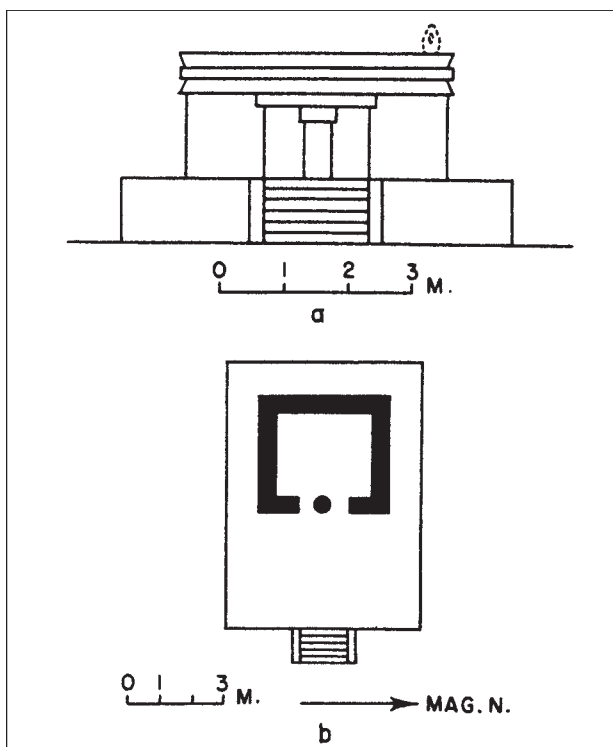
San Gervasio, Plan of Site (after Escalona Ramos).

its own low platform. Inside are signs of an altar but it is completely destroyed.

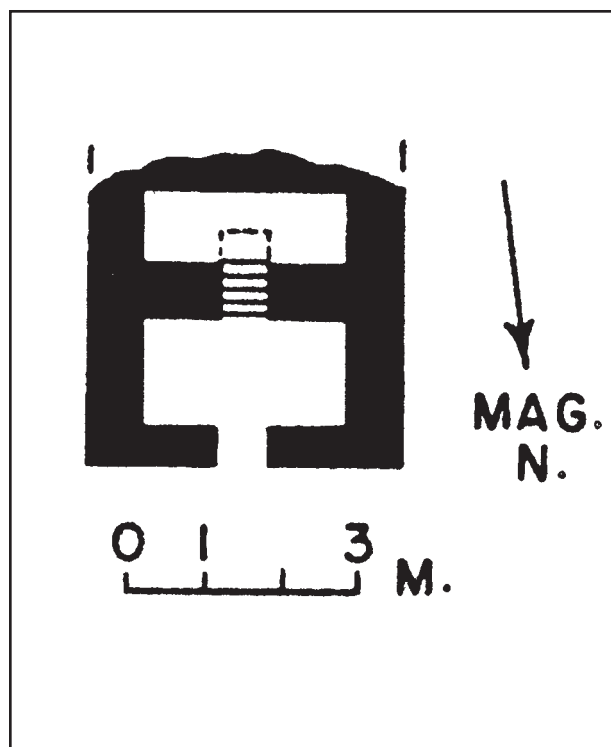
From the clearing of the floor and a trench along the front of the platform a good sherd sample, including a shark figurine, was collected.

Approximately 1.5 km north of this bay is a second one. I believe, but do not know, that the name Ak refers to the first bay. I have called the shrine

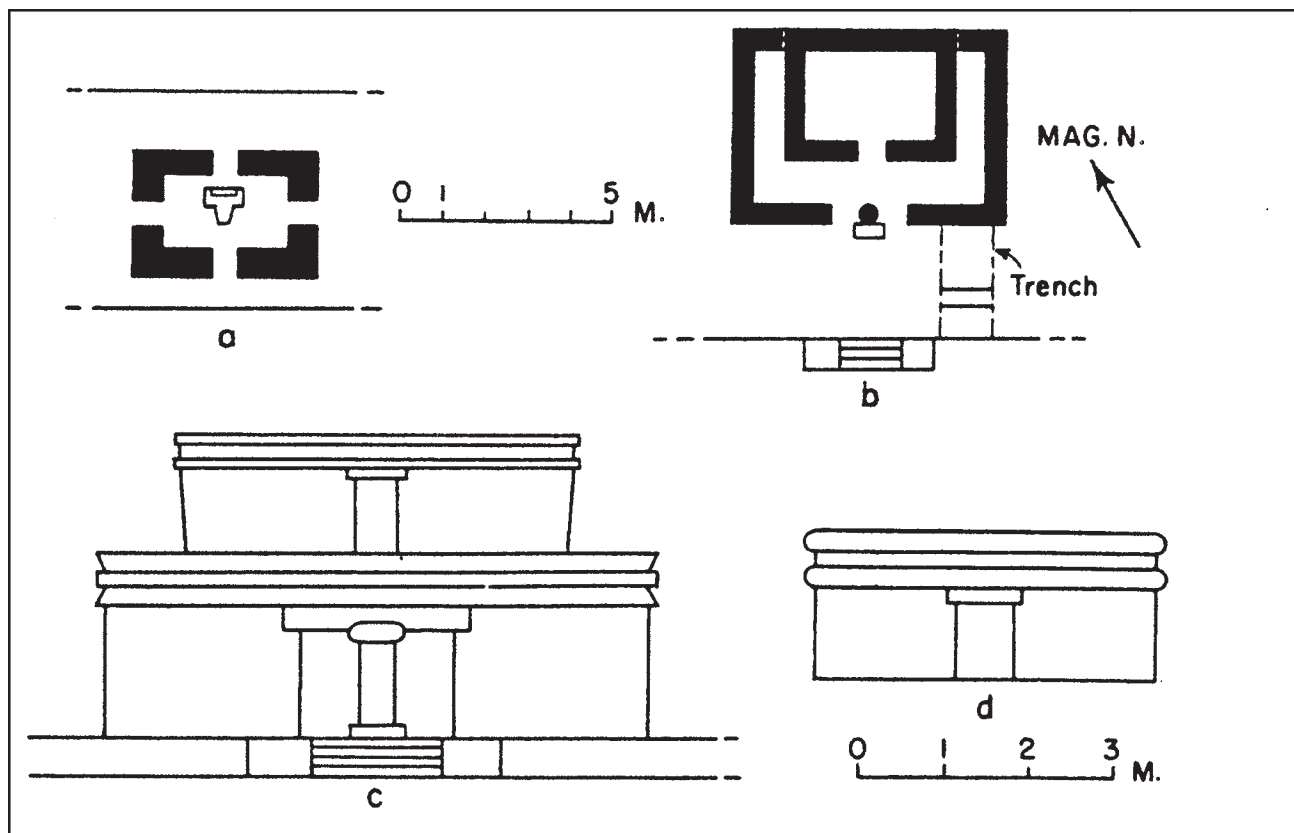
described above Ak 1; the second, Ak 2. This, again, is an isolated temple; it is on a rocky point overlooking the bay and facing inland to the west. On the west shore of the bay and visible from the sea, it is almost intact, including its corbelled roof (Fig. 24.15). Set on a low platform and measuring 2.8 m by 3.8 m and 2.1 m high, the shrine possesses an altar against its back wall and a typical East Coast doorway. A



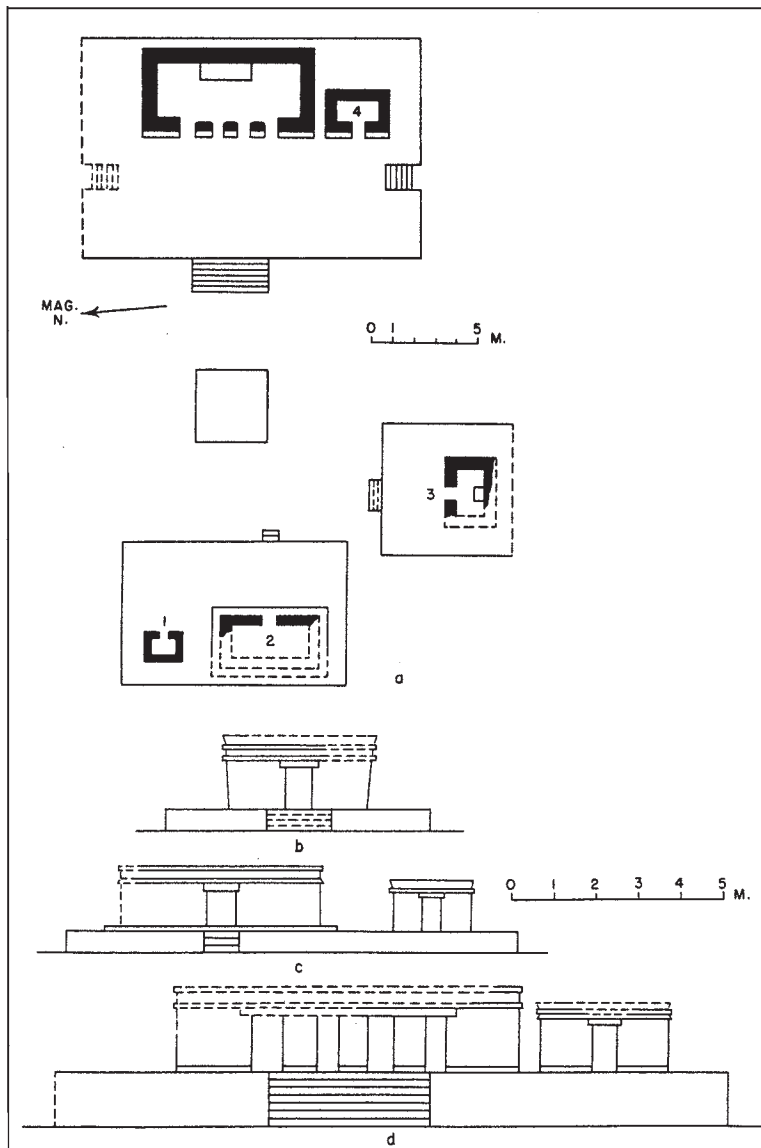
24.20. Palmol, Temple 2.
a. Façade elevation. b. Plan.



24.21. Celerain 1, Plan of Temple of Cenote.



24.22. Palmol, Temple 1.
a. Plan of upper story. b. Plan of lower story. c. Façade elevation. d. Façade elevation of inner structure.



24.23. Kilometer 35.

a. Plan of Temple. b. Façade elevation of South Platform and Temple 3. c. Façade elevation of West Platform and summit buildings. d. Façade elevation of East Platform and summit buildings.

peculiarity lies in the fact that the sunken panel of the doorway does not touch the molding. Lothrop states that only the very latest buildings at Tulum show this feature and that it is often found with corbelled roofs, a reversion from the flat beam-and-mortar roofs of the Toltec period. Because the temple stands on bare rock, no sherds were excavated, but a few were picked up off the floor. The lack of a good sample is unfortunate because this shrine was probably still in use when Cortez arrived. The caretaker of the nearby coconut plantation mentioned a group

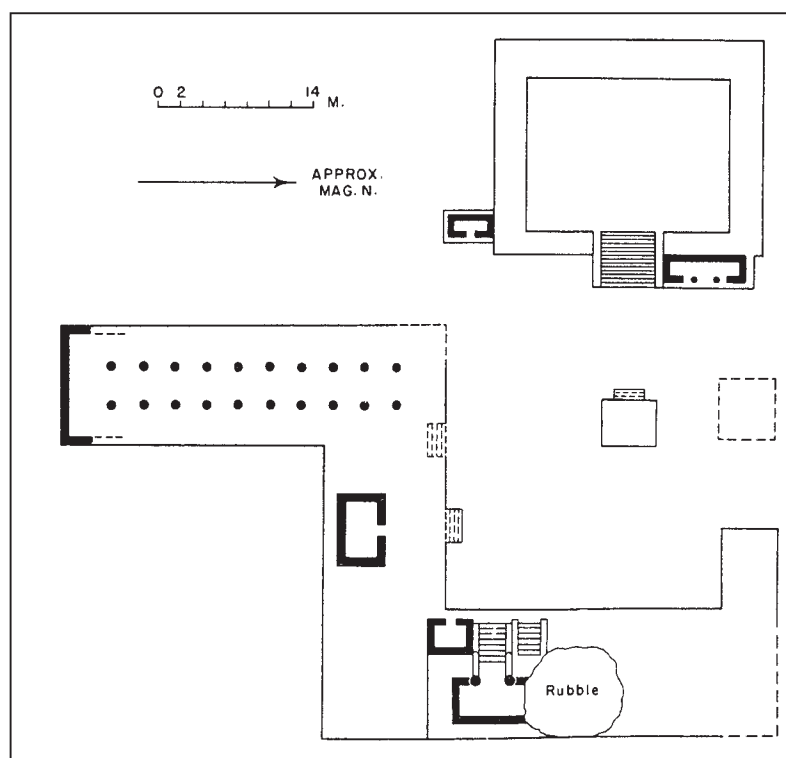
of two small temples about 1 km inland from Ak 2, but I did not visit them.

CHAKALAL (Chakhalal?). This is another cove site, about halfway between Ak and Palmol, consisting of a single shrine a few meters from the west shore of the bay and visible shortly after entering it. Since it stands on a rocky shore, not a single sherd could be found. The structure is in almost perfect condition, with a vaulted roof (Fig. 24.16). The building stands with its long axis about 40 degrees east of north, and measures 5.7 m by 3.8 m; the total height is 2.95 m, of which 1.3 m make up an two moldings and intervening panel and the rest the doorway, low which has a sunken panel. The walls average 0.80 m in thickness. There are remains of an altar against the back wall.

PALMOL (PAALMUL) PLAYA. This is probably the site located on modern archaeological maps. It is a kilometer south of the chicle depot of Palmol and within 50 m of the beach. The principal building, called locally El Castillo, can be seen from the sea as easily as the Castillo of Tulum.

The Castillo is a high pyramid. The entire seaward half, 2.5 along with most of the temple on top, has been eroded by the sea and its form is now vague. It was probably 6–7 m high and, from fragments of standing walls, may have had, at least in part, a circular plan, as reported by Mason and Spinden (see Pollock 1936). Of the surmounting tiny shrine-like temple, which faced inland, most of the front or west wall is standing, the rest completely destroyed. The doorway is the usual East Coast type; the molding looks as if it were a three-member kind similar to Str. 2 of this site.

Str. 2. This temple, with beam-and-mortar roof, stood about 50 m to the north, its long axis 35–40 degrees east of north. It has a three-member molding and a single column in the door way, which faces seaward, about southeast (Fig. 24.20). The temple, 1.9 m high, is set on a 1 m high platform. In the rubble at each front corner were sculptured pelicans, undoubtedly roof-corner ornaments. The head of a stone turtle also lay in the debris. The temple, in good condition except for the roof, measured 3.6 m by 4.0 m. The column in the center of the 1.6 m wide doorway has a capital, a height of 1.15 m, and a diameter of 0.40 m at the base. The temple was so



24.24.
El Meco, Plan of Site.

filled with roof rubble that it is not known if it possessed an altar.

The base of the platform stairway and northeast corner of the platform were trenched and produced a fair ceramic sample.

PALMOL (PAAMUL). This site, which may be new, lies 1.5 km inland, just south of a good *milpa* trail running west into the forest from the house of the government official at Palmol. One of the buildings, 20 m from the trail, is visible from it. About 200 m southwest of this building in the forest is a 6 m high pyramid, now a heap of rubble, with an almost completely destroyed temple on top. The guide mentioned another building but could not find it. Heavy rain made trail cutting too unpleasant, so we concentrated on the fairly well preserved temple just off the trail. This two-storied building faces south, with long axis 250 east of north, and has an older structure forming an interior room in the lower story, a columned doorway on the lower floor, and a regular East Coast T doorway on the upper (Fig. 24.22). The lower story has a three-member molding, but the upper story, as well as the interior structure, lacks it. A complete excavation of this building would undoubtedly produce considerable stratigraphic data

as it seems to represent three construction periods.

Interior building. Like all the units, this has a corbelled roof. It evidently once formed a free-standing structure (Fig. 24.22b,d) with its own platform, as we shall see later. It is 2.5 by 4.05 m and about 1.7 m high. The door is the usual East Coast inset-panel type.

Exterior building, lower story. The second stage of construction consisted of adding a continuous corridor along the south, west, and east sides of the interior building and of increasing the size of the supporting platform. This corridor averages 0.75 m wide, with walls 0.50 m thick. The roof is vaulted as in the interior structure. With the addition of the corridor, the total exterior measurements of the ground floor of the complex are approximately 6.4 by 4.5 m. The 1.8 m wide doorway to the outer structure has in its center a column with a round capital and has the sunken lintel typical of the East Coast. The doorway is 1.5 m high, including the lintel. The three-member molding above it is 0.60 m high,

giving the lower story a total height of 2.1 m. It is interesting that the inner building was not filled to give more stability when the upper story was added, as in most multi-storied Maya structures.

Exterior building, upper story. This single-room structure is slightly larger in ground plan than the interior building (Fig. 24.22a). It is set in 1.4 m from the back wall of the lower story and 0.80 m from the front wall. Its height is approximately 1.5 m, giving the building, exclusive of the platform, a total height of approximately 3.6 m. This upper story has a corbelled roof and four East Coast-type doorways. A curious feature is the presence of a low stone seat with stone back-rest set upright and joining the vault at the spring line on the back wall. There are signs on the front of the back-rest and on the seat that a stucco-covered idol once sat there. In the Cozumel museum is an idol of exactly the size and shape to fit here and it may have come from this building.

The clearing of the stairway of the platform and a trench along the platform base to the southeast corner down to bedrock turned up a fair sample of pottery. Another trench dug at right angles to the first one just east of the stairway into the platform construction disclosed a two-terraced platform within the outer platform. This was probably the base of the inner temple. No sherds were found in the platform fill.

COCAL 1. Of this site, an almost destroyed, isolated East Coast type of shrine, not a stone is left standing, for the stones were used in the construction of the lighthouse at Puerto Morelos. Escalona Ramos' description (1946:541) is here translated:

"The ruins of El Cocal are situated 1,700 m northeast of the lighthouse of Puerto Morelos and 100 m west of the beach.

"They include a small sanctuary almost at ground level (it rests on a very low platform) with a doorway facing the sea, that is, to the east; its dimensions are 3.85 m by 3.10 m; the width of the door is 0.75 m; the thickness of the walls is 0.50 m; the roof was probably a Maya style of arch with stepped stones."

Today there is a shallow pit where the building once stood. By making several trenches into the sides I secured a large sample of much-eroded red censer ware.

COCAL 2. Here is another isolated, East Coast type of shrine on a long sandy ridge about 100 m behind a bluff overlooking the beach. It is about 500 m northwest of the lighthouse in the coconut plantation of Joaquin Setina, the government official of Puerto Morelos. The owner has broken down the west (back) and south walls for building stone, but the other two walls are standing; the north wall, up to the fragments of the lower molding, is 1.10 m high. He stated that the roof had fallen before his time. The temple, 2.6 m square and oriented 15 degrees east of north, faces east to the sea. The doorway is 0.60 m wide; the walls are 0.40 m thick. Against the back wall is the usual low altar. The building is set on a 0.30 m high platform constructed of a single tier of stone blocks. The fill of the platform, which makes use of the natural terrain, is sand and small stones.

A fair sherd sample was picked up from a trench along the east base of the platform and the clearing of the floor, as well as from a second trench dug from the first one to the altar, penetrating the construction of the floor.

MULCHI AND LA CALETA. These two sites were discovered and mapped by Escalona Ramos, whose description (1946:542-543) of Mulchi is translated below (see Fig. 24.18):

"The ruins of Mulchi [are] situated 9 km south-southwest of Puerto Morelos, [on the] northern coast of the territory of Quintana Roo, and 1 km west of the Caribbean Sea. . . . The group consists of 10 buildings in ruins around a plaza. The state of preservation of the ruins is very bad; there are some which are completely fallen. All are found on platforms from 1 to 3 m high, which extend 3 or 4 m outward from them.

The average dimensions of almost all the buildings range between 2.8 m by 3.30 m and 4.00 m by 7.5 m; only one exceeds this, situated to the east, measuring 17.50 m by 6.40 m. All have entrances toward the plaza, except two. One small one on the west side has its doorway facing outward [from the plaza]; the large building to the east has three doors.

"On the north side there are three buildings, two of them aligned (VI and VII) and the other located farther back (VIII); of these three, that nearest to the east side (VI) has two columns in the doorway or entrance. On the west side there are three others situated similarly (I, II and III); that in the center (II) has its doorway facing outward. On the south side there is one (IV) with two columns in the entrance and two others totally destroyed, which, nevertheless, probably had the same symmetrical arrangement as those on the north side. On the east side there is one (V) elongated building with double rooms; it has an entrance with four columns; a central wall with three doorways separates one room from another; the exterior (or back) wall also has three doorways; these data indicate that the building is a deviation from typical architecture. In the center there is a small altar of square floor plan (IX).

"The flat roofs (of those which still have remains of beams) and the use of columns with capitals in the doorways remind one of the Toltec influence of the period in which they were made."

I have little to add to this description of the ceremonial structures. They are, if possible, in even worse condition than in Escalona Ramos' time. Most of the columns are fallen, with only the bases of some still in place; standing walls are rare. I noted traces of stairways (not indicated in his description or plan), one about 2 m wide ascending the platform in front of Temple VII and protruding from its edge, another mounting the platform in front of Temple VI and inset into it.

Adjacent to the site at the south is a banana plantation of five or six acres. Not a single house mound was noted, but in a small section many sherds were seen on the surface. A number of trails cut north of the ceremonial precinct uncovered only two structures, a 5 m high pyramidal mound and a low platform. There is a cenote about 100 m west of the plaza.

Work was concentrated on Temple VI, whose doorway measured 1.5 m from floor to inset lintel. We cleared the floor and then penetrated it to get sherds from the platform below it. Enough came from the floor but the platform was sterile. A good number were collected from the plantation. While clearing the floor we uncovered an altar, 0.25 m high and 1.1 by 0.6 m at the base, against the back wall.

The site of La Caleta is almost on the shore and directly east of Mulchi. It is a single pyramidal mound with a small shrine at its foot, both dating probably from the same period as Mulchi. The floor of the shrine was cleared but rewarded us with few sherds. We uncovered an altar 0.35 m high and 1.0 by 0.8 m at the base.

KILOMETER 35. This site, I believe, has not been noted previously. It is very hard to locate; only one man in Puerto Morelos knew of it and he found it only with great difficulty. It is impossible to give precise directions by defined trails, but as nearly as I can make out, Kilometer 35 on the tramway from Puerto Morelos to Leona Vicario (that is, 7 km from Puerto Morelos) is the old boundary of the town lands of Puerto Morelos and the Banco de Londres y Mexico Chicle Company. The western border of the Puerto Morelos land has been moved farther west so that the old wide trail cut through the forest to mark the boundary has almost vanished. This trail once provided easy access to the site, which is about 5 km south of the tramway. In a direct line to the coast it is probably 4 or 5 km.

The center of the site is a plaza surrounded by East Coast type of temples and a palace, all on low platform bases and of miniature size. My guide said he had seen several small pyramids about 5 m high but we were unable to locate them. A number of platform mounds lie scattered in the forest; some tiny conical mounds I thought might be burial mounds.

Main plaza and related buildings. The main plaza, 13.3 m wide, is open only on the north side (Fig. 24.23a). On the west it is closed by a single extensive platform, 11 m by 6.8 m and 0.50 m high, which was shared by two temples (Fig. 24.23c). Temple 1 is so small (1.5 by 1.85 m and only 1.2 m high from floor to roof) that what remained of the roof had to be removed so that a workman could clear the floor, where traces of an altar were found against the back wall. It is the only structure at the site with its roof, a crudely corbelled vault, partially intact. It has a simple molding of one rectangular member and an inset lintel East Coast doorway. Temple 2, on the same platform, is in much poorer condition. The entire back and south walls and the southeast corner have fallen along with the roof. The last was definitely masonry but the type could not be ascertained. The doorway is the East Coast type. It is considerably larger than Temple 1, but its dimensions can only be guessed; the total height was probably about 2.1 m. An intact altar, 0.65 by 0.40 m and 0.20 m high, was found against the back wall.

Temple 3, about 1.7 m high from floor to roof, is on a 0.50 m high platform on the south side of the

plaza (Fig. 24.23b). The back and west walls have fallen along with the roof, but the ground plan was ascertained by clearing. It had one room 2.0 by 1.2 m. The doorway, of East Coast type, is 0.60 m wide; the walls average about the same in thickness. Clearing of the floor debris uncovered an altar against the back wall. An interesting feature is the outward slope of the walls.

Enclosing the plaza on the east side is another extensive platform, about 1.3 m high, which supports two structures, Temple 4 and the Palace (Fig. 24.23d). The principal stairway is on the plaza side but smaller stairways ascend also the north and south sides. Temple 4 resembles Temple 3 in size and state of preservation. It may have had a three-member molding of the Chichén Itzá type but the exact form of the upper molding is not clear. The Palace is a single-room structure with a three-column entrance. The room is larger than that of any of the other structures, measuring 2.6 m wide and 6.3 m long. The columns are rectangular, each with a low rectangular basal platform in front of it. This platform also runs along the remainder of the front walls and along the front wall of Temple 4. Clearing the center of the floor revealed a long low rectangular bench or altar against the center of the back wall. A fragment of a wooden lintel was still in place over two of the columns. The roof, completely gone, was obviously the East Coast flat beam-and-mortar type.

In the center of the plaza is a low altar-like platform, 3.5 m square and 0.50 m high (Fig. 24.23a).

A number of trails were cut through the forest, starting at the main plaza, in an attempt to locate other structures. Just 50 m from the plaza along a trail cut due south from the southeast corner of the west platform was a platform, 15 m square and 0.50 m high, with a stairway on the east side; at 65 m is a smaller platform; at 80 m a second small one; and at about 100 m are several of the conical mounds mentioned earlier. At this point the trail was turned at right angles, cutting due west for 100 m and disclosing four small platform mounds and several conical mounds. In the area 50–100 m west of the plaza, trail cutting revealed half a dozen small platforms and four or five circular mounds. Another trail, cut due south of the plaza for 100 m, starting at the southwest corner of the east platform, revealed two other small mounds. Altogether, within 100 m south and west of the plaza there are the some 15 platform mounds of varying sizes that may well have served as bases for houses, plus a number of circular mounds. The latter appear as small heaps of loose stone 3 m in diameter and approximately 0.50 m high. I thought that they might have been burial mounds. I excavated one to floor level but saw nothing more than half a dozen

sherds. The fill is a heap of small stones covered with somewhat larger ones, none shaped and evidently not laid in mortar.

When the floor of Temple 1 was cleared of debris, traces of an altar were discovered against the back wall. At the same time we collected a small sherd sample, including the head of a clay figurine, possibly the god of the shrine. The floor was then broken through and excavation carried into the platform fill but this produced no cultural material. Temple 2 was also cleared and a fair sherd sample picked up, along with parts of a figurine. In the Palace a trench was dug at the base of the east platform stairway; and the floor, including the fronts of the columns, was cleared in a 2 m wide strip from the columns to the back wall of the building. From these excavations a good sherd sample was obtained.

ISLA CANCUN. The island of Cancun, one of the richest archaeological areas of the entire east coast, is a 15 km long narrow ribbon of limestone covered along its eastern two-thirds by sand. It is probably not over 400 m at the widest point; in many places it is less than 100 m. The entire west (lagoon) side is lined by a narrow strip of mangrove swamp, but there are numerous sandy beach-heads. The east (ocean) side is bordered by white sandy beaches interrupted by rocky headlands. Some 20 or 30 m inland from tidemark the sandy beach slopes sharply upward to a low ridge which runs the length of the island parallel to the coast. From this elevation the land slopes westward gradually down to the mangrove swamp. The sandy slope between ridge and swamp, varying in width from 50 to 150 m, is the heart of the island and is today occupied by an almost continuous coconut plantation running the length of the island. It is in this strip, especially at its widest parts, that the principal archaeological groups lie. The lagoon between the island and the mainland is a perfect harbor, which protected entrances at both north and south ends.

Cancun was virtually untillable in pre-Spanish days. The only crop grown now is coconut. Without much doubt the basis of the ancient islanders' economy was fishing and, especially, commerce. The Cancun settlements were probably important commercial centers for a sizable area of the nearby mainland, an area well populated at the time of the Spanish *entradas*. On the west shore of the island, at one of the sandy beach-heads about midway between the northern and southern points, is a tiny port and coconut headquarters called San Miguel. It makes excellent archaeological headquarters, for within a short distance of it are three of the largest ruins on the island.

Holmes gave a brief description of two groups of ruins which Lothrop makes use of. Holmes' estimate of distances is poor and is here corrected. He stated, according to Lothrop (1924:150), that Group 1 is a mile north of Punta Nisuc, the southern tip of the island; actually it is almost exactly 4 km. About 100 m south of Group 1 is Group 2, both about 1 km south of San Miguel.

These two groups, worked and mapped by Merwin, are obviously parts of a single site, 500 m north-south and 100 m east-west. Each consists of a small plaza surrounded by colonnaded platforms and East Coast type of temples. The only plan I have seen is that by Arnold and Frost, published by Lothrop, and this is incomplete. For example, it lacks a fifth building, a low platform enclosing the plaza on the west side, and the colonnaded platform connecting Strs. 4 and 3. Aside from the main group there are at least half a dozen platforms to the north, east, and west. Group 11 is equally extensive. In Group 1 trenches on the plaza sides of the bases of the platforms of Strs. 1, 2, and 4 unearthed beside the last a heavy concentration of sherds, including parts of censers and figurines.

Acting on directions of the plantation caretaker, we visited a third group right at plantation headquarters. Very few standing walls are left of the buildings, which are now mounds of rubble, but despite their condition, I believe one can see that the site was more secular than Groups 1 and 2. Most of the structures appear to be low house platforms; some are higher, larger, colonnaded platforms of the palace type. This place has the only sandy beach-head along the 1 km stretch between it and the other two groups and for at least another kilometer south of them. I believe that it may have been the ancient port of the main site to the south. There are at least 15 platforms of various sizes at San Miguel, and surface pottery is abundant although not heavily concentrated. A good ceramic sample was taken from trenches along several of the smaller platforms. The site is definitely post-Classic and may be in part Toltec-Chichén in date, as a small amount of Fine Orange from the excavations indicates.

EL MECO. This site, on the mainland coast about 100 m from the beach and about 400 m south of the lighthouse, has been incompletely described and mapped. It should be either thoroughly studied or placed under federal protection because the government is planning the construction of a large port, to be called Puerto Juárez, in the vicinity, and without doubt the site will be razed for building materials. The architecture indicates that it is an important site of the Toltec-Chichén period.

A single main plaza extends 150 m west to the usual behind the beach swamp and east to the sandy ridge bordering the coast. The famous Castillo of El Meco is on the west side of the plaza (Fig. 24.24). On the north are two large platforms, that to the west being completely ruined, that to the east possessing standing walls on its summit although in very poor condition. On the east the plaza is bordered by a large platform surmounted by remains of several buildings, one of them a small temple with serpent balustrades on its stairway. On the south lies one arm of a very large L-shaped platform. The plaza arm of this platform is surmounted by a small partially preserved temple; the other arm, which extends south at right angles to the plaza, is a large colonnaded platform. Between the Castillo and the swamp which lies west of it (Holmes states that it is north of the group) is a large temple on a low platform but in poor state of preservation.

In all the structures of the site only one roof remains intact, that of a tiny temple at the foot of the Castillo at the southeast corner (Fig. 24.24). The incomplete and very rough site plan is in no way intended as an accurate representation. The situation at the southeast corner of the plaza, for example, is extremely puzzling and cannot be clarified without extensive excavation. I am not sure if there is a double stairway on one temple or two separate temples each with its stairway. The precise relationship of the Castillo to the rest of the plaza was also not determined.

An excellent sample of temple wares was taken from a trench at the base of the Castillo stairway. Other small trenches made along the plaza side of the base of the east platform were also fruitful.

PRELIMINARY REVIEW OF THE POTTERY

Of the 40-odd sites visited, adequate ceramic samples were not obtained at all of them, but in general fair results were had in East Coast sites by use of the techniques described in the introduction. Most of the failures were at single shrines on rocky headlands, where the only successful way of getting a good sample would require almost complete destruction of the building.

Excellent sherd samples were recovered at: Kantunil Kin, Solfarino, Monte Bravo, Chiquila, Vista Alegre, San Gervasio, San Miguel, Aguada Grande, Tulum, Xelha, Mulchi, Kilometer 35, Kilometer 14, Cocal 1, Cancun, and El Meco. Fair samples came from El Diez, Yuukluuk, Cocal 2, Ak 1, Palmol, Palmol Playa, Tancah, Las Grecas, Punta Islote, Celerain 1 and 2, and El Cedral. Very poor samples were picked up at Santa Maria, Leona Vicario, La

Caleta, Ak 2, Chakalal, Punta Molas, Arrecife, El Real, and Janan.

At present a preliminary study has been made of the samples from all sites in the areas designated in the text as Interior Quintana Roo, North Coast, and East Coast. Also the pottery of two sites on Cozumel Island has been examined, leaving only the balance of the Cozumel material unstudied. No comparative studies with ceramic styles of Yucatán and Campeche have been made to date so that the following comparisons are to be taken with considerable reserve.

All the collections, with one exception, from the East Coast and North Coast areas are surely post-Classic. I believe that some of the buildings at Tancah are probably Classic, but much more excavation is needed to establish this. Some of the structures seem to be closer to Coba than to typical East Coast architecture. The only other possibility of a Classic site along the east coast is Chakalal, but no sherds were picked up at that site. The definite exception noted above is the sample from inside the platform at Chiquila.

In both the North and East Coast areas, the only collections with the basic Classic ware (slate) of Yucatán are the platform samples from Chiquila and from Vista Alegre. At the latter site it is mixed with Fine Orange, probably of the Chichén Itzá type, and with a Red-Slipped ware to be associated with Mayapán Red ware and similar pottery at Tulum. It is possible that Vista Alegre had a long period of occupation, say from Late Classic to Mayapán times. I believe its major period is probably Toltec-Chichen, but there is also a well-defined Mayapán period occupation level. In these two regions, then, there are very few Classic sites and no pre-Classic was encountered.

In practically all these post-Classic coastal sites one of the diagnostic wares of the period is a coarse, soft effigy-censer ware with close resemblances to the Mayapán type. The basic form is a high jar, often with a ring or annular base, and with the base pierced. Usually a large anthropomorphic figurine is joined to one face of the jar. There are, of course, local variations but the basic style from Chiquila to Tulum is very consistent. From the southern sites, Tulum to Palmol, the ware is generally buff in color, but from the sites around Puerto Morelos on to Chiquila it tends toward a brick red. Handled or ladle censers of the typical highland Mexican and Mayapán form also occur at most sites.

Also present at most of these coastal sites is a red-slipped ware which probably has close affinities to Mayapán Red ware. The forms are similar, shallow bowls and plates with tubular, hollow, pierced

tripod supports being the most common. Jars of the Mayapán type also occur in this ware although they are usually unslipped. The slip is exceedingly flaky; at Tulum the majority of the sherds have only fragments of it preserved.

The ceramic data at present suggest quite strongly that the majority of the coastal sites are not only post-Classic but very late post-Classic, dating from the Mayapán period. Pre-Mayapán sites are rare. There seems to have been extensive colonization of the coastal strip during this period, the basis probably being the expansion of trade with Honduras. The basic unity of pottery types with Mayapán over this large region establishes archaeologically, in my opinion, the documentary evidence of the hegemony of Mayapán over the northern part of the peninsula during this period.

One of the two Cozumel sites of which the pottery has been studied, San Miguel, has a ceramic complex very close to Vista Alegre, with the exception of a complete lack of Fine Orange. The basic wares are Yucatán Slate, including the Puuc basin variety, plus a striated plain ware also found at Vista Alegre. The site, or at any rate the sherd sample, is probably Late Classic.

Not a single sherd of Plumbate turned up in any of our samples, a strong indication that the majority of the sites are post-Toltec-Chichen. Fine Orange occurs in a number of sites but, with few exceptions, in very minor quantity. The only sites where it is present in any amount are Mulchi and Vista Alegre. It does occur, however, in very small quantities at sites such as Tulum, Cancun, and El Meco.

The Interior sites offer more varied material. Kantunil Kin, as has been noted, has Early Classic material. In my sherd samples is a high percent-

age typical of Peten Tzakol painted pottery with basal flanges. However, the region does not seem to have been heavily populated during Classic times. Solfarino, Monte Bravo, Santa Maria, and Leona Vicario are almost surely post-Classic; El Diez and Kilometer 14, if they have Classic material, are very Late Classic. A more probable dating seems to be transitional from Late Classic to Toltec-Chichen. Of the remaining unstudied collections from Cozumel, it seems probable that that from El Cedral is Classic.

CURRENT REPORTS
Carnegie Institution of Washington
Department of Archaeology

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EDITOR'S NOTE

I wish to call attention to the fact that some of the material in Current Report 24, "An Archaeological Reconnaissance of Northern Quintana Roo," had been recorded previously by the late Miguel Angel Fernandez, who visited a number of sites on Cozumel Island in 1937 and subsequently published his observations (*Exploraciones arqueológicas en la Isla Cozumel, Quintana Roo, Anales del Instituto Nacional de Antropología e Historia*, 1:107-120, Mexico, 1945). The ruins of El Real are described in text by Fernandez. Punta Molas, called El Cactus by Fernandez, Punta Islote, called Islote Celarain, and El Cedral are described and illustrated.

Sanders' ignorance of Fernandez's paper is understandable when it is realized that his report was prepared in Yucatán with little chance of reference to published sources.

H.E.D. POLLOCK

A NOBLE'S RESIDENCE AND ITS DEPENDENCIES AT MAYAPÁN

DONALD E. THOMPSON AND J. ERIC S. THOMPSON

The group comprises Str. Q-169 to Q-173a, inclusive. Str. Q-169 (260 S, 385 W), as judged from its size, its superior masonry, and its position less than 100 m from the Temple of Kukulcan, was almost certainly the residence of a chief or priest of outstanding importance; the other buildings in the group appeared possibly to have been dependent on Str. Q-169. The whole, therefore, presented an opportunity of studying the functions of a group of buildings believed to consist of the residence of a leading member of the community and its dependencies. The latter include what we believe to have been the private oratory of the noble or priest; and in that connection the function of the family oratory in Maya life, past and present, is discussed at some length.

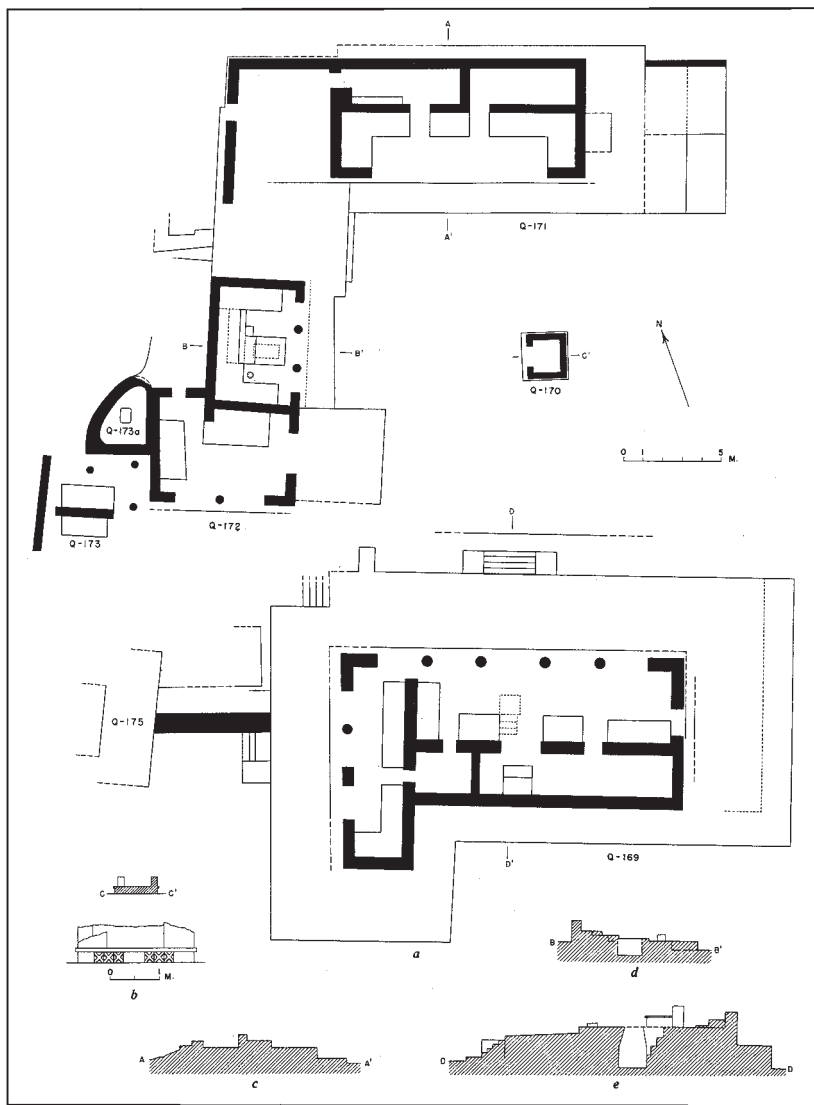
STR. Q-169

Str. Q-169, the main building of the group and the presumed residence of the most important mem-

bers of the family, stands on the south side of the court with its main doorway facing northward into the plaza. It is roughly L-shaped with the top of the L to the east, and is divided into four rooms (Figs. 25.1a,e; 25.2a-f).

The main room, facing the plaza, has a four-column entrance. A doorway, partly blocked by a bench, gives access to the eastern part of the terrace. No stairway leading to the terrace opposite this doorway could be made out, but the edge of the substructure there is so badly fallen that the former existence of a flight of steps is not excluded. Two doorways in the medial wall lead from the front room to a long rear room, and a third leads to a small rear room to the west of this.

A long end room, forming the bottom of the L, faces west with its main entrance divided by a column and a pier. The room could also be entered from the north or from the main room. A doorway in the east wall leads into the small rear room mentioned above.



25.1. Strs. Q-169 to Q-173a. Plans and Sections.

a. Plan of group. b. Str. Q-170, section (C-C') and front elevation. c. Str. Q-171, section (A-A'). d. Str. Q-172, section. e. Str. Q-169, section.

The building contains six benches: four in the main room and two in the west room, one of which is L-shaped. The long back room houses a small altar with a very low platform in front. These are on the central axis of the building, almost in line with the center of the four-column doorway and with the middle one of the three doorways in the medial wall. Practically on the same axis but slightly to the west is the tomb discussed later.

The terrace on which the building stands is also L-shaped. The front staircase, practically centered on the main axis, is composed of four steps of heavily plastered stone of Puuc style of workmanship, the fifth step being the terrace itself. Square block

balustrades stand on either side. The east side of the terrace, and probably the south side as well, had been widened, as earlier construction showed.

Against the west terrace wall there are three steps. The purpose of these, whether to give access to the west room or a small shrine, was not determined. The step up to the terrace is rather high, and the top step quite wide. It is, of course, possible that another step had once been present and was subsequently lost.

The purpose of the thick wall just north of the steps was not determined. It leads to the terrace of another structure. Likewise the very low retaining walls farther to the north serve no recognizable purpose. Possibly they were terrace walls for small thatched outbuildings, or perhaps for a small kitchen garden, the equivalent of the small fruit and vegetable gardens grown by present-day Maya women.

On the northwest corner a four-step staircase occupies a notch in the terrace. The north side of the stairway is badly fallen, but a balustrade may once have been present. West of this, on the north side, a small pier like block of masonry juts out from the terrace to no apparent purpose.

MASONRY. The terrace wall along the front of the structure is of fairly well-dressed stone. The top course projects 3 to 5 cm to form a small decorative molding. The sides and back of the terrace are less carefully built, are of more crudely dressed stone, and have no molding.

The walls of the superstructure are of well-dressed stone, carefully laid (Fig. 25.2a-e), the workmanship and masonry of the medial wall being superior to those of the rear wall. Stones standing as much as 1.15 m above the floor occur as door jambs. The west jamb of the north doorway of the rear west room is pierced diagonally across the inside corner, presumably for a cardholder.

The column drums are among the finest encountered at Mayapán. They are carefully dressed and rounded. The rectangular pier in the entrance to the west room stands out sharply in the otherwise quite symmetrical building. Possibly it represents the end


a

b

c

d

e

f

g

h

25.2. Strs. Q-169, Q-170 and Q-172.

a,b. Rear room, Str. Q-169, from east and north, showing altar. c. Rear west room of Str. Q-169 with main rear room in background. d. Rear west room of Str. Q-169 from west room. e. West room of Str. Q-169 from north. f. Tomb of Str. Q-169 with pottery vessels in southeast corner. g. Str. Q-170 from northwest. h. Room A of Str. Q-172 from southeast.

of an earlier wall which turned to join the rear wall, to give the building a rectangular plan. In that case the southern end of the west room would have been a later construction.

BENCHES AND ALTAR. The four benches of the main room are faced with well-dressed stone of Puuc style of workmanship, carefully laid. The top course projects to form a molding 7–10 cm wide. The benches

in the west room lack this molding, and are inferior in workmanship to those in the main room, although they are by no means badly made. All benches had been heavily plastered. Excavation of two of the benches produced nothing but a few nondescript sherds.

The altar is set at the western end of the rear room approximately on the central axis of the building. Like most of the benches, it had a small molding and was heavily plastered. The top had been broken, presumably by looters. Nothing was found inside, and no accumulation of sherds of incense burners was outside. In the debris in the doorway in front of the altar there was a well-made stucco foot, approximately life size, and a few other fragments of worked stucco, but not enough to constitute a complete stucco figure.

ROOF AND FLOORS. The debris in the rear rooms reached in places a depth of 1.27 m, and contained a high proportion of plaster, thus indicating a beam-and-mortar roof. In the front room the debris level was only 30–50 cm, but conditions here were more favorable for washing off (open doorway as compared with a solid rear wall). The debris was lowest on the central axis, and it looked as though the building had been previously trenched, but the filling of the tomb with roof fall accounted for this appearance.

Immediately in front of the plinth before the main entrance three rows of well-dressed stone of Puuc style of workmanship lay face down. Presumably these represented three courses of masonry laid above the doorway beams, thus assuring a roof at least 60 cm plus lintel thickness above the column height, which was probably about 2.30 m (6 drums, each a little under 40 cm, to a column).

In collapsing, the roof had caused the columns to fall in contrary directions. From east to west the four columns had fallen, respectively, northward, southward, northward, and south-eastward. There was no evidence that the building was burned.

Floors, in general, are well preserved. Along the central axis and at the east end of the rear room the floor was broken. In the first case this was because of the collapse of the roof of the tomb; in the second, probably because of the filtering down of the upper fill immediately below the floor. Between the front steps and the entrance the floor was in poor condition or destroyed because of the washing away of the protective covering of debris.

Beneath the floors there was a loose fill of very large boulders with a top layer of mortar and tight fill.

DEDICATORY CACHE. Immediately beneath the front edge of the plinth in front of the center of the

main entrance two small pottery figures representing seated jaguars were found (Fig. 25.3g). Both were broken, and pieces had slipped out of reach through the loose fill. One was painted red and white; the other, yellow. They closely resemble painted jaguar figurines of late date from Santa Rita, British Honduras (Gann 1900, Pls.33, 34, 36).

TOMB. A trench through the central axis of the building revealed a corbelled tomb entered by three steps on the south side (Fig. 25.2f). It represents a type previously found at Mayapán, even having the same position with relation to the building (Smith and Ruppert 1953:181–184, Fig. 25.1). As the two walls of the vault were far apart almost immediately below the floor of the room, and as no large capstones were found in the tomb, it can be assumed that a wooden ceiling closed the tomb. The whole space was filled with debris, most of it clearly from the collapse of the building. The masonry is inferior to that of the building. The floor is of very hard plaster.

A skeleton lay extended in supine position the full length of the north wall with skull to east. The left forearm lay across the chest; the right had been disturbed, the radius being in the southwest corner of the tomb. Hand and foot bones had been disturbed, and the skull was badly smashed. One copper bell (Cat. no. 55-205) was beneath the right tibia, just below the knee.

Twelve tripod bowls, small and mostly of very inferior Mayapán Redware, and one unslipped handled brazier were in the southeast quarter of the tomb (Fig. 25.3m–o). The rest of the tomb was empty. Clearly, there was room for large quantities of perishable goods, or nonperishables may have been removed from the tomb by looters. The presence of only one copper bell, and that in a position where it might have escaped observation by looters, and of such inferior pottery with the burial of a person presumably of considerable importance suggests that the tomb was robbed in ancient times. The misplaced right arm, disturbed hands and feet, and crushed skull support this suggestion, but also indicate that the robbery could not have taken place until after the flesh had decayed.

MATERIALS FROM BENEATH THE FLOORS. A small test pit under the floor of the tomb revealed midden-like material including a bone needle. R. E. Smith reports that the pottery from this sealed deposit (Lot A-421) is unique in containing no late Mayapán period sherds and almost none of pre-Mayapán period. It is possible that the floor of the tomb represents an earlier plaza level sealed off at the very beginning of the Mayapán period. Sherds from beneath floors in

other parts of the structure include examples of late Mayapán period.

SURFACE MATERIALS. These (Lot A-408) comprised late sherds, eight fragments of obsidian flakes, a piece of conch shell, a "pot lid," and a broken *metate* (present length, 45 cm; complete width, 36 cm; complete height, 14 cm), troughed and slightly turtle-backed. This supposedly had been re-used in walls or roof; there seemed no reason to believe it had served as a *metate* in the front room, where it was found. No dirt had accumulated between the mortar debris from the collapsed roof and the floor. This indicates a short interval between the abandonment of the building and the fall of the roof.

PURPOSE AND HISTORY OF THE BUILDING. The plan of the building with its large open room with benches in front and narrow, poorly lighted rooms in the rear, the excellent masonry, and the commanding position leave little doubt but that this was the residence of a person of high rank, lay or religious (cf. Smith and Ruppert 1953, Figs. 1, 3; Thompson 1958). No evidence of a kitchen or other domestic activities was found. The altar and perhaps the tomb had been looted before the collapse of the roof, which came shortly after the abandonment of the building. Surface sherds bear witness to an occupancy of the group in the last ceramic phase, so there is every reason to suppose that Str. Q-169 was in use until the destruction of Mayapán, when it was looted, but not burned.

STR. Q-170

Str. Q-170, in the center of the group, is a small structure of the type designated "shrine." The base is faced on all sides with groups of three X-shaped stones of Puuc style of workmanship alternating with areas of plain stone (Figs. 25.1a,b; 25.2g). The stones are plastered, but not so thickly as to mask the design. Here, the fine stone had not been re-used haphazardly, but had been carefully laid to produce a symmetrical design.

On top of this base, about 22 cm above plaza level, is a molding also of well-dressed stone, 8 cm high and projecting some 7 cm. The floor of the structure is level with the top of this molding.

The badly fallen walls have an outer face of thick stones set directly over the base, and an inner face of thin slabs. Single jamb stones form the doorway, which faces west toward the shrine room of Str. Q-172. The thickness of the debris suggests that the walls stood rather high and that the structure may

have had a vaulted or at least a beam-and-mortar roof.

The shrine had been looted, for the top floor and another 30 cm beneath it had been purposely broken. It will be seen that in size, plan, and location this is a typical shrine structure, but it lacked an altar. Moreover, no appreciable number of *incensario* sherds were in or near the building, nor was there any indication of a dedicatory cache.

STR. Q-171

Str. Q-171, on the north side of the court, faces south directly toward Str. Q-169. It is composed of three rooms with a large courtyard or perhaps fourth room to the west (Fig. 25.1a, c). The main front room is partly occupied by two L-shaped benches and one central bench. Between the benches two doorways in the medial wall lead to rear rooms. The room to the east can be entered only from the main room; the one to the west contains a very narrow bench and has an end doorway leading to the square court.

The court or room to the west is somewhat enigmatic. The front is completely unwallled, but the plinth of the main part of the building continues at least part way across this end. The back wall is a direct continuation of the rear wall of the main structure. Doorways enter from the west and from the rear room to the east.

This enclosed area could have been a courtyard, possibly containing a small wood-and-thatch structure, or could have been completely roofed. The maximum span (5 m) is not too great for a thatch roof, especially if posts were used.

MASONRY. The walls of the structure are of poorly dressed stone, not well fitted and badly fallen. Some better-dressed stone is used in the plinth. One very large slab of fairly well-shaped but badly eroded stone forms the south jamb of the door between the west rear room and the court. The section of retaining wall north of the west door of the court is of fairly well-laid and -dressed stone, but that to the south is composed of one poorly fitted course of upright stones.

BENCHES. The three benches in the front room are badly fallen because the small upright stones had not been deeply set. Likewise the narrow bench in the west rear room is in poor condition. As it is only 39 cm wide, it seems unlikely that it could have been used for sleeping purposes. An exterior bench with ends missing but with front of well-dressed stone of Puuc style of workmanship is against the east wall.



a



b



c



d



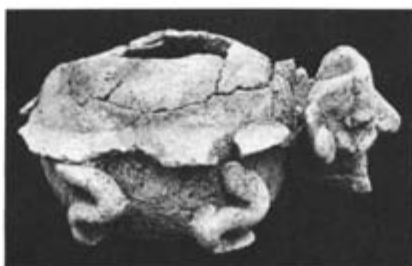
e



f



g



h



i



j



k



l



m



n



o

25.3. Artifacts.

a,b. Kneeling pottery figure from dedicatory cache, Str. Q-172. Face, except forehead, ears, rods of earplugs, left arm-let, and left glove (?) are red. Right glove (?) red with two white rectangles. Beads of necklace and wristlet alternately red and blue. Rectangular earplugs and right armlet blue. Body white with yellow stripes outlined with red. Forehead white. Loincloth and body belt striped red, yellow, and blue. Blue horseshoe around right eye, yellow horseshoe around left. Height, 14.1 cm. Lot A-416. c. Pottery head of death god from effigy incense burner. Traces of pink and green on face. Headdress white with vertical red stripes outlined in black. In cist, Room A, Str. Q-172. Height 23.7 cm. Lot A-413. d. Stone carved with two glyphs. Re-used in façade of Room A, Str. Q-172. Length 43 cm. Cat. no. 55-34. e. Tripod jar of unslipped pottery with solid, conical legs. Above altar of Room A, Str. Q-172. Height 10.9 cm, Lot A-406. f. Limestone ornament in doorway of Room A, Str. Q-172. Top hollowed to depth of 7.2 cm. Originally stuccoed over whole surface except butt. Traces of red paint. Height 30 cm. Lot A-406. g. Two hollow pottery figures representing jaguars, from dedicatory cache, Str. Q-169. Height of better-preserved 13.2 cm. Left is painted with red and white stripes; right, yellow except for red tongue. Lot A-417. h,i. Pottery vessel representing turtle with human head apparently once set in open jaws of turtle (lower jaw alone remains). Badly weathered. In roof-fall of Room A, Str. Q-172. Length 15.5 cm. Lot A-406. j. Pottery jar which held cremation. Inside altar, Room A, Str. Q-172. Worn red slip. Height 31 cm. Lot A-415. k. Pottery tripod jar of Mayapán Red Ware. Slip largely gone from interior. Inserted as lid in neck of j. Diameter 24.4 cm. Lot A-415. l. Copper tweezers with twisted handle. From cist of Room A, Str. Q-172. Length 7.1 cm. Cat. no. 55-204. m-o. Pottery vessels from tomb, Str. Q-169. Handled brazier unslipped, diam. 23 cm. All tripod bowls with solid conical feet. Diameters from 20 cm to 9.8 cm; heights from 8.7 cm to 4.5 cm. Two smallest bowls perhaps unslipped; the rest are slipped Mayapán Red on interior, unslipped on exterior. Three have regularly placed spots or casual dashes of blue paint on exterior or interior. Lot A-418.

ROOF AND FLOORS. The thin surface debris indicates a thatch roof, presumably supported in front by wooden posts, no trace of which survives. Because of the lack of protecting roof-fall, the floors are largely gone and, where present, are in very poor condition. Just enough remains to establish their level.

EXTERIOR OF THE BUILDING. To the east are a series of complex and badly disintegrated terrace additions. First the terrace was widened, as indicated partly by dotted line; then it was widened a second time, and the level of the northern half raised. The short piece of wall along the back is presumably the rear of a small additional structure on top of this higher section. There has been serious robbing of stone in this area.

To the west of the court are a series of short retaining walls, the purpose of which is not clear. As in the case of the walls west of Str. Q-169, it can only be suggested that perhaps they served as outlines for small kitchen gardens or as foundations for duck, turkey, or dog pens.

CONCLUSION. Str. Q-171 is clearly a residence. Since it faces the main court but is inferior to Str. Q-169, it was presumably used by less important members of the household, perhaps younger sons and their families. It seems unlikely that so large a building as this in so important a position would have been used by servants. The court to the west may have been a room, perhaps a kitchen, but this is uncertain. In any case it is in direct communication with the main part of the building and opens to the west and south as well.

STR. Q-172

Str. Q-172, on the west side of the court, had comprised two rooms forming a reversed L, but an addition which blocked the east doorway of Room B, the more southerly of the two rooms, converted the plan into a T shape with its top to the south (Figs. 25.1a,d; 25.2h). Only the outline of this addition can be followed; the interior is a jumbled heap of stone and rubble. It seems to have been a platform standing to a height of about 1.5 m, on top of which there may have been some sort of low-walled building, but this can no longer be made out.

After the addition of this platform, the plinth in front of Room A, the more northerly of the two rooms, was extended eastward, but the new face of the plinth is not parallel to the old one or to the walls of the structure. As a matter of fact, there is an unusual amount of asymmetry in this building, notably in Room B and in the alignment of the altar platform and the columns of Room A. In contrast to the single entrance divided by columns of Room A, Room B has three entrances. That on the east side was blocked by the addition of the platform, and the small doorway in the north wall is of secondary importance. The main entrance clearly is on the south side.

An earlier plinth beneath the southeast exterior corner of Room B, decorated with a line of X-shaped ornaments of Puuc style of workmanship, indicates a prior construction. This was not excavated, as it was considered unlikely to have any bearing on our investigation of the function of the building.

MASONRY. Wall stones vary much in quality, but for the most part are rather poorly dressed and of

indifferent workmanship. The best stonework is to be found facing the benches and the plinth and its addition. In those places re-used stones of Puuc style of workmanship are employed. The worst masonry appears in the short north wall of Room B and is extraordinarily crude. The stonework is not particularly good above the backs of benches, where often at Mayapán Puuc-style stone is used.

Doorjambes are large, rather thin slabs of stone standing to heights of as much as 1.30 m above floor level, and varying from roughly to excellently dressed. In the debris from the collapsed façade in front of Room A was a well-dressed stone carved with two glyphs (Fig. 25.3d). Stucco adhering to one corner indicated that the whole design had been masked with thick layers of stucco so that the stone could be re-used as an ordinary facade stone.

A peculiar stone artifact or ornament, like others which have been found at Mayapán, was tenoned into the floor of Room A, just within the earlier plinth and midway between the two columns. It leaned outward at about a 45-degree angle, but may once have stood upright. Its purpose is unknown (Fig. 25.3f).

CEILING. The amount of debris in both rooms was insufficient to have derived from the collapse of roofs with corbeled vaulting, but sufficient to have come from beam-and-mortar ceilings (average height of debris in Room B, 60 cm; slightly less in Room A). The quantities of mortar, sometimes in large chunks, which, except for a top layer mixed with earth, composed the debris, confirm the conclusion that both rooms had beam-and-mortar ceilings. The rear wall of Room A collapsed outward, and for that reason the debris over the back of the altar was only 27–35 cm deep. The lack of dirt between floor and roof-fall indicates the collapse of the building shortly after its abandonment. There was no evidence of burning or of looting.

A ritualistic vessel (Fig. 25.3h,i) in the mixed earth and mortar above the mass of roof-fall in Room A appears to represent an offering made after the collapse of the roof and presumably after the fall of Mayapán.

There was a circular depression, about 40 cm in diameter and 10 cm deep, in the floor near the south bench of Room A. This held a mixture of charcoal and mortar. Charcoal was scattered over the surrounding floor.

ALTAR AND BENCHES. Room A had an altar (for definition see below) against the back wall and a bench against each flanking wall. The somewhat irregularly placed benches of Room B are faced with

excellently dressed stone of Puuc style of workmanship and are decorated with niches. The front (south face) of the north bench has two niches, 18 cm wide and 24 cm high. Each is flanked by “jamb” stones which support “lintels” over the niches. Depths of niches are 27 cm and 11 cm.

The front of the west bench has a single niche, 56 cm wide, 22 cm high, and 28 cm deep, with a short column, 23 cm wide, set in the middle. There is a niche in the north face of this same bench, 23 cm wide, 21 cm high, and 23 cm deep. The niches appear to be ornamental (none held anything), although in no case was a niche placed symmetrically in the bench face. Instead, the width of the bench front to the observer’s left of the niche (of the pair in the north bench) is approximately half as wide again as the bench face to the right of the niche.

The north bench is 36 cm high; the west bench, 32.5 cm. A trench through the north bench produced nothing.

The benches of Room A, 50 cm high and undecorated, extend almost the lengths of the north and south walls, and join the altar against the west wall, which is of the same height. There is evidence of much remodeling of the benches and altar. These alterations will be treated briefly, for they have little bearing on the history of Mayapán. Certainly, little time elapsed between the building of the rooms and their abandonment, but changes in the altar correlate with a shift from cremation to inhumation. These alterations to the altar are as follows: (1) The original altar was part of the first construction of the room, since the wall of the room behind it is not faced. It was at two levels: the main part, 33 cm high and 87 cm wide, and a raised shelf at the back, 54 cm wide and 18 cm higher. (2) The shelf was extended forward to a total width of 1.11 m. (3) The floor in front of the altar was torn out, and the ossuary cist was made and covered with a low platform. (4) The face of the altar was extended 51 cm eastward so that it slightly overlapped the ossuary cist.

The sides of the cist are of undressed stone. There had been a cave-in of the ossuary roof, so that the platform floor above it is destroyed and the front of the altar sags (Fig. 25.2h).

The crematory jar, discussed below, was associated with the original construction, but the tripod bowl which covered it is full evidence that little time can have elapsed between the original construction of Room A and the abandonment of the building, since that type of vessel was in use until the fall of Mayapán.

The north bench of Room A was added after the construction of the room, for the wall behind it is faced. The south bench had undergone various

reconstructions. The wall behind it is faced above a height of 26 cm above floor level. At that point the plaster on the wall turns to mark the top of an early bench now destroyed.

DEDICATORY CACHE. This was below the floor immediately east of the original plinth of Room A and approximately on a line midway between the two columns of the entrance. It consisted of a broken pottery vessel in the form of a kneeling figure (Fig. 25.3a,b). This type of kneeling figure occurs in a cache elsewhere at Mayapán (Shook 1954, Fig. 2j) and, again in a cache, with late material, almost surely of the same period, from Santa Rita, British Honduras (Gann 1918, Pl. 8). It is not improbable that these figures represent a Maya equivalent of the Mexican deity Xochipilli, patron of music and the ball game, whence comes his kneeling position.

RITUALISTIC VESSELS. The pottery turtle with human head in mouth (Fig. 25.3h,i) has already received mention as perhaps marking a post-Mayapán offering.

On the altar were fragments of at least nine effigy incense burners and a coarse unslipped tripod jar (Fig. 25.3e). The incense burners extended in a line (perhaps two lines) across the back of the altar. They were very badly smashed and pieces were missing. As previously noted, the back wall of Room A had fallen outward so that little debris lay above the altar, with consequent greater root damage to the vessels on it. Fourteen feet and two legs with non-fitting fragments of feet indicated at least nine figures (there was an unmatched sandal tie). Face fragments were only six in number, and only three hands had survived. Other pieces of incensario figures, including one well-preserved head (Fig. 25.3c), were in the ossuary cist, into which they may have fallen or even been thrown after the collapse of the platform floor above it. It is well known that the modern Maya believe such figures to be alive and evil, and so make a point of destroying them whenever possible. As there is a technique for destroying them without peril to the destroyer, this belief may be ancient. Without doubt pieces had been removed. The survival of only three of at least eighteen hands is significant in view of the hand's high capacity for mischief. In any case, not one of the incensario figures was sufficiently complete to be restored. Several retained varying amounts of paint.

CREMATION AND OSSUARY CIST. Inside the altar of Room A and associated with the first form the altar took was a large unslipped jar of superior workmanship (Fig. 25.3j). On top of it was a flat stone slab,

about 25 by 20 cm, clearly placed there for protection. Inside the neck of the jar the tripod bowl (Fig. 25.3k) had been wedged, and sealed in position with mortar. It fitted quite snugly, but on one side there was a gap up to about 1 cm wide which had likewise been filled with mortar, and some effort was necessary to loosen the material so that the "stopper" could be removed. Inside, the jar was slightly more than two-thirds full of very fine, light gray ash. With this were mixed some very small fragments of bones including a piece of a human wrist bone; also two human molars, one human incisor, two teeth of an unidentified animal, and a jaguar canine with hole for suspension bored laterally through the root.

There seems no reason to doubt that this was a human cremation. From Landa's writings it is known that cremation and the keeping of the ashes in jars were common practices of the nobility; archaeological evidence indicates an increase in cremation shortly before the arrival of the Spaniards (Wauchope 1948:84-87).

The ossuary contained the skeletons of four adults. As the bones were partly articulated but the cist was certainly too small to hold four bodies (its dimensions were only 1.22 m long, 63 cm wide, and 48 cm deep), we must conclude that the bodies were placed in the cist one at a time and at intervals of several years, so that previous corpses, having disintegrated, occupied little space. The nature of the roof is uncertain, but as there is a space of 35 cm between the tops of the sides of the cist and the level of the missing floor of the platform above, a larger cubic area may have been available than the above measurements would indicate.

The use of the cist as a family vault seems the most reasonable interpretation of the finds. The owners of this family vault presumably were the occupants of the large adjacent residence, Str. Q-169.

The only objects in the cist, apart from the fragments of incense burners already mentioned, were: a pair of copper tweezers with unusual twisted handle (Fig. 25.3l), one very small discoid shell bead (5 mm diameter; Cat. no. 55-206), one damaged fragment of worked bone (Cat. no. 55-200), and one rectangular piece of worked shell (2.7 cm long, 1.1 cm wide; Cat. no. 55-199).

MATERIALS ABOVE ROOM FLOORS. Above the floor of Room A (Lot A-40b) were found, in addition to a miscellaneous lot of sherds, the following:

(1) An arrowhead, notched at base, secondary chipping along edges, of translucent light bluish-gray flint. Length 5.5 cm (Cat. no. 55-145). (2) A presumed arrowhead, not notched, secondary chipping along edges, of light bluish-gray flint. Length 3.4

cm (Cat. no. 55-146). (3) An obsidian flake pressed from core, but with blunt tip. Apparently complete. Length 5.5 cm. (4) A small obsidian core (Cat. no. 55-154). (5) Five broken obsidian flakes pressed off cores. (6) Three stone disks of the so-called "pot lid" type (Cat. nos. 55-194, 55-214, 55-248). These last were at some distance above floor level.

Room B yielded (Lot A-402), in addition to sherds: (1) A copper bell without clapper, almost spherical and with a ring for suspension. Height 1.6 cm (Cat. no. 55-101). (2) A probable arrowhead of honey-brown flint with secondary chipping on all sides. Length 4.7 cm; width at base (widest point) 3 cm (Cat. no. 55-102). (3) A very crude stone sculpture possibly representing the diving god. Length 11.9 cm (Cat. no. 55-134). (4) One broken flint point (Cat. no. 55-257). (5) Three fragments of obsidian flakes. (6) Four fragments of flint points. (7) One "pot lid." (8) One broken end of a *mano* (Cat. no. 55-550). (9) One antler fragment. (10) A small piece of coral. (11) A fragment of conch shell. (12) A rubbing or polishing stone (Cat. no. 55-549). (13) Six fragments of bone.

Despite the fact that Room A seems to have served as a religious room, whereas Room B better fits the residential type, there does not appear to be enough differentiation between the associated lots of artifacts to be of value in interpretation of function.

FUNCTION OF THE STRUCTURE. Str. Q-172 is clearly an integral part of the group dominated by Str. Q-169. Of its two rooms, Room A, because of the presence of altar and incensarios, appears to have had a religious function, whereas Room B presents no evidence of having served for religious purposes. We are, accordingly, faced with two problems, the solution of which would increase our knowledge of the position of communal and family religion in Mayapán. The first of these is whether a building could function as a religious edifice when a part of it seems to have served as a residence; the second is whether a small group of buildings, predominantly residential, can include, apart from a central shrine, a building for religious rites.

As an altar is the most obvious clue to the recognition of a room as a sanctuary, since literary and modern ethnological sources make it clear that these were used by the Maya, it is first necessary to define how we recognize a Mayapán altar. Archaeologists would probably agree that an altar can be differentiated from a bench if it meets any of the following conditions:

1. It is set against a back wall, faces a doorway, and stands on or behind a low platform which clearly functions as a low dais.

2. Either in width or in length it is not large enough to have been comfortably slept on, but it is of a height and size suitable for serving as an altar and is set against a back wall and faces a doorway.
3. Incense burners or ceremonial pottery (e.g. Thompson 1954:75) stood on it or on, or in front of, the platform immediately in front of it. Actually, the presence of large numbers of fragments of incense burners on the floor of a building, even where there is no altar or bench, has been deemed an important factor in the identification of a structure as having had a religious purpose (Adams 1953:149). For this there is support in the practice, observed by the present-day Lacandon, of keeping incense burners in the ceremonial hut (Tozzer 1907:91-92, 113).
4. An ossuary cist is beneath the floor area before it (Adams 1953:149), and one or more of the three other conditions is met. The association of ossuary cists, or of tombs (e.g. in Str. Q-169) or simple inhumation (Smith and Ruppert 1953, Fig. 3; Thompson 1954:77), with oratories suggests family burials, for it is improbable that adults, at any rate, were sacrificed at family altars. The probability that these burials were of members of the family is strengthened by Landa's description of the keeping of the ashes of ancestors in the oratories of houses of the nobility, and his statement that the members of a household were buried in or behind their home (Tozzer 1941:130-131). From Landa's statements as well as from accounts of worship at present-day family altars (La Farge 1947:114), it is apparent that ancestral cults were, and still are, associated with family altars.

In the light of the above conditions for the identification of altars, it is clear that in our group there are altars in Strs. Q-169 and Q-172. The altar in the former building is situated against the back wall and opposite a doorway, it stands on a low platform, and it is too short to have served as a sleeping platform. In front of it is a large tomb. On the other hand, the size of the room and the lack of fragments of incense burners or other ritualistic vessels are atypical features. In Room A of Str. Q-172 the altar is identified as such by the line of effigy incense burners on it, by its position, and by the platform and ossuary in front of it. In contrast, the so-called shrine structure (Q-170) not only lacked an altar, but also was without remains of incense burners and had no ossuary. Except for its position and size, it in no way suggests a religious building.

Before attempting to establish the function of Str. Q-172, with its unusual arrangement of one apparent living room and one shrine room modified by the presence of lateral benches, we must review the data on sixteenth-century and present-day use of household and detached family oratories.

Landa says that the lords, priests, and leading men had oratories and idols in their houses, where

they made their prayers and offerings in private, and where were kept the vessels and statues containing the cremated remains of their ancestors (Tozzer 1941:108, 131). As these last were the objects of a cult, it is clear that one of the uses of the family oratory was for ancestor worship. The shrine room in the house was not confined to Yucatán, for Wauchope (1938:142) quotes a passage from Las Casas: "When the Guatemalans built a new house they were careful to dedicate an apartment to the worship of the household gods; there they burned incense and offered domestic sacrifices upon an altar erected for the purpose."

Information from Tayasal is even more specific. Three of the largest temples are reported to have been the private oratories, respectively, of the chief Canek, the high priest, and the chief "prophet." Canek's oratory had been inherited from his ancestors (Villagutierre 1933, Bk. 8, Ch. 13).

Accordingly, at the time of the Spanish conquest we find that a family of rank set aside either a separate building or a room in their house as the family oratory.

Turning to the present-day Maya, we find that among the Chorti wealthier families have separate buildings in which only the altar and the images or pictures of saints are kept. These are built like ordinary huts, but are kept closed and darkened. During ceremonies, only men may enter them; at other times everybody uses them, although sick persons and menstruating women should not enter, and women do not work in them. Most Chorti villages have a communal ceremonial hut of a similar nature (Wisdom 1940:384).

In Quintana Roo, where conservative influences are strong, it is not usual to keep crosses or images of saints in any dwelling. Instead, they are housed in a separate family oratory called *chan iglesia* (small church) or *oratorio* (Villa Rojas 1945:97). In Yucatán the family altar is now in the dwelling hut, but it is remembered that "the old people" built separate shrines for their *santos* (Redfield and Villa Rojas 1934:131). Evidence for the former existence of family sanctuaries in Yucatán is probably contained in the discovery (circa A.D. 1600) by Father Orbita, who was campaigning against relapses into idolatry, of thirty temples of idols in a single (unnamed) town (Lizana 1893:119). These must have been family oratories, for clearly there could not be thirty communal pagan temples in a supposedly Christian village. At Tipu, in what is now British Honduras, this same Father Orbita uncovered more relapses into paganism, including idols and garments of pagan priests housed in a small private room (*retrete*) close to the hut of the chief man of the village (Lopez de

Cogolludo, 1868, Bk. 9, Ch. 12). Presumably this was a family oratory housed in a detached building within the typical Maya family compound. The present-day Lacandon have ceremonial huts in which all the worship of the group is carried on, and where the religious vessels, notably effigy incense burners, are kept (Tozzer 1907:92). As each Lacandon settlement is, according to Tozzer, a family group, the ceremonial hut is really a family shrine. The Lacandon have no altar or religious rite within the dwelling hut.

At Panajachel, on Lake Atitlán, families that can afford the expense have a detached "saints' house," but this is often used also for storage of corn or tools, and in one case an unmarried son of the house slept on the floor (Rosales in Tax 1951:67, 89, 101-102). Tax writes us that, to the best of his recollection, at Chichicastenango, where houses are often divided into rooms, one room is sometimes reserved for a domestic altar.

In contrast to these cases of a separate building or room serving as a family oratory, the altar in the regular dwelling hut is rather general throughout the Maya area. How far this is the result of Christian influence it would be hard to say. From the cases just cited, one gets the impression that the main cause for failure to provide a separate shrine room or shrine building is indifference or lack of wealth. The former reason is brought out in the Yucatec awareness that it was a custom of "the old people" to have a separate oratory, for the behavior of "the old people" is praiseworthy and worthy of emulation.

Information from Quintana Roo and Yucatán makes it clear that the placement of the family shrine in the living room is not the ideal arrangement. In Quintana Roo the reason given for having the oratory in a separate building is that it is thought irreverent to expose the altar and the sacred objects on it "to the indelicacies and impurities of daily human conduct" (Villa Rojas 1945:97). In Yucatán, where the altar is in the living room, the *santos* are put in little cases at night, for they must not witness sexual intercourse. To break wind before a *santo* brings sickness (Redfield and Villa Rojas 1934:131). In these tabus the whole concept of ritualistic purity, *zuhuy*, so strong in Maya religious life, is involved, and it is hard to believe that in pre-Columbian times the routine of the domestic daily round would have been tolerated in the room in which the rites of worship and sacrifice were performed.

Nevertheless, there are circumstances when it is licit to sleep in the same room with the altar or near it. In the periods of fasting and continence which precede and sometimes follow religious rites, it was, and still is, a widespread Maya custom for the men to sleep away from their homes. This is pri-

marily to insure continence before a ceremony. Las Casas (quoted in Roman y Zamora 1897, Bk. 1, Ch. 16) notes that in the Verapaz men slept before a ceremony in certain *portales* and houses near the temple specially made to house them. At Chan Kom, before and during the *ch'achac* ceremony the men sleep in their hammocks close to the sacrificial altar so as to avoid any risk of rendering the ceremony of no avail by sexual intercourse (Redfield and Villa Rojas 1934:138). In Quintana Roo, the *hmen* at the conclusion of the great ceremony of purification spends nine days in seclusion in a house close to his own (Villa Rojas 1945:139). Lacandon men sleep in the ceremonial hut for a period of at least four weeks while the new incense burners are being made. Tozzer (1907:111) writes that this is for the protection of the new incense burners, but there can be no serious doubt that the need for group continence is at least an equally important reason, for the *zuhuy* attitude is apparent in the belief that if food has first been taken into the living hut it is no longer fit to be offered to the gods. The Lacandon rite is very similar to that for the making of idols as described by Landa. Retirement to a specially constructed hut, blood-drawing and other religious rites, continence, and fasting were essential to the success of that work; the breaking of any of these tabus was highly dangerous.

Our review of the material permits us to offer certain generalizations which should be applicable to fifteenth-century Mayapán:

A member of the priesthood or the nobility had a family altar, either in a room in his residence set aside for private religious ceremonies, the shrine room already identified at Mayapán (Smith and Ruppert 1953, Figs. 2, 3; Thompson 1954, Fig. 1), or in a separate building. In this shrine an ancestor cult was practiced, and beneath its floor there was often an ossuary which was probably a part of the ancestral cult. For such persons of rank, we can suppose, it was not considered correct to have an altar in the living quarters. Indeed, such a location for it might endanger the inhabitants of the house and would make efficacious worship difficult because the necessary *zuhuy* atmosphere would be almost unattainable. Poor people, whose resources did not permit of a separate building or room to house a family shrine, may have had an altar in the living room, but archaeology has not yet produced any evidence of such an arrangement, and it is more probable that family worship took place elsewhere, perhaps in the *milpa* or at some communal place of worship (cf. the family ceremonies at the open-air altars of Momostenango; Goubaud 1937). In any case, poor families probably paid less attention than did the nobility to ancestor

cults, which seem to have formed an important part of family worship among the latter.

Before important rites, participants went into seclusion. For communal acts of worship men may have taken up residence in the large colonnaded halls around the ceremonial center, for these seem to correspond to the *portales* of which Las Casas writes. Most shrine rooms in houses would hardly have been large enough to allow all the men of a family to sleep in them before some private rite, but in view of the data on men sleeping in or near the oratory before ceremonies, we suggest that Str. Q-172 was a family shrine, and that the benches in it were for use by participants during the periods of ritualistic seclusion before and during ceremonies. Perhaps Room B normally housed the participants, but the flanking benches of Room A could take care of an overflow. The small and unusually situated doorway at the back of Room B is consonant with the suggested use of the room; men in seclusion could use it to leave the building inconspicuously to relieve themselves. The blocking of the front (east) doorway is also understandable if the room was converted to the suggested use.

STR. Q-173

There is little to be said about Str. Q-173, which appears to have evolved haphazardly from a very simple hut with two benches separated by a medial wall (Fig. 25.1a). Presumably, later inhabitants utilized the adjoining walls of Strs. Q-172 and Q-173a to enclose a larger area, adding for that purpose the three columns, which are irregularly placed.

Masonry is poor, and no dressed stone is used. The floor on the east side of the building is excellently preserved by fallen masonry from Str. Q-172. Excavation of the south bench produced only sherds, thirty animal bones, and one obsidian fragment (Lot A-430), but immediately below the floor east of the two benches there is an earlier construction. This is a sort of bench, about 20 cm high, resting on bedrock, built against the plinth of Str. Q-172. The top of this bench is a scant 3 cm below the floor of the structure. This bench is evidence that Q-172 is earlier than Q-173a in its final form.

Conceivably, this was the house of the *caluac* who served the owners of Str. Q-169, a matter discussed in the next heading.

STR. Q-173A

Str. Q-173a is most unusual in its quadrant-shaped plan (Fig. 25.1a) and in the absence of any entrance at floor level. The structure is built against Str. Q-172,

but the exterior west wall of the latter is not utilized in its construction, as was the usual practice when additions were made. Instead, a new wall was built against Q-172. The reason for this may have been that the new wall was needed to support the roof of the new building. This part of the wall stands to the same height as the adjacent part of Str. Q-172, that is, to about 1.10 m. The wall of the arc varies in height from 30 to 40 cm. The debris line sloped down from about 1 m on the east side to 40 cm against the arc, much debris clearly having entered from the collapse of Room B of Str. Q-172.

Plaster adheres to the inside wall surfaces. Bedrock serves as the floor over most of the interior, but near the edges and over natural pockets a little fill had been plastered over. Floor plaster turns up to continue as wall plaster. The floor slopes down irregularly at a slight gradient to the center of the room, where there is a natural crevice in the bedrock, 72 cm (north-south) by 54 cm wide. The lowest part of this pocket is 98 cm deep.

From the bottom of the crevice were taken a few sherds including the greater part of a tripod bowl of Mayapán Redware with human effigy feet, almost a duplicate of that with the cremation (Fig. 25.3k). On the floor was a crude stone sculpture barely recognizable as a turtle, 21.2 cm long (Cat. no. 55-285).

No information was obtained on the nature of the roof, if any, of the building. If, as seems a reasonable supposition, the walls everywhere stood to a height of not less than 1 m, as was the case on the east side, then the amount of debris against the arc was scarcely enough to account for both a mortar roof and walls not less than a meter high. That was so because the walls sloped inward and had obviously toppled inward. Indeed, the slope was so marked that at one time we wondered whether the building could have been domed.

Our first conjecture was that the structure had been built for water storage. Water from the adjacent structures could have been collected there without trouble. The slope of the floor of natural bedrock favored that interpretation, but one cannot be sure that the walls of the fissure were waterproof. This was filled with mortar debris, most of which had certainly fallen in, but some of which might have come from waterproofed cracks. There is also some doubt as to whether the walls with their stuccoed surfaces of normal thickness would have been impermeable. Edward H. Thompson (1897:77), in discussing the *chultuns* of Labna, which he believed to have been used as water reservoirs, remarks that the walls had been made impermeable "with thick layers of

cement like stucco." The stucco on the walls of Str. Q-173a was not in thick layers, nor was it, when excavated, of cement-like quality.

Alternatively, the room may have been used for the storage of maize and other produce. Landa (Tozzer 1941:26) writes of the *caluac*, the overseers, who sent notice to the provinces of what supplies were needed for the households of the lords, "such as birds, maize, honey, salt, fish, game, cloth, and other things." The housing of such produce is, perhaps, the most reasonable explanation of the purpose this building served. If it is acceptable, we might go on to suggest that Str. Q-173 may have been the residence of the *caluac*, despite Landa's statement that the *caluac*'s home was farther from the center of the city than was his master's. Archaeological evidence clearly disproves Landa's statement that the temples and houses of the lords were the only buildings in the center of Mayapán, for Str. Q-173 clearly was neither the one nor the other.

SUMMARY

The group of buildings here discussed is dominated by Str. Q-169, which clearly was the residence of some important personage. Indeed, to judge by the masonry and by the proximity of the group to the Temple of Kukulcan, this was one of the most important residences in Mayapán.

Following a review of data on the use of family oratories by the Maya from the sixteenth century to the present day, Str. Q-172 is identified as the private oratory of the residents of Str. Q-169 or, perhaps, of the whole group.

Strs. Q-171 and Q-173 are residential, but are more humble dwellings, and presumably were occupied by less important members of the household of the high priest or chief resident in Str. Q-169. The suggestion is advanced that Str. Q-173 may have been the residence of the *caluac*, "overseer," because the adjacent quadrant-shaped Str. 173 may have served as a warehouse.

Three ways of disposing of the dead were followed: cremation, burial in a large vaulted tomb, and insertion in an ossuary set before the altar of the family shrine.

Pottery (Lots A-400 to A-437) shows that the group was certainly occupied late in the history of Mayapán, and presumably was in use until the destruction of the city. Sherds beneath the floor of the tomb in Str. Q-169, which was beneath the final level of the plaza, are a good representation of early Mayapán period, according to R. E. Smith.

EARLY CERAMIC HORIZONS AT MAYAPÁN AND SANTA CRUZ

ROBERT E. SMITH

In order to give some idea of the early ceramic material at Mayapán, in anticipation of a final report, it is considered advisable to compile this preliminary analysis selecting only the main wares and types.

The early pottery found at Mayapán and the small neighboring site of Santa Cruz (R. E. Smith, 1954:53–58) includes pre-Classic, Classic, Puuc, and Toltec period types, which together form approximately 2.5 percent of the total pottery collected. Here by Classic is meant Lowland Maya Classic as found in southern Campeche, Mexico, in the Peten of Guatemala, and in British Honduras. Puuc pottery was manufactured during the Classic period, both early and late, but was regional to northern Campeche and Yucatán. The Toltec period types were made during the early post-Classic period. The lowland Maya Classic specimens, all early in so far as the material examined for this report is concerned, were always associated with Puuc types. The small percentage of early pottery naturally was more

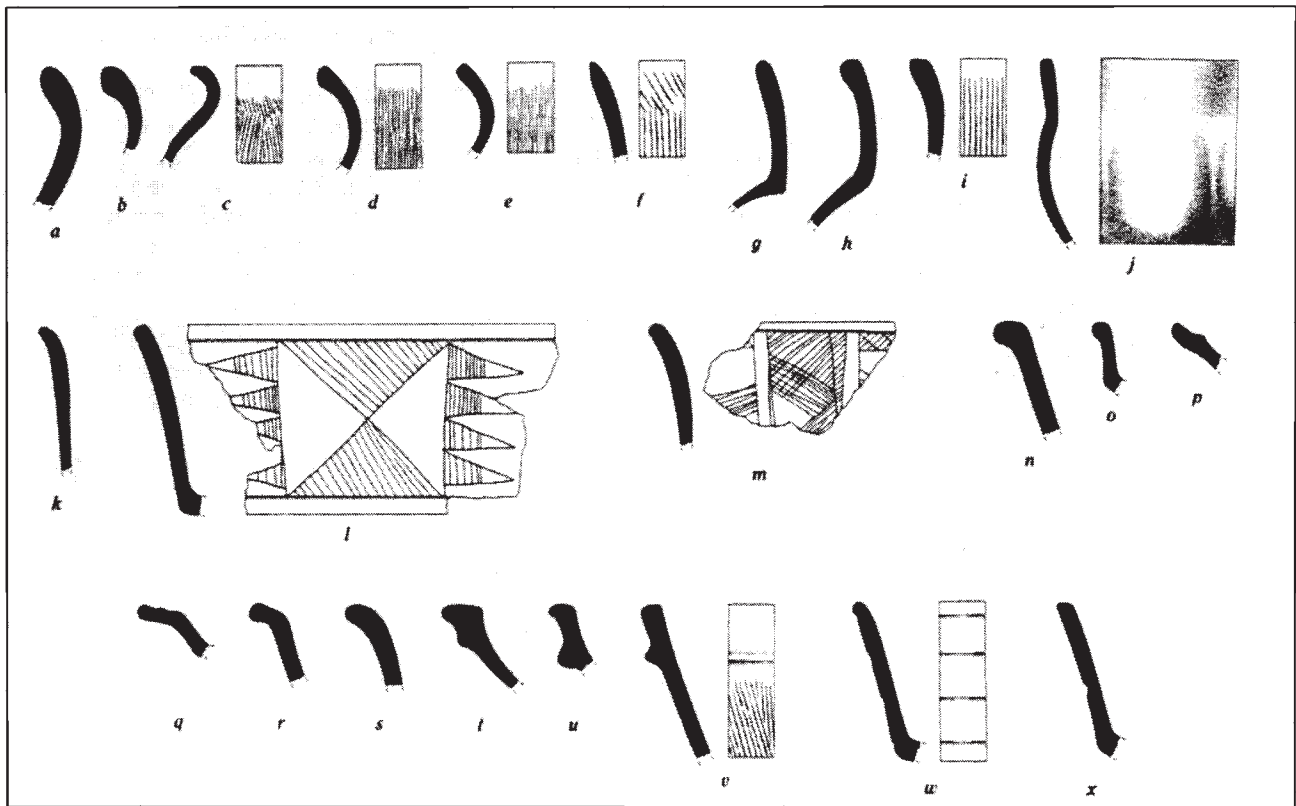
abundant at certain levels and in certain sections. At Mayapán this was especially true of Cenotes X-Coton and Ch'en Mul, where deposits occurred in considerable depth. At Santa Cruz, a site about 1.5 km southeast of the Mayapán wall, was found one of the best early ceramic sequences so far encountered in Yucatán.

The pottery wares and types dealt with in this report are listed and described in the captions to the illustrations. Here we shall summarize the material under both ware and type.

"Ware" in this report refers to ceramic groups in each of which paste characteristics and surface finish are constant.

Pre-Classic pottery comprised three main wares: Unslipped Cinnamon-Colored; Waxy Red, usually a brownish-red; and Waxy Pinkish Cinnamon.

Classic pottery offered a number of distinctive wares: Unslipped Gray; Oxkintok Coarse Monochrome; Dichrome Gloss (called Flaky Dichrome by



26.1. Pre-Classic Types.

a-f. Unslipped Cinnamon-Colored Ware (a-c, 25; d-f, 8, lip sherds). Jars. Color: usually Cinnamon (Munsell, 7.5 YR 6.2/6.0). Form: high outcurving neck, often thickened at rim, rounded lip(a,b,d); low outcurving neck, direct rim, flat lip c; medium high outcurving neck, direct rim, rounded lip e; high flaring neck, direct rim, pointed lip f. Bodies are globular, bases not encountered. Size: a,b,d, lip diam. 18.0–26.0 cm, thickness 0.7–1.3 cm, but where rim is thickened attains 1.6 cm; c, lip diam. 11.0 cm, thickness 0.6–0.8 cm; e, lip diam. 14.0 cm, thickness 0.7–0.9 cm; f, lip diam. 17.0 cm, thickness 0.8–0.9 cm. Surface: smoothed, and majority of sherds (a–c) striated on body only, a few (d–f) with vertical neck striations. g–v. Waxy Red Ware. g–j. Jars (g, 5; h, 6; i, l; j, 4, lip sherds). Color: red to brownish-red, a few reddish-brown. Form: globular body, high slightly flaring (g,h) or outcurving (i) neck, direct rim (i, thickened), rounded or flat lip; j, probably better regarded as a deep bowl with neck. Size: g, lip diam. 20.0 cm, thickness 0.4–0.9 cm; h, lip diam. 24.0 cm, thickness 0.6–0.9 cm; i, lip diam. 21.0 cm, thickness 0.8–1.3 cm; j, lip diam. 27.0 cm, thickness 0.7–0.8 cm. Surface: g,h,j, slipped and burnished on exterior and neck interior, all well smoothed. i. Red-Slip-over-Striated, a type with fine striations on vessel exterior including neck and body, a polished red slip with waxy (?) feel covering jar exterior and neck interior. Decoration: j, vertical gadrooning on body done by pressing out vessel wall. k–m. Bowls or dishes (k, 51; l,m, 52, lip sherds). Color: reddish-red, some reddish-brown. Form: flaring, rarely outcurving (m), medium thick sides, direct rim, rounded lip, flat base. Size: k,l, lip diam. 41.0 cm, ht. (l) 10.0 cm, thickness 0.7–1.1 cm; m, lip diam. 32.0 cm, thickness 0.8–1.0 cm. Surface: slipped and burnished all over. Decoration: l,m, geometric design incised on exterior wall. n–v. Flaring side, flat base dishes or plates n–q, 10; r–u, 28; v, l, lip sherds). Color: n–q, brownish-red to red; r, red exterior, Pinkish Cinnamon (Munsell, 7.5 YR 6.6/6.0) interior; s, light brown with red flushing on exterior, light brown on interior; t–v, weathered. Form: n,o, bolster rim; p–r, wide everted rim, grooved or plain; s, thickened rim; t–v, lateral ridge, some with rim bolster (t,u). Size: n, lip diam. 44.0 cm, thickness 1.1–1.2 cm (not including bolster); o, lip diam. Not determinable, ht. 3.0 cm, thickness 0.7 cm (not including bolster); p, lip diam. 36.0 cm, thickness 0.6–1.0 cm; q, lip diam. not determinable, ht. 2.7 cm, thickness 0.7–0.9 cm; r, lip diam. 40.0 cm, thickness 0.9–1.1 cm; s, lip diam. 28.0 cm, thickness 0.9–1.4 cm; t, lip diam. ca. 49.0 cm, thickness 0.7–1.6 cm; u, lip diam. not determinable, thickness 0.8–1.0 cm; v, lip diam. ca. 52.0 cm, thickness 0.8–1.2 cm. Surface: slipped and burnished all over save v, slipped on interior only; n–q, flaky red slip; s, crazed and fire-clouded; v, unslipped exterior, vertically striated below ridge. Remarks: most of these specimens are similar in form to Chicanel types found at Uaxactun. w,x. Waxy Pinkish Cinnamon Ware (33 lip sherds). Dishes. Color: w, Pinkish Cinnamon (Munsell, 7.5 YR 6.6/ 6.0); x, Red with Pinkish Cinnamon and brown areas. Form: flaring, medium thick sides, direct rim, rounded (w) or beveled (x) lip, flat base. Size: w, lip diam. 48.0 cm, ht. 8.0cm, thickness 0.7–0.9 cm; x, lip diam. 45.0 cm, ht. 8.0 cm, thickness 0.9–1.1 cm. Surface: slipped and burnished allover. Decoration: w, chamfered; x, single horizontal groove divides exterior wall. Remarks: both w and x are reminiscent of Mamom types from Uaxactun (R. E. Smith 1936, Fig. 1, nos. 8–10).

G. W. Brainerd); Polychrome Gloss, all Red-and-Black-on-Orange; and Polished Brown-Black.

Puuc pottery, a regional manifestation of the Classic period, included the following: Unslipped Gray or Cinnamon-Colored; Medium Slate, so called because it has a medium-texture paste and has no definite color, but buff, often dirty and occasionally lined with purple veins, is most common, followed by drab and various shades of brown; Thin Slate, characterized not only by thinness and cream to light gray color but by almost constant vertical crazing; Puuc Red, notable for evenness of color as applied to each vessel, as well as for unusual smoothness of surface, perhaps a color variant of Medium and Thin Slate wares since it occurred with, and in the same shape combinations as the Slate wares; Lustrous Streaky Brown, lacking the waxy feel of Slate and Puuc Red wares and reminiscent of Uaxactun Gloss ware.

Fine Orange, associated either with very late Classic or with early post-Classic, was usually slipped and had a rather matt finish. Here only X type was noted, and it is placed in the Toltec period (Early Mexican).

"Type" is used to subdivide ware, on the basis of form and decoration. Under this heading we consider form, design, and technique.

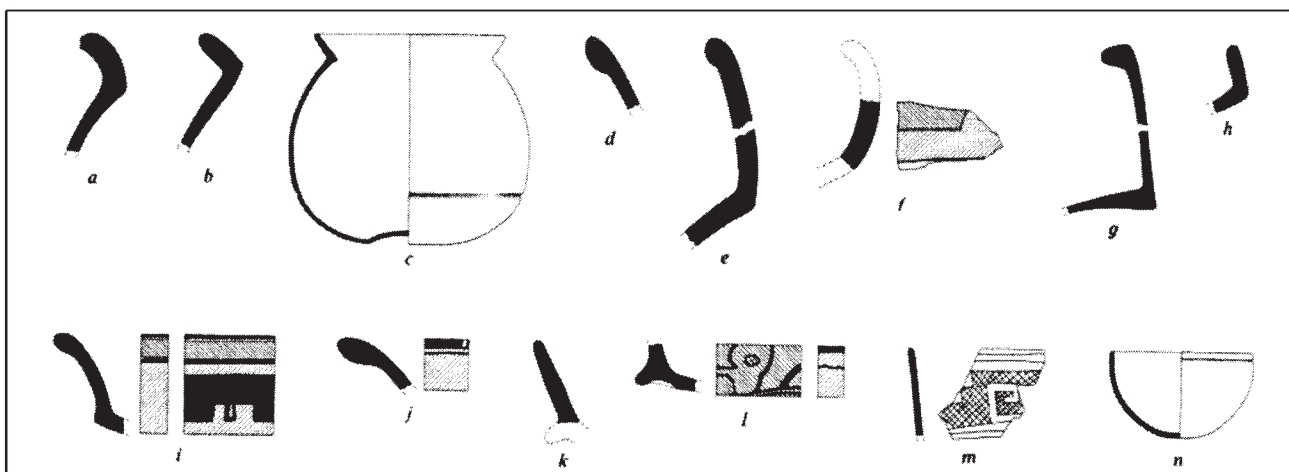
Pre-Classic types: Body-striated and neck-striated unslipped cinnamon-colored jars, the latter presumably having body striations as well. Waxy Red separated into various types, including Undecorated Red, Incised Red, and Red-Slip-over-Striated. Forms consisted of jars, bowls, deep bowls, and dishes. The designs on the incised bowls or dishes were geometric with considerable hatching. Waxy Pinkish Cinnamon bowls or dishes (Mamom rather than Chicanel tradition) divided into chamfered and grooved.

Classic types recorded were: Unslipped and Undecorated Gray jars; Oxkintok Coarse Monochrome, present in jar form only; Dichrome Gloss in Red-on-Orange and Incised Red-on-Orange, but in this instance only jars of the latter were found, on

which the incising outlined the red geometric design; Polychrome Gloss in a variety of shapes including jars, basal-z-angle bowls, and basal-flange bowls, all embellished with geometric design whenever decipherable, and all painted in red-and-black-on-orange background; Polished Brown-Black, all of the incised or grooved type, in two forms consisting of a hemispherical bowl and a possible cylinder tripod, the former decorated with an encircling groove just below the lip, the latter adorned with a geometric, probably step-and-angular-scroll, incised design.

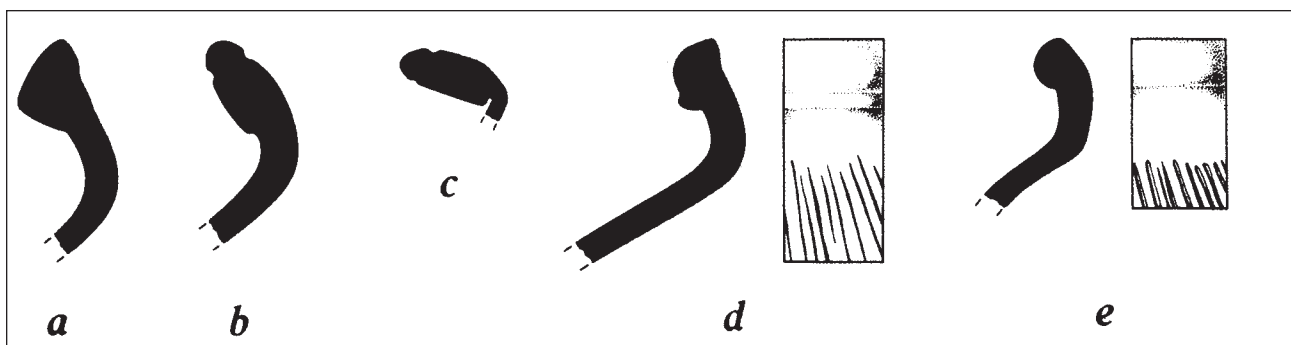
Puuc pottery had five principal types: (1) Unslipped jars of two types, both coarse striated in a pattern (geometric) design, but one, usually the cinnamon-colored, with wider and more jagged channels than the other. (2) Medium Slate in four subtypes: plain; Black-Trickle-on-Medium Slate, usually jars and basins; Black-on-Medium Slate with the principal design of dabs and scrolls on the floor of a tripod dish; and Stamped-Red-on-Medium Slate tripod dishes with a red-covered stamped band encircling the base. (3) Thin Slate in Puuc Thin Slate and Chichén Thin Slate, the latter in a light brown rather than a cream or gray slip; both types usually in hemispherical bowls or cylindrical vases; the latter sometimes vertically grooved. (4) Puuc Red with only one type division other than shape, which included hemispherical bowls, flaring-side bowls or dishes, tripod dishes, and restricted orifice bowls, an example of the last with a single groove encircling the vessel just below the lip. (5) Lustrous Streaky Brown, found only in jar form and with no decoration.

Toltec period pottery: Fine Orange, probably all of the X variety, subdivided into Black-on-Fine Orange jars with only black lines and stripes on the fragmentary specimens; Gouged-and-Incised-Fine Orange in jar, bowl, and vase form, mostly too fragmentary to permit making out the design, although one had a twist or braid motif, and others appeared to have some design similar to the scroll-and-related-elements.



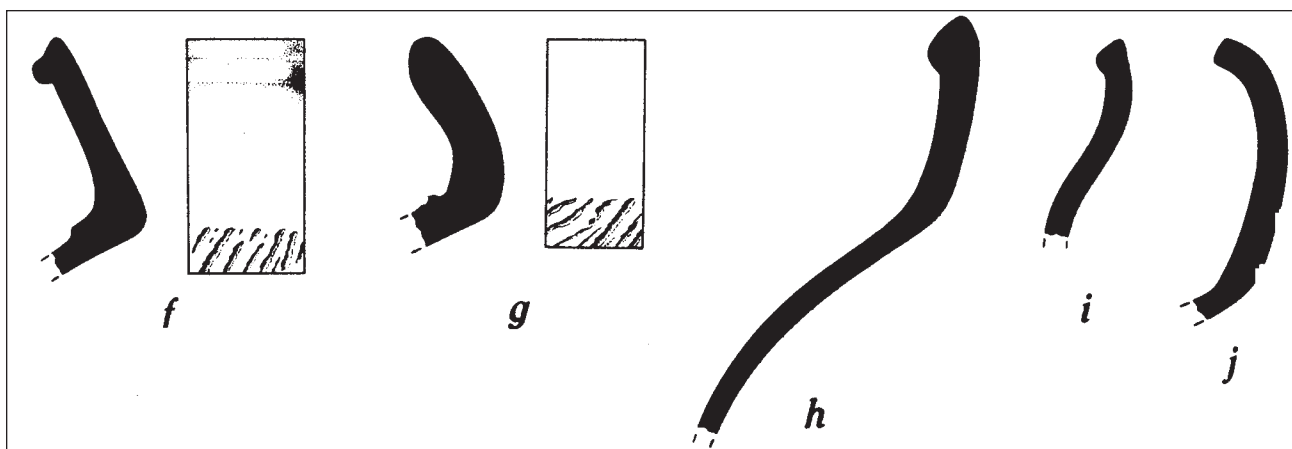
26.2. Classic Types.

a. Unslipped Gray Ware (2 lip sherds); Jars. Color: gray. Form: globular body, wide mouth, out-curving neck, beveled and grooved lip, probably flat base. Size: lip diam. 22.0 cm, thickness 0.7–1.4 cm. Surface: smoothed. b,c. Oxkintok Coarse Monochrome Ware (4 lip sherds); Jars. Color: brown to tan. Form: globular body, flaring neck, rounded lip, concave base. Size: lip diam. 24.0–26.0 cm, thickness 0.6–1.1 cm; type vessel (c), lip diam. 21.5 cm, maximum diam. 26.8 cm, base diam. 97.0 cm, ht. 22.5 cm, thickness 0.5–0.8 cm. Surface: slipped and burnished on exterior and on neck interior. A pimpled surface is characteristic of this ware. Decoration: single horizontal groove encircling jar below point of maximum diameter, probably more utilitarian than decorative. Remarks: type vessel (c) is from Campeche. d–f. Dichrome Gloss Ware (10 lip sherds); Jars. Color: red-on-orange, the red deep (Munsell, 7.5 R 3.4/6.0 or 10 R 3.5/6.0) and the orange bright (2.5 R 5.0/10.0 or 10 R 4.5/10.0). Form: large, globular body, wide mouth, high flaring or outcurving neck, often bolster rim, rounded lip, base not present. Size: lip diam. 26.0 cm, thickness 1.0–1.1 cm. Surface: slipped and well burnished (horizontal burnishing streaks) on exterior and neck interior. Decoration: red geometric design outlined with incised line. Remarks: sizable deposit of this type found in large cave at Balam Canche near Chichén Itzá (Ruppert, Shook, and R. Smith, 1954). g–l. Polychrome Gloss Ware; g,h. Jars. Color: red-and-black-on-orange, typical of Uaxactun types. Exact color range not noted for preliminary report. g. (2 lip sherds). Form: globular body, high nearly vertical neck, bolster rim, rounded lip, no bases available. Size: lip diam. 29.0 cm, neck ht. ca. 10.0 cm, thickness 0.5–1.0 cm. Surface: slipped and burnished on exterior and neck interior. Decoration: not decipherable. h. (2 lip sherds). Form: globular body, low flaring neck, direct rim, rounded lip, no bases available. Size: lip diam. not determinable, neck ht. 2.5 cm, thickness 0.7–0.9 cm. Surface: slipped and burnished on exterior and neck interior. Decoration: not decipherable; i,j. Basal-z-angle-bowls (6 lip sherds and 4 basal-z-angles). Color: red-and-black-on-orange typical of Uaxactun types. Exact color range not noted for preliminary report. Form: outcurving side, thickened rim, rounded lip, may have had three feet or a ring base. Size: lip diam. 22.0 cm, thickness 0.6–0.9 cm. Surface: slipped and burnished all over. Well smoothed and no blemishes noted. Decoration: i. black and red lines and stripes on interior and exterior, but latter combines these with geometric band; j. decorated on interior only with geometric black rim band. k,l. Basal-flange bowls (5 lip sherds and 9 basal-flanges). Color: red-and-black-on-orange typical of Uaxactun types. Exact color range not noted for preliminary report. Form: flaring side, rounded lip, probably ring base since a few were present and no feet were observed. Size: all very fragmentary; thickness 0.8–0.9 cm. Surface: slipped and burnished on interior and exterior but generally not below flange. Well smoothed and no blemishes noted. Decoration: mostly too fragmentary or weathered to decipher. l. exterior, horizontal striping plus black wavy line on flange; interior, curious black design (birdlike) on red background. m,n. Polished Brown-Black Ware (2 lip sherds and a complete vessel); m: Incised cylindrical bowl, possibly cylinder tripod. Form: slightly flaring, thin walls, direct rim, rounded lip. Size: diameter unknown, thickness 0.3–0.4 cm. Surface: slipped burnished all over. Decoration: incised cross-hatching and probably step-and-angular-scroll motif; n: Grooved hemispherical bowl (cache vessel from burial below shrine in Platform A at Santa Cruz. R. Smith 1954, Fig. 6k). Form: medium thick walls (thickened toward base), rounded-lip, flat base. Size: lip diam. 16.5 cm, base diam. 6.5 cm, ht. 8.8 cm, thickness 0.5–0.9 cm. Color: a few dark brown areas near lip, otherwise black. Surface: slipped and burnished all over, and well-smoothed. Decoration: single horizontal groove 0.8 cm. below lip. Remarks: reminiscent of Early Classic type at Uaxactun (R. Smith 1971, Figs. 23a; 79b).



26.3. Puuc Types, Probably Early and Late.

a-g. Unslipped Gray or cinnamon-colored Ware (a-c, 31; d,e, 20; f,g, 2, lip sherds). Coarse striated jars. Color: generally dark gray but some Cinnamon (Munsell, 7.5 YR2/6.0); cinnamon-colored type usually more coarsely striated than gray. Form: globular body, low to medium high, outcurving or rarely flaring (f) neck, wide mouth, bolster (a, triangular; b,d,f, grooved; e, rounded), wide everted (c), or direct (g) rim, rounded or pointed (a,d) lip, base not known. Size: lip diam. 18.0–24.0 cm, neck ht. 2.5–4.5 cm, thickness 0.5–1.3 cm. Surface: smoothed and then body striated. Striations appear to have been made with edge of a shell. Two types of striation noted: more abundant and finer type almost always associated with Dark Gray Ware, where troughs are narrow and neatly executed; coarser type, where troughs are wide and ragged edged, found only on Cinnamon-Colored Ware. Both types include a sort of pattern design. Decoration: geometric pattern striation. Remarks: perhaps one pattern striated type is earlier than other. At present, however, only certainty is that different tool or at least different type shell was used for each. a-c are common rim types without associated body sherds. A T-shaped rim exists but was not encountered in lots selected. h-gg. Medium Slate Ware. h-n. Jars (h,i, 38; j, 8; k, 3, lip sherds); plain and black-trickle-on-Medium Slate. Color: h, buff; i, cinnamon-colored; j, buff to drab; k, dark brown to dark drab; l, buff; m, drab with purple veins. Form: globular body; medium high neck with slight inward slant (h,i), outcurving (j), or vertical (k); rounded (h) or triangular (i) bolster rim (k, inner square bolster /, or direct (j) rim; rounded (h), pointed (i), or flat (j,k) lip; concave-base (n). Size: h, lip diam. 14.0 cm, neck ht. 5.0 cm, thickness 0.5–1.0 cm.; i, lip diam. 19.0 cm, neck ht. ca. 2.5 cm, thickness 0.6–0.7 cm; j, lip diam. 19.0 cm, neck ht. 6.2 cm, thickness 0.7–0.9 cm; k, lip diam. 12.0 cm, neck ht. 5.0 cm, thickness 1.1–1.4 cm; l, thickness 0.8–0.9 cm; m, thickness 0.7–1.6 cm; n, thickness 0.8–1.6 cm. Surface: polished and burnished on exterior and neck interior (except k). Well smoothed all over. Decoration: bodies often have vertical black trickle (1). One specimen (m) has band of two rows of oblong impressions made with unidentified tool. Remarks: probably some jars had handles, usually strap, but few were encountered. n is example with vertical strap handles. o-s: Basins (o,p, 57; q, 6; r, 8; s, 3, lip sherds); plain and black-trickle-on-Medium Slate. Color: generally buff, some with purple veins (o). Form: bodies globular (o-q), slightly rounded (r), outflaring but rounding to base (s); orifices often restricted (o-q); rims bolstered (o-q), thickened (r), or direct; lips pointed (o,p), rounded (q), or flat (m,s); bases flat or slightly concave; handles when encountered are the strap type vertically placed (p,q). Size: o, lip diam. 46.0 cm., thickness (excluding bolster) 1.70–1.3 cm; p, lip diam. 36.0 cm, thickness (excluding bolster) 1.0–1.2 cm; q, lip diam. 28.0 cm., thickness (excluding bolster) 0.6–0.8 cm; r, lip diam. 34.0 cm, thickness (including rim) 0.6–2.2 cm; s, lip diam. 26.0 cm, thickness 0.8–1.4 cm. Surface: polished and burnished all over. Well smoothed. Decoration: vertical black trickle on exterior (r). Others (not illustrated) like o-q also have trickle, sometimes on both interior and exterior. t-z: Tripod dishes or plates (t, 29; u, complete; v, 16; w, complete; x, complete; y, 1, lip sherds); plain, Black-on-Medium Slate, and Stamped-Red-on-Medium Slate. Color: t, dirty buff; u, black-on-buff; v, Pinkish Cinnamon (Munsell, 7.5 YR 6.6/6.0) on interior, buff on exterior; w, black-on-buff with pinkish flushing; x,y, buff with purple veins; z, buff on interior, red-on-buff on exterior. Form: t,u, flaring side tripod, direct rim, rounded lip, convex base, small solid wedge-shaped slab (t) or solid conical (u) feet; v,w, flaring sides rounding to convex base, slightly everted and beveled rim, rounded lip, solid wedge-shaped slab or conical feet; x, flaring sides angling sharply to flat base, slightly everted and beveled rim, rounded lip, low solid slab feet; y, outcurving side (tripod?), direct rim, rounded lip, flat or convex base; z, outcurving side tripod, basal molding, convex base. Size: t, lip diam. 24.0 cm, dish ht. 5.5 cm, foot ht. 1.0 cm, thickness, 0.6–1.0 cm; u, lip diam. 23.0 cm, base diam. 18.5 cm, dish ht. 6.3 cm, over all ht. 6.8 cm, thickness 0.6–0.8 cm; v, lip diam. 28.0 cm, dish ht. ca. 4.5 cm, thickness 0.6–0.7 cm; w, lip diam. 23.3 cm, base diam. 18.0 cm, dish ht. 5.6 cm, over all ht. 5.9 cm, thickness 0.5–0.8 cm; x, lip diam. 25.5 cm, base diam. 15.5 cm, over all ht. 6.0 cm, thickness 1.0–1.2 cm; y, lip diam. not determinable, dish ht. ca. 3.3 cm, thickness 0.8–0.9 cm. Surface: generally slipped and burnished allover, but some not slipped on exterior; v shows horizontal smoothing striations on exterior, the interior being more carefully done. Decoration: u,w, scroll and dabs in black on floor; y, thumb-impressed fillet at angle formed by side and base; z, vertically incised band plus a stamped geometric band below, all on red background. Remarks: u and w were found together with gg in Platform B at Santa Cruz (R. Smith 1954, Fig. 60-g); x, found with jj, came from burial on north side of Platform A at Santa Cruz (R. Smith 1954: Fig. 6g,h). aa. Small bowl (1 lip sherd); plain Color: dirty buff. Form: outcurving side, thickened rim, pointed lip, flat base. Size: lip diam. 11.0 cm, ht. 4.1 cm, thickness 0.4–0.7 cm. Surface: slipped and burnished allover. bb,cc: Ring-stand bowl (5 lip and 10 ring-stand sherds); plain and Black-on-Medium Slate. Color: dirty buff (bb) and drab (cc). Form: incurved rim, restricted orifice, pointed lip, ring-stand base. Size: lip diam. 18.0–19.0 cm, bowl ht. 8.0 cm, over all ht. 9.0 cm, thickness 0.7–0.9 cm. Surface: slipped and burnished on interior and exterior down to ring-stand. Decoration: cc, black-on-drab,



26.3. Puuc Types, Probably Early and Late—continued

trickle on exterior, finger (?) dabs on exterior, finger (?) dabs on floor. Remarks: This is a complete vessel from cave in Cenote X-Coton (R. Smith 1953, Fig. 6f). dd: Grater bowl (7 lip sherds and 5 base pieces, two of which show hollow foot welding marks); plain. Color: buff. Form: rounded medium thick sides, direct rim, rounded lip, probably three hollow oven-shaped feet, flattish base. Size: lip diam. 17.0 cm, bowl ht. ca. 5.0 cm, thickness 0.6–0.9 cm. Surface: slipped, burnished, and well smoothed all over. Decoration: incised criss-cross lines on floor. ee–ff: Round sided bowls (ee, 3; ff, 1, lip sherds); plain. Color: ee, light brown; ff, buff plus orange flushing on interior. Form: rounded thin to medium thick sides, direct rim, pointed lip, flat base. Size: ee, lip diam. 18.0 cm, thickness 0.5–0.7 cm. Surface: well-smoothed, slipped and burnished all over; ff, fire-clouded on interior and exterior. Decoration: ff, incised geometric design on exterior. Remarks: ee is a deep and ff a shallow bowl. gg: Cuspidor-shaped bowl (1 complete vessel); plain. Color: Pinkish Cinnamon (Munsell, 7.5 YR 6.6/6.0). Form: cuspidor-shaped, globular body, flaring neck, direct rim, pointed lip, flat base. Size: lip diam. 18.3 cm, body diam. 14.8 cm, base diam. 9.5 cm, ht. 10.1 cm, thickness 0.5–0.7 cm. Surface: well smoothed, slipped and burnished. Decoration: horizontal grooves encircling neck; vestiges of pink stucco adhering to neck, especially in grooves. Remarks: this vessel together with u and w was found in burial in Platform B, Santa Cruz (R. Smith 1954, Fig. 6o–q). hh–jj: Thin Slate Ware. hh, ii: Puuc Thin Slate. Vases (hh, 4; ii, 2, lip sherds). Color: dirty cream. Form: cylindrical, direct rim, pointed (hh) or rounded (ii) lip, probably flat base. Surface: well smoothed, slipped and burnished all over; vertical crazing lines on exterior. Decoration: ii, vertical grooving on exterior. jj: Chichen Thin Slate. Bowl (1 complete vessel). Color: right brown. Form: hemispherical, direct rim, pointed lip, flat base. Surface: well smoothed, slipped and burnished all over. Remarks: jj closely resembles Brainerd's Chichen Thin Slate, which differs from Puuc Thin Slate in color and lack of vertical crazing lines. This complete vessel was found with x in burial in Platform A, Santa Cruz (R. Smith 1954, Fig. 6g). kk–pp: Puuc Red Ware (kk, 7; ll, 2; mm, nn, 2; oo, 7; pp, 1, lip sherds). Bowls or dishes. Color: usually a darkish red. Form: kk–nn flaring-side, some if not all having three feet, direct rim (save for nn, which is slightly everted), flat or convex base, lips flat (kk), grooved (ll); rounded (mm), or beveled (nn); oo, round-sided bowl, direct rim, rounded lip; pp, restricted-orifice bowl, globular body, rounded lip, evidence of handles. Size: kk, lip diam. 20.0 cm, thickness 0.5–1.0 cm; ll, lip diam. 25.0 cm, thickness 0.5 cm; mm, lip diam. 42.0 cm, ht. ca. 5.4 cm, thickness 0.6–1.0 cm; nn, lip diam. 20.0 cm, thickness 0.6–0.7 cm; pp, lip diam. 14.0 cm, thickness 0.5–0.7 cm. Surface: exceptionally well smoothed, slipped and burnished all over. Blemishes rare. Decoration: occasional grooving (mm) but usually no decoration. Remarks: Puuc Red may be considered a color variant of Puuc Medium and Thin Slate wares, since it occurs in same forms and has same waxy feel. In general, however, it has been more carefully smoothed and color is more uniform. qq: Lustrous Streaky Brown Ware (22 lip sherds, 1 strap handle). Jars. Color: brown, occasionally with red flushing. Form: globular body, flaring neck, direct rim, rounded lip, usually concave base. Size: lip diam. 23.0–24.0 cm, maximum diam. 32.4 cm, neck ht. 3.7–4.3 cm, over all ht. 28.8 cm, thickness 0.5–0.9 cm. Surface: smoothed, slipped, and burnished on exterior and neck interior. Streaky effect is caused partly by tool used in horizontal smoothing and partly by application of slip in unequal strength and thickness. Remarks: qq, from Santa Cruz, was reconstructed by using complete body, from which neck had been removed to insert infant burial (R. Smith 1954: Fig. 6j), and neck found in cave in Cenote X-Coton.

26.4. Toltec Period Types.

a–g. Fine Orange Ware. a, b. Black-on-Fine Orange jars. Form: globular body, medium high or high neck, direct rim, rounded lip. Size: lip diam. 8.0–9.0 cm; neck ht. 3.0 cm (a), thickness 0.4–0.6 cm. Surface: well smoothed, probably slipped although this is often doubtful, lightly burnished leaving matt finish. Decoration: black horizontal or oblique stripes and horizontal grooving (b). c–g. Gouged-and-incised-Fine Orange vessels. c, d. Jars. Size: thickness 0.4–0.7 cm. Surface: well smoothed, usually slipped and lightly burnished. Decoration: curvilinear design gouged-and-incised. e–g. Vases or bowls, very fragmentary. Size: e, lip diam. 16.0 cm, thickness 0.4–0.8 cm; f, lip diam. 27.0 cm, thickness 0.5 cm; g, lip diam. 26.0 cm, thickness 0.6–1.0 cm. Remarks: all these vessels appear to be in X Fine Orange tradition.



a



b



c



d



e



f



g



h



i



j



k



l



m

ANOTHER ROUND TEMPLE AT MAYAPÁN, YUCATÁN

EDWIN M. SHOOK

The round temple investigated in 1954 at Mayapán (Shook 1954) proved to be in too ruinous condition to warrant repair. Therefore, in order to have one example of this type of structure available for students, another such temple, Str. Q-126, was selected for excavation and solidification. Early in 1955, the writer performed the excavations and Strömsvik repaired the unit.

Str. Q-126 lies 150 m east of the Castillo (Jones 1952, map, 260 S, 85 W), somewhat beyond the area of heaviest concentration of ceremonial structures. Like the other round temple, Str. Q-214, it is more closely associated with a minor, outlying court group than with the principal courts immediately surrounding the Castillo. Str. Q-126 occupies the north, and a colonnaded hall, Str. Q-129, the south edge of what apparently had been the principal eastern avenue of approach to the heart of the city. These structures are on the east side of a vaulted portal, Str. Q-127 (Strömsvik 1953) the most elabo-

rate and formal entrance to the ceremonial center of Mayapán.

Though freestanding, the portal with its portico is similar in plan to the major gateways in Mayapán's encompassing Great Wall (Shook 1952) hence its primary purpose as an entrance way seems certain. The presence of a small temple, Str. Q-127a (Strömsvik 1953), against the north façade of the portal and the near-by round temple further imply the importance of this gateway.

Str. Q-126 had been studied briefly by Andrews in 1942, although no report of his work was published. Evidence of his probing to establish the temple plan was encountered in the center of the south room (Fig. 27.1) and several of the sculptured stelae associated with the unit had been moved for photography. No further recent disturbance was noticed during our investigations. Before excavation, all the substructure was obscured under debris from collapsed masonry except a short section of the west

wall (Figs. 27.3a; 27.4a). More could be discerned of the temple's exterior because exposed walls stood in places to a height of 2 m (Fig. 27.4b). The orientation of the temple, its doorway, and its interior plan, however, were not distinguishable before excavation.

The 1955 dig began along the best exposed walls of the building and substructure. These were cleared to their bases and followed until the entire temple and the west and south sides of the substructure lay bare (Fig. 27.3c,e). Except for minor exploration to locate the northeast corner, the east and north sides of the substructure were left untouched (Fig. 27.3a,b). Once the plan of the unit had been ascertained, several shortest trenches were dug on the building's north-south axis. These trenches exposed the various phases of the round temple, the remains of a structure buried beneath the front terrace, and three early plaza floors (Figs. 27.1; 27.2a). The floors came to light in a trench at the base of the stairway (Figs. 27.2a; 27.4e). They may all pertain to different phases of the buried unit, although it is quite possible that a still earlier construction exists. Our excavations through the terrace of the round temple did not penetrate below the floor level of the buried structure.

Floor 1, the oldest plaza floor (Fig. 27.2a) of lime concrete, had been laid over a grouting of small-crushed rock which in turn capped a fill of dry rock. This fill covered the purposely cleaned surface of limestone bedrock; i.e., the soil, loose stone, and humus had been removed before construction. The extent of Floor 1 was not obtained. It may have joined the platform supporting the buried unit (Fig. 27.2a,1) or have served a still earlier structure. Pottery recovered in the sealed fill below the oldest floor (Lot C-110) consisted of almost 100 percent Mayapán period types. The vessel forms represented were those predominant in the early half of the major occupation of the site.

The next floor, Floor 2, built like the first, raised the court level another 20 cm, and Floor 3, apparently a minor renovation, simply covered the second one. These two floors were possibly associated with the buried structure (Fig. 27.2a,1). Only the doorway of the latter was cleared to floor level, and the ripped-off top of the walls partly outlined. The rectangular building appeared to have been a small shrine or temple (Fig. 27.1d). Its walls had been built of Mayapán block and slab masonry, though rougher than usual. The single narrow doorway had jambs also of rough block masonry (Fig. 27.4f).

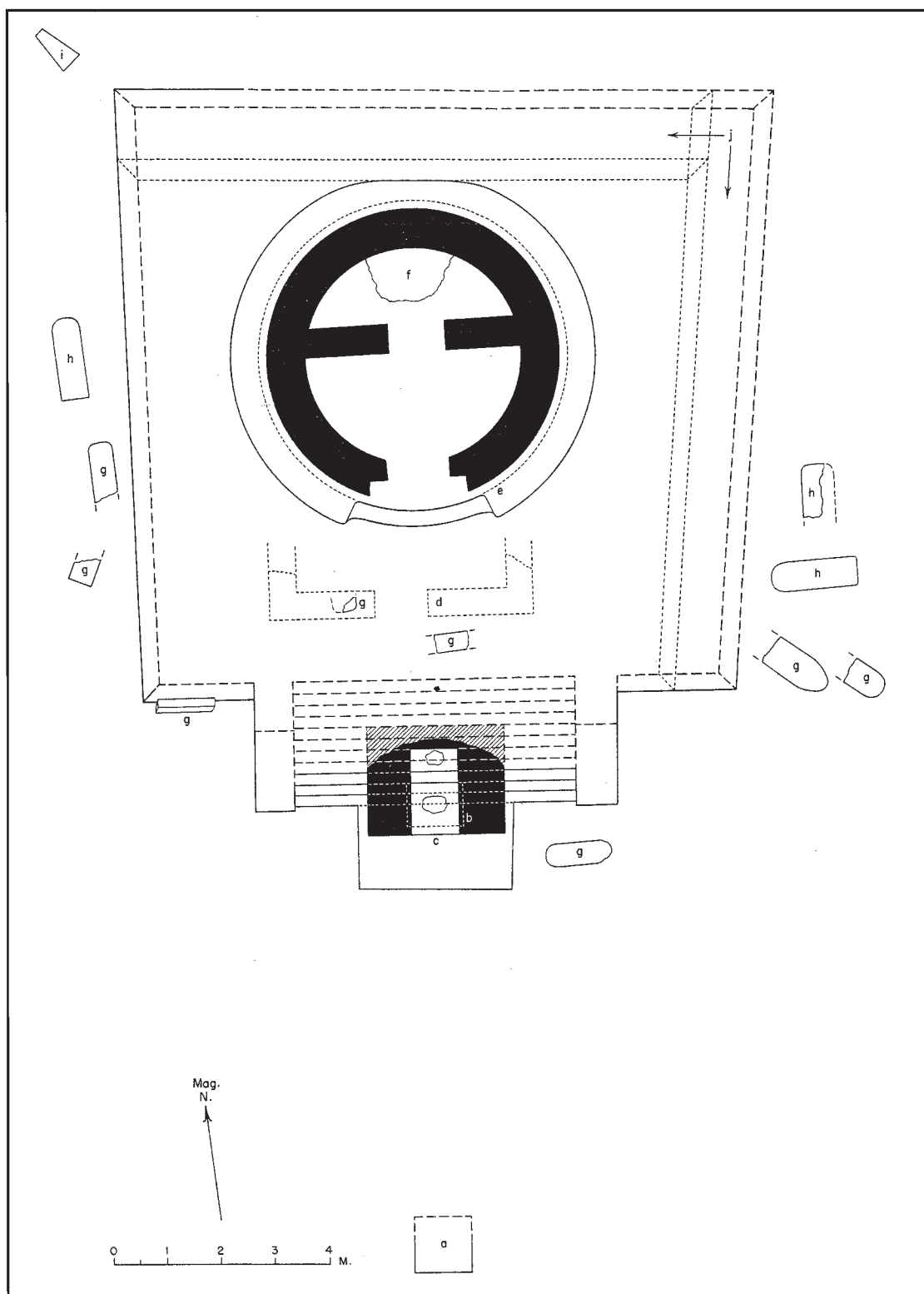
The roof and upper walls of this early structure had been demolished and the remainder enveloped by the substructure of the round temple. In the process of adding the core fill of large dry laid stones, a

cache of two chipped flint blades was placed on the temple's north-south axis (Fig. 27.2a,2). The loose core fill of the substructure was held in place by very rough retaining walls (Fig. 27.3g) and by the walls left standing from the early structure. Over these walls were constructed the final sloping terrace walls of block and slab masonry (Fig. 27.3b–g). The terrace wall on the south side was erected before the addition of a wide stairway flanked by balustrades. Coevally with the erection of the substructure, a new plaza floor, Floor 4, was laid joining the base. Perhaps at the same time the square masonry altar, 25 cm high, had been added on the plaza level in front of Str. Q-126 (Figs. 1a; 2a).

The cache of flint blades placed in the substructure fill may have been a dedicatory one. Further evidence of ceremonial activity during the construction of the round temple was found below the floor of its rear chamber. Here, sealed by the remnants of the floor, were unweathered fragments of several pottery censers. Copal incense had been burned in these containers before their breakage and disposal in the upper substructure fill. The temple floor effectively sealed these censer fragments and protected their interior surfaces, which showed stains and smoke blackening from copal burning. Some of the censers were non-effigy types, and one, abnormally large for Mayapán, was a human-effigy censer gaudily painted in brilliant colors of red, orange, yellow, green, blue, and black over a white base. The presence of the human-effigy-type censer in the structure fill clearly indicates that the round temple had been erected near the end of the major occupation at Mayapán.

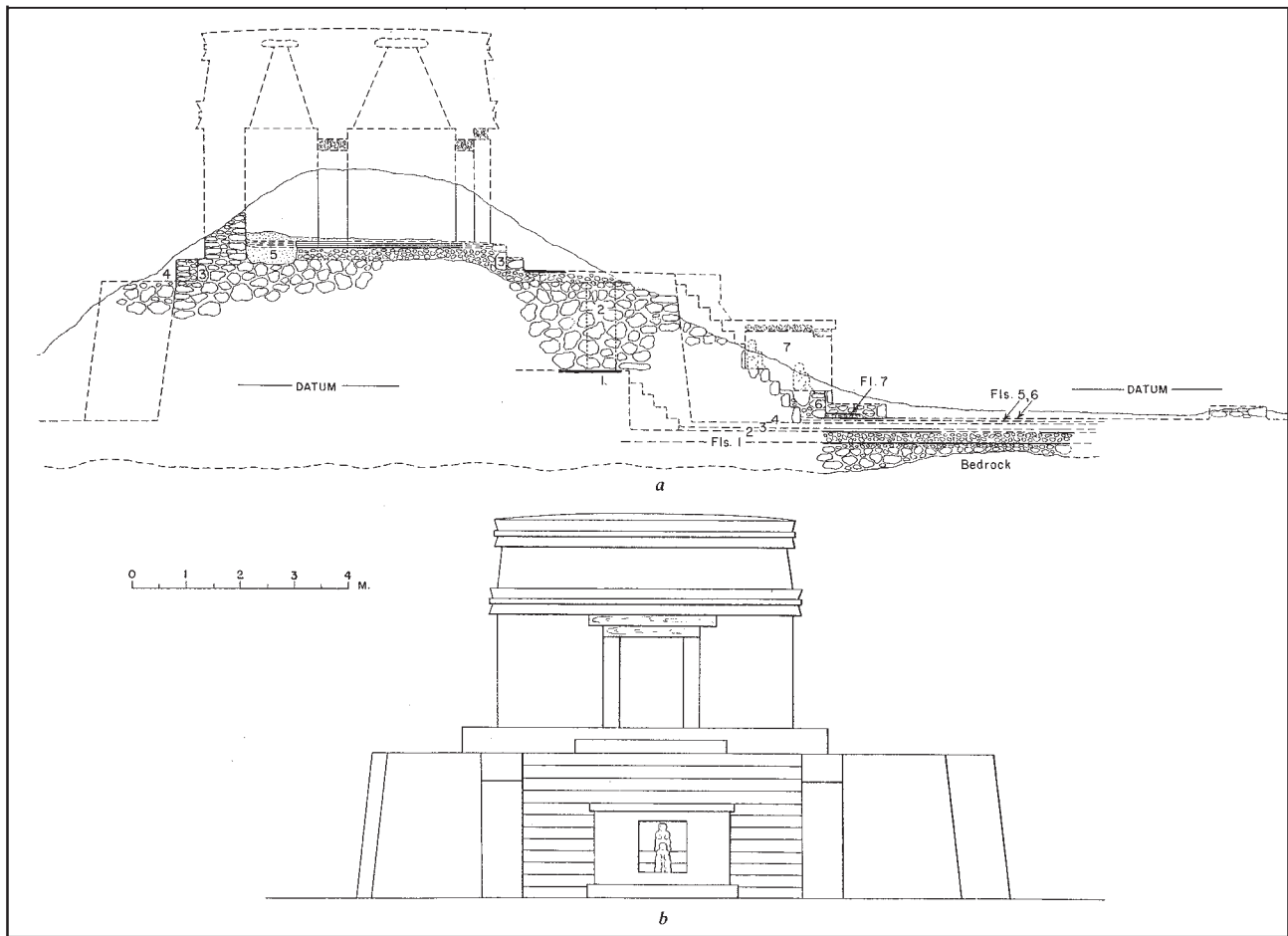
The temple, perfectly circular in plan and set toward the rear of the rectangular substructural platform, rests on a high plinth (Figs. 27.1e; 27.2a3). A single doorway on the south, with inset jambs or pilasters, gave access to the temple interior. This had been divided by a medial wall into two quite small semicircular rooms. The rear chamber was entered through a narrow doorway in the center of the medial wall directly in line with the front entrance. The heavy building walls, largely of typical Mayapán block and slab masonry, and the presence of long stone slabs up to a meter in length in the debris filling the rooms suggest the use of masonry vaults to roof the temple (Fig. 27.2a). Both doorways evidently had borne wood lintels, as no stones of sufficient size to span them were found in the debris.

The interior of Str. Q-126 was finished with a lime concrete floor and lime plaster on the walls (Fig. 27.4d). Both floor and walls were left a grayish white, the natural color of the poor-quality plaster, but traces of yellow paint occurred in the back



27.1. Plan of Str. Q-126.

a. Masonry altar on plaza floor. b. Masonry altar built against bottom steps of stairway. c. Stairway shrine, and two holes in floor possibly marking where idols stood. d. Early structure, probably a shrine or temple, buried below terrace of round temple. e. Primary plinth of round temple. f. Area where floor was missing. g-g. Plain stelae, as found during excavations (see Fig. 27.4i). h-h. Carved stelae moved for photographing before 1955 excavations (see Fig. 27.4j-m). i. "Sacrificial stone" altar. j. Secondary additions to substructural platform.



27.2. Section and Elevation of Str. Q-126.

a. North-south section on axis of building. 1. Early temple or shrine buried by substructure of round temple. 2. Cache of two chipped flint blades. 3. Primary plinth. 4. Secondary plinth and extension of substructure. 5. Ancient cut through temple floors filled with charcoal, ashes, and fragments of pottery, plaster, and modeled stucco. 6. Rectangular masonry altar added to stairway and subsequently buried by shrine. 7. Stairway shrine, and holes possibly marking the position where originally stood two idols, one of stone and one of modeled stucco. b. Restored elevation of south side.

room, and the jambs of the medial doorway had been painted red with specular hematite. On the outside, the structure carried plaster painted in various colors. Further decoration embellished the facade, probably above the doorway, as many fragments of modeled and painted stucco and a sculptured stone (Fig. 27.4g) lay in the surface debris around the temple doorway.

Str. Q-126 functioned long enough to undergo several minor renovations and refurbishings. There were traces of four coats of plaster adhering to the interior walls, and four distinct floors. The original narrow plinth on the building's exterior had been buried by another of the same height but considerably wider (Figs. 27.1; 27.2a4). This addition created an inset stairway, two steps high, from the terrace to the temple.

Remodeling of the substructure also took place. One addition enlarged the platform over a meter toward the north and east (Figs. 27.1j; 27.2a4; 27.3g). It could not be determined without considerable excavation whether these new north and east terrace walls were needed to bolster the older unit, but the extension of the platform retained the terrace around the temple, which otherwise would have been eliminated on the north by the secondary building plinth (Fig. 27.2a,4).

Originally, and during two successive renewals of the plaza floor, the substructure stairway had an uninterrupted flight of steps between balustrades. This was modified by the addition of a rectangular masonry altar in the center of the stairway against the bottom steps (Figs. 27.1b; 27.2a6). The altar later was buried by a miniature shrine. The excavations

disclosed the shrine's walls and its basal platform but no trace of the roof (Figs. 27.3d; 27.4e). The shallowness and character of the debris inside leave little doubt that the shrine had carried a flat beam-and-mortar roof. A triangular jade bead and fragments of two human figures, one modeled in stucco, the other sculptured in stone, were in the debris, and two ragged holes in the shrine floor probably mark the positions where these idols originally stood (Figs. 27.1c; 27.2a7). The jade bead, holes, and broken statuary suggest that the images housed in the stairway shrine had been torn out and caches beneath them robbed.

Other evidence in Str. Q-126 shows purposeful destruction. A large oval-shaped hole had been cut through the floors of the rear chamber opposite the doorway (Figs. 27.1f; 27.2a5). Filling the hole and heaped in a mound over it were wood ashes, charcoal, potsherds from human-effigy-type censers, pieces of plaster, and parts of a human figure modeled in stucco and painted red. The area of floor demolished and its location centered against the back wall suggest that here, seated on a low dais, may have been an image of the god or goddess in whose honor this round temple functioned. Often a cache lies beneath such figures, and looting of the contents may have been the motive for the destruction.

On the front terrace of the round temple, and scattered around the southern base of the substructure, were at least seven plain and three sculptured stelae (Fig. 27.4i-m). Some were complete, others broken into many fragments. The positions of the carved and two of the plain monuments had been slightly altered for photography in recent times, but the others lay where shown on the plan (Fig. 27.1g,h). Fragments of two incomplete plain stelae remained on the terrace before the temple, buried by the fallen wall masonry. It seems logical to assume that these two, and quite possibly all the monuments, originally stood in a row across the terrace in front of the temple (Fig. 27.2b). If this was the case, the natural failure of the platform edges and collapse of the temple walls could not have scattered the other eight monuments as they were when found. Also peculiarly situated was a "sacrificial stone" altar off the northwest corner of the substructure (Fig. 27.1i). The positions of the stelae and altar suggest that they had been willfully thrown down from the temple terrace.

The distribution and quantity of broken pottery and artifacts around Str. Q-126 bear on the question of its function. The various floors of the temple showed marks of burning concentrated on the north-south axis through the doorways of both chambers. The final floor had a layer up to 15 cm thick of ash

over it, the maximum thickness being above the cut through the rear-room floor. Furthermore, there was a group of censer fragments on the terrace and steps in front of the temple doorway. Elsewhere, above floors, pottery and artifacts were thinly deposited except along the west base of the substructure. Here, and particularly at the northwest corner, were recovered about 90 percent of the sherds and artifacts in the surface lot, C-109. The material had accumulated close to the base of the wall as if it had been swept from the terrace above. A plain band of copper, apparently a finger ring, was among the trash at the platform's northwest corner. A summary of Lot C-109 and other material from the excavations will be found in a following section.

The investigation of Str. Q-126 disclosed that the unit had undergone major and minor renovations from the earliest construction. One change involved the partial demolition of a rectangular shrine or temple and the substitution of a round temple. The date of the latter's construction, on the evidence of the human-effigy-type censer sealed below the floor, was relatively late in the period of Mayapán's political dominance. The inhabitants of Mayapán shortly before the presumed destruction of the city in the mid fifteenth century were still erecting carved and plain stelae, a practice the Maya had carried on intermittently for a millennium and a half. One of the sculptured monuments associated with Str. Q-126 bears a panel of hieroglyphs (Fig. 27.4j). The art of carving glyphs apparently had degenerated in the late Mayapán period to the extent that only outlines of the glyphs were delineated. The monument probably had been coated with lime plaster, as were the plain stelae (Fig. 27.4i), and the glyph details painted.

The evidence of incense burning within the temple, the heavy accumulation of pottery censer fragments off the substructure, the presence of a stairway shrine, idols of stone and modeled stucco, and the many carved and plain stelae are features indicating the importance of Str. Q-126 as a temple for ceremonial and religious purposes. The two round buildings excavated, Strs. Q-126 and Q-214, are duplicates in all but minor details, and they probably served identical functions. The fact that one faces south and the other east almost certainly precludes their having been used for astronomical purposes.

MATERIALS RECOVERED

LOT C-110A,B: from fill sealed below plaza floors to bedrock in central trench (Fig. 27.2a): 134 fragments of fish, bird, and animal bones which include deer



a



b



c



d



e



f



g



h

27.3. Str. Q-126.

a. East side, showing condition of round temple before excavation. East and north sides of substructure were left unexcavated. b. View from southeast after excavation and repair of temple and part of substructure. Stones in foreground and at lower right are plain and carved stelae. c,d. South side, after excavation and after repair. e,f. Looking northeast after excavation and after repair. Carved monument at left in [f] was erected in that location for conservation purposes; its original position is uncertain. g. Detail view of substructure masonry at northwest corner. Note sloping line of primary corner at lower center, and at upper right a section of retaining wall for the platform's loose, dry rock fill. h. Temple doorway before repair. Note well cut and dressed Puuc-style wall and molding stones re-used as facing for jambs of doorway, whereas temple walls are of typical Mayapán period block and slab masonry.

and many rodents; 5 obsidian flake blades and 1 chip.

Total sherds: 218; 0.4 percent Puuc period; 99.6 percent Mayapán period (Unslipped vessels, 29.4; Non-Effigy-Type Censers, 1.8; Mayapán Red, 61.0; Fine Orange, 2.8; Black-on-Cream, 4.6).

LOT C-110c: from sealed fill below floor of round temple and front terrace (Fig. 27.2a): 1 bird bone; burned copal; 3 fragments of stucco painted yellow and specular hematite red; 1 cache containing 2 flint blades.

Total sherds: 317; 0.6 percent Puuc period; 99.4 percent Mayapán period (Unslipped vessels, 2.9; Non-Effigy-Type Censers, 17.3; Human-Effigy-Type Censers, 72.9; Mayapán Red, 6.3).

LOT C-109: from surface and general excavation of temple and substructure: charcoal; ashes; 148 fragments of bird and animal bones; 1 perforated bone ornament; approximately 50 fragments of modeled and painted stucco representing architectural ornaments and human statues; 2 small stone sculptures (Fig. 27.4g); 33 obsidian flake blades and 1 chip; 1 chipped flint point, 1 scraper, and 26 chips; 1 fragment of limestone *mano*; 1 fragment of greenstone celt; 1 tubular jade bead; 1 shell tinkler, 1 worked and 4 unworked shells; 1 spherical pottery bead; 1 copper ring.

Total sherds: 10,374: 0.2 percent Puuc period; 99.8 percent Mayapán period (Unslipped vessels, 21.9; Non-Effigy-Type Censers, 0.5; Human-Effigy-Type Censers, 41.3; Mayapán Red, 34.5; Red-on-Cream, 1.0; Fine Orange, 0.5; Black-on-Cream, 0.1).

27.4. Str. Q-126 (following page)

a. West side, before excavation, showing exposed masonry of substructure in foreground, and wall of round temple below Maya workman. b. West wall of temple. Typical example of Mayapán block and slab masonry after centuries of exposure. Lacking are many small chinking stones and the heavy surface coat of lime plaster. c. East jamb of doorway in medial wall of temple. d. West jamb of same doorway and (at left) interior wall of front chamber. Note patches of plaster adhering to wall. e. Stairway shrine and trench exposing earlier plaza floors. f. East jamb of doorway of early shrine or temple. This unit was buried in loose stone fill of the substructure supporting the round temple (see Fig. 27.1d). g. Tenoned stone sculpture probably from temple facade (Cat. no. 55-22). A human head is shown in mouth of a bird. This sculpture may represent an Eagle Knight, one of the warrior orders popular in central Mexico during post-Classic times. h. Left: Puuc-style mask element (nose) from debris on plaza floor east of stairway. This element and other decorated building stones may have been salvaged from older Puuc-style structures and re-used in the round temple by the Mayapán builders. Right: Tenoned stone ring from debris over stairway. i. Plain stelae. Both retain evidence of a smooth lime plaster coating, but no traces of paint. Taller stelae, with square hole cut 5 cm deep on front, lay on plaza level, against platform wall, west of stairway (Fig. 27.1g), and fragmentary one came from terrace in front of temple doorway. Complete monument measures 1.07 m high, 0.33 m wide, and 0.20 m deep; other, 0.33 m wide, 0.11 m deep. j. Stela carved in low relief with upper panel of hieroglyphs, and lower panel of human figures. Height 1.80 m, width 0.56 m, depth 0.28 m. k-m. Monument with standing human figure carved in high relief. Height 1.53 m, width 0.50 m. Note that in shape background resembles other carved and plain stelae.



a



b



c



d



e



f



g



h



i



j



k



l



m

AN ALTAR AND PLATFORM AT MAYAPÁN

DONALD E. THOMPSON

The ceremonial group at Itzmal Ch'en in the northeast part of Mayapán (365 N, 1520 E), being a fairly small and compact center over 1.5 km from the Main Group, was thought worthy of survey in order to determine, if possible, the minimum number and class of buildings required for such a center. The original intention was to clear architectural details for an accurate map of building types and their relation to one another, but as the work progressed various features were discovered which merited additional investigation. Among these were the altar of Str. H-17, the main pyramid, and Str. H-17a, a small platform at the foot of the stairway of that pyramid.

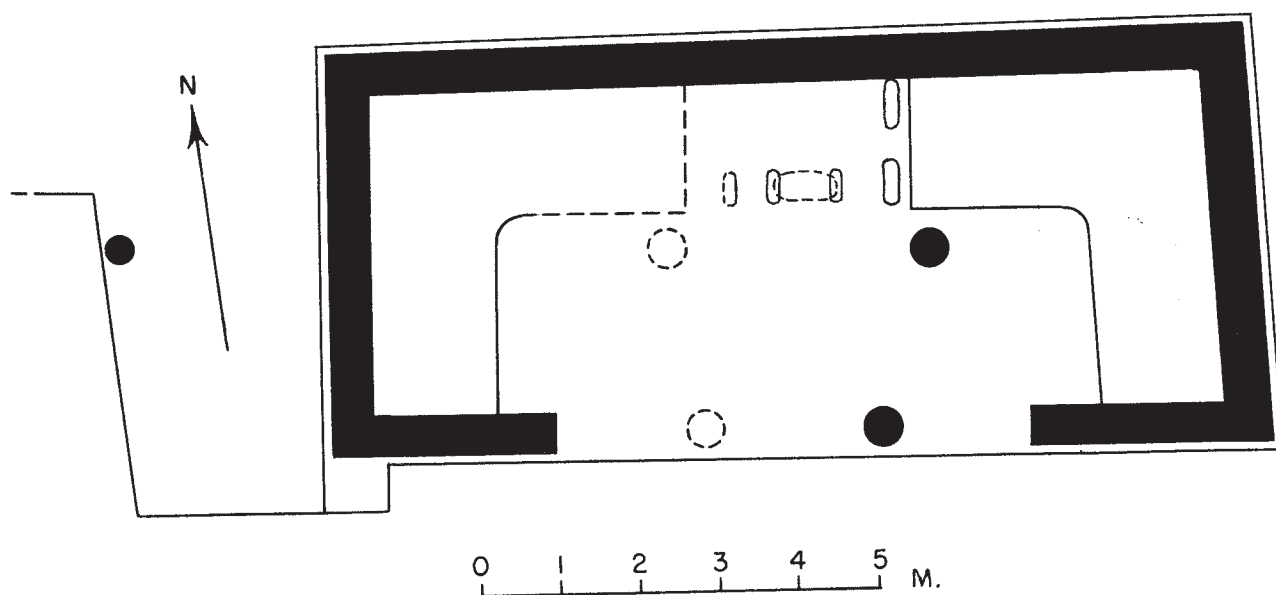
ALTAR OF STR. H-17

The altar of Str. H-17 stands at the rear of the building on top of the pyramid (Fig. 28.1a). The building is of simple rectangular plan with two doorway columns in line with the short front walls, and two col-

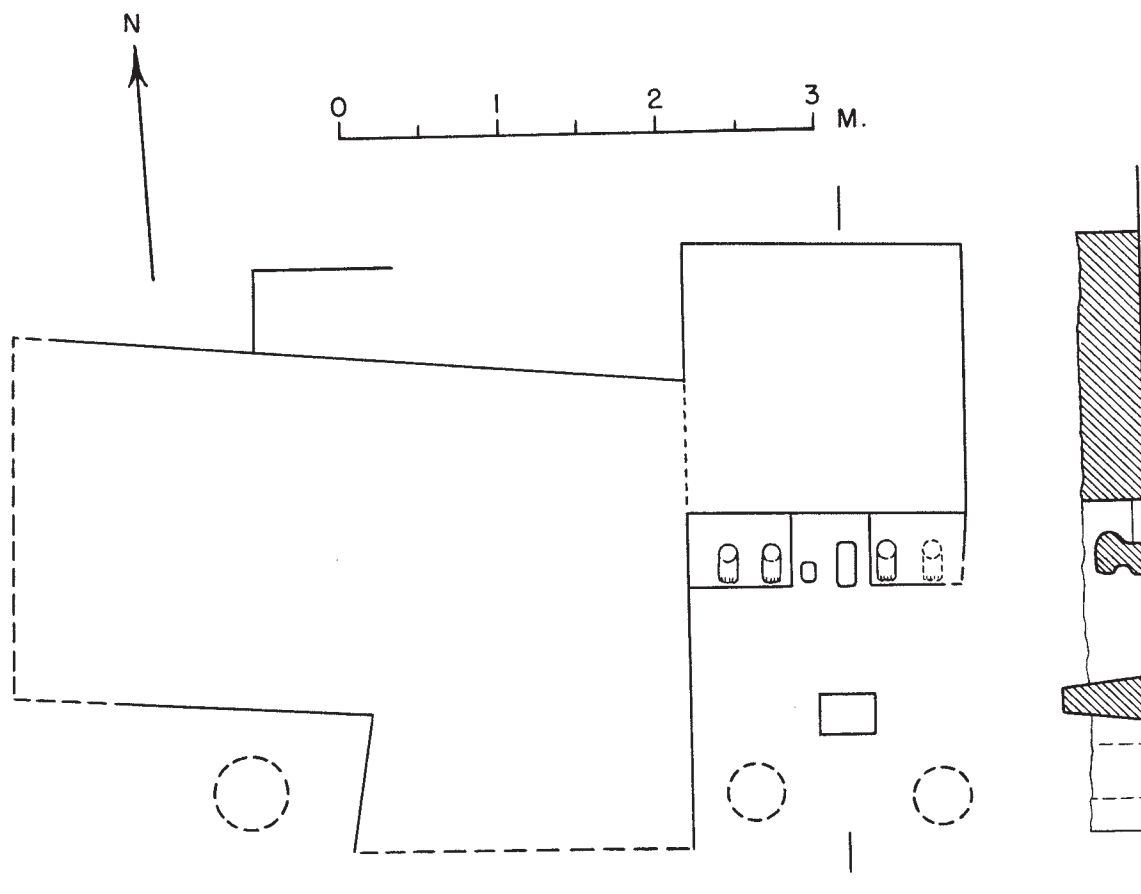
umns near the center of the building on the longitudinal axis. Two L-shaped benches occupy the sides and part of the back of the room. The east bench turns back to the north (rear) wall as shown; the west bench is assumed to have turned back at the point indicated by the dotted line. Large quantities of plaster and generally thick debris over the floor indicate that the building had carried a beam-and-mortar roof. The presence of an exterior bench to the west and one column drum in situ suggest some sort of additional structure on this side, but its exact nature was undetermined and has little bearing on the discussion of the main altar.

The altar (Fig. 28.2a) consists of three plaster figures in high relief set on the fronts of three crudely squared stones. A fourth stone to the west was probably once similarly employed.

The figures are seated with legs drawn up and elbows resting on knees (Fig. 28.2c). The hands reach upward to the position of helping support the altar



a



b

28.1. Strs. H-17 and H-17a.

a. Plan of building on top of pyramid, Str. H-17. b. Plan and section of platform, Str. H-17a, at foot of pyramid.

on the heads of the figures in a manner reminiscent of Atlanteans. On the two central figures rests a large stone slab, well faced in front but jagged behind (Fig. 28.2b). No other slabs were found in the altar area.

The immediate area around the altar yielded six pieces of stone sculpture and numerous incensario sherds (Lot C-120). The sculpture included four turtles (Fig. 28.2d,e), a crouching human figure with a snake on its back (Fig. 28.2f), and a small head. Beneath the unbroken floor under the altar a crude head of jade, drilled for use as a pendant, was found (Fig. 28.2g).

Just to the west of the figures, a long depression in the debris suggested that a trench had previously been dug through the building, narrowly missing the altar. As mentioned above, another upright stone similar to those supporting the plaster figures and altar was found in what would be the correct position for a fourth figure to the west. This stone may well have been so employed, and the figure either destroyed by the roof fall or disturbed by the earlier digging. The east end of the west bench was never found; it may have been destroyed, for although this side was not cleared, a deep probe was made under the fill and nothing was encountered.

The floor in front of the altar turned up to the feet of the figures and, between the figures, to a low (3–4 cm) ridge which ran in front of the altar except where interrupted by the figures.

Behind and under the altar was an unbroken floor at a level lower than that in front of the altar. This floor turned up to the side of the east bench and ran under the floor in front of the altar and under the stones supporting the altar. Between the above-mentioned floors, a small section of floor was found which did not run under the floor in front of the altar, but did run under the ridge and in one place turned up to the stones supporting the altar. This suggests that a floor, now destroyed, may have overlain the one found under and behind the altar and have turned up to all the stones supporting the altar.

Both the figures and the floor in front of the altar had traces of paint, though not enough to show a positive design. The column to the east of the altar was heavily plastered in several layers. The removal of one layer revealed brilliant painting in monochrome bands: red for 25 cm above the floor, the next 9 cm yellow, a 1 cm black band, then blue-green for 1–5 cm to where the column was broken.

The complete construction of the altar as it once stood will never be known. There are definitely three figures, and probably a fourth, all supporting the altar on their heads and hands. One slab, which just spans the distance between two of the figures, was found in position. If there were four figures, then the

central pair were the ones supporting the slab. How the spans to either side may have been bridged is not known.

Another problem which presents itself is what happened behind the figures. No indication was found of a wall, so the altar supports may have been freestanding like those in the Temple of the Warriors at Chichén Itzá or possibly there was a plaster wall a short distance behind the figures and the rest of the altar was solid. No trace of the latter wall was found, nor was there any turn-up on the floor. On the other hand, a higher floor did once exist over at least part of the area beneath the altar. One might argue that the wall was destroyed in a looting of the altar, but in that case, one would expect some indication of a wall or the turn-up of the floor; if it was totally destroyed, one would expect the figures to be gone also.

It can definitely be said of the altar, then, that it consisted of three, possibly four, seated plaster figures bearing on their heads and arms the top of the altar. At least one of the spans was bridged by a stone slab. The freestanding altar supports may or may not have given way to solid construction farther back; in either case, the altar stood free of the sides of the benches and probably continued back to the rear wall.

STR. H-17A

Str. H-17a, a small platform at the foot of the staircase of H-17, stands to a height of about 38 cm above the plaza floor, is of irregular shape, and does not appear to be centered exactly on the pyramid's staircase (Fig. 28.1b). The small square section to the east is built of more carefully dressed stone than the rest and appears to be the earlier, since the other section butts against it and since the west wall of the smaller section continued behind the larger section to the west. The floor sequence gives no indication of relative age.

The L-shaped wall on the north side of the west section of the platform presents an interesting problem. It is a poor wall, yet it approximately lines up with the north side of the east section, and its outside corner together with the northeast corner of the east section form a line quite well centered on the staircase of the pyramid. It was in this neighborhood that a number of small stone sculptures (Fig. 28.2k,l,n,o) and two large ball-on-column altars (Fig. 28.2h) were found. Some of this material may have fallen from above, either from the top of the pyramid or from a staircase shrine, if there was one; but it is equally possible that there was some sort of shrine on the north side of the platform, perhaps utilizing a niche where no wall was found. No large incensario

28.2. Strs. H-17 and H-17a. Architectural Details and Associated Artifacts.

a. Altar of Str. H-17 from southwest. b. Altar of Str. H-17 from south. c. Easternmost plaster figure from altar of Str. H-17. d. Limestone turtle (length 22.2 cm), from area around altar of Str. H-17. Lot C-120, Cat. no. 55-328. e. Top: limestone turtle (length 24.4 cm), from area around altar of Str. H-17. Lot C-120, Cat. no. 55-306. Bottom: limestone turtle (length 22.5 cm), from same area. Lot C-120, Cat. no. 55-120. f. Crouching human figure with snake on back (length 18.6 cm), from area around altar of Str. H-17. Lot C-120, Cat. no. 55-305. g. Jade pendant (height 4.9 cm), from beneath floor under altar of Str. H-17. Lot C-123, Cat. no. 55-141. h. Altar stones from north side of platform, Str. H-17a. i. Str. H-17a from southeast, showing "sacrificial stone," feet, and snake head. j. Str. H-17a from south, showing "sacrificial stone," feet, and snake head. k. Limestone carving of head of old man wearing snake headdress and coming out of shell (length 15.1 cm), from area north of Str. H-17a. Lot C-114, Cat. no. 55-108. l. Limestone snake head (height 26.9 cm), from area north of Str. H-17a. Lot C-114, Cat. no. 55-118. m. Limestone snake head (height 38.0 cm), from debris south of east section of Str. H-17a. Lot C-115, Cat. no. 55-119. n. Limestone turtle (length 19.3 cm), from area north of Str. H-17a. Lot C-114, Cat. no. 55-113. o. Limestone snake (length 25.4 cm), from area north of Str. H-17a. Lot C-114, Cat. no. 55-116. p. Head and feet of incensarios (Lot C-115), from debris south of east section of Str. H-17a. The head is wearing a bird headdress. Traces of red paint on headdress and ears. Lips encircled by narrow band of red and wide one of blue.

sherds were discovered in the area. The floor is in very poor condition here, and the numerous holes in it suggest the possibility of some of the sculptures having been tenoned in, though this is by no means certain.

The small southern extension of the platform is unclear. No wall was found across the southern end of it, nor did the south wall of the main platform continue behind it. There seem to be two possibilities: either the southern wall of the extension was lost, or there was a small step-up to the platform, walled on either side to the same height as the platform. On the west wall of the southern extension, there was a suggestion of an inner facing of stones which were above plaza floor level, but they were too badly disturbed for their function to be clear. It seems more likely that the south wall was lost.

The area just to the south of the small, earlier (east) platform contains a number of related features worthy of note. Against the edge of the small platform (Fig. 28.1b), are built two low (3–4 cm) benches of rock and plaster. On top of the western bench are found a pair of stucco feet and the beginnings of their legs (Fig. 28.2i, j). On the left side of the eastern bench is a single foot matching it was found in the debris and almost certainly belonged on the right side of the same bench. Between the two benches is a snake head tenoned into the floor, and another tenon from which the sculpture had broken away. The head was crudely made, depicting a snake with upper jaw wide open in a vertical position and lower jaw horizontal. Eyes were formed by a perforation through the stone (Figs. 28.1b; 28.2i). Masses of plaster, loose small stone, and stalactites in the area suggest that the feet were those of two plaster and stone figures which either stood to full height or sat on the platform. Since the platform is very low relatively to the size of the feet, the standing position seems more likely.

In front of the snake head and tenon is a so-called sacrificial stone, badly eroded but preserving the general shape of a truncate pyramid. Loose in the debris covering the area were found (Lot C-115) two tenoned snake heads similar to the one described above. One of the heads was small and very crude, the other large and much better executed (Fig. 28.2m). Large fragments of at least two human-figure incensarios were present, one figure wearing a bird, probably eagle, headdress (Fig. 28.2p).

On either side and slightly to the south of the "sacrificial stone" were found two column drums. These drums were smaller than any found on top of the pyramid or on Str. H-18 to the south. Their regular spacing suggests that they are *in situ*. They rest considerably above floor level, but a scrap of floor found nearby suggests that a much higher floor once covered this area. If this was the case, the column drums, resting on top of the floor and chinked underneath, may have served as altars. The column drum west of the southern extension is a similar case. The regular placing of the drums and their lack of association with any other building argue for their being in place; their height above the floor and the crowding they produce argue against, but do not negate, their being *in situ*.

Although a trench was dug to find the floor sequence and its relation to the buildings, little information came of it. None of the floors around the platform could positively be associated with Str. H-18 to the south, and there was only slight and dubious evidence suggesting that all floors found under the platform were later than the staircase of the pyramid, Str. H-17.

Throughout most of the region around the eastern platform two floors were found. The upper of these floors turned up to the bench supporting the feet, but both floors were broken by the walls of the platform. Two floors were also found inside the



a



b



c



d



e



f



g



h



i



j



k



m



n

o



l



p

eastern platform. The evidence suggests that the two floors were broken in order to construct the platform and that at the bench edge the upper floor was re-laid in order to turn up to the bench. A scrap of floor, higher than both these, was found in one place, indicating that a subsequent surfacing once covered at least the area around the feet and "sacrificial stone."

Str. H-17a, because of its position, was probably associated with the main pyramid. Although it is not centered on the staircase of the pyramid, one section of it may have been. The earlier and better-built part of the structure had two statues and a "sacrificial stone" in front and yielded many incensario sherds. In the area about the platform a considerable amount of stone sculpture was found.

A RESIDENTIAL QUADRANGLE: STRUCTURES R-85 TO R-90

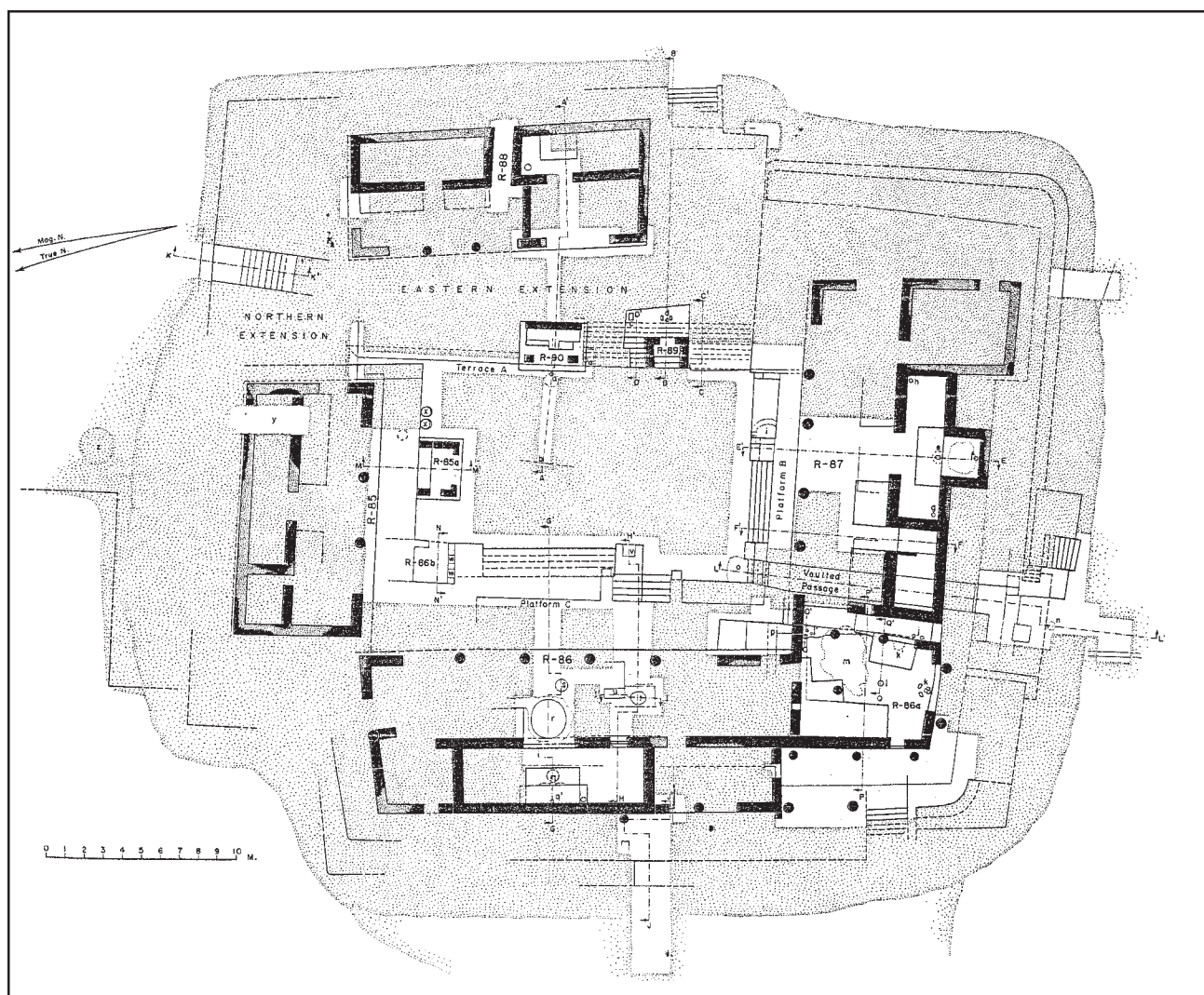
TATIANA PROSKOURIAKOFF AND CHARLES R. TEMPLE

The quadrangle to be described is situated just short of 300 m on the magnetic east line from the main pyramid of Mayapán. It is adjacent to a ceremonial group comprising a round temple, Str. Q-126, a gateway, Q-127, and several other civic and religious buildings on the periphery of the city center. It faces away from this group toward another residential quadrangle, Strs. R-95 to R-99, almost identical with it in plan. Its major buildings are readily identified as dwelling houses, though its high foundations and its size and location distinguish it from other house groups as a residence of more than ordinary importance. The monumental effect of the high terraces, however, is partly the result of adapting a court plan to a rough piece of ground. Building at this spot began long after the foundation of the city center, and, at this time, better locations may already have been occupied. The site is a rocky outcrop, and the court floor, which is only 0.75 m above its peak at the base of the west terraces, is 3.40 m above the low ground north

of the group. Immediately in front of Str. R-86, bedrock is about 1.50 m below the court floor.

BUILDING SEQUENCE (FIGS. 29.1–29.11)

The group was not built all at once, but suffered a number of rebuilding operations. On the basis of our limited excavations we could not correlate all the observed sequences of construction, but for convenience in discussion we group building activities into four general phases. The earliest operation of which we have knowledge was the leveling of the ground on the periphery of the site for the foundation of the first terraces. This was observed at the entrance of a vaulted passage (Fig. 29.8, cross sections 5 and 6) and elsewhere in trenches outside the group. The leveling was accomplished by spreading a mixture of earth and stones behind a rude step or retaining wall. The earliest terrace walls are bedded in this primary fill. The first unit to be constructed



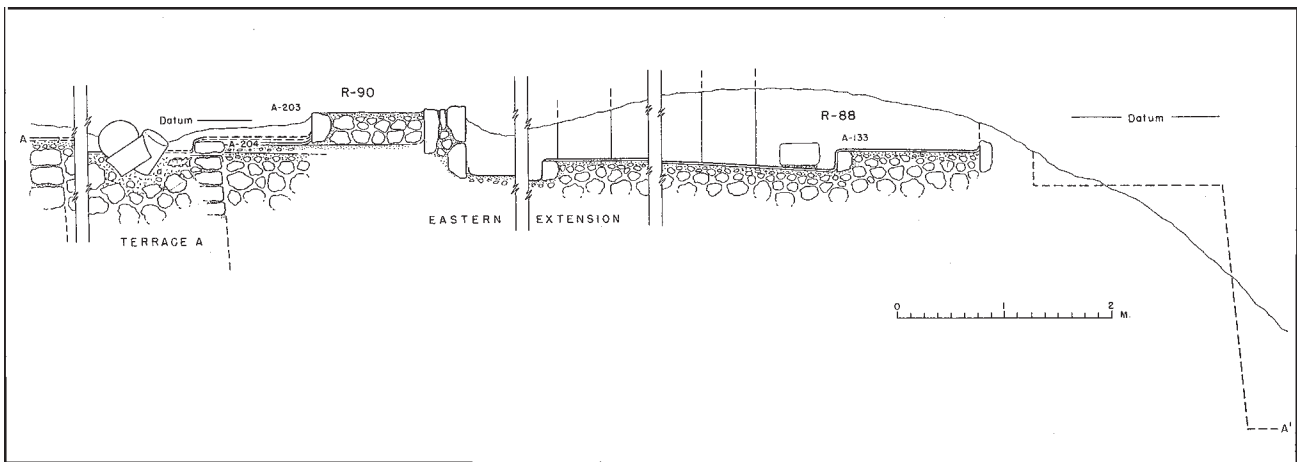
29.1. Plan of Quadrangle, Strs. R-85 to R-90.

a. Cache 6. al: Cache 7. b. Wall going down through fill. c. Drain in areaway. d. Cache 8, with stone rings set into areaway floor above it. e. Cache 3. f. Cache 2. g. Cache 4. h. Drain formed by neck and body of jar set under floor. i. Rounded curb built against balustrade at court level. jj'. Small depressions in finished floors, probably used as pot stands. k. Hearth. k'. Probable location of second hearth. l. Post hole. m. Area of broken upper floors. n. Skeleton of child in crevice of rock. o. Old excavation at entrance to vaulted passage. p. Buried corns of original structure, R-86a. q. Cache 1. r. Burial Cist 2. s. Trace of column or altar in buried floors. t. Burial Cist 1. u. Dismantled pier of early building. v. Niche in stairway block. w, w'. Niches in secondary wall of chamber. x, x'. Column drums placed against wall of platform for its ascent. y. Old trench through building. z. Circular pile of rock, probably from old trench.

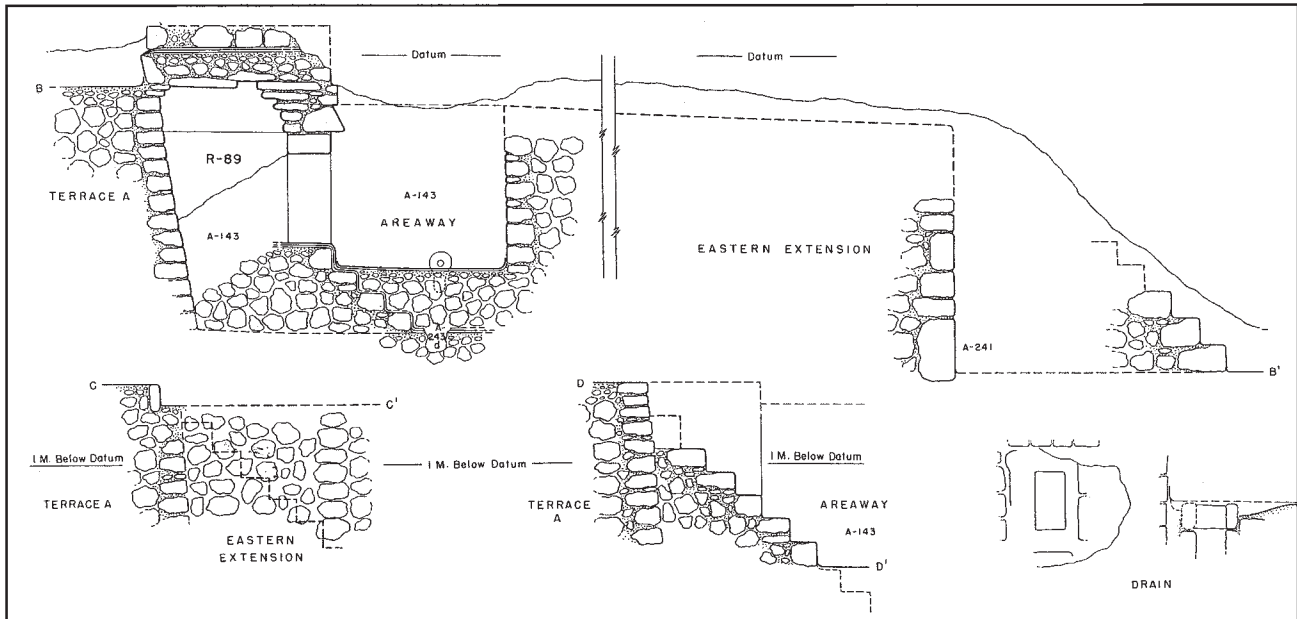
was a broad terrace supporting two building platforms joined together at the southwest corner. These elements are designated as Terrace A and Platforms B and C, although all three are built as a unit and we found no construction level separating the platforms from the terrace. The above-mentioned vaulted passage runs under Platform B, giving access to Terrace A from the south. Later, a monumental stairway with a central shrine, Str. R-89, was added to the east edge of Terrace A (Figs. 29.1, 29.3). These constructions constitute Phase I of the group.

During Phase II, the group probably retained its over-all design, and the east stairway and Str. R-89 stood exposed. Various additions, however, were made to the two platforms, and the buildings upon them were completely rebuilt. Probably at this time construction was begun on the essential elements of Str. R-86a, which later served as a kitchen for Strs. R-86 and R-87. In other locations, walls of Phase II were torn down at the beginning of Phase III.

In Phase III, the group was greatly expanded. Terrace A was extended first to the east, then to the



29.2. Section A-A', Through Strs. R-90 and R-88.
Location of Lots A-133, 203, 204. a. Cache 6.



29.3. Sections B-B', C-C', D-D', Str. R-89 and Stairway
against Terrace A.

Location of Lots A-143, 241, 243. d. Cache 8. Lower right, plan and section of drain in areaway.

north, and the major houses, Strs. R-86 and R-87, were rebuilt on a larger scale. In addition, two new houses were built, Strs. R-85 and R-88, two new shrines, Strs. R85a and R-90, and a small room, Str. R-86b.

In our Phase IV we include late additions to the outer terraces, the secondary constructions outside the south entrance to the vaulted passage, the open colonnaded galleries back of Strs. R-86 and R-87, and some minor constructions clearly secondary to those of Phase III.

Although the phases undoubtedly overlap chronologically, in any given location they can be regarded as sequent in time and as representing distinct stages in the progress of construction. Their significance, however, is strictly limited to the development of the building group, and they have no general stylistic implications. The observed differences in masonry, for example, are not paralleled in building sequences of other groups. They are not to be interpreted as representing general trends of development, but rather

as an illustration of the variability of the masonry techniques practiced at Mayapán.

STRUCTURAL DETAIL

The walls of the terraces of Phase I are built of roughly dressed limestone blocks, noticeably smaller, more uniform in size, and more regularly coursed than the stones of the terraces which cover them. The northeast corner of Platform B has a well-cut cornerstone placed vertically (Fig. 29.14,5), but there are no vertically set stones in the faces of the terrace walls. Later terraces tend to have rounded corners and cruder mixed masonry. All terrace walls are cemented with lime mortar and chinked with small bits of limestone. Very little of their outer coat of plaster now remains. A cut through Platform C shows the outer wall backed by another of unshaped fill stones also set in mortar (Figs. 29.5, 29.6). Behind this double wall is an open fill of broken limestone rock. The fill was probably built up in sections separated by dry-laid retaining walls. One such wall, going down through the fill of Terrace A (Fig. 29.1b), was built of roughly shaped stones, and we cannot be sure that this is not part of some earlier buried construction, although there is no other indication of building prior to Terrace A. Elsewhere, unshaped fill stones were used, and this probably was the common practice.

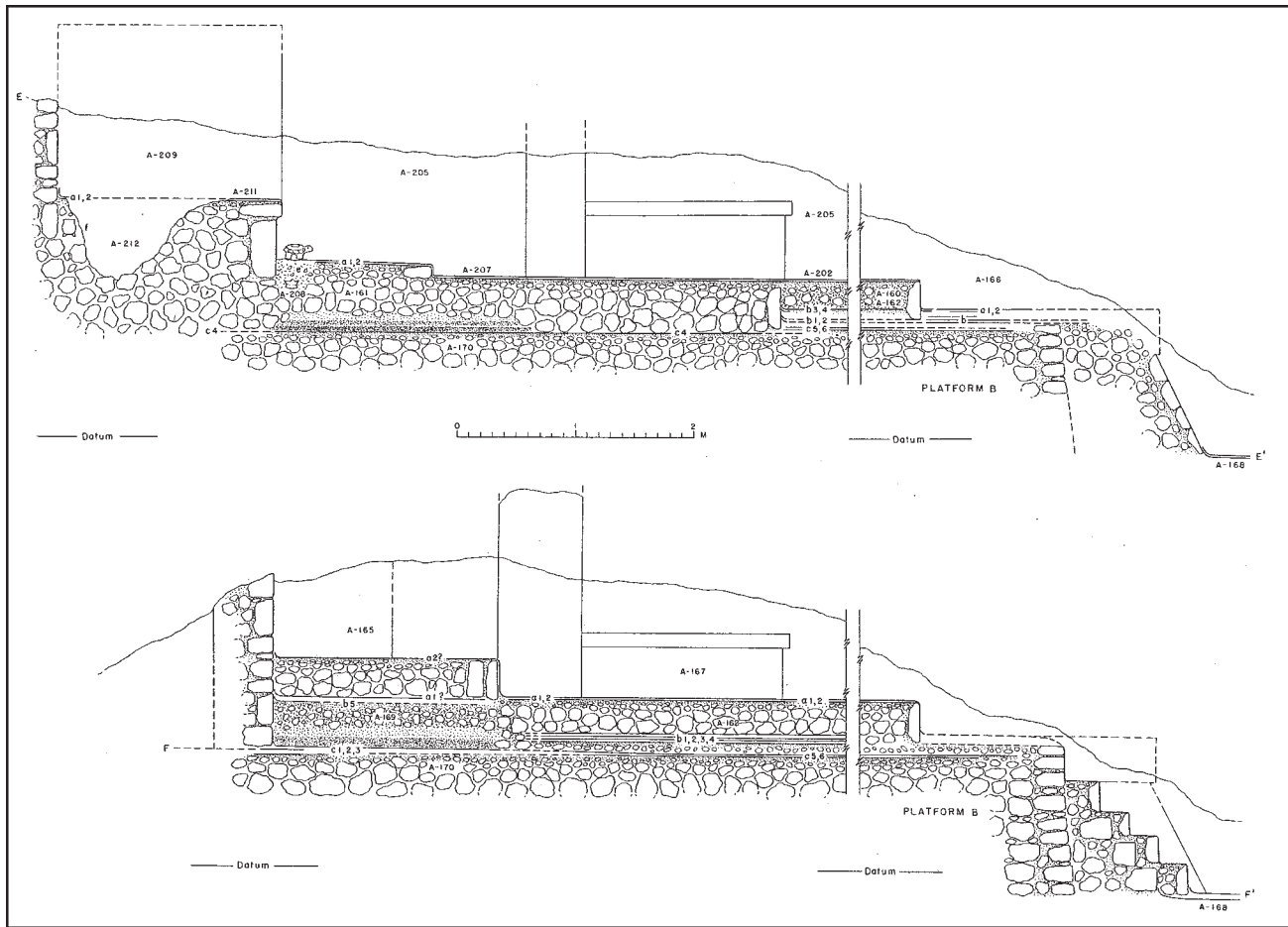
As elsewhere at Mayapán, we find two sharply contrasting techniques of stonecutting. Among rudely shaped blocks and slabs there are often accurately cut, smoothly faced stones of fine limestone, which apparently come from dismantled buildings of an earlier period. These we call "Puuc stones," referring to the architectural style with which they are associated. Since this style extended into northern Yucatán, the stones may have been locally manufactured, but we have not been able to identify any remains at Mayapán that could represent this early period except scattered sherds of Slateware and associated pottery types mixed with early deposits. In Phase I of our group, Puuc stones were used more sparingly than they were later. It is particularly striking that they were not used at this time for the risers of stairways, though some may have been included in the sloping zones of balustrades. Steps of Phase I are built of blocks laid horizontally and are heavily plastered. In Phases II and III, risers of steps are in most cases built of Puuc stones set on edge, as are the plinths of the late buildings. Puuc stones are also used in building walls of Phase III, particularly on the interior, and in platform walls, though rarely in walls of the higher terraces. Phase IV constructions tend to be more rudely built, but this may be

because they are for the most part outside the main Court. A certain decline in building standards or in resources seems, however, to be indicated by the fact that the outer constructions at the entrance to the vaulted passage rest on midden material rather than on stone fill, and that no Puuc stone is used in the stairway immediately to the east.

No consistent changes in mortar, plaster, or floor construction were noted. Floors vary in composition in all phases. Normally the open fill is covered by a layer of small stone on which is laid a mixture of limestone chips and *sascab*, a local marl that is widely used today for floors and for mortar. This marl may be mixed with slaked lime to form a hard concrete, and on top of it is spread a finer mixture to give a smooth plaster surface. In several instances we noted an even red-brown stain on the finished surface. Building debris, earth, and refuse are often substituted for the *sascab* layer under finished floors, which vary greatly in hardness and in state of preservation.

We learned little concerning the plans of the early dismantled buildings of Phases I and II, but it was noted that, in contrast to later houses, none of them had a plinth; all were entered on platform level. Houses of Phase II were in general smaller than those of Phase III, but had benches and columns and were probably similar in plan. The major Phase III buildings, Strs. R-85, R-86, and R-87, are larger and more spacious than most houses at Mayapán. The gallery of Str. R-87 is 4 m wide and the span between the central columns is 3 m. The columns are correspondingly massive, and with their coat of plaster were at least 0.65 m in diameter. They are built of drums about 0.30 m high, fairly well cut, and leveled with spalls and mortar. They apparently had no capitals. Benches are faced with vertically set stones, and those of the galleries have a small rectangular projecting molding. Large stones cut to the width of the jamb and set deep into the floor are usually used in doorways. The jambs of the small doorways of the early shrine, Str. R-89, and the late chamber, Str. R-86b, however, have no facing.

The outer doorways of the houses were doubtless spanned by wooden lintels, and the roofs were built of wooden beams and mortar. Stone lintels were sometimes used in small doorways. The greatest wall height observed was about 2.15 m above the floor, so that the minimum height of a house above its plinth would be over 2.50 m, and a height of 3 or 3.50 m is not unlikely. The beams were probably overlaid by thin poles laid close together to support a cap of mortar 0.15 m or more in thickness. The mortar is a mixture of burnt lime and *sascab*, with pebbles and potsherds occasionally embedded in it. Slabs of stone



29.4. Sections E-E', F-F', Str. R-87.

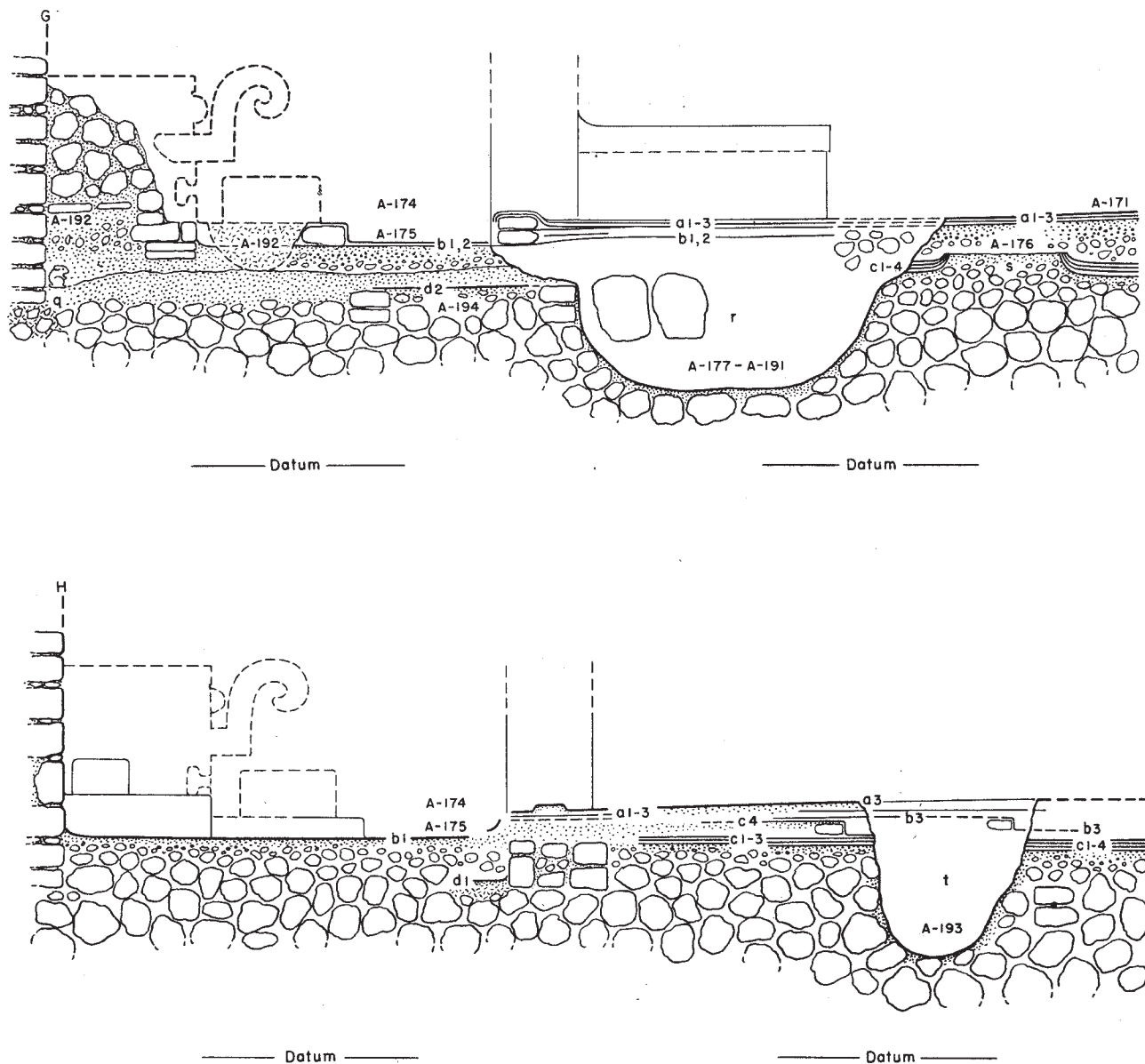
Location of Lots A-160 to 162, 165 to 170, 205, 207 to 209, 211, 212. e. Cache 3. f. Cache 2.

were apparently used on the edge of the roof, and a grooved stone recovered in debris near Str. R-86a may have served as a rainspout (Fig. 29.13u). Minor buildings were probably thatched, and there are two standing masonry roofs, both built during Phase I.

The roof of the early shrine, Str. R-89, is a rough stone corbel of uncoursed slabs projecting inward from the front and side walls of the building and from the corners (Figs. 29.3; 29.14i). A large irregular capstone with a span of 1 m does not quite fill the gap between the corbel stones, which is closed by three smaller capstones resting on the first. The thickness of the roofcap could not be measured directly, but is in the neighborhood of 0.30 m, including the large capstone. There was no sign of plastering on the inside of this rude vault.

The roof of the passage under Platform B is more conventionally constructed. At its north end it has the typical form off the vault associated with the Puuc architectural style (Fig. 29.8, cross section 2). There is

a slight offset at the spring, which tends to disappear where the wall merges with the wall of the stair well to the north. The soffit is lightly curved and faced with smoothly dressed tenoned vault stones, set in lime mortar and chinked with bits of limestone. Just below the capstones, which at the entrance are unusually thick, there is a narrow projecting string course of well-cut stones. Away from the entrance, inside the passage, only the lower courses of the soffit are of faced stone (Fig. 29.8, cross section 3). Above them are stepped courses of roughly shaped blocks. It is not clear whether this change was resorted to because of the scarcity of faced stone in the early phase, or whether there had been a later alteration, with part of the original vault torn out and replaced by ruder construction. A slight setback of the first capstone from the face of the entrance gives some indication of rebuilding, but we did not attempt to penetrate the floors of Str. R-87 to see if the plaster over the capstones had been destroyed.



29.5. Section G-G', Str. R-86.

Location of Lots A-171, 172, 174 to 191, 192, 194, 195.
q. Cache 1. r. Burial Cist 2. s. Trace of column or altar in
buried floors.

ARCHITECTURAL ORNAMENT

We do not know whether sculptured Puuc stone was used for building decoration during the early phases, for, if so, it was no doubt all removed and re-used again during Phase III. The lavish stone decoration of the façade of Str. R-87 is rivaled only by the ornate façade of Str. Q-151, one of the more elaborate colonnaded halls of the ceremonial center. The majority of the sculptured pieces are elements of masks. These do not all match in design, but a great

number show the type of carving that is associated with what are probably very late Puuc structures at Kabah and Uxmal. This carving is characterized by sharp crisp lines, the use of narrow outlining fillets, and ornate design. The motif in Figure 18m is particularly worth noting, for it derives from a very late Classic Maya form and is not common in the Puuc. It occurs at Kabah in a distinctive type of building which borrows from the Chenes the motif of the serpent-mouth doorway, adapting it to the Puuc style.

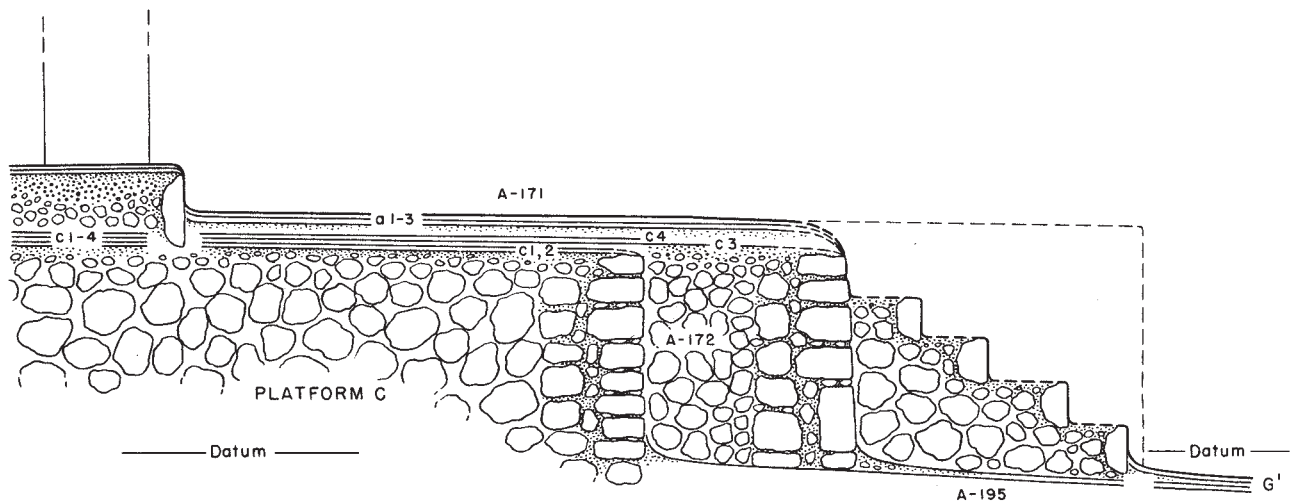
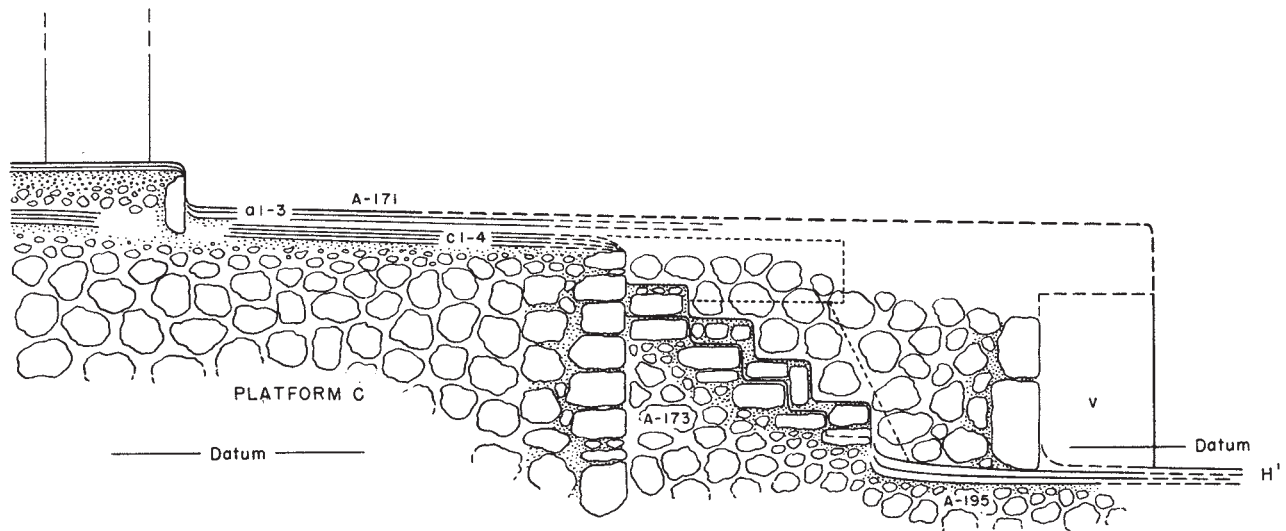


FIGURE 5

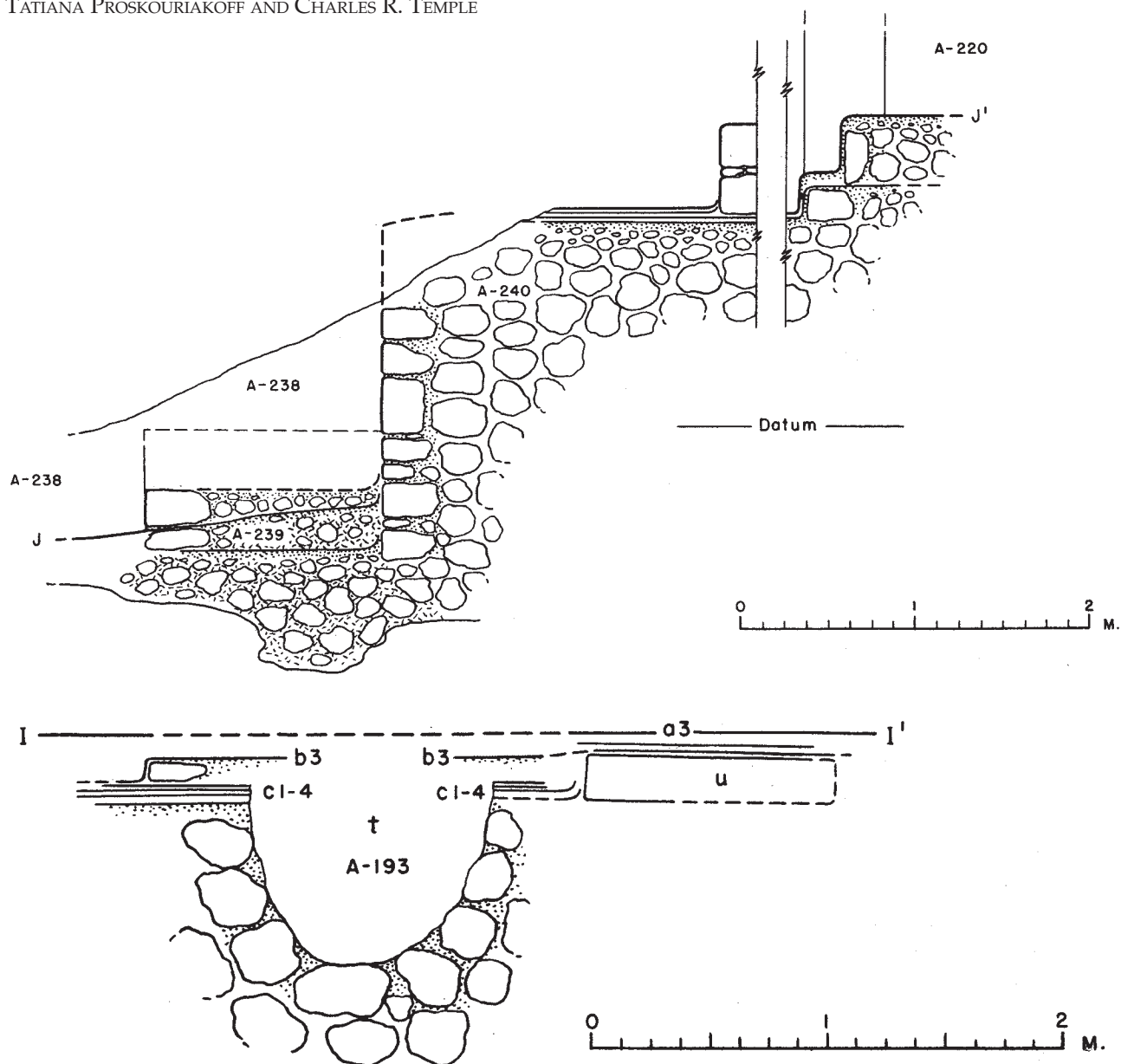


Brow elements such as that in Figure 18f,g may stem from the same style, whereas those in Figure 19c,i represent a different type of design.

Sculpture contemporary with the constructions is confined mostly to small ceremonial objects used in the buildings, though we cannot be altogether certain that the masons of Mayapán did not occasionally copy Puuc elements or fill in with motifs of their own. There are a number of sculptured human heads and a human hand (Figs. 29.18x-d'; 29.19x), the style of which we cannot clearly identify. In addition,

there are three monolithic altars locally carved. Two are upright altars with a molding and a bulbous top, of a type commonly found in the ceremonial center (Fig. 29.13x,z), and the third is a flat round altar, with a three-member molding around it, probably made from a column drum. Plain altars that do not differ from column drums were also used, and there is one large cylinder of stone (Fig. 29.13y) which may likewise have been an altar.

Stucco was sometimes used to continue decorative motifs started in stone, and to elaborate detail.



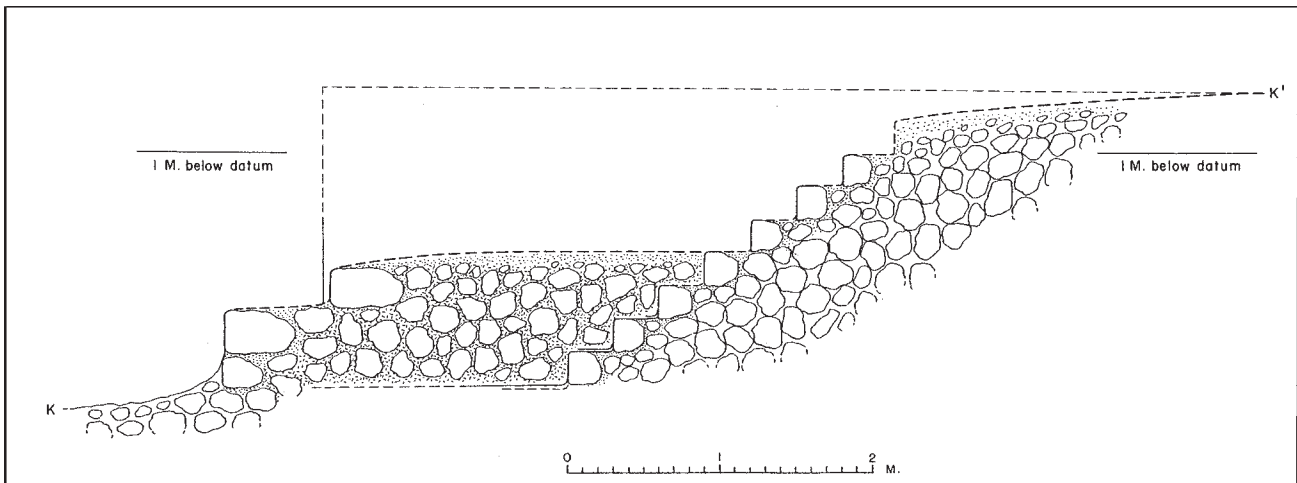
29.6. Sections H-H', I-I', J-J', Str. R-86.

Location of Lots A-171, 173 to 175, 193, 195, 220, 238 to 240. t. Burial Cist 1. u. Dismantled pier of early building. v. Niche in stairway block.

We do not know whether it was used alone for major motifs. Some of the column drums on the rear terraces of the group have projecting tenons that were probably meant to hold high stucco relief, but these drums may very well have been re-used without trimming. The only pieces of modeled stucco we found suggest the use of stucco statues inside the buildings, rather than outer architectural decoration.

On the other hand, there is ample evidence of polychrome painting on plaster, both inside the

buildings and on exterior walls. The colors include flat tones of red, yellow, light blue, and green, usually outlined in black or very dark brown. They show little penetration into the plaster surface and were probably applied when the plaster was dry. Nowhere did we find a fragment large enough to reveal the character of the design, but the motifs often show forms no larger than 0.10 m, which suggests a fine scale of ornament. Elsewhere, large areas may have been covered with a single color (Fig. 29.12m).



29.7.
Section K-K', Through Northeast Stairway.

EXCAVATIONS

When the group was first examined late in the season of 1954, it was clear that there had been previous digging. On the north side near the end of Str. R-85, there was a deep gash breaking through the rear and medial walls of the building into a bench of the front gallery (Fig. 29.1y). Stone, apparently from this excavation, was piled in a circular mound below (Fig. 29.1z). In the southwest corner of the court, a pit had been dug through the court floor, destroying the upper steps of the stairway leading down into the vaulted passage (Fig. 29.1g). Another pit was noted in the debris of Str. R-88, at the entrance of the southeast room. The areaway in front of Str. R-89 was filled with loose stone that looked as if it had recently accumulated there, and our excavations showed that the debris on the main altar of Str. R-87 had probably been disturbed after the roof had fallen. Later, we encountered excavations made by the inhabitants themselves, but the destruction mentioned above was the work of later visitors to Mayapán and was made with no apparent understanding of the plans of the constructions.

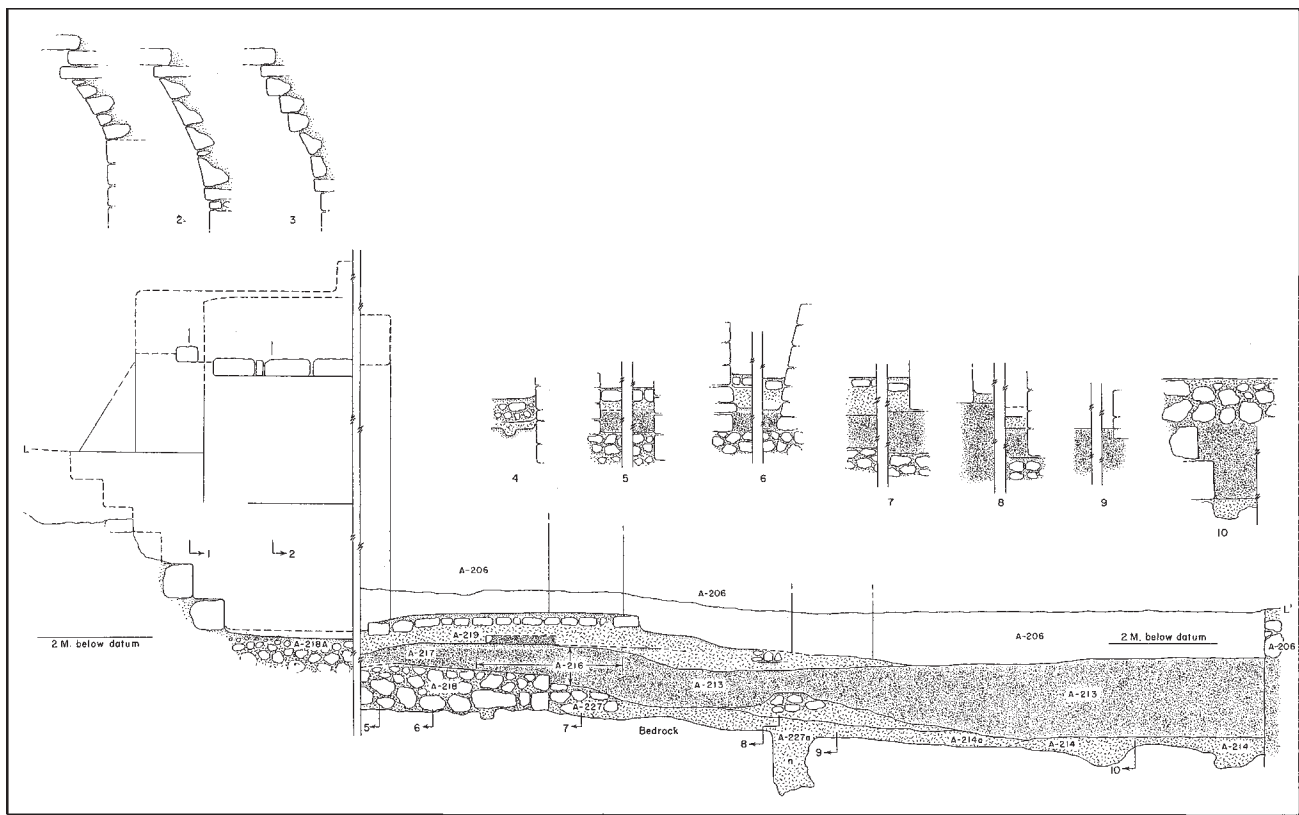
The brief excavations of Proskouriakoff in 1954 were concerned largely with clearing enough of Str. R-88 to show its general plan. In addition, the areaway in front of Str. R-89 was emptied, and debris was cleared from the east edge of the platform of Str. R-86. This work is covered here together with the excavations of Proskouriakoff and Temple in 1955.

STRUCTURE R-89 AND TERRACE A

In digging out the areaway of Str. R-89, we removed a quantity of loose stones, many of them mask ele-

ments sculptured in the Puuc style (Fig. 29.18). Most of these undoubtedly came from the east end of Str. R-87, and some can be matched with elements from that building. Other pieces were of Mayapán style and workmanship, notably a crouching or "diving" figure (Fig. 29.18e', f') and a small parrot or turtle head of stone, once plastered and painted blue (Fig. 29.13b'). We are not certain to which style to ascribe the sculptured head in Figure 18c', d', possibly representing a Maya or Toltec version of the Mexican god Tlaloc. Lower down, the stone was mixed with earth, and a sizable tree had grown immediately in front of the shrine doorway. Cutting the tree exposed the stone lintel of Str. R-89, and we could see that the earth had spilled from the areaway into the shrine, half filling it. In the lower debris we found a small copper bell (Fig. 29.12t), a tiny bead of jade, and a number of fragments from large human effigy censers. The shrine itself was empty. Bits of at least three floor surfaces could be seen here and there at the base of the walls, but most of the floor inside the shrine was destroyed, and a pit about 0.60 m deep had been dug against the rear wall formed by the face of Terrace A. It was here that we first encountered this early construction. Later, we traced its edge northward to a sharp corner, where it turns to run under the terraces of Str. R-85, and southward until it disappears under the platform of Str. R-87. A meter and a half farther south, set back about 0.20 m from the edge of Terrace A, we exposed the northeast corner of Platform B, built in the same manner as Terrace A and forming a unit with it (Fig. 29.14a).

The shrine R-89 (Fig. 29.3, Section B-B') is built on a broad stairway with which it forms a single



29.8. Section L-L', Through Vaulted Passage and Trench in Front of South Entrance.

Location of Lots A-206, 213 to 214a, 216 to 218a, 227, 227a. n. Crevice in rock with burial of child. Above: cross sections at various locations along the trench.

construction. The stairway is secondary to Terrace A, but is built in the early manner, with horizontal riser stones. We place it tentatively in Phase I, but it may possibly have been built at the beginning of Phase II, when the original Platforms B and C were being altered. The shrine incorporates some Puuc stones in its walls and in the three-member molding which forms its upper façade. At the back, the upper member of this molding rests on the edge of Terrace A. In front, over the stone lintel of the doorway, the upper member is interrupted and the arrangement of the stones that remain suggests that there was a decorative panel, possibly a mask, over the door. The construction of the vault has already been described. The roof was finished with three thick layers of plaster, showing that it stood exposed for some time before a secondary platform or altar was built upon it.

The stairway originally extended for about 3.30 m on each side of the shrine. Its south end abutted a wall jutting out eastward from Terrace A to form a block, balustrade, or projecting wing of the terrace.

The steps here are destroyed, but traces of them can be seen on the wall (Fig. 29.14b). The north end of the stairway abuts another projecting block or balustrade, 1.55 m wide, with a rectangular molding 0.76 m high, buried under the shrine R-90. The last step of the stairway is secondary. Just south of the shrine it is represented by a single stone which overlies the plaster of the shrine molding (Fig. 29.14c). On the north, the step is missing, but it probably abutted a secondary masonry block built on the stairway 0.80 m from the shrine. This block projects about a meter from the edge of Terrace A, and covers the upper steps leaving a narrow stair next to the shrine. It is likely that there had been another such block on the south, torn out in subsequent operations.

The stairway apparently stood exposed and was in use for some time, while various alterations were being made on Platform B. At the beginning of Phase III, when Str. R-87, the final building on Platform B, was about to be built, Cache 8, which had been buried in front of the steps, was carefully opened and its valuable contents were apparently

removed, leaving only broken fragments of the cache bowl in place. The opening broke through three hard plaster floors, one of which passed under the stairway. This floor was broken very near to the cache, and we believe must originally have covered it. Nevertheless, we are reluctant to conclude that the cache is earlier than the stairway, for it is clearly centered on the shrine. Since the early floor continued in use after the stairway was built, we believe it may have been broken through for the cache and patched to cover it.

The looting of the cache was preliminary to major alterations extending the court eastward and forming a small areaway in front of the shrine. At the same time, an addition was made to Platform B to support the east end of Str. R-87. The edge of the addition is 1.50 m in front of the north edge of Platform B, exactly in line with and resting on the wall at the end of the shrine stairway. The plaster surface on top of the stairway wall was removed, so that no clear break can now be seen between the two constructions, but the character of the masonry changes abruptly, as can be seen in Figure 14b. For some reason not entirely clear, the upper steps of the stairway, and even the upper courses of the early Terrace A south of the shrine, were torn out in the course of these operations and the level of the court was stepped down by a row of small stones set on edge. The fill over the broken stairway was retained by a rough wall of fill stones running from the south-east corner of the shrine to the south stairway wall. At the juncture of the fill wall with the shrine, we noted an early plaster coat on the shrine wall which showed traces of mural decoration. Unfortunately, we could not expose more of this painting without endangering the wall of the areaway, which started immediately behind the fill wall. All the walls of the areaway are based on fill 0.55 m above the floor in front of the stairway. The north wall abuts the secondary masonry block north of the shrine, leaving the narrow upper steps exposed to give access to the areaway.

The floor of the areaway meets the foot of the plinth of the shrine, burying the lowest three steps of the stairway. Into this floor, 1 m in front of the shrine, were set two stone rings 0.35 m apart (Fig. 29.14e, f) with their holes not very accurately in line. The holes are about 0.04 m in minimum diameter, and the rings are 0.19 m across and 0.07 m thick.

A similar pair of rings has been observed in a small shrine at the foot of Str. Q-143 in the Main Group. In the northeast corner of the areaway, a rectangular hole faced with stone formed an opening into a drain that went deep into the fill and under the east areaway wall (Figs. 29.3; 29.14j). Later, this

drain opening was rebuilt and a patch of new floor was laid around it. Finally, a second coat of plaster was laid down, covering the whole floor.

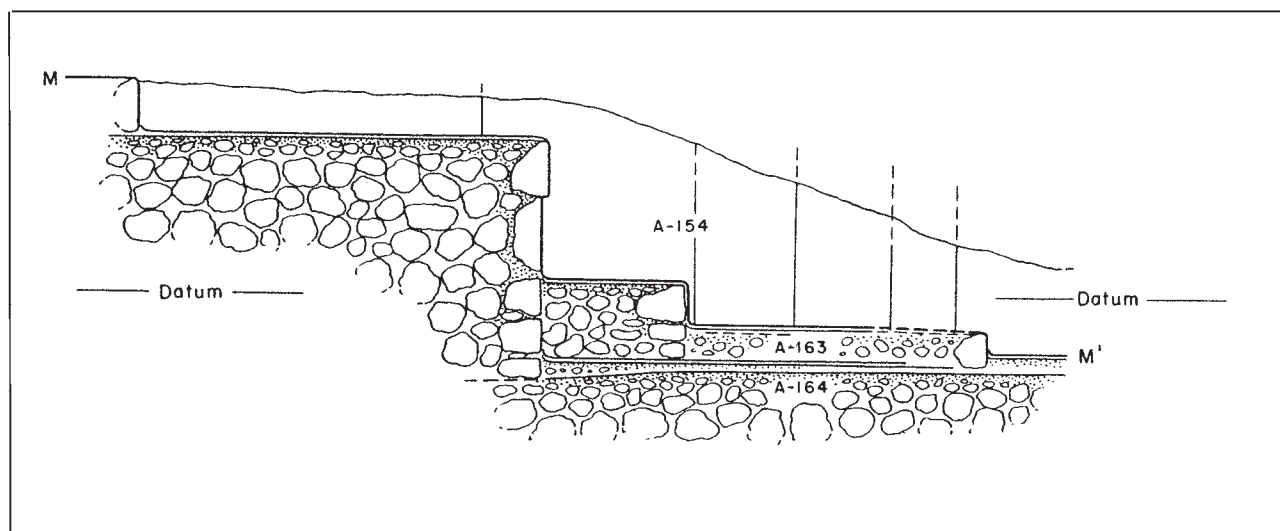
Very little remained of the late platform or shrine that was built on the roof of Str. R-89. Traces of its face were found about 0.02 m from the west edge of the roof. Elsewhere this facing had fallen. The maximum height of the masonry on the roof was about 0.20 m, and no surface was preserved.

It is possible that the upright altar shown in Figure 29.13z, whose broken pieces were found in the court, was associated with this late platform. The court floor in front of the platform, which we assume faced westward, was broken, but we did not clear enough to see if there was an open pit in the fill. In the base of the altar, there is a round dowel pit 0.07 m in diameter and about equally deep. Apparently this was to hold the altar firmly in place, an indication that its base was not deeply buried.

STRUCTURE R-87 AND PLATFORM B

Even before excavation began, many pieces of sculpture were noted in the surface debris in front of Str. R-87. Clearing of the debris on the platform disclosed many more. Others, as we have mentioned, had been thrown or had fallen into the areaway in front of Str. R-89, and a number were recovered on the south slope of the terraces back of the building. Most of the pieces could be identified as mask elements, and some were repeated, though not nearly so many as one would expect if the masks had all been designed for one building (Fig. 29.19). This confirms our conclusion, based on the style of the carving, that the masks had been taken from dismantled earlier constructions and re-used. In the debris on top of the platform east of the transverse axis of the building we also found two fragments of a small sculptured turtle, well worked in fine-grained limestone (Fig. 29.21,i) On the carapace are carved two hieroglyphs with the coefficients 10 and 8. The first glyph is missing, but the second clearly reads 8 *Ahau*. If these glyphs are calendrical, they could record the dates of two consecutive *Katuns*, 10 *Ahau* and 8 *Ahau*, or the single date *Tun* 10, 8 *Ahau*.

Our excavation in the building proper consisted in the digging of a central trench through the debris of the front gallery and the clearing of the central and the west back rooms. The debris throughout showed a stratum of charcoal on the floor containing fragments of burned beams, round in section and about 0.09 m in diameter. Above the charcoal layer was a layer of loose mortar 0.30 to 0.50 m deep containing large pieces of solid roof cap of burned lime probably mixed with *sascab* and other temper-



29.9. Section M-M', Through Str. R-85a.
Location of Lots A-154, 163, 164.

ing material. The biggest pieces found were 0.15 m thick. Mixed with the roof material were occasional slabs of stone. The floor under the debris was uniformly blackened, and it is clear that the building was destroyed by fire.

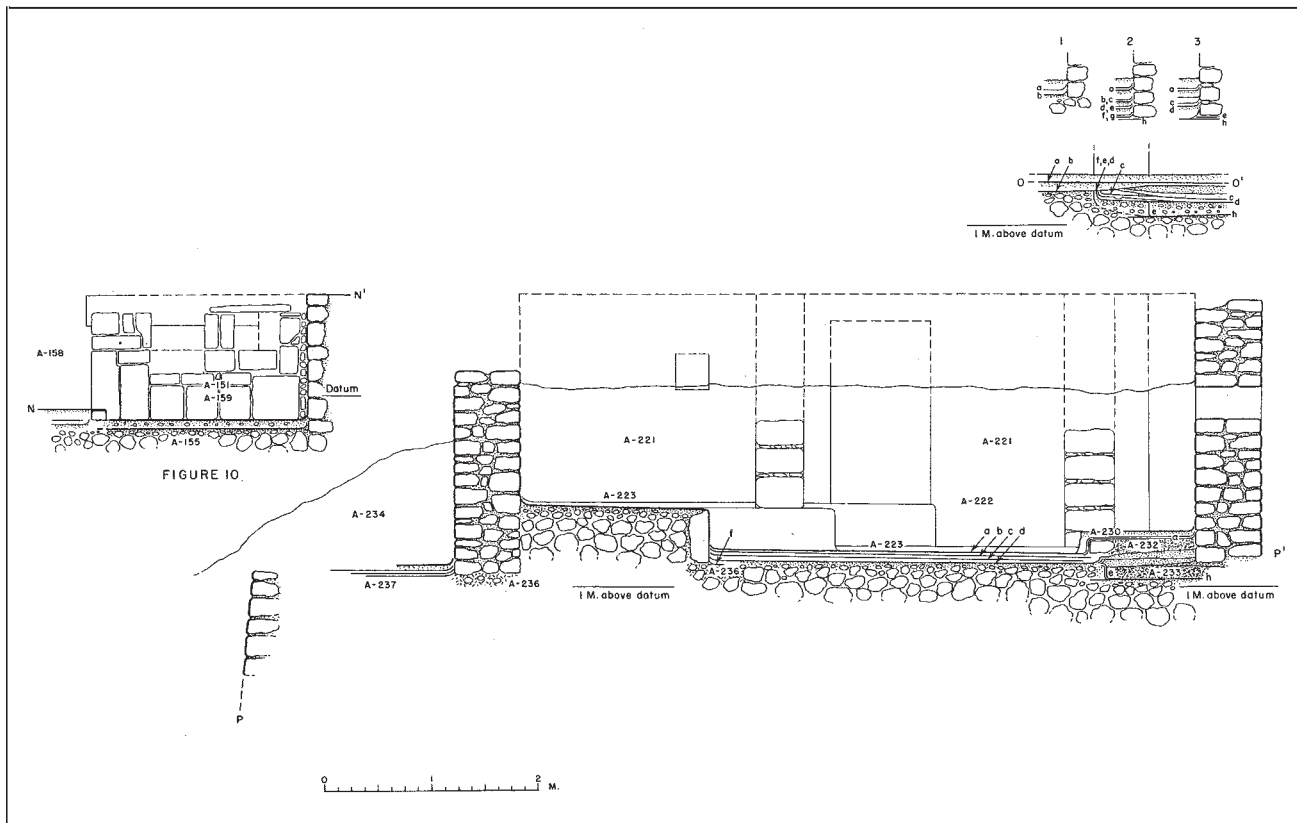
The floor is raised 0.30 m above the front terrace by a plinth of vertically laid Puuc stones, and has two distinct coats of plaster. Wherever plaster had remained on the walls, two corresponding coats were found (Floors a1,2, Fig. 29.4). In the front gallery we encountered two benches, one on either side of the central doorway to the rear room. The benches were about 0.65 m high and were finished with a small projecting molding. Some of the stones of this molding were carved with a simple design (Fig. 29.15c), and it is possible that the design was continued in stucco over other stones that were plain.

On the floor of the front gallery between the two benches we found three fragments of stucco representing human feet wearing sandals (Fig. 29.21a). The odd foot on the right has traces of red paint. The soles of the sandals are smooth on the bottom, as if these feet had belonged to movable idols and had not been fixed in a floor. There were also between the benches many thick unslipped pottery sherds, coated with one or two layers of plaster, in places over a centimeter thick. These sherds apparently belonged to large water jars of the type we later found in Str. R-86 and partly reconstructed (Fig. 29.21k). They increased in number as we entered the central back room, and here we noted two areas of their concentration, one just east of the central altar and another in the west end of the room.

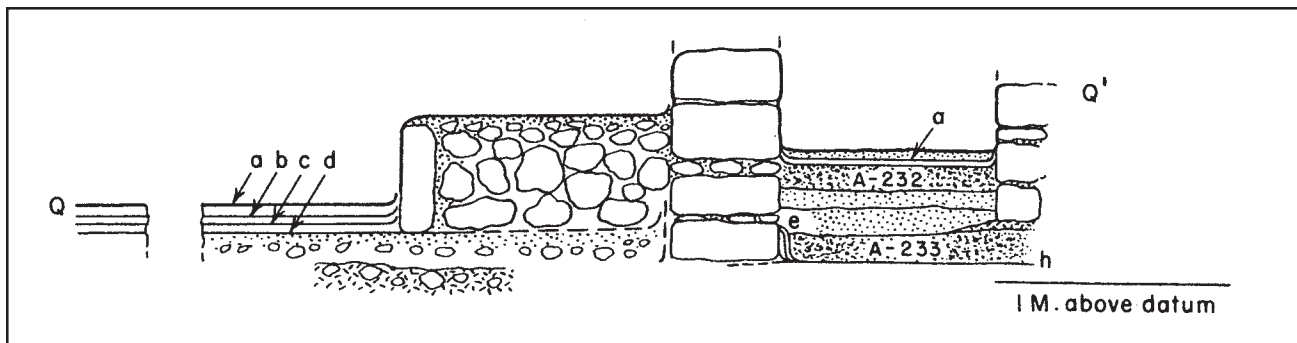
All together, over 1,200 jar sherds were recovered, indicating that several jars must have been broken *in situ*. In addition, there were numerous sherds of Redware bowls, the majority slipped only on the interior. R. E. Smith, who examined the pottery, lists also fragments of Redware jars, of a Fine Orange vessel painted in polychrome, sherds of Thin Black Ware, and a few Effigy Censer sherds. That only a few of the last were found was surprising, since the center rear room, with its altar and dais, no doubt had a ceremonial function. An explanation of this circumstance will be considered when we examine the contents of Burial Cist 2 in Str. R-86. The presence of water jars in a room dedicated to ritual activity is in itself unexpected, and invites speculation as to the ceremonies performed. The possibility of ritual bathing, as in the sweat baths of other Maya cities, naturally suggests itself, but no facilities for producing steam were observed.

There was, however, a small drain in the northeast corner of the room (Fig. 29.12e,f). Its round opening was formed by the mouth of a jar with a broken bottom, set into the loose rock fill beneath the floor. The floor sloped gently down to meet the lip of the jar. The jar (Fig. 29.21d) is unslipped and has two strap handles and an unusual rim with a slight concavity on the interior corresponding to the projecting band below the lip.

The altar is set in an alcove projecting back from the room (Fig. 29.15a,b) and the walls of this alcove rest above floor level on the fill of the altar. Testing at the base of walls in the east end of the room, we came to the conclusion that the walls of the room,



29.10. Section N-N', Through Str. R-86b
Location of Lots A-151, 155, 158, 159.

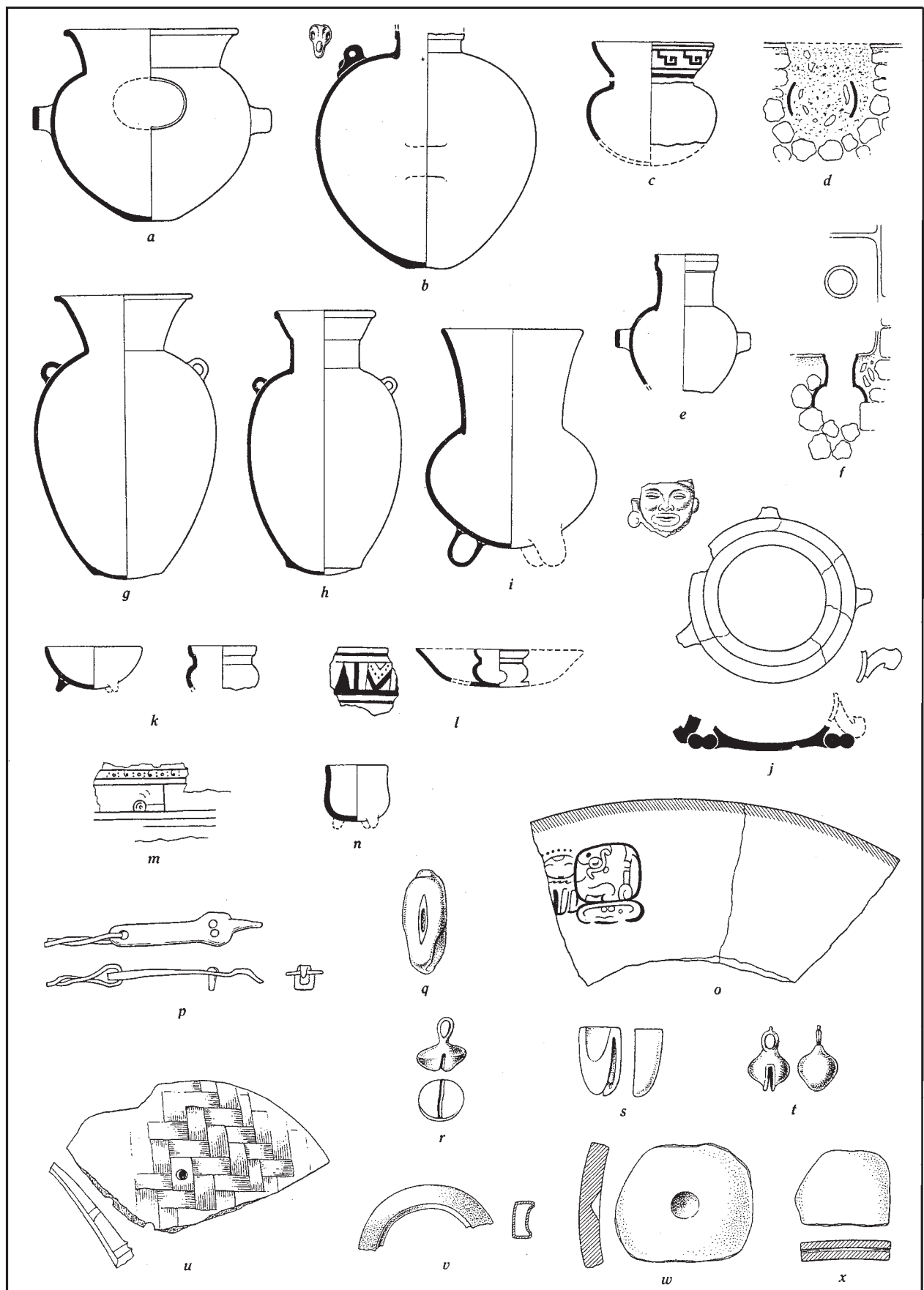


29.11. Sections O-O', P-P', Q-Q', Through Kitchen, Str. R-86a.
Location of Lots A-221 to 223, 232 to 234, 236, 237.

the alcove, the altar, and the low dais projecting in front of it were all built in a single operation, and at the same time as the plinth and the benches of the front gallery.

On the east wall of the alcove were the remains of two coats of plaster, the lower of which had traces of a design painted in red, black, and yellow (Fig. 29.12m). The debris on the altar did not contain the layer of roof material we observed elsewhere, and

had probably been disturbed. A large hole had been excavated in the top of the altar, and most of its covering of plaster had been destroyed. This situation was similar to that found in Str. R-89. Excavations that we could attribute definitely to the departing inhabitants, made with the purpose of removing valuables from caches, were all neatly made exactly at the spot where the caches were hidden. The large area of broken floor on top of the altar, as well as the



29.12. Pottery and Artifacts.

a. Red Ware jar with oval opening in side (see Fig. 29.21e) found on west bench of Str. R-86a; Lot A-223. Exterior of vessel, interior of neck, and edge of opening are slipped with red. Rim diam. 31 cm; body thickness approx. 0.7 cm. b. Red Ware jar (see Fig. 29.21c) found on west bench in Str. R-86a; Lot A-223. Rim broken. Two handles at right angles to lug. Exterior slipped light brown-red with black splotches. Ht. 82 cm; body thickness 0.7 to 1 cm. c. Vessel of Cache 4; Lot A-210. Red-on-buff (?). Lip, interior of neck, and band along exterior of neck are red. Design in brown or black. Body of vessel weathered, with traces of brown paint. Rim diam. approx. 22.5 cm. d. Cache 4, section. e. Gray, unslipped jar (see Fig. 29.21d) used as drain in northeast corner of central rear room in Str. R-87; Lot A-215. Note groove below lip on interior. Traces of plaster on neck. Rim diam. 11.5 cm; body thickness approx. 0.5 cm. f. Plan and section of drain. g. Water jar (see Fig. 29.21k) from rear room of Str. R-86; Lot A-174. Plaster coating on exterior 0.7 to 1 cm. Rim diam. 49 cm; ht. 99 cm; thickness 0.8 to 1 cm. h. Water jar (see Fig. 29.21j) from southeast corner of Str. R-86a; Lot A-223. Rim slipped red on both interior and exterior down to vertical part of neck. Outside coated with plaster. Rim diam. 35 cm; ht. 93 cm; body thickness 0.9 to 1.5 cm. i. Tripod jar (see Fig. 29.21f) found on west bench of Str. R-86a; Lot A-223. Slip on exterior, black, shading to dark reddish brown. Reddish slip continues halfway down interior of neck. Feet hollow, with no apertures. Rim diam. 25 cm; ht. 41 cm; body thickness 0.5 to 0.8 cm. j. Fragments recovered in Cache 8; Lot A-243, Small effigy vessel of Porous Unslipped Ware with traces of blue paint. Yellow paint around eyes and mouth of human face. Vessel was broken in many small pieces and could not be restored. Outer diam. of ring base approx. 12 cm. k. Two small vessels (see Fig. 29.21b) from east bench of Str. R-86a; Lot A-223. At left, unslipped, smoke-blackened tripod bowl. Rim diam. 16.8 cm; thickness 0.85 to 1 cm. At right, small jar, incomplete, with traces of red slip on exterior and on interior of neck. Note concavity of rim on interior. Rim diam. 11.9 cm; thickness 0.8 to 1 cm. l. Two fragments of red-and-black (brown)-on-buff pottery, with suggested reconstruction of form. From material on floor of Str. R-86a; Lot A-223. Note concavity of rim. Rim diam. of inner piece approx. 11 cm. m. Painting on lower coat of plaster on east wall of alcove above altar in Str. R-87. Lower zone, red. Band above, yellow outlined with black. Above wider band of red and black design is ornamented band in dark red between two red bands. Max. height above altar top 36 cm. n. Small unslipped tripod jar (see Fig. 29.21b) from east bench of Str. R-86a; Lot A-223. Rim diam. 11 cm; thickness 0.9 to 1.5 cm. o. Sherd of bowl, slipped red on interior, with glyph of God D (Itzamna?) painted on outer surface in black. From Cache 3; Lot A-208. p. Wrought iron hasp (Cat. no. 54-123) from debris of northeast stairway. All over length 10.6 m. q. Small oliva shell with vertical slit (Cat. no. 55-625) from Str. R-85. r. Copper bell (Cat. no. 55-25) found at south end of vaulted passage; Lot A-206. Diam. 1.1 cm. s. Cut oliva shell (Cat. no. 54-128) from general debris. t. Copper bell (Cat. no. 54-132) from areaway in front of Str. R-89. Diam. 1 cm. u. Fine orange pottery sherd with mat impression on convex side; cut and perforated (see Fig. 29.24g); from debris, Str. R-87. Max. measurement 9.2 cm. v. Fragment of pottery ring, possibly part of earplug (Cat. no. 55-237); from debris south of Str. H-87. Soft, fine-textured gray paste with thick waxy surface of a lighter color. Max. diam. approx. 5 cm. w,x: Two Mayapán Red Ware potsherds apparently used as tools for smoothing or sharpening implements (Cat. no. 55-282); on bedrock outside vaulted passage. Max. measurement 5 cm.

disturbed debris, suggests subsequent excavation, though we believe that Cache 2, placed at the foot of the alcove wall, had already been looted before the secondary digging. Two other caches (3 and 4) were found in the room. Both had been looted, and on the refill of Cache 3 immediately in front of the altar, carefully oriented and centered, was placed a small limestone receptacle in the form of a turtle (Fig. 29.21h).

One meter west of the altar, near the back wall of the room, was found a tenoned ring, which probably served as a cord holder. Another stone ring, broken, was recovered in the general debris (Fig. 29.15l). Set into the center of the east wall about 1.50 m from the floor was a well-cut rectangular stone with a deep tenon projecting about 0.10 m from the wall face.

Our trench followed the north edge of the bench west of the central doorway and turned into the entrance of the west back room. Here we exposed the end of another bench similar to the others. The west jamb of the doorway into the back room was made of a single stone accurately cut and smoothly faced. The finished face of this stone is 0.70 m by somewhat

over 2 m. Just beyond this jamb the floor is raised by a step 0.32 m high, faced with Puuc stones backed by a row of vertically set rough stones (Fig. 29.15d). Flush with the face of the jamb and projecting into the back room at this higher level is a thin partition made of small stones and mortar and rounded at the end (Fig. 29.15g). The room behind this partition was cleared of debris but revealed no distinctive features or artifacts left *in situ*. The step to the back room overlies another at right angles to it just under the east edge of the partition. The sequence here was never successfully correlated with that of the front gallery, but we believe that the jamb and both steps belong to the final phase of construction inaugurated by the extension of the platform and the laying of the plinth.

A transverse trench on the central axis of the building, penetrating through successive floors into the open fill below, revealed a long series of building operations that had preceded Str. R-87. The original Platform B at one time had an earlier stairway, of roughly faced, horizontally laid stones. The first court floor encountered here turned up to the lowest

29.13. Artifacts and Sculpture.

a. Fragment of flint blade (Cat. no. 55-236) from debris near south entrance of vaulted passage. Max. dimension 5 cm. b. Flint point (see Fig. 29.24f,2). c. Flint scraper (see Fig. 29.2f,1,2). Max. dimension 4.8 cm. d. Gray streaked obsidian "thumbnail" scraper (Cat. no. 55-36); under roof debris of Str. R-86a. Max. dimension 2.7 cm. e. Two arrowpoints (see Fig. 29.24a,3,4). f. Gray obsidian "thumbnail" scraper (Cat. no. 55-105) from debris at base of west terraces. Max. dimension 2.1 cm. g. Gray obsidian "thumbnail" scraper (Cat. no. 55-331) from debris at base of west terraces. Max. dimension 2.5 cm. h. Gray obsidian core (Cat. no. 55-73); Lot A-169. Under upper floors of Str. R-87. Max. dimension 3.5 cm. i. Fragment of obsidian core (Cat. no. 55-104) from debris at base of west terraces. Max. dimension 3.7 cm. j-o. Obsidian flake scrapers (Cat. nos. 55-250 and 55-123). k-o are from debris at base of west terraces. p. Large limestone metate found on top of debris in Str. R-86a. Width 45 cm. q. Smaller limestone metate (see Fig. 24h) and mano from debris near south entrance to vaulted passage, Width 26 cm. r. Leg of lava metate, in debris on terrace outside kitchen. Max. dimension 24 cm. s,t. Broken limestone metates, in debris outside kitchen. Width 30 and 27 cm. u. stone with groove, possibly a waterspout, from debris near southeast corner of kitchen. Width 22 cm. v. Ring cord-holder from debris of Str. R-86a. Max. dimension 29 cm. w. shell peg pictured in Fig. 24a,9. x,y. Two limestone "altars" from pit in front of Str. R-90. Ht. of y 46 cm. z. Limestone "column altar" found in court. Ht. 70 cm. a'. Carved celt (see Fig. 29.24i,2) from above Burial Cist 2. Heavy gray-green stone with unpolished surface. Max. dimension 21.3 cm. b'. Limestone head of parrot or turtle (Cat. no. 54-136) found in drain of areaway in front of Str. R-89. Traces of plaster with blue paint adhering to surface. Max. dimension 6.5 cm. c'. Small stone sculpture (see Fig. 29.24i,1) from Burial Cist 2. Max. dimension 12.1 cm.

step of this stairway (Fig. 29.4). Though seen in section, this stairway was never traced in plan, and we have no data on its extent.

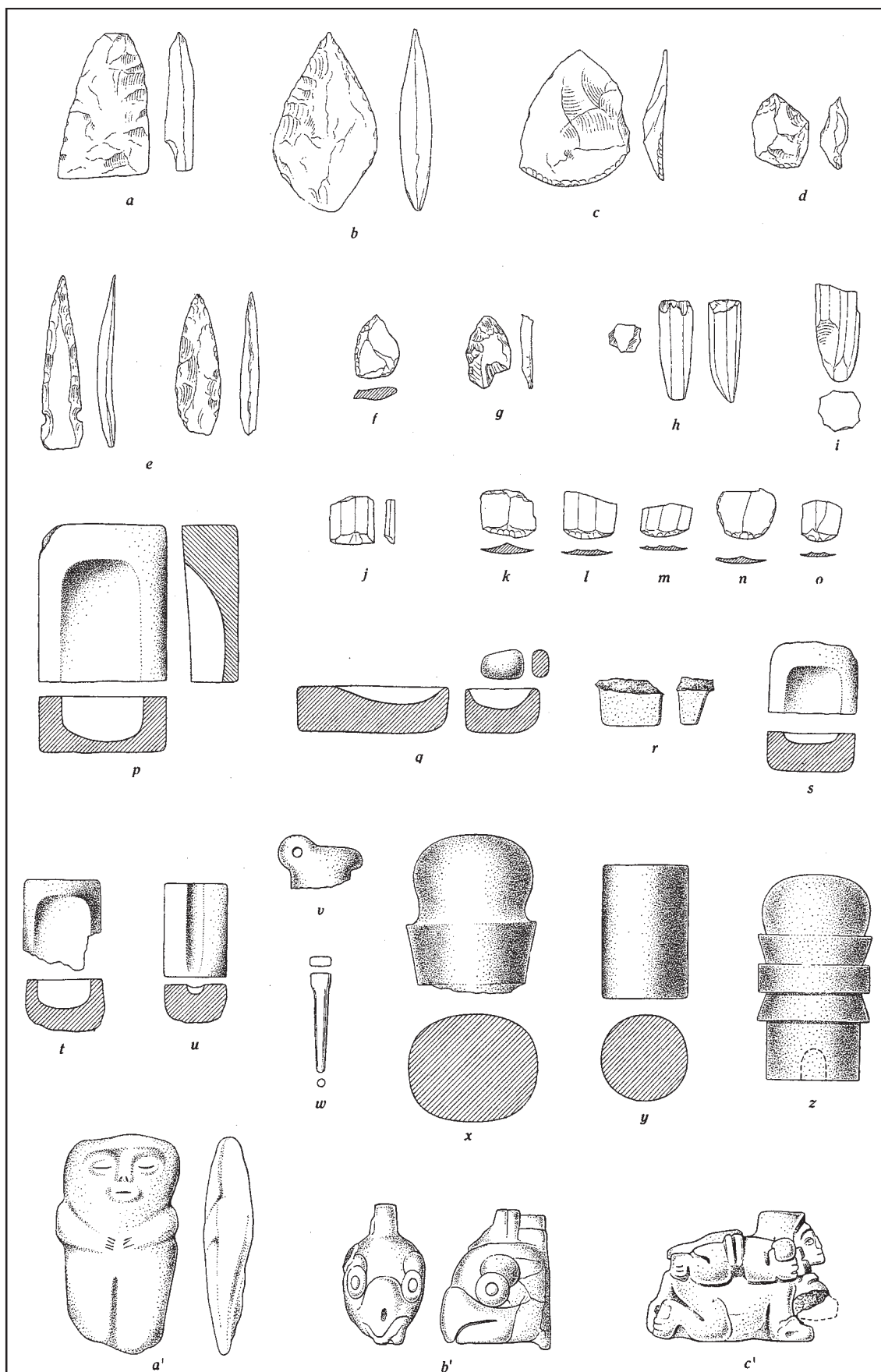
The earliest floors on the platform are consistently a little lower than its top course, which was apparently raised at the time when the stairway was rebuilt. There are at least three of these early floors, but they are not continuous, having been destroyed in many places by later building operations, and we could not be certain at any specific location which of them we picked up. Floors c1-6 in Figure 29.4 are fragments of these early floors. The lowest floor in Section F-F' (c1) underlies all standing walls, but turns up to a single stone buried under the foundation of the wall between the two excavated back rooms. A floor above it (c3) turns up to the south wall of the late structure, which at this point is apparently based on the stub of a wall of an earlier building. The west wall of the building and the west jamb of the front colonnade likewise must incorporate earlier constructions, for both were associated with floors that seem to have been laid down before the plinth was built (Floor d in Sections O-O' and P-P', Fig. 29.11). We were not able to identify these floors, observed outside the building, with the floors in Sections E-E' and F-F'. It is possible, however, that they belong with the series b1-4 in Section F-F'.

This series contains four distinct finished floors outlining two benches, with faces just behind the faces of the later benches, but set at a lower level. Between two of the benches and in line with their front edge, the upper floor rose slightly to form a low, rough ridge or sill. In Section E-E' one sees a vertically set stone which was once a part of the face of one of these benches. Behind this stone is an area of open fill, but as one enters the back room, the fill abruptly changes. On a very early level (c4), there is

a thin layer of dark ash overlain by a stratum of very fine uniform gray ash, such as housewives today sift from the hearth to use as a bleach. Above this layer is a stratum of lime and *sascab* that may be the remains of a floor. In this area we are apparently inside the room behind the early benches.

A similar ash layer occurs in the west rear room and is overlain by a stratum of loose plaster above which is a fill of earth, stones, and debris supporting a higher floor (b5, Section F-F'). This floor extends under the transverse step into the back room, and apparently at one time dropped down in an east-west line to meet one of the other floors of the b series. Such fragmentary remains of the building preceding Str. R-87 suggest that it was similar in plan to the later building, though somewhat smaller and lacking the plinth that raised later floors above the platform level.

The passageway between the two early benches is imperfectly centered on the later of the two stairways to the platform. The associated floors, however, apparently override the last course of the platform (Section E-E'). Therefore, unless the steps of the early stairway had been raised, the new stairway must have been built before these floors were laid down. From other evidence we know that the new stairway long preceded the final structure, R-87. It was part of a larger operation which included the extension of the early vaulted passage under the west end of the building and the widening of Platform C. A decided change in masonry can be noted, the risers now being built of thin Puuc stone, including two sculptured elements, which, however, were probably plastered over and did not serve as ornaments (Fig. 29.15r). The sloping zones of the balustrades are also faced with well-cut stone set on edge, and, though the vertical member above is destroyed, its former



29.14. Views of Excavations and Details of Construction.

a. Northeast corner of Platform B with secondary bench in front, and face of eastern extension of platform in foreground at left. b. Balustrade or block south of stairway to Terrace A, with face of eastern extension of Platform B built on it. Note change in masonry and (below) trace of steps torn out in later construction. c. Buried south side of Str. R-89, with remains of original stairway to Terrace A. d. North side of Str. R-89, showing steps left open for access to areaway. e. Areaway in front of Str. R-89, with rings set in floor. View from north. f. Same, view from south. g. Façade of Str. R-89. h. Buried steps of stairway to Terrace A in front of Str. R-89. i. Interior of shrine, Str. R-89, looking up at large capstone resting on edge of Terrace A and corbel of shrine walls. j. Drain in northeast corner of areaway in front of Str. R-89. k. Str. R-90; view from northwest. Plinth stones in center have been removed.

existence is attested by an abrupt interruption of the sloping zone at a height of 0.85 m and by a slight offset on the side wall at about the same level.

Next to the east balustrade on the earliest floor of the court was built a raised and rounded ridge or curb of plaster and small stones, forming a quadrant of a circle with the wall of the balustrade and the north face of Platform B (Fig. 15g). Later, part of this construction was torn out and a bench about 0.40 m high was built along the face of Platform B. The basin formed by the round curb, however, was left open and its walls were raised 0.25 m above their former level. An aperture 0.17 m wide, and about as high, apparently served as a drain at this time (Fig. 29.15h). The bench extends to the northeast corner of Platform B, where five floors turn up to it and run over the masonry block south of the stairway of Terrace A and under the eastern extension of Platform B. Since the bench is secondary to the stairway of Str. R-87, it is clear that the stairway is much earlier than the latest building, which was built as a unit with the platform extension. This extension juts out northward from the face of the earlier Platform B, and its fill is divided by an east-west wall of dry-laid fill stone that runs under the plinth of Str. R-87. The west edge of its projection is retained by a buttress built in the form of a narrow balustrade on the bench in front of Platform B, and this is matched at the opposite end of the bench by a similar buttress laid against the balustrade of the stairway to Str. R-87, widening it by 0.30 m (Fig. 29.15h). The basin-like structure under the bench must have been filled and completely covered over at this time, but the floor of the bench above it was later destroyed by a pit that penetrated through the fill of the bench and the earliest floors in the basin. Remains of stones, potsherds, and animal bones in the pit suggest that former offerings may have been disturbed. Nothing definitely indicating a cache, however, was found.

STRUCTURE R-86 AND PLATFORM C

Str. R-86 is the largest house of the group and doubtless was the residence of the head of the family. It

is approached by a broad stairway on which is centered the small shrine Str. R-90. Like Str. R-87, it was burned down immediately after abandonment, and shows the same strata of collapsed beam and mortar roofing, underlain by a layer of charcoal in the rear room. The debris of the front gallery, however, was widely scattered and did not show clear stratification.

In plan, Str. R-87 and Str. R-86 are similar, with the important difference that two of the back rooms of R-86 have entrances on the west, where a gallery had been built back of the house. Moreover, the principal front gallery had originally turned to skirt the north end of the building, and was only later divided to form a rear room at this end.

As in Str. R-87, the central room at the back was used as a shrine, and although there is no specially built alcove, a richly decorated altar is placed against the back wall. The decoration has fallen from the face of the altar, but the elements recovered show that it consisted of a large mask composed of typical elements of the Puuc style with a huge curved nose (Fig. 29.20q-y). One eye piece still retains vivid polychrome painting. The mask elements of the altar were supplemented with stucco decoration, and adhering to the base there is an admirably executed little serpent that may have projected from the mouth of the mask (Fig. 29.16). Apparently this was the only sculptured decoration in the building, for we found no such profusion of elements in front as we did in Str. R-87. Perhaps the older generation living in the principal house was more conservative in taste or more religious in temperament, since it concentrated ornament in the ceremonial part of the house.

Laid against the rear wall under the altar was Cache 1, an effigy jar in the form of a rabbit containing two jade beads and a shell ornament (Fig. 29.23e,1). In front of the altar there is a low dais which had been excavated, presumably to remove another cache. Immediately to the north of this excavation, on edge and leaning partly against the altar and partly on debris, was a large well-cut stone drum 0.63 m in diameter and 0.30 m high. This may have stood on



a



b



c



d



e



f



g



h



i



j



k

29.15. Views of Excavations and Details of Construction.

a. View through doorway to central rear room of Str. R-87, showing central altar and dais in front. b. Southwest corner of central rear room of Str. R-87, showing location of caches. c. Bench west of central doorway in front gallery of Str. R-87. Upper floors in front have been removed. Under floor in left foreground are remains of earlier bench. d. Doorway to west rear room of Str. R-87, showing large monolithic jamb and step to higher level in room. Trench in foreground. e. Plaster partition flush with monolithic jamb, and buried step at right angles to doorway shown in d. f. Stairway to Platform B and Str. R-87. Entrance from court to vaulted passage in background. g. Remains of plaster curb forming basin-like structure against the balustrade of stairway to Platform B. h. East balustrade of stairway, showing buttress addition and drain (?) from basin-like structure. Facing stones of bench have been removed. i. Str. R-85a from west. j. Doorway to Str. R-86b. Platform of Str. R-85 at right. k. Str. R-86b. West wall with niches. Behind it, block of stairway to Str. R-86. l. Two rings from wall debris of rear room, Str. R-87.

the dais, and perhaps was lifted to allow the excavation of the cache. Attached to the altar on the south side is a small rectangular masonry block on which stands another, smaller, drum altar (Fig. 29.16k).

In the southwest corner of the room, under the roof debris, was a large plaster-coated water jar, broken into many pieces, which we in part reconstructed (Figs. 29.12g; 29.21k). No drain, as such as was found in Str. R-87, was noted here, but there may be one in the unexcavated northern half of the room.

The shrine room has two floors. The lower floor passes under the dais to turn up to the altar. Eastward it extends under a sill in the central doorway, turning up to the medial wall and the bench of the front gallery. It could be traced no farther (Floor b1, Section G-G', Fig. 29.5). In the south doorway of the room, it breaks off before reaching the sill. We could not determine whether this floor once extended over the plinth of the gallery or whether the façade of the building is a later construction.

Only three floors (a1-3) were observed on the plinth. These floors slope down toward the back of the building and probably represent the three uppermost floors turning up to the medial wall and to the side of the bench. The lowest of the three has two surfaces, one associated with a secondary row of stones laid on the sill in the central doorway, and the other, a hard surface with a red stain, passing under the secondary stones and directly covering the original sill laid on the lower floor of the rear room.

In the south doorway to the back room, a small plaster sill is formed by the latest floor. Earlier floors apparently stepped or sloped down directly. Here even the lowest of the gallery floors is higher than the floors of the back room, which, however, break off before reaching the sill.

Two transverse trenches were dug in this building. One (Section H-H') was on the center of the early stairway (Fig. 29.16i) to Platform C, the other (section G-G') on the center of the late structure, about 5 m to the north. In Section H-H' we see that the earliest stairway of Platform C is built directly on the fill of the court. Although the face of Platform

C passes behind the stairway, the two form a single construction. Fragmentary building remains on the platform were encountered in the fill, but, in general, the earliest floors had been destroyed and no idea could be formed of the plan of the Phase I structure. In Section H-H' an old butt of a wall is shown just under the entrance to the back room. A floor (d1), turning up to it, rests on a layer of dirt and debris, which again occurs under the back wall of the room behind the altar in Section G-G'. At this point, however, there is no floor surface to show whether the wall is contemporary with the debris layer or later. A large patch of floor (d2) resting on a double course of stones was found just in front of the altar, and another patch was observed south of Burial Cist 2 in the front gallery.

The limits of Platform C, with which these remains are associated, were only partly determined. The east face of the platform was traced northward to a point 6.50 m beyond the early stairway, where it turns a corner to pass under Str. 86. The southwest corner of the platform, which it shares with Platform B, was picked up just outside Str. R-86a. From here we followed its west edge northward as far as the south wall of the back room of Str. R-86. Under the wall, the edge apparently makes a jog eastward to within a meter of the medial wall of the structure. Farther north, another edge forming a projection westward was picked up under the bench of the southwest room (see plan, Fig. 29.1). The depth of overlying construction here precluded further exploration, and we are not certain that all these buried terrace walls represent the original outline of Platform C.

In the first large series of alterations (Phase II) after the razing of the original structures, the steps of the stairway and the edge of the platform were raised and, soon afterward, the face of the platform was brought forward something over a meter. Unfortunately, we failed to trace this secondary addition northward, and we do not know whether it extended beyond the early platform. South of the stairway a similar addition ties in with the extension of the vault of the passage under Str. R-87 and is contemporary with the



a



b



c



d



e



f



g



h



i



j



k



l

rebuilding of the stairway to Platform B. The floors belonging to this series (c) in Sections G-G' and H-H' show a complicated sequence of constructions that is not clear in detail. A series of floors (c1-4) representing Phase II turns up to a small masonry pier, which conceivably could have stood in the entrance to a shrine room of an early building that at the time may still have used the stub of an early Phase I wall buried in the fill. Behind the pier is a very low rise in one of the floors that suggests a shrine room dais (Section H-H'). The same floor (c4) also outlines what seems to have been a bench 1.38 m wide in front of the small pier. This bench was torn out and covered by another floor (b3), which stepped down slightly to the south as it passed over the upturn of the plaster at the edge of the bench. It is not altogether certain, but seems probable, that the pier also was razed at this time.

Just south of the pier, at the center line of the stairway, all floors were broken, exposing in the fill a roughly circular cist, lined with a thick coat of rough plaster and filled with debris (Burial Cist 1, t in Sections H-H' and I-I'). The cist may have been built in Phase I times, as is suggested by a row of cut stones placed below the level of the earliest floors about 0.30 m in front of it, but if so, it was rebuilt when Floor b3 was laid, Floors c1 to c4 being cut through for this purpose. It was probably at this time that a burial was placed in it. Unfortunately Floor b3 cannot be related to any known construction. It apparently overrides the butt of the small early pier, but, in front, steps down below plinth level. Floor a3, the latest finished floor of the gallery, is 0.11 m above b3, immediately over the pier, but the intervening surfaces of the series are missing in this location. This makes it difficult to determine not only when the burial was made, but also when Floor b3 was broken for the looting of the grave. We believe that this happened before the final floor of the gallery was laid, but the destruction of all the upper floors for some distance around the cist precludes a definite conclusion. As found, the cist was filled with debris, and of the original contents there remained only an effigy vessel (Fig. 29.23e,2) and fragments of a skull.

In the trench centered on the late building (Fig. 29.5, Section G-G') the same series of floors (c), that were observed near Burial Cist 1 turn up to a round area that could have been a base of a column or of a large drum altar. Since this area is somewhat larger in diameter than the columns of the late building, we consider it possible that the out-size drum found in front of the central altar had originally been set here. The location bears no obvious relation to that of the small pier in the south trench, although the two were clearly in use at the same time. Just west of the trace of the altar or column, the floors break off

abruptly in a straight line. Beyond is a large irregular excavation into a second cist in the fill (Burial Cist 2, r in Section G-G'), larger than that in the south trench but built in very much the same manner. The excavation was filled with pottery and stone objects, stone, earth, and debris of broken floors. The cist underneath is lined with rough plaster, and in one place with large stones set on edge. It was clearly built after Phase II, for the floors of this phase are broken just in front of its east edge, and nowhere overlap it. Floors a1-3 probably covered it originally, but it is not clear whether Floors b1 and b2 did likewise or were broken at the time of its construction. Before the building was abandoned, the cist was apparently reopened, excavated, and refilled. The material was piled up above and beyond the edges of the cist, filling the whole excavation.

There was an astonishing number (16,795) of fragments, many large and well preserved, of pottery figure censers in the form of the principal gods. The cist could not have held so many censers in an unbroken state. Since very few fragments of such censers were found in the various shrines of the group, we believe that they had been deliberately removed from their customary locations, and had been broken and hidden here by the departing inhabitants or their immediate successors. The lack of any accumulation of debris beneath that of the roofs leads us to conclude that the houses were burned at the time of the abandonment of Mayapán, when the lords were returning to their provinces, rather than at some later date. The remains in the pit, therefore, may represent most of the ceremonial equipment of the group as a whole, aside from the precious material that was carried away. It forms an interesting collection, which is discussed more fully in the section on collections and caches.

Probably at about the same time that Burial Cist 2 was constructed and the first of the upper floors was laid on the plinth, the older stairway leading up to Platform C was half covered by a new and wider stairway, built of Puuc stones set on edge. This stairway did not have the conventional balustrades, but abutted a rectangular block at either end. The south block contains a small niche at court level (Fig. 29.16h; v in Section H-H'), and there is no question but what it is contemporary with the stairway. There is less certainty about the block at the north end, but this, too, is probably contemporary, for it bears a rectangular molding 0.30 m high, which is not seen on the earlier terrace wall behind the stairway. North of this block is a small chamber, Str. R-86b, joined to the substructure of Str. R-85 which is to be described later.

A trench back of Str. R-86 exposed a high, vertical terrace wall supporting the building (Fig. 29.6,

Section J-J'). In front of the terrace wall is a secondary step that rises to the north to form a buttress. Two floors under the step turn up to the terrace wall, which rests on a fill of earth and stone laid on bedrock. On top of the terrace there were four floors, all turning up to the rear wall of Str. R-86, and also probably once extending to the terrace edge. If this is the original back of Platform C jutting out, our trench unfortunately just missed its southwest corner, for the terrace line to the south is undoubtedly secondary to Platform C. A column placed against the rear wall of Str. R-86 and a small jamb built against its southwest corner suggest that the back terrace supported an open colonnaded gallery, probably roofed with thatch. Two of the terrace floors turn up to the column and two pass under it. In the doorway to the southwest room, which was only partly cleared, there is a low step of horizontally laid stone with two layers of plaster. The outer layer is 0.09 m thick and covers also a bench, which is secondary to the jamb of the doorway.

The collection of artifacts from the debris covering the outer terrace wall is noticeably richer in stone tools than our other collections. There were 21 pieces of obsidian flake blades, 5 of them with secondary chipping (Fig. 29.13k-o), two obsidian scrapers (Fig. 29.13f,g) and a core (Fig. 29.13i), a battered limestone ball (Fig. 29.24l,1) probably used as a hammerstone, a fragment of a greenstone celt, and 9 chips of flint, including one with a shaped retouched edge (Figs. 29.24l,2; 29.13c). Of particular interest in this collection were 22 larger pieces of roughly chipped flint, many with the cortex of the core remaining in patches on the surface. Some are roughly shaped and could perhaps have been used as chopping tools; others are without definite form (Fig. 29.24l,3-9). The concentration of tools in this location suggests that the colonnade on the terrace served as some sort of workshop.

STRUCTURE R-86A

Before excavation, the area between Strs. R-86 and R-87 at their southwest juncture was a more or less level square of debris with no architectural features in evidence. In the center lay a large limestone *metate* of the legless trough type apparently cut straight across at one end (Fig. 29.13p). Fragments of four other *metates* were noted on the slopes of the debris outside (Fig. 29.13q,r,s,t). We surmised that this was the location of a kitchen, though it was not clear which of the two main houses it served. Later we found that its plan is more intimately tied in with that of Str. R-86, but that it served both buildings. The medial wall of Str. R-86, which is an old wall and predates the rest of

the structure, is integral with the back wall of R-86a. Nevertheless, both the houses communicate with the kitchen by doorways in their galleries and by small apertures through the walls. The aperture into the gallery of Str. R-87 is 0.29 m wide and 0.31 m high and is set about 1.10 m above the floor immediately in front of it. That in the wall of Str. R-86 is similar. It is slightly higher, but is also 1.10 m above the bench beneath it. These apertures probably served to transmit orders to the kitchen, rather than for service, since they are too narrow for any but the smallest dishes.

The walls and columns of Str. R-86a are all older than the two houses which the kitchen adjoins. Its beam and mortar roof, burned as were the others, was probably integral with that of Str. R-86, but there is some question whether it joined that of R-87. Between the two structures is a passageway about 1 m wide, and in the debris of this passage was a fallen row of extremely well-cut Puuc stones and other scattered stones that suggested the facing of an upper façade. On the other hand, it is difficult to understand how this passage could have been left open during the rains, for its south end is blocked off by a low wall and the floor slopes forward into the kitchen and the gallery of Str. R-87.

The west side of the passage is formed by a wide doorway with two columns, leading into the kitchen (Fig. 29.17b). This is the façade of a very old structure probably built at the beginning of Phase II. There is one interior column partly buried in an L-shaped bench which fills the northwest corner of the room. Presumably, when the structure was remodeled as a kitchen, another column had been removed and replaced by a post about 0.20 m in diameter. The room is entered from the outside through a doorway in the west wall near the southwest corner (Fig. 29.17c). Immediately on the right in the south wall is a wide opening with a low wall, now standing about 0.50 m high, running across it. In the center, against this wall, was a hearth laid on the floor. It consisted of three flat stones placed close together near the wall, and two upright stones 0.10 m apart in front of them and about 0.50 m from the wall. Possibly there were other upright stones that once ringed the hearth and are now missing. Since all the floor was blackened and covered with ash and charcoal from the burned roof, traces of actual fire in the hearth were obscured, though ash was noted under the horizontal stones.

Immediately in front of the entrance, between a column and the south jamb of the east façade, is a bench with a low wall at the back. At the center against this wall, the plaster of the top of the bench was particularly badly burned, this fact indicating a second hearth in this location. On the bench were



a



b



c



d



e



f



g



h



i



j



k



l

29.16. Views of Excavations and Details of Construction.

a. Southeast room of Str. R-88, showing corner of rectangular altar or dais, and drum altar at left. b. Central passage in Str. R-88. Bench of front room in foreground. At right, secondary partition between front rooms. c. Stairway leading up to court at its northeast corner. Fill behind secondary steps in front has been partly removed. d. South entrance to vaulted passage and trench in front. Large vertical stone above is southwest corner of Str. R-87. e. Trench in front of vaulted passage entrance, looking east, showing high secondary terrace wall and (at right) vertical buttress for the support of the vestibule roof. f. Same, showing stairway to the east. g. Entrance to vaulted passage from court. At left, remains of balustrade and stairway to Platform B. h. Niche in block at south end of stairway to Str. R-86, showing also exposed portion of older stairway. i. Original stairway to Platform C, after removal of block and part of late stairway. Trench immediately behind balustrade. j. General view of Str. R-86 from south, at end of 1954 excavations. k. Corner of altar in rear room of Str. R-86, showing low wing with drum altar placed on it. l. Serpent sculptured in stucco on face of altar in Str. R-86. Facing of altar has fallen.

three small vessels that had broken *in situ*. One was a small tripod cup or jar of unslipped gray ware. Another was a small tripod bowl, very badly charred; and the third was a small, wide-necked, red-slipped jar with a rim slightly concave on the interior (Figs. 29.12k,n; 29.21b).

Larger vessels were grouped on the floor in an alcove, formed by the projecting bench, in the southeast corner of the room (Fig. 29.17g). Among these vessels was an unslipped striated low-necked jar or bowl, broken into tiny fragments and beyond repair, a portion of a small jar that probably was like the jars shown in Figure 29.23f, a large red-slipped jar, and a very tall water jar, unslipped except for its rim and plastered on the surface (Figs. 29.12h; 29.21j). These vessels were apparently used for storage of food and liquids. Another distinct group of vessels was found in the northwest corner of the room on the large L-shaped bench (Fig. 29.17f). This included a large globular jar with a narrow neck, two strap handles, and a lug in the form of a turkey head. There was also a large black tripod jar, and another of Redware with a wide mouth and with an oval aperture in the side (Figs. 29.12a,b,i; 29.21c,e,f). A very curious part of another vessel is shown in Figure 29.12l. This is made in a two-toned ware of red and buff, painted in brown, and has a rim slightly concave on the interior, like those of the large water jar and of the small jar on the east bench. There is another fragment of this ware that may belong to the same vessel. It is shown attached to it in the illustration. The total number of sherds recovered from the floor of the room is 1,667. It includes fragments of numerous other vessels, notably a number of Redware tripod bowls, some slipped all over, others only on the interior. There are both solid and hollow feet, and effigy feet of human and animal form. Unslipped ware included various lightly striated jars and a hollow handle of a ladle.

No *metates* or *manos* were found in the room. Evidently corn was ground elsewhere, perhaps in the open gallery outside the kitchen. The stone utensils included a pestle (Fig. 29.24d,1) and a broken hammerstone (Fig. 29.24d,3), a flint knife (Fig. 29.24a,1),

a flint arrowhead (Fig. 29.24a,4), a small obsidian scraper (Fig. 29.13d), and one obsidian flake blade. There were a pair of small bones (Fig. 29.24a,5,6), the terminal phalanges of a deer foot, and a small peg of white shell of unknown use (Fig. 29.24a,9). This seems a meager collection for a kitchen so well equipped with pottery vessels of all sorts. Portable utensils of stone must have been valued sufficiently to be carried away, for it is difficult to imagine that only perishable materials were used.

At the time when the buildings were abandoned, the kitchen may have been undergoing one of its numerous stages of renovation. A large portion of the upper floor in the north end of the room was broken or deliberately stripped off (Fig. 29.17b). A low step, with a good finished floor turning up to it from the gallery side, had been laid in the doorway to Str. R-87. Behind it, all over the passageway floor and over part of the north end of the kitchen, was spread an even layer of *sascab* mixed with building debris, as if for a foundation of a floor that was never finished. This rough surface broke off unevenly and in one spot seemed to be riding up over the fallen debris of the roof. Here there was probably an unlevelled pile which we could not distinguish clearly from the later accumulation. On the surface, near the north column, there was a small pile of ash, probably sweepings from the hearths. Beneath the unfinished level, the south half of the passage behind the east bench is raised by a low step. Near the south end are two shallow depressions in the floor about 0.15 m in diameter, possibly meant to hold pots or gourds in place (Fig. 29.1j).

Excavation in the kitchen revealed a long succession of floors and a baffling series of renovations. The earliest floor (Floor h in Fig. 29.11, Sections O-O', P-P', and Q-Q') extends only under the passage and appears to be earlier than any standing construction. It passes under the north wall of the kitchen and turns up to a stub of a wall buried under a bench outside at the juncture of Strs. R-86 and R-87. Nothing further is known about the building connected with this early floor, except that it probably was part of

the original structure on Platform C. The wall was apparently torn down and its stub was incorporated in the original north wall of Str. R-86a (Fig. 29.1p). The east façade of the latter structure with its two columns and jambs was built directly on the early floor, and at this time extended about 1.30 m beyond the later north wall of the kitchen (cross section 2 of Section O-O').

The rear (west) wall is bedded at a slightly higher level, but the original floors connected with it were destroyed, and we are not certain whether it was built at the same time or later. Under this wall is a layer of earth and debris like that found beneath the earliest constructions under Str. R-86. Assuming that this was the original rear wall of Str. R-86a, the next construction was an L-shaped bench 1.70 m wide along the north and west walls of the room (Floor f, Section O-O'). After this bench was built, the floor of the room was raised by a plinth 0.13 m high along the façade of the building (Floor e). The plinth had no stone facing but was modeled in plaster with an admixture of small stones and *sascab*. Its floor had two finished surfaces. The upper surface shows signs of burning and still retains traces of red paint or stain. Traces of polychrome painting on the walls were also noted. The floor surfaces do not extend far into the room, since at a later time they were extensively destroyed. Before this destruction, however, a wall was built abutting the north jamb of the façade and extending eastward from it (cross section 3 of Section O-O'). This later became the front wall of Str. R-87, but it is footed almost 0.45 m below the plinth of the final building. After this wall was finished and plastered, a fill of small stones and *sascab* was laid in front of the plaster plinth of the kitchen, and the west wall of Str. R-87 was footed on this fill, creating the narrow passage between the two buildings (section P-P'). In places, the fill contains bits of painted plaster and other building refuse as well as potsherds and bones (Lot A-233). In one spot particularly, under the wall, there was an accumulation of iguana bones. There was also a shark's tooth and a rectangular piece of shell with two perforations (Fig. 29.24a,7,8). The floor laid on the fill was level with the top of the plaster plinth at the north end of the passage, but farther south it turned up to a bench or step in the passage 0.80 m from the wall of Str. R-87 (Floor d). Another layer of plaster was laid on this floor, and then large sections of the earlier floors were destroyed. It was probably with the third reflooring of d that one of the interior columns was replaced by a post, and a low wall was built across the south doorway. Perhaps at this time the room was converted into a kitchen. Two small depressions in the floor similar to those we found

back of the east bench were found near the north jamb of the east facade (Fig. 29.1,j').

The next step was the destruction of the step or bench in the passageway and the building of the east bench, associated with Floor c. After that, major alterations were undertaken.

First, the whole north end of the room, including the north bench, was torn down almost to ground level, and the north wall was moved forward 1.30 m south of its original position to be flush with the north jamb of the columned doorway (cross section 1 of Section O-O'). This wall is built as a unit with the front wall of Str. R-86, and the latter rests on a plinth overlying the stub of the razed northeast corner of the kitchen. The corner, however, was not completely destroyed, but was incorporated into a bench that buried the plinth of Str. R-86 at this point. The plinth of Str. R-87 seems to have been built at about the same time, though no direct connection between the floors abutting the two buildings could be traced. Later, the bench outside was extended 1.50 m northward, and another facing was added to the plinth of Str. R-87, extending only a short distance eastward. The facing of the addition to the bench incorporates stones carved in the pattern of a guil-loche with a lower band of pleats or feathers. This pattern was continued in stucco over the earlier part of the bench.

A small door from the gallery of Str. R-86 opens out on the bench, and another larger door leads into the kitchen (Fig. 29.17a). Since the floor of the kitchen is 0.30 m lower than the floor of the gallery, a step was built in front of the doorway, and at the same time or with the next reflooring a new wing was added to the west bench, enclosing the north-west column.

The latest addition of all was the step, again raising the floor of the passageway behind the east bench. The fill of this step is mostly debris mixed with small stone (Lot A-232, Section P-P'). A number of pieces of plaster, painted with polychrome designs, and fragments of stalactite were recovered in this fill, as well as pieces of charcoal and animal bones. The kitchen was now complete except for an additional layer of plaster and the building of the hearths.

On the terraces south and west of the kitchen are rows of columns, probably the remains of thatched-roofed structures similar to that uncovered in the trench back of Str. R-86. One row of columns is placed a few centimeters from the kitchen wall and another on the edge of the terrace (Fig. 29.17d,e). Between the two rows runs the edge of an early terrace wall, which probably formed the back of Platforms B and C. The addition to this terrace swings in an arc around the early corner and juts out to the west and

to the south. A stairway opposite the kitchen door leads up to the west structure, and a doorway at its north end gives access to a back room of Str. R-86. Unfortunately, the kitchen floors could not be followed out onto the terrace, since they are interrupted in the doorway by a low stone sill and extend no farther. We could judge the age of the structures only by the fact that the structure on the south must have stood in part on the roof of the very late constructions outside the entrance to the vaulted passage below. This structure, therefore, is later than the terrace addition. The structure on the west may be contemporary with the addition. Both are probably later than Str. R-86 and have been placed in Phase IV.

The outer columns of the west structure are larger than those of the inner row. Two of the drums from these columns, one large and one small, have strongly projecting bosses or tenons, probably made to hold high-relief stucco; but no fragments of the sculpture, if it ever existed, were found. Broken *manos* and *metates* in the debris on the terrace slope suggest that corn was ground on the roofed terraces outside the kitchen, which probably served generally for food preparation and perhaps also for the housing of servants.

TRENCH AT THE ENTRANCE TO THE VAULTED PASSAGE

Centered on the passage between Strs. R-87 and R-86a, there is a break in the high terraces behind the buildings forming a vestibule in front of the entrance to the vaulted passage under Platform B (Fig. 29.16d). A trench to bedrock level was dug, starting 4 m outside the vestibule and extending to the entrance of the vault (Fig. 29.8, Section L-L'). An exploratory pit at the beginning of the trench showed bedrock to be about 1.30 m beneath the ground surface. At the bottom was a shallow layer of red earth with occasional potsherds, the majority of common Mayapán types, with a small admixture of slate and other wares associated with an earlier period (Lot A-214). On the south edge of the trench, roughly at right angles to the terraces and based on the red earth, was a course of large upright stones about 0.35 m high on which rested another course slightly lower and set back about 0.20 m from the edge (cross section 10). This may have been a buried platform or an early step up to a higher level to the west, where the ground rises. The construction was completely covered by a stratum of loose gray ash that reached a depth of 0.75 m in front of it. Mixed with the ash were sherds and numerous animal bones (Lot A-213). Above it, a stratum of stones, debris, and humus had accumulated to a depth of about 0.40 m.

As we followed the bedrock in toward the vault, the lowest stratum changed from red earth to a black clayey deposit (Lots A-214a, 227a). In places, stones were mixed with the earth (Lot A-227), and in one spot, at the entrance to the vestibule where the layer rose to a depth of about 0.40 m, there was a patch of hard, rough floor on the surface. In the center of the trench at the entrance to the vestibule and under the clayey layer of earth, there was a crevice in the rock containing the skeleton of a child six to eight years old (n). The skeleton was in very poor condition, but from all appearances had been placed flexed on its side. No grave furniture was found with it.

The fill of earth and stone in this stratum is secondary to a leveling platform supporting the walls of the vaulted corridor (cross section 5). The edge of the platform is 1.50 m in front of the passage entrance, and is covered with a fragile *sascab* floor, apparently never plastered. Beyond the entrance this floor breaks off, but 0.80 m inside, a patch of well-preserved floor with a hard surface picks up again at the same level. About 0.20 m from the east wall of the corridor and parallel to it, this floor has a shallow gutter about 0.10 m wide (cross section 4).

At the other end of the passage, the only floor preserved seems to be the original one laid on a shallow fill of stones and dirt above bedrock. On this floor were disintegrated remains of other floors, debris, and charcoal from recent camp-fires. The passage ends in a stair well opening on the court, which is about 1.80 m above the passage floor. Of the five or six steps that led up to court level, all but the two lowest were destroyed by an excavation at the head of the stair well. When the stairway in front of Str. R-87 was built, the vault of the passage was projected northward, with the vault spring and capstones slightly stepped up to give headroom over the steps (cross section 1). On the west side of the passage, the addition to the vault merges with the wall of the platform of Str. R-86. It has already been shown that the platform is earlier than either of the standing houses.

The pottery collections from beneath the passage floor (Lot A-218a) and from the leveling platform (Lot A-218) show no striking differences from those recovered on the floors of the buildings above. There are no Black-on-Cream sherds, such as we associate with the earliest building levels at Mayapán. Red-on-Buff and Red-and-Black-on-Buff sherds are present, as well as red tripod bowls slipped only on the interior, indicating a period late in the history of the site. There are also a few fragments of Large Figure Censers. One of the features that occurred in later collections and is absent here is the rim concave on the interior. This was prominent in the wares found

in the kitchen, but is not common elsewhere at Mayapán. It may have appeared only a short time before the abandonment of the city. The absence of effigy feet of vessels in the early strata may also be significant.

Flush with the east wall of the passage, which is set into the fill of the leveling platform, is the base of a very high sloping terrace wall (cross section 6 and Fig. 29.16e). This wall is secondary to the passage and represents an addition to the terrace back of Str. R-87. The addition apparently extends uninterrupted to the southeast corner of the group, where it encloses an earlier corner of the east extension of Platform C. If the wall is in fact continuous, then it is later than Str. R-87, and all subsequent construction can be referred to Phase IV. The portion of the terrace wall seen in the trench may be contemporary with the fill in front of the leveling platform, or may belong with the next stage of construction, which included the deposition of the ash layer. At this time a buttress with vertical walls was added to the corner of the terrace (cross section 8), and the area in front of the passage was probably roofed. The vestibule in this period may have been no wider than the passage, for opposite the sloping terrace wall in line with the west wall of the passage is the stub of another wall that was later torn down (cross section 6). We do not know how far this wall originally extended, but it may well have matched the terrace wall on the east. The ash layer continues uninterrupted to within about 0.50 m of the passage entrance, and is covered by patches of unfinished *sascab* floor which turns up to the sloping terrace wall, to its vertical buttress, and to the stump of wall west of the passage. It is fairly level throughout, rising slightly toward the passage and thinning out over the leveling platform. It appears to be a deliberate leveling in front of the passage door, and is probably associated with the second floor within the passage.

The material in this stratum (Lots A-213, 216) probably once formed a kitchen midden that had accumulated nearby, but, having been leveled and spread out, it no longer represents a stratified deposit. It probably covers most of the period of occupation of the group, including part of the occupational period of the latest buildings. Our collection included 4,419 pottery sherds and a very large number of animal and bird bones, but very few artifacts. Among limestone tools were a fragment of a *mano*, a hammerstone, a pestle, and a fragment of a stone ring with a hole about 3 cm in diameter. A small flint point (Fig. 29.24m,2), two flint chips, and three shaped potsherds completed the collection. The absence of obsidian is difficult to explain. The pottery collection differed little from those of the

later strata. It included the typical utilitarian wares of the latter half of the Mayapán period, with only a small admixture of censer fragments, a mere trace of Slateware, and no Black-on-Cream sherds. There were 12 fragments of small figurines, worth noting because such figurines are not common in ceremonial groups at Mayapán and they were not found in the larger houses here. They may represent a folk cult among the people that was not shared by the aristocracy.

In the next operation, the wall at the west jamb of the passage was torn out, a layer of black earth containing pockets of clay (Lot A-219) was spread over the ash layer, and the vestibule was rebuilt in its present form. The north addition to the buttress on the east, the pier in the center of the vestibule, and the buttress just west of the passage door are parts of this late alteration (cross sections 7, 8, 6). The southern projection of the east buttress and the stairway to the east are footed on the ash layer and may have been built at the same time or later (cross section 9). Finally, the floor of the vestibule back of the pier was covered with a layer of small stones and floored with a hard lime floor, which steps up from the passage and down again between the pier and the east buttress. The vestibule was undoubtedly roofed, for the gallery above must have extended over it, but the manner of its roofing is not entirely clear from the plan. Strangest of all is the fact that a roof supporting a gallery should be built on masonry footed on nothing more substantial than a layer of ash. The masonry of the outer constructions is conspicuously crude, employing large roughly shaped stones, and the east stairway uses blocks horizontally laid rather than Puuc facing (Fig. 29.16f). One may wonder if increasing unrest occasioned the building of this vestibule with the purpose of posting a guard at the door, and if its jerry-built construction can be interpreted as an indication of failing resources.

STRUCTURES R-86B, R-85, R-85A, R-90

At the northwest corner of the court, a small chamber, Str. R-86b, joins the platform of Str. R-86 with that of Str. R-85. The south wall of this chamber is built against the finished block of the latest stairway of Str. R-86. It has two small niches 0.65 m above the floor, capped by thin slabs that probably supported the beams of a flat roof that extended the platform level (Figs. 29.10, Section N-N'; 15k). The opposite (north) wall was built at the same time, and has a small ledge at the same height for the support of the beams (Fig. 29.15j). The room must have been just over a meter high. The west wall is formed by the edge of the platform of Str. R-86, which is later than

the original Platform C but possibly earlier than the final stairway. The two floors within the room turn up to this wall, and the lower passes under the secondary south and north walls. Neither could be identified with floors outside, for both break off in the doorway under a low sill which supports the edge of the two latest floors in the court. Inside the chamber on the floor were two jars of Unslipped Gray Paste (Fig. 29.23f), empty except for a few pieces of charcoal and debris. Near the northeast jamb was a round hole in the floors, about 0.09 m in diameter, which contained a chipped limestone disc (Cache 9).

Our records indicate that this small chamber is also secondary to the original platform under Str. R-85, but the sequence of construction here is not altogether clear. The original platform may have stood free of Str. R-86 at one time, but no trace of a stairway to it from the court was found. It is without a doubt a late construction, and uses faced stone the whole length of its molding and in the course immediately below. It is built on the north extension of Platform A, which is later than the east extension and Str. R-87. It precedes, however, the plinth of Str. R-85, and was later extended about 0.75 m to the east so as to make it possible to walk around the building at platform level. Thus Str. R-85 is definitely later than Str. R-87, and we believe it also postdates Str. R-86, though of this we are less certain.

The only excavation made in Str. R-85 was the clearing of its front platform. This exposed a plinth built of Puuc stone and a wide doorway with two columns. The back wall of the building had been built near the edge of the northern terraces, and with their collapse had been destroyed almost entirely. Near the northeast corner was a deep gash in the debris, evidently made by treasure hunters (Fig. 29.1y). It cut through the medial wall into a bench in the front gallery. Thus the presence of benches is known, though we did not follow them in outline.

Against the platform of Str. R-85, east of the transverse axis of the building and centered approximately on the wall of the original platform, is built a small shrine, Str. R-85a (Fig. 29.15i). This shrine evidently had a roof of beams and mortar, and, for some reason not clear to us, the debris from this roof, probably mixed with that from Str. R-86b, was piled up mostly on the west side between the two buildings. Among large pieces of roof plaster here, we found a sculptured human foot from a stucco statue, similar to those of Str. R-87. Other pieces of sculptured stucco were found in the shrine, which was otherwise devoid of ceremonial material.

Originally the shrine had three doorways and a low bench across the back of the room. Later, the east doorway was blocked with masonry. The height of the walls is unknown, but a course of facing stones on the platform shows that the back wall rose above this level. Thirty-one sculptured elements like that in Figure 29.20z were found in the debris around the building and probably present the decoration of its cornice. On the platform behind the shrine, but not centered on it, was a column drum carved with a three-member molding. It was probably displaced from its original position and may originally have been centered and used as an altar.

A section through the shrine (Fig. 29.9) exposed an early floor of Terrace A sloping rather sharply as it passes under the edge of the platform. Two more floors were laid in the court after the platform was built and before the plinth for the shrine was laid. The two final floors are associated with the shrine. Just east of it, and a little in front of the platform, are two column drums set on the ground with others on top, slightly set back to touch the platform and make rude steps for its ascent. There are no court floors near the column drums, and we cannot tell whether they were placed there when the buildings were in use or later.

Another small shrine, R-90 (Figs. 29.2; 29.14k), is built on the eastern extension of Terrace A. It is centered on Str. R-86, which it faces, and may have been built at about the same time. The debris around it was very shallow, and it is questionable whether the masonry wall or the piers ever rose much above their present height of at most 0.50 m. The walls may have been carried up in perishable material, and the roof was almost certainly of thatch.

The sides of the shrine are open, and the two piers and the rear wall are built of vertically set heavy stones. There is a low plinth of rudely shaped horizontal stones on the north, west, and south, but none in back. Against the rear wall is a T-shaped bench 0.29 m high, with a sculptured stone forming each side of the central projection (Fig. 29.20b'). Later, these stones were covered by additional blocks of masonry widening the bench first on the north and then on the south. The shrine was originally built without a plinth, directly on the east extension of the terrace and in part on the block which projects from the early stairway connected with Str. R-89. At this time it had other piers or, even more probably, posts on the façade. The north addition to the bench was laid before the plinth and the piers were added. The south addition lies on the floor that turns up to the piers. Under this floor, embedded in *sascab* and plaster, we found fragments of a miniature tripod bowl of unslipped paste. Immediately in front

29.17. Views of Excavations and Details of Construction.

a. Interior of Str. R-86a, showing west bench and doorway leading to Str. R-86. Area of broken floor in foreground. b. Str. R-86a, looking toward Str. R-87. West bench and post hole in foreground. Note old jamb of doorway incorporated in north wall, also unfinished raised floor in northeast corner, with floors broken in front. East bench at right. c. Southwest corner of Str. R-86a. At left, south opening, with low wall across it and hearth in front. At right, entrance to kitchen from west terrace, and corner of west bench. d. West terrace behind kitchen. Left of center, doorway leading to southwest room of Str. R-86. In front, two columns of gallery built on outer terrace. At right foreground, edge of original Platform C buried by outer terraces. e. Rear wall of Str. R-86a, showing edge of Platform C, a fallen column of the gallery, and behind it, partly filled with stones, the entrance to the kitchen. f. Group of broken vessels on west bench in northwest corner of Str. R-86a. g. Fragments of large water jar and other vessels in southeast corner of Str. R-86a. Note thin stone slabs among sherds, probably from edge of roof.

of the shrine on center was a deep pit in the court floor filled with dirt and debris. Thrown into the pit were an oval altar with a round top and a cylindrical stone, possibly an altar (Fig. 29.13x,y). In place on the edge of the pit and just in front of the plinth was a cache bowl in the form of a turtle (Cache 6), and on the south side under a plinth stone and resting against the wall of the early stairway block was a similar cache (Cache 7).

STRUCTURE R-88

This structure was partly cleared in 1954 to determine the general nature of its plan, and was then filled to serve as a dumping ground for the debris of later excavations. Although it is in general a structure of the dwelling type, its plan has a number of peculiarities. There are two rooms instead of a single gallery in front, and instead of a centered shrine room there is a corridor between the two back rooms leading out onto the terrace in back. The wall between the two front rooms is secondary to the medial wall and to the pier it abuts in front, and, unlike them, it is faced entirely with Puuc stones on edge. The north front room has two columns in its entrance, and our first thought was that a colonnade of four columns originally extended across the front of the building. We found no evidence, however, that the pier was secondary to the main construction. Both its jambs are missing, though the floors vaguely outline their original location. The floors do not extend, however, across the entrance of the south room, and any traces there had been of supports in this entrance, which is over 3 m wide, had been effaced.

The lower of the two floors in the south room (Fig. 29.2) passes under the face of the secondary partition, but does not emerge on the other side. Here, the facing stones are based below the floor, and the two floors of the north room turn up to it. Another hint of alterations is given by the fact that the plinth, which projects 0.10 to 0.15 m from the walls on the north and west, is flush with the south wall of the building. Our excavations did not pro-

ceed far enough to explain these peculiarities. The floors of the rooms were covered with a layer of loose plaster about 0.30 m thick, suggesting that it had a beam and mortar roof like the other houses, but there was no evidence that the roof had been burned. At the north end of the building, where there is a wide entrance, we uncovered the end of a bench built against the medial wall, and the edge of another appeared to the north of the corridor between the back rooms (Fig. 29.16b). Just in front of this corridor, lying on the floor, was a small sculpture of a scaled monster with a human or simian figure on its back (Fig. 29.21,l-n).

Clearly inscribed on the sides of the monster are the hieroglyphs 13 Ahau and 4 Ahau, and on the back of the smaller figure, 1 Ahau. Katuns so named are prominently mentioned in the books of Chilam Balam in connection with the history of Chichén Itzá and Mayapán, and it is tempting to think that they may have a similar his topical significance here.

In the southeast room our trench exposed a low dais around which we noted evidences of burning on the floor. The floor was also blackened near a small column drum set in a bed of loose mortar and stones on the latest floor in the northeast corner of the room (Fig. 29.16a). Time did not permit us to explore for caches in this room, a circumstance which we later regretted, since this was one of the few ceremonial locations where there was no evidence of looting. The debris of the room contained an unusual concentration of sherds from figure censers, and was the only location in the group where the censers may have been left in place.

**MISCELLANEOUS EXCAVATIONS
OF TERRACES AND STAIRWAYS**

In its final form, the group had four approaches. One was through the vaulted passage on the south, and has already been described. Another was the stairway on the west, leading up to the gallery back of the kitchen. This stairway was not excavated. There was also a stairway on the southeast, just south of



a



b



c



d



e



f



g

29.18. Sculptured Elements Found in Debris Around Str. R-89.

a-e. Nose elements of masks. f-i. Eye elements. j,k. Mouth elements. 1-q. Scroll elements. r. Unidentified. t. Head band element. u. Eye. All above probably of pre-Mayapán manufacture. v. Rosette. w. Guilloche. x-d'. Sculptured heads of unidentified style. z and b', found above shrine roof, have round depressions on top of head. e',f': Crouching or "diving" figure in style of Mayapán. Elements of g and l are 36 cm in maximum dimension; others are approximately same scale, except e', f', which measures 18 cm.

Str. R-88, and a fourth facing north near the northeast corner of the court. The east stairway was excavated only enough to note part of three steps and their juncture with a balustrade. It faces directly on Str. R-91, excavated and to be described by A. L. Smith in a forthcoming number of this series, and shows this building to be associated with the group. Its relation to the terraces of the group is, however, unknown. Another low mound to the south, Str. R-92, is probably also part of the complex.

The northeast stairway was built as a unit with the northern extension of Platform A and is set in a stair well whose walls rise with the steps. The risers are built entirely of Puuc stone, and their construction is characteristic of Phase III (Figs. 29.7; 29.16c). The four bottom steps were later buried in a fill of dirt and debris retained by two steps built of very large rough blocks at the entrance of the stair well (Phase IV). A large tree growing just in front has destroyed all traces of floors at the foot of the stairs. The stairway, however, leads out to a leveled area of ground which now shows no traces of construction, but which may have supported perishable buildings. Immediately to the northeast are a knoll, which supports a small structure, and a number of small house mounds scattered at its base. No attempt was made to follow property walls, which are badly destroyed and obscured by modern walls in this area, not very far from the old Rancho San Joaquin. It is obvious, however, that some of the structures outside the court group are immediately related to it, and it is possible that the group is only the main residence of a larger estate that extended to the northeast. This may explain the elaborate arrangements at the entrance of the vaulted passage, which may have been the only direct approach to the group from outside the property.

A deep accumulation of debris covers the base of all the outer terraces, and the only location where we explored them intensively was at the entrance of the vaulted passage. The trench back of Str. R-86 has already been described. Two other exploratory pits were dug, one at the base of a corner near the east stairway, and another on the south side near the southeast corner. The first pit showed a vertical square corner of a terrace built of very large stones resting on stones and earth below, with no trace of

a floor at the base (Fig. 29.3, Section B-B'). The construction suggested a late addition here, which we did not explore further.

At the base of the southeast corner we found a level of small stone and dirt very similar to the fill of the primary leveling platform observed in the trench in front of the vaulted passage. This fill buried a row of large stones set at an angle to and facing the terrace about 2 to 2.5 m in front of it. Buried inside the fill was a nest of large potsherds that included parts of several gray striated low-necked jars. An unfinished surface on top of the fill passed under the terrace. On this surface in front was a thin layer of earth covered by another fairly hard but unfinished floor that turned up to the base of the terrace. A jaw and other bones of a peccary were recovered from debris immediately above this surface.

COLLECTIONS AND CACHES

Ninety-two lots of pottery and small artifacts were recovered from the excavations and are here grouped according to the time and conditions of their deposition. The total pottery collection numbers 42,287 sherds, which have been classified in detail by R. E. Smith. Sherd counts of the major classes are as follows:

Unidentified: 2,557

Post-Conquest: 95

Mayapán Period: 39,570; Figure Censers, 19,340 (48.9 percent of Mayapán period material); Other Unslipped Ares: 8,848 (22.2 percent); Slipped Red Wares: 10,198 (25.8 percent); Red-on-Buff Wares, with or without design in black: 708 (25.8 percent); Fine Orange Wares (some unidentified as to type): 247 (0.6 percent); Black-on-Cream Ware: 6.

Tojil Plumbate pottery: 2.

X Fine Orange (?): 2

Slateware Period wares: 59

Other Classic period wares: 3

Wares in current use before the foundation of Mayapán occur only in trace amounts. The fact that Black-on-Cream ware also occurs only as a trace indicates that the construction of the group began later than that of the ceremonial center. The Red-on-Buff pottery that occurs in all levels is an even stronger indication of the late date of its construction.



a



b



c



d



e



f



g



h



i



j



k



l



m



n



o



p



q



r



s



t



u



v



w



x



y



z



a'



b'



c'



d'



e'



f'

29.19. Sculptured Stones from Debris of Str. R-87.

a–d,i,m,n. Eye elements of masks. e,f. Nose elements. g,h,j,k,l,o,p. Scroll elements. b'. Earplug element. c'. Mouth element. All pieces except w seem to be of Puuc style and workmanship. [p] is 32 cm long; [c'] is 45 cm; scale of others roughly similar. Traces of red, yellow, and green paint on element at right in s; traces of red paint on o. See also Fig. 29.20a,p.

GROUP 1. Lots A-130, 152, 153, 157 to 159, 165, 166, 171, 201, 203, 206, 209, 211, 220, 221, 234, 238, 241. Surface accumulation of debris at various locations in the group.

Pottery

Total: 7,604.

Unidentified: 1,314.

Post-Conquest: 95.

Mayapán period: 6,177: Figure censers: 1,109 (18.0 percent); Other Unslipped wares: 1,652 (26.7 percent); Redwares: 3,102 (50.2 percent); Red-on-Buff: 232 (3.8 percent); Fine Orange: 61 (1.0 percent); Black-on-Cream: 1 (trace); Miscellaneous: 20 (0.3 percent).

Plumbate: 2.

Slateware period: 13.

Classic: 3.

Artifacts

Limestone tools: 4 pot-lids chipped stone discs; Fig. 29.24m,5); 7 hammerstones (Fig. 29.24d,6–8); 1 grooved stone, function unknown (Fig. 29.24d,4); 3 *metates*, trough type (Fig. 29.13q,s,t); 4 *manos*.

Chert and flint: 2 fragments of chipped knives or points (Figs. 29.13a; 29.24a,2); 1 arrowpoint (Fig. 29.24a,3); 1 scraper (Fig. 29.24l,2); 9 chips, unretouched; 14 large unshaped flints; 8 large flints, roughly shaped (Fig. 29.24l,3–9).

Obsidian: 3 “thumbnail” scrapers (Fig. 29.13f,g); 5 scrapers made from retouched flake blades (Fig. 13k–o); 13 fragments of flake blades, unretouched; 1 core (Fig. 29.13i).

3 fragments of lava *metates* (Fig. 29.13r). 3 fragments of granite *metates* (Fig. 29.24j,l). 1 honing stone (Fig. 29.24j,3). 1 small fragment of a greenstone celt. 1 fragment of a pottery ring (Fig. 29.12v).

1 cut oliva shell. 2 fragments of shell.

Miscellaneous fragments of animal bone.

1 wrought iron hasp (Fig. 29.12p). 2 copper bells (Fig. 29.12r,t).

GROUP 2. Lots A-133, 151, 154, 205, 222. Mixed lots of debris and material on floors of rooms.

Pottery

Total: 1,788.

Unidentified: 351.

Mayapán period: 1,434: Figure censers: 721 (50.3 percent); Other Unslipped wares: 196 (13.6 percent); Redwares: 414 (28.8 percent); Red-on-Buff: 18 (1.3

percent); Fine Orange: 9 (0.7 percent); Black-on-Cream: 0; Miscellaneous: 75 (5.3 percent).

Slateware period: 3.

Artifacts

Limestone tools: 1 pot-lid; 3 hammerstones.

Obsidian: 1 flake blade.

1 oliva shell cut with vertical slit (Fig. 29.12,q).

The high proportion of Figure censers in this group is due to their concentration (610) in Lot A-133, which represents the southeast room of Str. R-88. This is the only location in the group where censers may have been left in place when the group was abandoned.

GROUP 3. Lots A-175, 202, 207, 223, 225, 228, 231. Material on floors, sealed by roof debris.

Pottery

Total: 4,625.

Unidentified: 288.

Mayapán period: 4,337: Figure censers: 161 (3.7 percent); Other Unslipped wares: 2,194 (50.6 percent); Redwares: 1,874 (43.2 percent); Red-on-Buff: 69 (1.5 percent); Fine Orange: 20 (0.5 percent); Black-on-Cream: 0; Miscellaneous: 19 (0.5 percent).

Artifacts

Limestone tools: 1 hammerstone; 1 *mano*; 1 pestle (Fig. 29.24d,l); 8 chips of red limestone; 2 fragments of unidentified implements of reddish stone.

Chert and flint: 1 knife (Fig. 29.24a,1); 1 arrowpoint (Fig. 29.24a,4); 1 chip.

Obsidian: 4 flake blades; 1 “thumbnail” scraper.

1 carved shell pendant (Fig. 29.24f,3). 1 shell peg (Fig. 29.24a,9). Several fragments of shell.

2 terminal phalange bones of deer foot (Fig. 29.24a,5,6).

Fragments of modeled and painted stucco.

In these lots the high percentage of unslipped sherds is due to the large water jars left in situ in the shrine rooms of Strs. R-86 and R-87. The lack of censer sherds, on the other hand, may be explained by assuming that the censers had been gathered together and deposited in Burial Cist 2 in Str. R-86.

GROUP 4. Lots A-160 to 163, 167, 174, 204, 215, 219, 230, 232, 235, 239, 240, 242. Material sealed between floors of Phase III and Phase II.

Pottery

Total: 2,003.



29.20. Sculptured Stones from Various Locations in the Group.

a–p. From debris of Str. R-87. q–y. Elements of altar mask in Str. R-86; t retains most of its painted plaster blue background, yellow body of scroll with red band at upper edge, yellow, red, and green feathers. z, a'. From Str. R-85a (31 elements of type z). b'. One of pair of elements facing projection of bench in Str. R-90. c'–d'. From debris of Str. R-90. e'–h'. From debris of R-88. Dimensions of t are 20 by 40 cm; r and q shown on somewhat larger scale; scale of others variable.

Unidentified: 118.

Mayapán period: 1,881: Figure censers: 181 (9.6 percent); Other Unslipped wares: 560 (29.8 percent); Redwares: 1,060 (56.4 percent); Red-on-Buffer: 19 (1.0 percent); Fine Orange: 44 (2.3 percent); Black-on-Cream: 4 (0.2 percent); Miscellaneous: 13 (0.7 percent).

Slateware period: 4.

Artifacts

Limestone tools: 1 pot-lid; 1 *mano*; 10 chips of red limestone. Fragments of stalactite. Chert and flint: 1 knife (Fig. 29.24m,3); 1 hatchet-shaped tool (Fig. 29.24m,1); 1 chip.

Obsidian: fragments of flake blades.

2 fragments of shell.

Fragments of animal bone.

Bits of painted plaster.

Charcoal.

GROUP 5. LOTS A-155, 168, 169, 172, 224, 226, 233. Material above Phase I floors, sealed by floors of Phase II or Phase III.

Pottery

Total: 1,548.

Unidentified: 75.

Mayapán period: 1,470: Figure censers: 92 (6.2 percent); Other Unslipped wares: 660 (44.9 percent); Redwares: 632 (43.0 percent); Red-on-Buffer: 21 (1.4 percent); Fine Orange: 16 (1.1 percent); Black-on-Cream: 0; Miscellaneous: 49 (3.4 percent).

Slateware period: 3.

Artifacts

Limestone tools: 5 pot-lids; 1 hammerstone.

Chert and flint: 1 chipped point (Fig. 29.24f,2); 7 chips.

Obsidian: 10 flake blades; 1 spent core (Fig. 29.13h).

Small eroded fragment of copper.

1 perforated rectangular piece of shell (Fig. 29.24a,8); 12 fragments of shell.

Miscellaneous animal bones, 4 perforated human teeth (Fig. 29.24b,16–19). 1 deer antler. Shark tooth and other fish bones.

Bits of painted plaster.

Charcoal.

GROUP 6. LOTS A-213, 216, 217. Ash midden outside vaulted passage.

Pottery

Total: 4,507.

Unidentified: 328.

Mayapán period: 4,176: Figure censers: 138 (3.3 percent); Other Unslipped wares: 2,224 (53.3 percent); Redwares: 1,754 (42.0 percent); Red-on-Buffer: 28 (0.7 percent); Fine Orange: 14 (0.3 percent); Black-on-Cream: 0; Miscellaneous: 18 (70.4 percent).

Pre-Mayapán: 3.

Artifacts

Limestone tools: 1 hammerstone; 1 fragment of *mano*; 1 pestle.

Chert and flint: 1 knife or point (Fig. 29.24m,2); 2 chips.

Obsidian: None.

3 used or worked potsherds.

Large collection of animal bones.

GROUP 7. LOTS A-164, 170, 173, 194, 195, 214, 214a, 218, 218a, 227, 227a, 236, 237. Material under earliest floors, in earth layer on fill of early platforms, and under ash midden.

Pottery

Total: 1,255.

Unidentified: 52.

Mayapán period: 1,169: Figure censers: 36 (3.1 percent); Other Unslipped wares: 531 (45.4 percent); Redwares: 575 (49.2 percent); Red-on-Buffer: 6 (0.5 percent); Fine Orange: 6 (0.5 percent); Black-on-Cream: 1 (0.1 percent); Miscellaneous: 14 (1.2 percent).

Pre-Mayapán: 34.

Artifacts

Limestone tools: 1 hammerstone; 2 *manos*.

Chert and flint: 1 chip.

Obsidian: 1 spent core; 2 flake blades.

2 worked potsherds.

1 fragment of shell.

Miscellaneous animal bones.

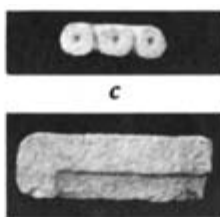
It is very unlikely that the changes in proportions of wares in the stratified deposits have any chronological significance. The location of the deposits and the manner of their deposition influence their nature far more than does their stratigraphic position. The proportion of figure censers in the deposits sealed under floors is conspicuously low, less than 7 percent, as compared with 48.9 percent in the total collection. If we exclude from the total the material in Burial Cist 2 and that in the southeast room of Str. R-88, the proportion of censer sherds under the floors of Phase III will be comparable to the proportion of these sherds in the total. A slight increase in the use



a



b



c



d



e



f



g



h



i



j



k



l



m



n



o



p



q



r



s



s'



t



u



u'



v



w



x



y



z



a'



b'



c'



d'



e'



f'



g'



h'



a



b



c



d



e



f



g



h



i



j



k



l



m



n

29.21. Sculpture and Pottery.

a. Three human feet sculptured in stucco, found under roof debris in center of front gallery of Str. R-87. Foot at right shows traces of red paint. Soles of sandals are smooth and slightly concave on bottom. b. Three small vessels found on east bench in Str. R-86a (see Fig. 29.12k,n for sections and description). c. Red Ware jar with turkey-head lug from west bench in Str. R-86a (see Fig. 29.12b). d. Jar used for opening of drain in center rear room of Str. R-87 (see Fig. 29.12e). e. Red Ware jar with side opening, from west bench of Str. R-86a (see Fig. 29.12a). f. Jar with dark-red or black slip, from west bench of Str. R-86a (see Fig. 29.12i). g. Small unslipped tripod jar, Cache 2. Ht. approx. 15 cm. h. Limestone turtle receptacle placed over excavated Cache 3. Max. measurement 18 cm; orifice 5.5 by 4.6 cm; depth of receptacle 4 cm; max. diam. 7 cm. i. Fragments of limestone turtle with glyphs carved on carapace; found in debris of Str. R-87, east of center. Larger fragment measures 8.6 by 8.4 by 5.3 cm. j. Water jar reconstructed from fragments in southeast corner of kitchen, Str. R-86a (see Fig. 29.12h). k. Water jar from rear room of Str. R-86 (see Fig. 29.12g). l–n. Limestone carving of scaled monster from in front of center passage in Str. R-88. Hieroglyphs read: 4 Ahau, 13 Ahau, 1 Ahau. Measures 26 by 15.3 by 10.8 cm.

of censers, therefore, may have taken place. Other Unslipped wares are most abundant in the kitchen midden deposit, which has a low proportion of Fine Orange, as might be expected.

GROUP 8. TOMBS AND CACHES.

BURIAL CIST 1. Lot A-193. This tomb is a plaster-lined cist in the fill under Str. R-86, centered on the early stairway to Platform C. It was built before the end of Phase II, and later reopened and plundered. It is not certain, however, whether this was done at the time of abandonment or at the time when Str. R-86 was built. The later floors of Str. R-86 were broken above the tomb, but over a wider area than would have been necessary for its excavation. On the floor of the tomb were fragments of a skull and an unslipped effigy jar representing a death's head (Fig. 29.23e,2), with traces of black and white painting. The jar was partly filled with earth and tiny fragments of burned fiber. Mixed with the earth and stones that filled the tomb were fragments of plaster painted with blue and black design.

BURIAL CIST 2. Lots A-176 to 191. The construction of the tomb has already been described in connection with Str. R-86. It is an oval cist in the fill, 2 m long, 0.80 m wide, and about 0.80 m deep, lined with plaster and built probably at the same time as Str. R-86. Scattered on the floor of the cist were some disarticulated bones of a skeleton and most of the smaller artifacts. Five of the small tripod bowls in Figure 23c,d also came from this lowest level and may have been placed there with the original burial. Most of the pottery and probably all of the small sculptures, which were near the surface, were put in after the cist was reopened, just before Str. R-86 was burned. Some of these objects were actually above the top of the cist and in the area of the broken floor around it. Mixed with the objects were some fill stones, earth, and the debris of broken floors,

including several large pieces of floor material with finishing plaster. There were also pieces of modeled and painted stucco. The collection appears to represent the ceremonial paraphernalia from Str. R-86 and probably also R-87 and R-85, gathered together when the inhabitants left, and deposited in the pit opened for the plundering of the tomb. Over 90 percent of the pottery material comes from effigy censers. A count of human faces shows that at least twenty-five censers are represented. The heads vary in size, and there are at least two different types of figure. The smaller heads shown in Figure 22h may come from "Diving God" figures on a base such as that in Figure 22m. The faces show less characterization than those of the larger heads and they are uniformly Mexican rather than Maya in features. Among the large Figure Censers there are at least four representations of God D, identified chiefly by his almost toothless mouth (Fig. 29.22a,b,j,k). There are two clear examples of God B, characterized by a pendulous nose, and a mask of Xipe (Fig. 29.22l,1). One unidentified head is particularly well preserved Fig. 29.22d,e). It represents a bearded man with an upturned nose, a long pendulous lower lip, tusks at the corners of the mouth, and yellow rings around the eyes. The face itself is painted an earthy red, and the beard is blue with black lines. In addition, there are heads with no grotesque characteristics but with a Mexican cast of features. Among these is one represented with a bird's beak like the so-called Eagle Knight of the Aztec (Fig. 29.22f,3; g3).

Pottery

Total: 18,433. All of Mayapán period: Figure censers: 16,795 (91.1 percent); Other Unslipped wares: 733 (4.0 percent); Red Wares: 624 (3.4 percent); Red-on-Buff: 206 (1.1 percent); Fine Orange: 75 (0.4 percent).

Artifacts

Stone carvings: grotesque idol (Fig. 29.13c1); temple (Fig. 29.24k,5); tripod (Fig. 29.24i,3); axe (Figs. 29.13a'; 29.24i,2); 3 worked fragments of stone of unknown use (Fig. 29.24k,2–4).



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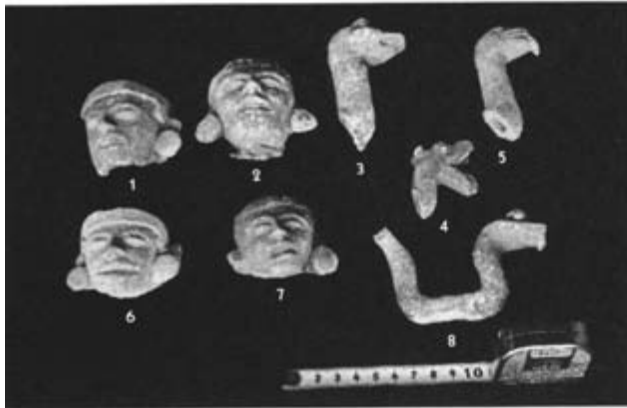
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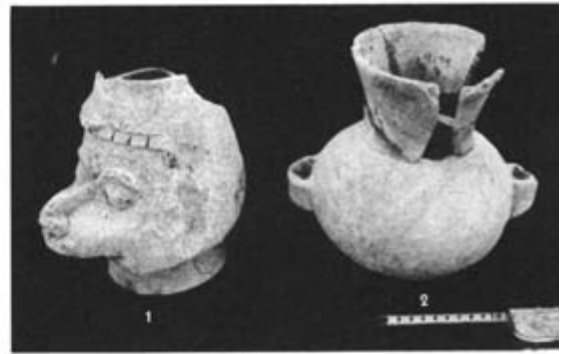
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29.22. Pottery Effigies and Jar from Secondary Fill of Burial Cist 2.

a,b. Head of figure censer representing God D. Unslipped Porous Gray Ware with post-firing polychrome paint. c. Head of figure censer, unidentified deity. d,e. Head of figure censer, unidentified deity. Face is painted a deep red-brown; right eye encircled with blue, left eye, with yellow; beard gray with black lines. This personage with upturned nose is represented in pottery and jades elsewhere in Maya area, notably in pottery from Nebaj, Guatemala. f,g. Three heads of Figure censers with Mexican facial features. Note "Eagle Knight" headdress in 3. h. Smaller heads with Mexican features, and serpents. i. 1. Effigy jar of Unslipped Gray Ware possibly representing Ehecatl; ht. 20.4 cm; 2. Unslipped Gray jar with handles. j,k. Head of figure censer representing God D. 1. 1. Head of figure censer representing Xipe. 2. Fragment of censer with death's-heads. m. Animal effigy base of censer, probably for "diving god" figure above. Unslipped, painted.

Chert and flint: 5 blades or points (Fig. 29.24b,1–4,6); 1 arrowpoint (Fig. 29.24b,5).

Obsidian: 1 complete flake blade; 5 fragments.

3 jade beads (Fig. 29.24c,1–3).

1 rectangular piece of iron pyrites, perforated (Fig. 29.24c,14); 2 copper bells (Fig. 29.24c,12,13).

2 shell beads (Fig. 29.24c,7,8). 2 shell discs (Fig. 29.24c,9,11).

1 perforated human tooth (Fig. 29.24c,6).

1 stingray spine. 1 shark tooth.

CACHE 1. Lot A-192. Phase III (?). Under central altar of Str. R-86, placed in cavity hollowed in plaster layer on which altar was built, was an effigy vessel representing a rabbit (Fig. 29.23e,1). It contained 2 jade beads (Fig. 29.24c,4,5) and 1 shell bead (Fig. 29.24c,10).

CACHE 2. Lot A-212. Phase III. This cache was placed in altar of Str. R-87, and may have been looted at time that buildings were abandoned. There was, however, a later excavation into the altar which had disturbed the roof debris above it. The debris of this excavation contained 29 sherds of Mayapán period: Figure censers: 8; Other Unslipped wares: 5; Redwares: 16. Near the rear wall in the undisturbed fill of the altar was a small unslipped tripod pottery jar (Fig. 29.21g).

CACHE 3. Lot A-208. Phase III. In dais in front of altar of Str. R-87 was an excavated cache, refilled, on which had been placed a stone turtle (Fig. 29.21h). The debris of the refill contained 196 sherds: Unidentified: 25. Mayapán period: 171: Figure censers: 43; ring-stand base of unslipped jar: 4; Redwares: 108; Red-on-Buff: 2; Fine Orange: 2; Reddish Brown, very thin: 12. Among the Redware sherds is one with a glyph painted in black on its unslipped exterior. The glyph is the name glyph of God D, Itzamna (Fig. 29.12g). There was also a flint point (Fig. 29.24f,1), a shark tooth, and seven tiny fragments of paper-thin gold, the largest 1.8 by 1 cm. The flakes show a reddish color on one side, and the larger pieces have traces of perforations 0.1 cm in diameter.

CACHE 4. Lot A-210. Phase III. In southwest corner of center rear room of Str. R-87. This cache was put through the latest floor and sealed by a patch of plaster. It was excavated and looted before the collapse of the building and was carefully refilled with debris. The cache had been placed in a Red-on-Buff (?) jar, parts of which were still in place (Fig. 29.12c,d). A "pot-lid" of chipped limestone (Fig. 29.24e,3), found inside the jar, was too small to have served as a cover.

Pottery in the refill numbered 173 sherds, all of Mayapán period: Figure censers: 41; Redwares: 24; Red-on-Buff (?) cache bowl: 107; Thin Black: 1. In the debris of the refill there were also a pointed obsidian flake blade and 10 fragments of paper-thin gold, the largest 1.8 by 1.2 cm. Some of the pieces showed minute rectangular holes, none larger than 0.1 cm.

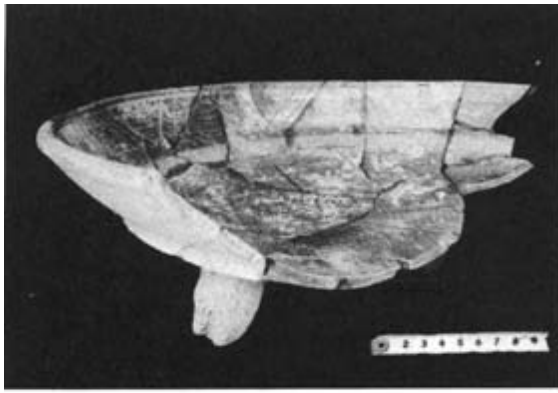
CACHE 5. Lot A-229. Refilled excavation in bench east of stairway to Str. R-87, penetrating through floor of basin next to balustrade. Total sherds: 31. Unidentified: 4. Mayapán period: 27: Figure Censers: 6; Other Unslipped wares: 6; Red wares: 14; Thin Black: 1. Also miscellaneous animal bones.

CACHE 6. Lot A-142. Probably Phase III. Small effigy bowl with cover, representing a turtle, found at edge of excavation just in front of Str. R-90 (Fig. 29.23i,j). Total sherds: 12, including 2 unidentified and 1 of Red Ware. The bowl contained a very fine pointed obsidian flake blade.

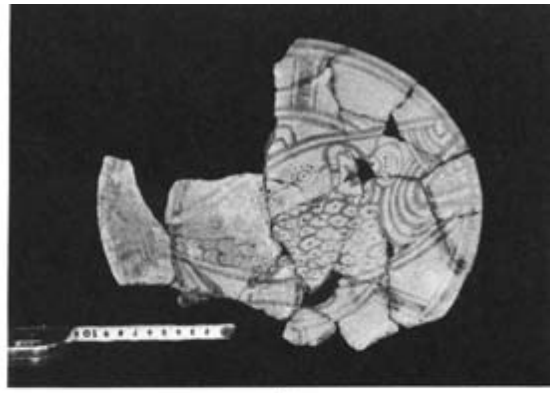
CACHE 7. Lot A-204. Phase III. Under plinth of Str. R-90 in fill covering north end of original stairway to Terrace A. Turtle effigy bowl containing two fragments of burned bone and a pointed obsidian flake blade (Fig. 29.23h).

CACHE 8. Lot A-243. Phase I or II, This cache, placed in front of Str. R-89 probably at time of its construction, was looted when areaway of shrine was built. It consisted of 82 fragments of an effigy bowl, very badly broken (Fig. 29.12j).

CACHE 9. Lot A-156. Chipped stone disc found in hole in floor of chamber (Str. R-86b) at juncture of substructures of Strs. R-86 and R-85.



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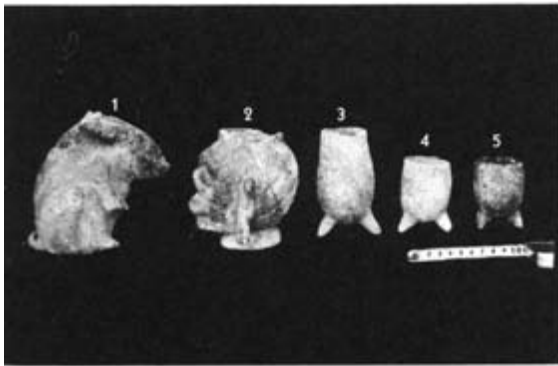
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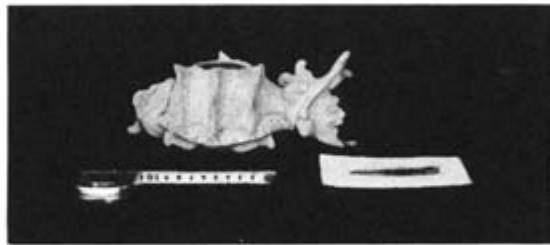
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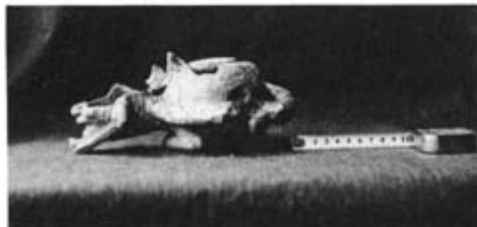
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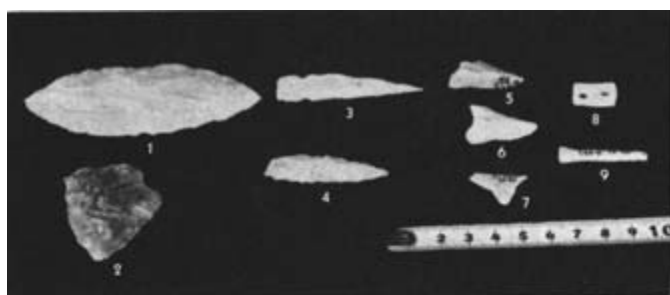
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29.23. Pottery from Caches and Burial Cists.

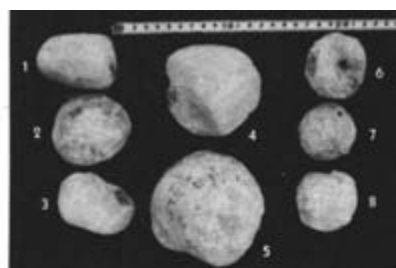
a. Fine Orange tripod bowl, decorated on interior with red and brown paint and incised design. From Burial Cist 2. Diam. 42 cm, ht. 11.3 cm. b. Red-and-Black-on-Buff tripod bowl. Hollow animal effigy feet, with perforation and pellet. From Burial Cist 2. c,d. Small tripod bowls slipped on interior. Majority show signs of burning on both interior and outer surfaces. From Burial Cist 2. Most of these bowls were found at bottom of deposit and a number were on floor of cist. e. 1. Unslipped gray rabbit effigy jar, with traces of red and blue paint applied after firing. From Cache 1. Ht. 13.5 cm. 2. Unslipped gray effigy jar, painted white with design in black applied after firing. From Burial Cist 1. 3,4,5. Small Unslipped tripod jars from Burial Cist 2. f. Two unslipped gray jars found on floor in Str. R-86b. Ht. of 1 is 20 cm. g. 1. Red Ware tripod bowl slipped on inner and outer surfaces. From Burial Cist 2. Diam. 21.2 cm, ht. 6.7 cm. 2. Red Ware bowl slipped on interior only. From Burial Cist 2. h. Unslipped turtle effigy bowl of Cache 7. Polychrome design, yellow, red, blue, applied after firing. Contained two fragments of burned bone and pointed obsidian flake blade shown at right. i,j. Unslipped turtle effigy bowl of Cache 6, with pottery lid. Traces of red, yellow, and blue paint applied after firing. Contained a very fine pointed obsidian flake blade.

29.24. Tools and Small Artifacts from Various Locations in the Group (following page).

a. Artifacts from Str. R-86a. 1. Leaf-shaped blade of rose-tinged flint, Cat. no. 55-33. Lot A-223, under debris of roof. Dimensions: 9.7 by 3.9 by 14 cm. 2. Worked flake of buff chert, Cat. no. 55-79. Lot A-221, surface debris. 4.7 by 4.1 by 0.75 cm. 3. Flint arrow point (see Fig. 13,2), Cat. no. 55-37. Lot A-221. 4. Flint arrow point (see Fig. 29.13g), Cat. no. 55-34. Lot A-223. 5, 6. Two small bones (terminal phalanges of deer foot), Cat. no. 55-100. Lot A-223. 7. 1 Shark tooth, Cat. no. 55-81. Lot A-233, *sascab* and debris layer on earliest floor of passage between Strs. R-86a and I R-87. 8. Perforated shell ornament, Cat. no. 55-80. Lot A-233. 9. Shell peg (see Fig. 29.13w, Cat. no. 55-32. Lot A-223. b. 1–15. Artifacts from Burial Cist 2. 1. Flint point with long stem, Cat. no. 55-196. Length 8.9 cm. 2. Flint blade or drill, Cat. no. 55-150. 8.9 by 1.9 by 0.95 cm. 3. Broken flint point or blade, Cat. no. 55-130. 5.95 by 2.1 by 0.7 cm. 4. Fragment of flint point or drill, Cat. no. 55-151. 4.8 by 1.2 by 0.65 cm. 5. Flint arrow point, Cat. no. 55-197. 3.35 by 1.4 by 0.4 cm. 6. Fragment of buff, semi-translucent chert blade, Cat. no. 55-152. 3.6 by 4.1 by 0.9 cm. 7–15. Shaped pieces of white shell, probably conch, Cat. no. 55-198. 16–19. Four perforated human teeth, Cat. no. 55-75. Lot A-169, just above ash layer under upper floors of southwest room in Str. R-87. c. 1–3, 6–9, 11–14. Beads and other small objects from Burial Cist 2. 1. Apple green highly polished jade bead, roughly triangular in section, with bi-conical perforation, Cat. no. 55-154. 1.3 by 1.2 by 0.9 cm. 2. Deep green highly polished jade bead, triangular in section, with bi-conical perforation, Cat. no. 55-155. 1.4 by 1.4 by 0.7 cm. 3. Bright green highly polished jade bead, triangular in section, with bi-conical perforation, Cat. no. 55-149. 1.0 by 1.05 by 0.55 cm. 6. Human molar cut and perforated at root, Cat. no. 55-147. 7. Bead of pink shell with longitudinal bi-conical perforation, Cat. no. 55-153. 2.2 by 0.7 by 0.6 cm. 8. Rectangular bead of white and orange shell with bi-conical perforation, Cat. no. 55-148. 1.4 by 1.3 by 0.7 cm. 9, 11. Two white shell discs, upper with drilled pit and lower with perforation in center, Cat. nos. 55-158, 55-156. Lower is blackened by burning. Diam. about 2 cm. 12, 13. Two copper bells with double wire loop handles and with copper pellets inside, Cat. no. 55-157. Larger specimen is 3.1 cm long and has burr around lip, which smaller bell lacks. 14. Almost square piece of iron pyrites with two perforations; corners at right, square, those at left, rounded, Cat. no. 55-140. 1.7 by 1.6 by 0.1 cm. 4, 5, 10. Three beads found in rabbit effigy jar under central altar of Str. R-86 (see Fig. 29.23e.1). 4. Light green and white jade with low polish, bi-conical perforation, Cat. no. 55-142. 2.9 by 1.6 by 1.3 cm. 5. Cylindrical bead of light yellow-green jade with cylindrical perforation, Cat. no. 55-143. Length 2 cm, diam. 0.85 cm. 10. Small, low cylindrical bead of pink shell with cylindrical perforation, Cat. no. 55-144. Diam. 0.7 cm., ht. 0.5 cm. d. Limestone tools. 1. Pestle, Cat. no. 55-31, found on floor of Str. R-86a. Length 6.9 cm, diam. 4.8 cm. 2,3,5. Hammerstones from debris in Str. R-86a. 2 and 5 were above roof material. 4. Shaped, partially grooved stone of unknown use, Cat. no. 55-39. 6–8. Typical small hammerstones from various locations in the group. Diam. approximately 6 cm. e. 1. Chipped limestone disc, “pot-lid,” Cat. no. 55-4, found under floors of Str. R-90. 9.9 by 9.3 by 1.9 cm. 2. Polishing or grinding stone with rough outer surface, Cat. no. 55-13, from front room of Str. R-Q7. Limestone. 12.9 by 7.3 by 5.9 cm. 3. “Pot-lid” of roughly chipped limestone, Cat. no. 55-29, from Cache 4. 0.4 by 0.3 by 2.3 cm. f. 1. Chipped flint point, Cat. no. 55-5, from Cache 3. 9.4 by 3.3 by 1.15 cm. 2. Chipped flint point, Cat. no. 55-76, on ash layer under late floors of southwest room in Str. R-87 (see Fig. 29.13b). 3. Carved shell pendant, Cat. no. 55-7, rear center room of Str. R-87, under roof debris. Diam. 3.5 cm. thickness 0.45 cm. two conical holes, 0.15 cm. min. diam. g. Cut and perforated potsherd with mat impression (see Fig. 29.12u), Cat. no. 55-43, surface of southwest room of Str. R-67. h. Trough *metate* (see Fig. 29.13q) from debris at base of terraces south of Str. R-86a. i. 1. Small limestone sculpture (see Fig. 29.13c’), Cat. no. 55-126, from Burial Cist 2. 2. Axe-shaped carving of gray-green granitic stone (see Fig. 29.13a’), Cat. no. 55-133, from above Burial Cist 2. 1.3 by 1.6 by 4.5 cm. 3. Tripod carving of limestone, Cat. no. 55-127, from surface of Burial Cist 2. 8.6 by 7.7 by 8.5 cm. j. 1. Fragment of granite *metate*, Cat. no. 55-28, found in surface debris of court near Str. R-85; 2. Limestone *mano*, Cat. no. 55-26, from debris in court. 3. Fragment of grinding or honing stone of fine-grained limestone, Cat. no. 55-27, from debris in court. k. Limestone objects from Burial Cist 2. 1. Small sculpture, Cat. no. 55-129. 4.6 by 12 by 4.6 cm. 2–4. Shaped pieces of soft, reddish clayey limestone, Cat. nos. 55-131, 132, 195. 5. Small replica of temple with four doorways. 8.7 by 7.8 by 9.7 cm; irregular pit about 2 deep in base. l. Stone tools from debris of terraces back of Str. R-86. 1. Worn hammerstone, Cat. no. 55-103, diam. approx. 6 cm. 2. Flint flake scraper (see Fig. 29.13c), Cat. no. 55-124. 3–9. Roughly chipped flint tools, Cat. no. 55-125. Most retain patches of cortex on surface. m. 1. Celt-like flint tool, Cat. no. 55-242, under floor in front of rear terrace of Str. R-86. 7.7 by 4.4 by 1.3 cm. 2. Chipped flint knife or point, Cat. no. 55-245, in ash layer under construction at south entrance to vaulted passage. 8.4 by 3.9 by 1.15 cm. 3. Flint knife, Cat. no. 55-243, under floors in front of rear terrace of Str. R-86. 13.8 by 5.2 by 2 cm. 4. Rough flint tool similar to those pictured in 1, on west terrace of Str. R-86. 5. “Pot-lid” from debris near southeast stairway to the group max diam. 11 cm.



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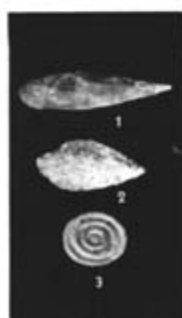
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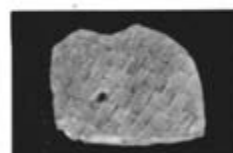
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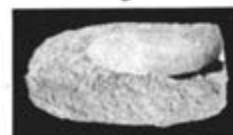
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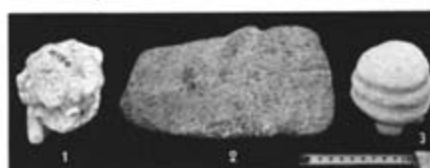
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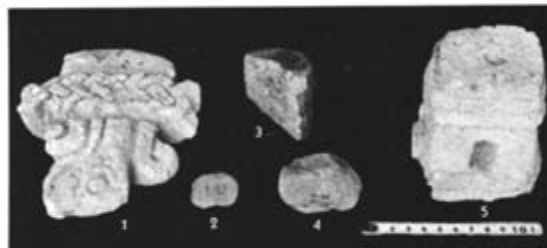
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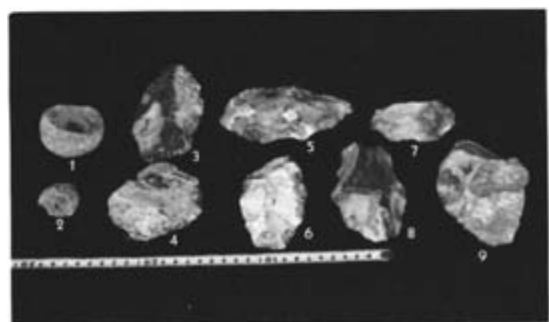
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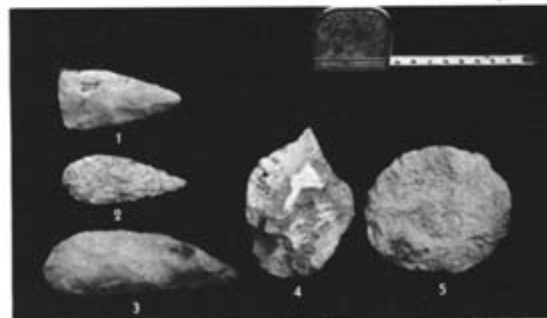
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A VAULTED TEMPLE AT MAYAPÁN

HOWARD D. WINTERS

During the 1953 field season, test excavations by Pollock had indicated the presence of murals in a buried room in Str. Q-80 (150 S, 260 W). Consequently, it was decided the following year to undertake excavation for the purpose of exposing the murals and gaining information on architectural details of the structure.

The building is interesting in that there is no comparable structure at Mayapán. It is also difficult to find examples elsewhere in Yucatán which combine the architectural features present in Str. Q-80. The Temple of the Frescoes at Tulum (Lothrop 1924) does have the upper story, vaulted room, and side galleries characteristic of the Mayapán temple, but differs in so many other respects that it is hardly a comparable example.

Rooms 1, 2, 3, 6, and 7 were completely excavated, and Room 5 was partially excavated (Fig. 30.1). Room 4, which is only partly filled with debris, was left unexcavated. In addition, numerous minor

excavations were made around the temple and its platform wherever structural details were obscure. The only major architectural feature left uninvestigated was the stairway on the north side of the basal platform.

The later stages of construction were worked out quite satisfactorily, but the early stages still present problems of interpretation. Accordingly, for early construction phases alternative explanations have been presented in the following report, with indication of the interpretation which seems most probable.

Str. Q-80 is on the north side of the north court of the Castillo. Directly to the south is the colonnaded hall Str. Q-81, separated from the temple by a narrow passage (Fig. 30.2a). Within the small area of the passage which was excavated was found the skeleton of a young adolescent. The skeleton lay on the surface of the debris which originally filled the passage and under a great pile of fallen masonry. Whether the

youth was killed by falling masonry or met death by other means must remain a moot point. Before excavation Str. Q-80 was a high mound with little structural detail showing on its south side, but with a partially filled, vaulted room and a small end room exposed on its north side. The slope of the debris on the south side ran smoothly over the remains of the adjacent colonnaded hall.

The temple as it stands today consists of two vaulted rooms running east and west, with two small rooms on the west side and three small rooms on the east side (Fig. 30.1). These rooms rest on a low platform, the walls of which serve as a plinth for much of the building. Quite inexplicably, this building platform is placed well off center toward the west and south on the large platform which serves as the base for the structure. No other construction could be seen on unexcavated areas of the substructure platform, nor do there seem to be any requirements of perspective in the area which would lead to such a placement of the temple and its platform. Access to the structure is provided by a stairway on the north side of the basal platform.

The masonry is of the usual crude type found in other ceremonial structures at Mayapán. A few well cut, re-used stones are incorporated with the rough limestone slabs forming the bulk of the stone used in the construction of the building (Fig. 30.2h). The well cut stones, many of which are very similar to the well dressed or carved stones of Puuc type found frequently in Mayapán construction, are usually in the doorjambs and vaulting, but occasionally appear in the walls of rooms (Figs. 30.2h; 30.3a,c,e). The mortar appears to be of slightly better quality than that used elsewhere in construction. The fill in the platform and in Blocks A and B (Fig. 30.1) consists of fairly large rocks, among which a small amount of earth and a few sherds are intermingled. Apparently wood lintels were used throughout, since no stone lintels were found.

Large areas of plaster still cover the walls in parts of the temple, but, other than the murals in Room 1, no decoration or paint was noted on the plaster, even where it was well protected.

The temple and its platform now stand over 7 m high, but must originally have stood much higher, as there is evidence for a second story's having been present. The evidence consists in a stairway on the north side of the temple which must once have extended over Block B (Figs. 30.1; 30.2k); the presence of four floorings on top of a capstone in the vault of Room 4; the large amount of stone and debris in Room 1 and in the passage between Strs. Q-80 and Q-81; and the sizable quantity of sherds and burned copal in the top of the debris which

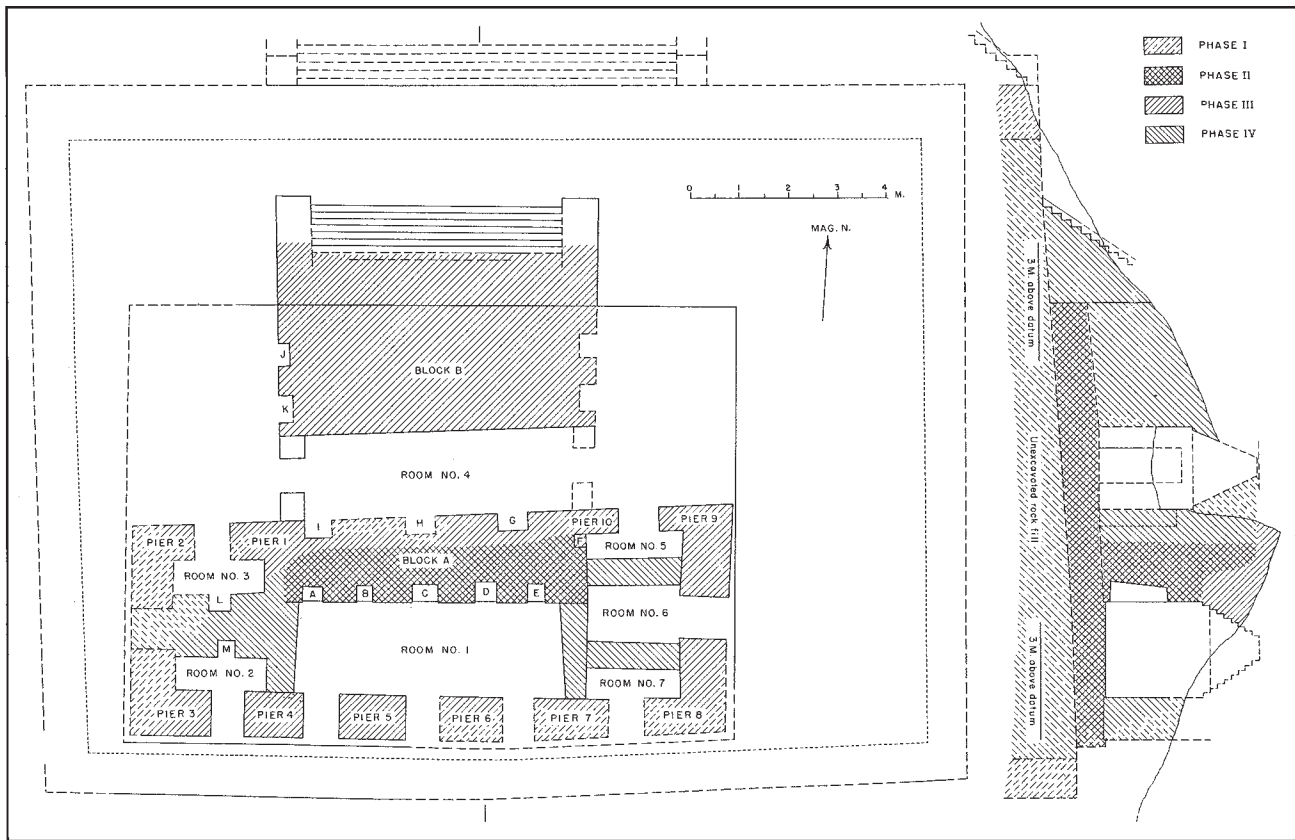
filled Room 1. The turtle effigy vessel (Fig. 30.3f) may have come from this upper story, since its fragments were found about 1.5 m above the floor of Room 1. Nothing can be said as to the appearance of the second story, but distribution of debris in the area suggests that it was placed well to the south in relation to the lower story, and that it may have been directly over Room 1.

The substructure platform is about 2.5 m high, but shows some irregularities in its elevations. There is a noticeable slope from south to north, and from west to east on the southern part of the platform. Small variations might be explained by the irregularities of the slope on which the platform is built, but the variations here are of a magnitude that indicates the presence of some unknown construction factor.

The temple itself presents some rather difficult problems in interpretation, since, in spite of the extensive excavation, much of the detail of the early phases remains obscure, and perhaps must always remain so. Four major construction phases were disclosed, and will be discussed before the more detailed description of the temple.

PHASE I (Fig. 30.1). A substructure platform was erected. This platform, which was later concealed by a wall around all four sides, has moldings on its east and west sides, slightly over 0.80 m high and projecting 0.30 to 0.36 m beyond the platform walls. Presumably the building that stood on the platform was razed during later construction. This conclusion is based on the assumption that the platform originally supported a building which was well centered, not off to one corner as is the existing temple structure. It is not certain where the stairway leading to this platform was, since the only visible stairway abuts the secondary wall around the early platform.

PHASE II (Fig. 30.1). The present temple platform was built on the substructure platform. The building originally erected on the present platform is probably represented today only by the southern part of Block A with its five niches. The interpretation of this construction phase is based on construction involving Niche F and the west pier in Room 5. The pier fills the northern part of Niche F, the southern half of which has been blocked with masonry. Since the plaster on the walls of the niche is continuous with the plaster on the west wall of Block A, the niche is apparently a part of the original block. The upper part of the pier, however, ties into the outer masonry of Room 4, a fact which indicates that the northern part of Block A was removed when Room 4 was built and a new face added.



30.1.
Plan and Section of Str. Q-80.

Other details pointing to this conclusion are:

1. Three floors turn up to the south wall of Block A, but only the late upper floor could be found elsewhere in the rooms and on the platform. Perhaps the two earlier floors were removed during new construction, and the older floors remain only in areas adjacent to the original construction.

2. Traces of what is probably a floor were found running under Block B, an indication that this block is a later addition contemporaneous with the construction of Room 4.

3. The slight divergence in orientation of Rooms 1 and 4 may be the result of their having been constructed at different times:

It must be admitted that the tying in of the pier in Room 5 may be the result of a local alteration, and that the early floorings may have disintegrated before the last floor was laid. But the interpretation of the southern section of Block A as a residuum of earlier construction seems the most satisfactory solution.

PHASE III (Fig. 30.1). As indicated above, Phase III begins with the removal of the northern face of Block A. A new face containing three niches was

added on the northern side of Block A, and Block B was constructed, forming Room 4. The ten piers on the east, south, and west sides were added at the same time, forming a gallery with eight doorways around the southern part of the temple. The second story was probably constructed at the same time. Architectural details supporting these conclusions are as follows:

1. The north face of Block B is flush with the platform wall instead of being set back slightly as was customary, a fact which indicates that the north face was constructed with the idea that it would be the back wall for the stairs leading to the upper story. Thus Block B would be contemporaneous with the renovations which involved the construction of the second story.

2. The debris on the structure indicates that the upper story was placed well to the south and perhaps directly over Room 1. Consequently, the piers would have had to be present to support the weight of the second story. Thus the upper story cannot be earlier than Phase III.

The gallery was probably vaulted for its entire length. We assume here that the vaulting in Room 1

30.2. Views of Str. Q-80.

See Figure 30.1 for identification of numbers and letters referring to rooms and architectural features. a. Strs. Q-80 and Q-81 from south. West wall of shrine of Str. Q-81 at lower right; secondary platform wall of Str. Q-80 at lower center; primary platform of Str. Q-80 at center; Room 1 of Str. Q-80 with Niches A, B, and C at top. b. Room 1 from southwest, showing Niches C, D, and E and vaulting. c. Room 1 from northeast, showing doorway and west wall. d. Room 1 with fallen beam of sapote (?) wood in situ in front of Niche C. Beam is 1.64 m long. e. Room 1 from southeast, showing Niches A, B, and C and west wall. f. Room 1 from southwest, showing Niches C, D, and E and east wall. g. Room 1 from south, showing murals between Niches D and E. Niche D is 1.25 m high. Large sections of representations of temples are preserved around each niche, with a fragment of an "earth monster" mask at the bottom (see Fig. 30.4). h. Room 1 from northwest, showing rubble-filled doorway between Piers 6 and 7. i. Room 1 at right and Room 2 at left, from southwest. j. Room 3 from north, Niche L in rear wall. k. Stairway on platform from northeast. Originally led to an upper story. l. Room 4 from southeast, showing east doorway of room and blocked vault.

represents the original roofing of the gallery. Certainly, if the second story was directly or partly over Room 1, the roofing of the gallery on its south side could scarcely have been changed unless the second story was removed and rebuilt. If such extensive changes were made, there is now no way to determine whether the gallery originally had a flat or vaulted roof.

PHASE IV (Fig. 30.1). Five secondary walls were built in the gallery, creating six rooms (Rooms 1, 2, 3, 5, 6, and 7). The secondary nature of these walls is clearly indicated, since the plaster on Block A runs behind the east wall of Room 1 and the north wall of Room 6, and the plaster on Pier 4 runs behind the west wall of Room 1.

As was stated above, there is a good possibility that Room 1 retained its original vaulted roof when it was formed by placing walls across the gallery. It would seem, however, that the roofing of the east and west sides of the gallery underwent extensive changes, if we are correct in assuming that these side galleries also were originally vaulted. There is good evidence in Rooms 2, 3, and 6 that the new rooms were roofed by placing two or three courses of stepped masonry on the new walls and covering the remaining space with one or two large capstones.

Rooms 5, 6, and 7 were formed simply by erecting two walls across the gallery. Rooms 2 and 3 and the west wall of Room 1 were formed in a slightly more complicated manner. The west face of Block A was removed, and a large block of masonry was tied into Block A. This block of masonry forms the common east-west wall of Rooms 2 and 3 and part of the west wall of Room 1; in addition, it apparently filled completely the doorway between Piers 2 and 3 (Fig. 30.1).

The secondary wall surrounding the basal platform may also have been added during this phase in order to give access to the newly created rooms. Rooms 1, 2, and 7 can be reached only along the addition to the platform provided by the secondary wall.

It should be noted, however, that the north stairway abuts this wall and is centered on the original basal platform rather than on the later construction. Thus, if centering can be considered a diagnostic factor in a structure which is otherwise quite erratic, one might even assign the secondary wall to Phase I. An alternative solution is that the wall was added during Phase III to give another means of access to the newly created gallery.

The construction of the secondary jambs in the doorways and the blocking of the vault of the east doorway of Room 4, also the blocking up of Niche K on the west side of Block B, may have taken place during Phase IV (Fig. 30.1). These changes are assigned arbitrarily to this phase, but may simply represent minor alterations made between the mayor changes of the last two phases.

DESCRIPTION OF ROOMS

Room 1 (Fig. 30.2b-i). Room 1 is a slightly irregular rectangle in shape, and has a vaulted ceiling. The vault is built of stepped courses of masonry, but probably presented a smooth appearance after being covered with plaster. The west wall of the room is tied into the vaulting, but since this wall is clearly a secondary construction, the tying in must have been done when the wall was built and at the same time that the west face was removed from Block A (Phase IV). The masonry of the walls consists of roughly cut limestone slabs, with an occasional well cut, re-used stone of Puuc style, the latter appearing more frequently in the piers and vault than elsewhere. Some of the re-used stone found in the room debris is carved and retains fragments of brightly colored murals (Fig. 30.3a,c,e).

Beams were placed in the vaulting for support. A collapsed beam which was found in the room apparently ran from above Niche C to a point over the doorway between Piers 5 and 6. The beam was cut from a very hard wood, possibly sapote, and is rectangular in cross section (Fig. 30.2d). The powdery



a



b



c



d



e



f



g



h



i



j



k



l

30.3. Pottery and Small Objects from Str. Q-80.

a. Re-used carved stones, covered with painted plaster. Stone at upper right is 33 by 16 cm, and was commonest variety of carved stone found around Str. Q-80. b. Room 6 from east. Junction of secondary wall and Block A shows in center of picture. c. Re-used carved stones. Stone on bottom is 33 cm long. d. 1. Limestone "pot lid," c. 10.1 cm, in diameter, 2.8 cm thick at center, Cat. no. 54-85, Lot C-67. 2. Univalve shell tinkler, 3.7 by 2.1 by 1.8 cm, Cat. no. 54-86, Lot C-67. 3. Pink shell bead, 1 cm in diameter, 0.8 cm thick, Cat. no. 54-101, Lot C-68. 4. Rectangular stone bead, burned, 1.5 by 1.2 by 0.7 cm, Cat. no. 54-99, Lot C-68. 5. Rectangular stone bead, burned, 1.7 by 1.2 by 0.9 cm, Cat. no. 54-98, Lot C-68. 6. Barrel-shaped stone bead, burned, 2.3 by 1.2 cm, Cat. no. 54-102, Lot C-68. 7. Triangular shell pendant burned, 1.8 by 1.8 by 1.7 by 0.4 cm, Cat. no. 54-103, Lot C-68. 8. Cylindrical greenish stone bead, 2.9 by 1.2 cm, Cat. no. 54-100, Lot C-68. 9. Subspherical greenish stone bead, 1 cm, in diameter, 0.8 cm thick, Cat. no. 54-96, Lot C-68. 10. Rectangular greenish stone bead, 2 by 1.3 by 0.9 cm, Cat. no. 54-g7, Lot C-68. e. Re-used carved stones, covered with plaster painted red, blue, white, orange, and green. Stone at upper right has diameter of 16 cm. f. Turtle bowl, from debris in Room 1; may have come from upper story. Restored. Unslipped Ware, painted black, blue green, and yellow after firing. Human hands protrude from turtle's front feet. Orifice diameter 6.5 cm, height c. 9.5 cm, length c. 17.5 cm Lot C-68. g. Filleted jar incensario from Niche A of Room 1. Porous Gray Ware, painted blue-green, with vertical blue stripes and concentric blue circles on the rosettes. Burned copal in bowl. Orifice diameter 22 cm, height 28 cm. Lot C-68.

residue of another beam was found in front of Niche E. Thus, it appears that beams ran from above niches to points above the doorways. There were undoubtedly other beams in the vaulting, but no trace of them remains today.

Three doorways give access to the room, and along the north wall are five irregularly spaced niches (Fig. 30.2b,d-g) The niches taper slightly from the bottom toward the top. Each niche has a low step at the bottom, and Niche C has a projecting course of masonry at the top.

The room is floored with the typical smooth hard plaster found in previously excavated structures in Mayapán. Three floors turn up to the north wall, but the lower two are preserved only adjacent to this wall. The second floor is continuous with the plaster on the north wall on which the murals to be described below are painted. No wall plaster ties in with the lowest floor, and it may be that the earliest coat of plaster was removed or had disintegrated at some earlier period of the building's history. The uppermost floor, which is very well preserved, ties in with the outer layer of plaster on the wall.

The most important feature of the room is the murals which cover the north wall and extend onto the east and west walls (Figs. 30.2e-g; 30.4). The murals were covered with a thin, undecorated coating of plaster which was heavily smudged, probably by the smoke from burning copal, ample remains of which were found on the floor. The murals showed no such smudging.

The murals are fairly well preserved up to the tops of the niches, with a few patches still adhering to the upper part of the wall. They consist of two distinct elements. The first is the depiction of a temple façade painted around each niche, which thus served as a doorway for the temple, although the size of the niches makes the doorways dispro-

portionately large in comparison with the rest of the temple façade. A deep red is used as the background for the designs, and the temples are painted in blue, black, red, white, and yellow, with black outlining Proskouriakoff's restoration of the murals gives us some idea of the way the temples of Mayapán may have been decorated (Fig. 30.4).

The second element is an "earth monster" mask which occupies the space between the niches below the temple facades. The masks are portrayed with gaping haws, and are painted in red, yellow, black, and green.

On the back wall of each niche is a vertical line of disk shaped spots painted either solid red or blue. The part of the murals extending onto the side walls consists simply of an area painted in the solid deep red of the background.

As to the dating of the murals, the following points are relevant:

1. The murals are painted on a coating of plaster that is preserved on the east and north sides of Block A. They seemingly were painted on dry plaster, since the pigment does not penetrate the plaster.

2. The murals extend onto both the east and west secondary walls of the room. They are not present on the area of the north wall covered by these secondary walls. Consequently, the murals date from Phase IV, since they must be as late as the secondary walls of the room.

A fair number of sherds were found on the floor, with smaller quantities in the plaster, stone, and earth debris which filled the room. The sherds were predominantly from filleted jar and human effigy incensarios.

Six stone beads, a disk-shaped shell bead, and a triangular shell pendant were found in various areas of the room just above the floor. A few animal bones were also present in the debris, including two



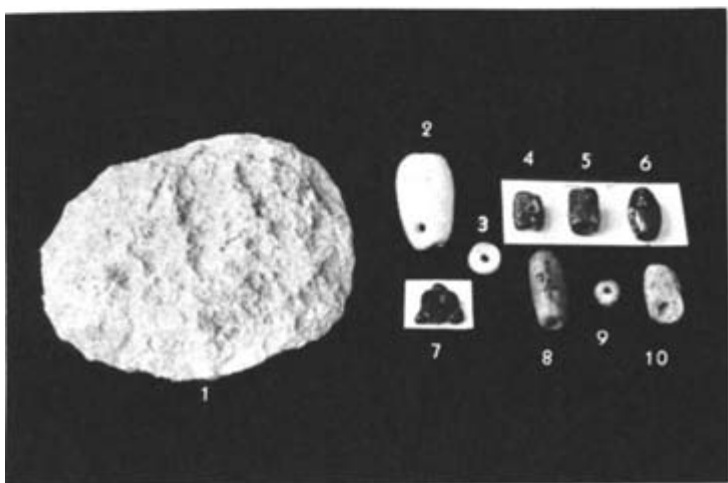
a



b



c



d



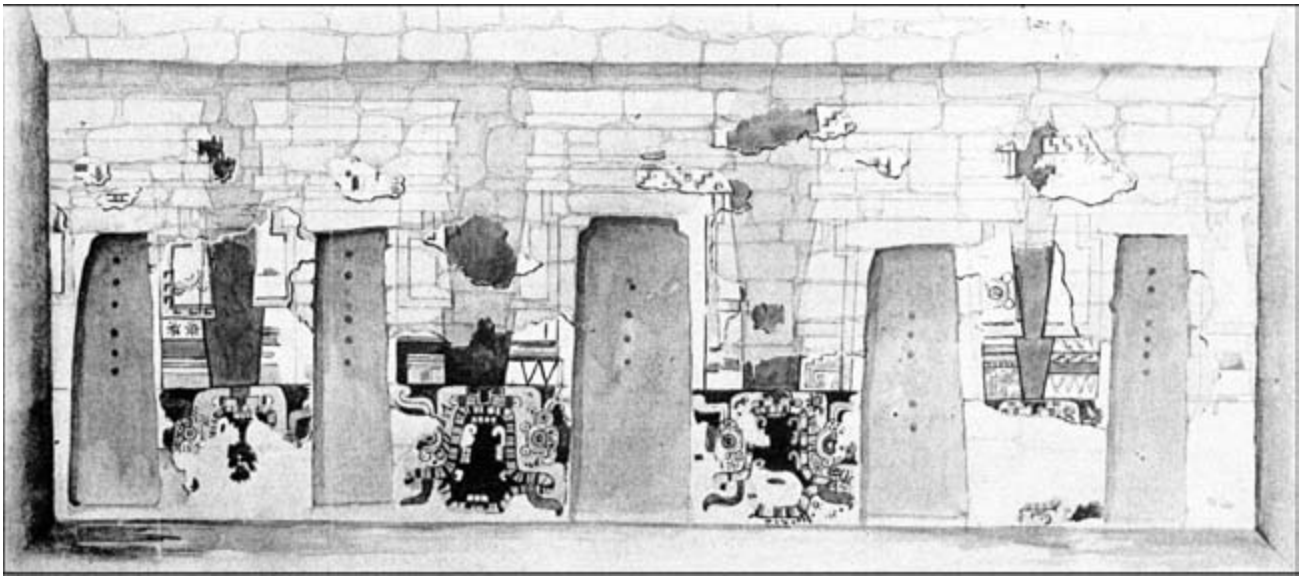
e



f



g



30.4. Str. Q-80. Murals in Room 1.

a. Restoration of murals in Room 1, by Tatiana Proskouriakoff. Restored portions are outlined on the masonry wall of the room. Preserved portions of the murals are shown on plaster.

which were recognized as those of deer. Many of the others were of iguana or rodents. Three of the beads and the shell pendant were blackened from burning. The other beads were made from assorted greenish-colored stones, none of which could be called jade (Fig. 30.3d, 3-10).

A completely restorable incensario of the filleted jar type was found in Niche A (Fig. 30.3z). Large sherds of similar incensarios were found just outside of and in Niches D and E. In Niche C and surrounding it were many sherds of a large human effigy incensario. A few sherds of another such incensario were found in Niche B. The bottoms of several of the incensario bowls still contained quantities of burned copal.

Pieces of heavily smudged limestone sculpture and painted stucco were found in the debris in the middle of the room at heights of 0.50 to 0.75 m above the floor. Some of the stucco resembled the ornaments on human effigy incensarios, and it may be that all these fragments once formed part of a large image of the effigy incensario type. The limestone sculpture may have served as an armature on which the stucco was modeled.

In the general excavations outside Room 1, a stone "pot lid" and a univalve shell tinkler were found (Fig. 30.3d, 1, 2).

ROOMS 2, 3, 5, 6, AND 7 (Figs. 30.2i,j; 30.3b). All these rooms were completely excavated, except Room

5, which was cleared only at its west end. Previous remarks on masonry apply to all these rooms, and the mode of roofing has been discussed under the section dealing with Phase IV of the temple.

Before excavation, all the rooms except Room 3 were filled with debris consisting of earth, rock, and plaster. Room 3 contained little debris, but may once have been filled with material which spilled out over the ruined western edge of the platform.

A few sherds were found mixed in the detritus which filled the rooms, and considerable quantities of sherds were found in the floors of Rooms 2, 3, and 7. The sherds were mainly from filleted jar incensarios, some with pedestal bases; and sherds from human effigy incensarios were found in Rooms 2, 3, and 5. Room 6 produced only a handful of sherds, even the floor being almost barren of pottery.

Rooms 2 and 3 differ from the other small rooms only in that each has a niche in its rear wall. Unlike those in Room 1, neither of the niches has a step at the bottom.

ROOM 4 (Fig. 30.1) was not excavated, but since it is only partly filled, some of its architectural detail could be observed. Room 4 differs from Room 1, which runs roughly parallel to it, mainly in the number and location of its niches, the appearance of the vault, and the location of the doorways. Room 4 has three niches, Room 1 five. The niches in Room 4 are

very poorly spaced along the south wall of the room, but no satisfactory explanation has been advanced to account for the peculiar spacing. The corbelled vault of Room 4 is constructed so that it has a smooth surface, whereas the vault in Room 1 is constructed of stepped courses of masonry. The doorways of Room 4 consisted originally of the open ends of what was essentially a vaulted passage. These openings were later modified by the addition of secondary jambs and the blocking of the vault at its ends, the modifications resulting in much smaller doorways. Entry into Room 1 is provided by the openings between the piers along its south side.

TEMPORAL RELATIONS OF THE TEMPLE

Little could be determined about the temporal relations between Str. Q-80 and other structures at Mayapán. Excavations in the passage between Str. Q-80 and the colonnaded hall Str. Q-81 to its south were inconclusive. There was slight evidence that Str. Q-81 cut through a layer of grouting in the passage, an indication that the hall was later in construction than the secondary wall around the platform of Str. Q-80. This sequence of events is, however, by no means certain.

Tests were made in the fill of the substructure platform, and exposed surfaces of the fill in Blocks A and B were examined for pottery types. No sherds from human effigy incensarios were found either in the fill of the platform or in the fill of Blocks A and B. It would probably be safe to assume that most of the construction of the temple took place before the introduction of the human effigy incensario at Mayapán.

The presence of human effigy incensarios and restorable incensarios of the filleted jar type in the niches of Room 1 probably indicates that the temple was still in use very late in the occupation of Mayapán.

SUMMARY

The summary which follows presents what seems to the author to be the best interpretation of the rather complex series of alterations in Str. Q-80. Qualifications of the conclusions, and alternative solutions of the architectural problems involved, have already been presented.

A building was erected on an earlier basal platform. Most of this building was razed, leaving only the southern part of the construction designated as Block A in Fig. 30.1. A temple was then built incorporating the remaining portion of Block A. The building was a two-story structure, with a first story

consisting of a large vaulted room, and galleries running along the east, south, and west sides. Nothing is known as to the appearance of the upper story, except that it was probably placed well to the south in relation to the lower story, and that the stairway leading to it was on the north side of the basal platform. The lower story was subsequently remodeled by placing walls across the gallery, forming six rooms. At approximately the same time murals were painted on the north wall of the large vaulted room on the south side, and changes were made in the doorways of the large vaulted north room.

Tentatively, it might be suggested that Str. Q-80 is earlier than the colonnaded hall to its south. The temple was almost certainly built before the introduction of the human effigy incensario at Mayapán, and continued in use after the introduction of this type of incensario.

MATERIALS RECORDED

Artifacts and pottery are listed below. The whole vessels illustrated in Figure 30.3f,g are described in the captions. The pottery was analyzed by E. M. Shook.

LOT C-67: general excavation along the south, west, and north sides of the structure: limestone "pot lid" (Fig. 30.3d,1); univalve shell tinkler, white, perforated with one hole for suspension (Fig. 30.3d,2); skeleton of adolescent; 61 animal and bird bones; 4 stalactites; 1 obsidian flake blade; 2 unworked univalve shells.

Total sherds: 2,900: 7 Puuc period; 2,893 Mayapán period (Unslipped vessels, 217; Non-Effigy Type censers, 260; figurine fragment, 1; Human Effigy Type censers, 2,030; Mayapán Red, 358; Red-on-Cream, 22; Fine Orange, 4; Black-on-Cream, 1).

LOT C-68: in debris in Room 1: pink shell bead (*Spondylus* shell?), disk-shaped (Fig. 30.3d,3); burned stone bead, rectangular (Fig. 30.3d,4); burned stone bead, rectangular, with rounded surfaces (Fig. 30.3d,5); burned stone bead, barrel-shaped (Fig. 30.3d,6); burned shell pendant, triangular, incised at corners, central depression, hole for suspension in one corner (Fig. 30.3d,7); stone bead, cylindrical, greenish (Fig. 30.3d,8); stone bead, subspherical, greenish (Fig. 30.3d,9); stone bead, rectangular with rounded surfaces, greenish, longitudinal perforation, perforation on side extending into longitudinal perforation (Fig. 30.3d,10); 5 obsidian flake blades; 30 animal and bird bones; copal from incensarios.

Total sherds: 2,068: 3 Puuc period; 2,065 Mayapán period (Unslipped vessels, 24; Non-Effigy Type

censers, 770; Human Effigy Type censers, 1,087; Effigy bowl, 15; Mayapán Red, 153; Red-on-Cream, 22; Fine Orange, 2; Black-on-Cream, 1).

LOT C-69: excavation down to bedrock in passage between Strs. Q-80 and Q-81: copal from incen-

sarios; 26 animal and bird bones; 2 obsidian flake blades.

Total sherds: 787: 11 Puuc period; 776 Mayapán period (Unslipped vessels 114, Non-Effigy Type censer, 58; Human Effigy Type censers, 328; Mayapán Red, 264; Fine Orange, 1; Black-on-Cream, 11).

EXCAVATION OF A COLONNADED HALL AT MAYAPÁN

HOWARD D. WINTERS

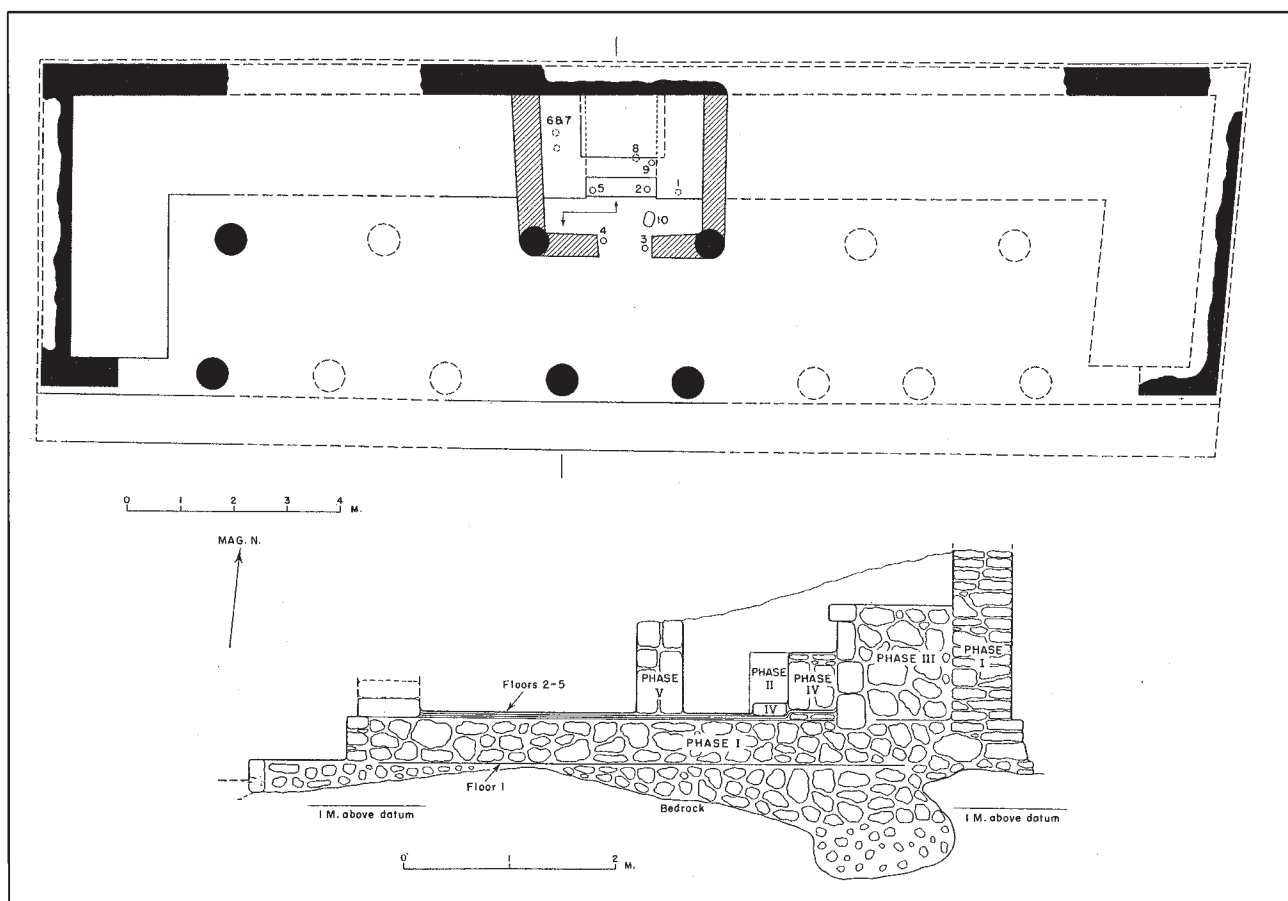
In 1954, while an approach trench was being carried across the colonnaded hall Str. Q-81 (165 S, 260 W) toward the vaulted temple Str. Q-80 on the north side of the north court of the Castillo, the central shrine of the hall was encountered. Excavation of the shrine produced a very interesting group of effigy incensarios, pottery vessels, and sculpture.

The central portion of the hall was excavated in addition to the shrine. A small section of the passage between Strs. Q-81 and Q-80 was also excavated at the northeast corner of the former structure. The data from these excavations combined with those obtained by Proskouriakoff at the west end of Str. Q-81 in 1953 gave an adequate picture of the construction of the building.

Before excavation, the presence of the colonnaded hall was indicated only by a few column drums and an occasional bit of exposed wall. The debris covering the structure formed a continuous slope with the mound of Str. Q-80 behind it.

The plan of the building after excavation was found to differ little from that of other colonnaded halls at Mayapán (Fig. 31.1). The structure, which faces directly on the plaza, is approached by a flight of steps leading up from the plaza to a front terrace. Neither of these architectural features was excavated. At the rear of the terrace is a low step in front of the plinth of the colonnaded gallery. Eight round columns are evenly spaced, very close to the edge of the plinth; six more widely spaced columns are at the rear of the gallery, close to the bench which runs around three sides of the structure. An enclosed shrine containing an altar is centrally located at the rear.

The gallery, including the bench, is 5.75 m wide and 22.28 m long. The rear wall of the structure today stands 3.33 m above the plaza floor. Originally it may have been only 30 or 40 cm higher, since presumably it would not have been much higher than the platform of Str. Q-80 to its rear.



31.1. Plan and Section of Str. Q-81

1-7. Incensarios Nos. 1-7, in order (Fig. 31.3a-d, f-n). 8. Turtle effigy cache vessel (Figs. 31.2e, 31.3q,r). 9. Mayapán Red Ware cache vessel (Fig. 31.2i). 10. Limestone turtle (Fig. 31.2j,k).

The masonry of the building consists of roughly shaped slabs of limestone with occasional pieces of well cut, re-used stone, many of which are very similar to the Puuc type of dressed stone. The well cut stone was used mainly in the doorjambs, the altar molding, and the face of the bench, and as facing for the low step in front of the gallery. The columns are constructed of roughly shaped disks of stone. The gaps between the uneven surfaces of the disks were filled by chinking with small wedges of stone, and the whole surface was then covered with plaster.

The gallery is surfaced with four well preserved plaster floors 2 to 5 cm thick, and plaster still adheres to the walls in spots. No trace of painted decoration was found.

Presumably the roof was of masonry supported by beams and lintels of wood. Concentrations of plaster from the roof were found throughout the excavation, often in direct contact with the floor.

CONSTRUCTION PHASES

EARLY CONSTRUCTION. A doorjamb belonging to an earlier structure was found in a trench cut through the center of the gallery and shrine (Figs. 31.1; 31.2f). The jamb is under the doorway of the present shrine; the wall of which it is a part continues eastward, but was not excavated.

Floor 1 (Fig. 31.1) under the building is contemporary with the early construction. The rear wall of the hall cuts through this early floor.

Little can be said about the nature of the early building. Two column drums were found in the fill overlying Floor 1, however, and if they belong to the early structure, the jamb may be part of an earlier colonnaded hall.

Floor 1 runs over a shallow pit dug into the limestone bedrock (Fig. 31.1). Though the floor does not completely cover the pit, presumably it did so at one time, and was partly removed when

the later hall was built. The pit underlies the central niche and altar of the present hall, but whether these structures were purposely placed over the pit cannot be determined. The contents of the pit were of little help in interpreting its significance, consisting of loose, dark soil, in which sherds of Mayapán Red, black-on-cream, porous gray, and slate wares were mingled with a few obsidian chips. A patch of fine gray ash was also present, and flecks of charcoal were randomly dispersed throughout the fill.

PHASE I. After most of the earlier construction had been razed, the major portion of the colonnaded hall was built. The gallery, with its columns and walls, and the steps and terrace in front of the gallery are all assigned to this phase. Fill, consisting of fairly large stones and a small quantity of earth containing a few sherds, was placed over the earlier construction and the bedrock, which at some points comes almost up to the floors of the terrace and gallery.

PHASE II. A bench with a central niche was built around the west, north, and east sides of the gallery. This conclusion is based on the fact that in the central niche the plaster on the rear wall runs behind, and Floor 2 (Fig. 31.1) runs under, the bench on either side of the niche. An alternative interpretation would be that the central niche was originally much wider, and that it was later narrowed, so that a portion of the floor and wall plaster was covered. Such an addition was not observed, but may exist. If the addition does exist, Phase II would be eliminated.

PHASE III. A wall was built across the central niche near its mid-point, and an altar was placed over the cist thus formed (Figs. 31.1; 31.2d,e). The altar rests on the earliest floor on the bench, and the later two floors of the bench turn up to it. A low step of plaster was placed in the niche in front of the altar. Floors 3 and 4 of the gallery (Fig. 31.1) are continuous with this step and turn up to the altar.

PHASE IV. A turtle effigy cache vessel was placed in a pocket formed by the removal of a stone from the wall under the altar and the excavation of a shallow depression in Floor 2 (Figs. 31.1.8; 31.2e; 31.3q,r). A small piece of white shell was found in the earth which filled the vessel. Beneath the vessel was a sub-spherical bluish stone bead (Fig. 31.2h,2).

An additional wall was then built across the niche, and the space between the new wall and the altar wall was filled with stones and earth (Fig. 31.1, 2d). A small Mayapán Redware cache vessel (Figs. 31.1.9; 31.2i), covered with a circular lid of the same ware, was placed in the fill behind the new wall.

Flatstones were laid across the front of the niches, raising the height of the step in front of the wall.

PHASE V. Walls were erected around the altar area, forming a shrine room. The doorway of the room is directly in line with the niche and the altar (Figs. 31.1; 31.2b,d). The walls incorporate columns of the gallery at the southwest and southeast corners. Floor 5 (Fig. 31.1) turns up to the shrine walls, but all other floors run under these walls.

DESCRIPTION OF THE SHRINE AND ITS CONTENTS

As indicated above, the shrine in its final form was a room with benches and an altar placed centrally and to the rear. A step in a shallow niche between the benches led up to the altar, which is made of well dressed stone, mostly of the Puuc type and definitely re-used, and which has a projecting molding around its three freestanding sides (Fig. 31.2a,b).

The top of the altar was badly disturbed, perhaps through looting. No cache vessels were found in the cist under the altar, where one might expect to find something of the sort. If looting took place, it occurred before the collapse of the roof, since roof debris lay undisturbed on top of the altar. Perhaps the fragments of two small greenish-blue tripod cylinder jars found on the west bench were once part of an altar cache. (For illustration of a similar jar see Shook 1954, Fig. 10s. One of the tripod cylinders from the shrine is about 7.5 cm high and has an outside diameter of 4.5 cm). The cache vessels mentioned in the discussion of Phase IV, since they were not in the cist under the altar, may have been overlooked by the looters.

Among the more important objects in the shrine was a large limestone turtle (Fig. 31.2j,k). The turtle is portrayed with gaping jaws, from which a face having the toothless, sunken jaws of Itzamna looks out, and has human hands holding unidentified objects. Flecks of white plaster adhere to the stone. If any other colors were used, they are no longer preserved. The turtle was sitting on the floor of the shrine with its head pointing northeast (Fig. 31.1.10). One might infer from its skewed position that the turtle had been removed from its original location. Perhaps it once was on the altar, and its removal was coincident with the disturbance of the altar top.

Fragments of a restorable jar of Mayapán Redware were found in the doorway of the shrine. When assembled, the jar was found to be a lidded cylinder on which was appliquéd a polychrome "diving god," modeled from porous gray ware (Fig. 31.3o,p). The face of the figure is painted orange, and the hands



a



b



c



d



e



f



g



h



i



j



k

31.2. Views of Str. Q-81 and Miscellaneous Objects

a. Shrine and altar after excavation, from southwest. b. Shrine and altar after excavation, from south. c. Shrine doorway during excavation; effigy incensario in situ. d. View of shrine from southeast after removal of altar and part of secondary construction; note secondary walls and steps in central niche. e. Effigy cache vessel in situ in pocket in wall under altar (Figs. 31.1.8; 31.3q,r). f. Detail of trench through shrine; earlier construction under colonnade shows just below center of picture. g. Pestle, limestone, 7.7 cm long, 5 cm wide at bottom, Cat. no. 54-91, Lot C-70. h,1. Limestone "pot lid," 17 cm in diameter, 2.5 cm thick at center, Cat. no. 54-82, Lot C-72. 2, bluish stone bead, 1.3 cm in diameter, 0.7 cm thick, Cat. no. 54-92, Lot C 71a. 3, pink shell bead 0.6 cm in diameter, 0.1 cm thick, Cat. no. 548-3, Lot C-72. i. Cache vessel from fill behind late wall in central niche (Fig. 31.1.9). Mayapán Red Ware, although slip is darker than normal; lid is typical Mayapán Red Ware. Bowl is 5.5 cm high; orifice diameter 5 cm; neck and loop handles were removed before vessel was placed in cache; lid has diameter of 5.5 cm. Lot C-71a. j,k. Limestone turtle from floor of shrine (Fig. 31.1.10). Length 42 cm, width 25 cm, height 17.5 cm; Cat. no. 54-81, Lot C-72.

are red. The eyelids and a band around the mouth are green. The fact that no smudging was present on the inside of the jar suggests that it was not used as an incensario.

Perhaps the most notable artifacts in the shrine were the human effigy incensarios. Seven incensarios were restorable at least in part, and fragments of many others were found on the floor of the shrine and on the benches (Figs. 31.1, 31.1.7; 31.2c; 31.3a-n). The incensarios were crushed in place by roof and wall debris which lay over and around them. The color is well preserved on all of them.

Before proceeding to a description of the incensarios, one may note that similar human effigy censers have been found over a wide area from Chichén Itzá to sites in British Honduras (see Gann 1918, Fig. 67, Pl. 20; Gann and Gann 1939, Pl. 5; Lothrop 1924, Figs. 29c, 30, Pl. 9; Morley 1946, Pl. 85; Salisbury 1879:71-89; Sanders 1955:214; Thompson 1897, Pl. VIII).

Since Adams (1953:146-148) has already described the general appearance of the censers, we shall note only a few details which have been observed in the somewhat better specimens now available.

As Adams has indicated, the censers consist of an effigy attached to a pedestal-based censer bowl. The effigies are usually portrayed standing erect, but in rare examples they are shown in a seated position. The effigies of our examples stand from 58 to 70 cm high, including their headdresses. The censer bowls, with their pedestal bases, are from 40 to 56 cm high, with an average of around 45 cm. The bowls have outside diameters of 17 to 20 cm, and the bases are around 15 cm in diameter. The bowls are normally undecorated, but a few bowl sherds showed traces of some sort of design applied in white paint.

All the human effigy censers at Mayapán were decorated in a variety of colors, but it would seem that similar censers from the Corozal District of British Honduras are decorated only with blue paint applied over a white slip (Gann and Gann 1939:20). The censers from this district are considered to be

late in the area, since the sherds from them occur as surface finds on top of earlier structures.

The slightly concave panel on either side of the effigy mentioned by Adams is part of the feather headdress represented in a highly stylized form. Adams' statement on the construction and appearance of the effigies has been verified, except that the hand and arm position shows some variation. The forearms generally form a 90 degree angle with the upper arms and the body, but may come together so that the fingers touch in front of the body (Fig. 31.3j,k). The hands may have the palm inward, upward, or downward. In the group from the shrine, the palm is usually up, with a ball of copal resting in it. The copal is sometimes shown flaming. In other examples the hands hold an *atlatl*, an ear of maize, or an unidentified conical object (Fig. 31.3e,f,j,k). Pouches are sometimes suspended from the arms (Fig. 31.3h-k). A shield is attached to the left arm of one effigy (Fig. 31.3g).

Some new details have been learned about dress from the shrine incensarios. The basic garments consist of an apron (*maxtli*), a sort of half skirt which covers the buttocks and sides of the thighs, an open coat, and a breastplate. Some effigies are shown with a wide, circular collar. The coats, half skirts, *maxtlis*, and shirts are painted in a variety of color combinations and designs, which probably represent the appearance of cloth. The only color not noted by Adams is white, which seems to be fugitive and is preserved only under ideal conditions. The breastplates are often elaborately ornamented with braid and appliquéd decoration. One breastplate consists of the Quetzalcoatl seashell motif with pendant bells (Fig. 31.3n). Each head has earplugs, the design of which varies somewhat, and bracelets of circular "jade" beads are sometimes worn around the wrists.

Three basic styles of headdress have been observed. One style consists basically of a cylindrical bonnet, another is in the form of a helmet modeled



a



b



c



d



e



f



g



h



i



j



k



l



m



n



o



p



q



r

31.3. Incensarios and Other Objects from Shrine of Str. Q-81.

a,b. Incensario No. 1 (Fig. 31.1.1). Polychrome decoration. Face 31 cm high. Lot C-72. c,d. Incensario no. 2 (Fig. 31.1.2). Polychrome decoration. Effigy 58 cm high; bowl 43.5 cm high. Lot C-72. e. Hand holding *atlatl*. Polychrome decoration; hand is painted blue. From west bench of shrine. Arm and hand 17 cm long. Lot C-72. f,g. Incensario no. 4 (Fig. 31.1.4). Polychrome decoration. Hand ca. 7.5 cm long, holding maize; face ca. 16 cm high; effigy 59 cm high; bowl 40.5 cm high; orifice diameter 17.6 cm. Lot C-72. h,i. Incensario no. 5 (Fig. 1.5). Polychrome decoration. Effigy 55.5 cm high; bowl 47 cm high; orifice diameter 19 cm. Lot C-72. j,k. Incensario no. 6 (Fig. 31.1.6). Polychrome decoration. Effigy 62 cm high; bowl 44.1 cm high; orifice diameter 20.2 cm. Lot C-72. l,m. Incensario no. 7 (Fig. 31.1.7). Polychrome decoration. Face and panels ca. 46 cm high; orifice diameter of bowl 21 cm. Lot C-72. n. Incensario no. 3 (Fig. 31.1.3). Polychrome decoration. Effigy ca. 68 cm high. Lot C-72. o,p. Lidded jar from doorway of shrine. Polished red and buff slip, with polychrome "diving god" figure of Porous Gray Ware. Total height 24.5 cm; jar 16 cm high, orifice diameter 14 cm; lid 10 cm high, orifice diameter 14 cm. Lot C-72. q,r. Cache vessel from pocket in wall under altar of shrine (Figs. 31.1.8; 2e). Porous Gray Ware painted bluish green. Bowl 22 cm long, 17.5 cm wide, 9 cm high, orifice diameter 8 cm. Circular plug in bottom of bowl 2.5 cm in diameter. Figure on turtle's head 13 cm high. Human face looks out of turtle's mouth; object held by seated figure may be intended to represent flaming copal. Lot C-71a.

to portray a bird or other animal with gaping jaws, and a third form looks like a rectangular box. Though ornamentation varies considerably between and within the three styles, some elements are common to all. All headdresses observed have flaps which extend down to the shoulders and a funnel-shaped element at the top, and all are attached to elaborate featherwork. The featherwork usually varies only in color and minor details of pattern, but Incensario No. 4 has a strikingly different sort of feather headdress (Fig. 31.3g).

The bonnet type of headdress consists of a cylindrical cap from which the usual funnel-shaped element rises. The caps and "funnels" are decorated with panels and stripes in a variety of color combinations. Ornaments (*adornos*) such as spikes, rectangular panels, and triangles are appliquéd on the headdresses (Fig. 31.3c,j).

The helmet type of headdress consists of a representation of the head of a bird or other animal with an open mouth from which the face of the image looks out. In two examples the head is that of a jaguar (Fig. 31.3f,n). In one instance the head is that of an unidentified bird (Fig. 31.3b), and another head (Fig. 31.3l,m) may be that of a bird, although the presence of human teeth makes its identification very much open to question. A variant form of the helmet headdress is found on Incensario No. 5 (Fig. 31.3h,i). The upper jaw of a serpent is attached to the headdress, but the effect is not that of the typical open-mouthed head of an animal.

The decoration of the helmets is relatively simple. Appliquéd decoration was not used on the helmet proper, and solid colors predominate. The two jaguar headdresses, which were on the two incensarios in the doorway of the shrine, were painted orange with red lips. The bird headdress on No. 1 was painted green with red eyes and mouth, and the "bird" helmet on No. 7 had a cream-colored back-

ground on which were painted small designs in red. The eyes were blue, and the mouth was red with white teeth.

Only fragments of the "box" type headdress were found in the shrine, so that its description must await the reporting of examples from other structures at Mayapán.

The identities of the effigies have not been thoroughly analyzed, but some suggestions can be made on the basis of preliminary observations.

Incensarios Nos. 1, 2, and 3 on the east side of the shrine have well modeled faces, very human in appearance and so alike in detail that one might suggest that they were made from a single mold (Fig. 31.3a–d,n). Incensario No. 3 has a breastplate in the form of a seashell, perhaps indicating some connection with Quetzalcoatl. Traces of paint on the face of No. 1 show that it was painted red and black, perhaps in a banded pattern. The face of No. 2 is orange with a curving red band; the eyelids, arms, and legs are painted red. The face of No. 3 is red and orange, and the feet were apparently black.

Little can be said about Incensario No. 4 (Fig. 31.3f,g). The presence of fangs might suggest Chac (God B, following the classification of Schellhas 1904), but the protruding blue eyes and the sunken jaw seem to contradict such an identification. The last-mentioned element is more commonly associated with Itzamna (God D). The presence of a shield on the left arm and an ear of maize in the right hand does little to clarify the identity of the effigy. Perhaps one should note Morley's comment that "... the ancient Maya conceived of some of their deities not only as a single entity but at the same time as composite or multiple in character. . . ." (Morley 1946:231). Possibly we have here a combination of attributes conventionally assigned to separate deities. The face of this particular image has whitish skin, blue eyes, orange eyebrows, and red lips surrounded by an

orange area. The arms and feet appear to be painted white.

The proboscis-like nose and curving fangs of Incensario No. 5 (Fig. 31.3h,i) are suggestive of Chac, the rain god. Perhaps again a duality in the nature of a god is indicated by the painting of the body of this effigy, the flesh of the right side of the body being painted red, and that of the left side blue. The face has orange eyebrows and lids, red lips, and white tusks.

Incensario No. 6 (Fig. 31.3j,k) has the toothless, sunken jaws of Itzamna (God D), lord of the heavens. The hands hold an unidentified conical object, which was originally covered with rows of triangular spikes. Small red, white, and black designs under the eyes might be interpreted as tears. The face, hands, and feet are blue. The eyelids are orange, and the red lips are surrounded by an orange area.

The face of Incensario No. 7 (Fig. 31.3l,m), with its cutout eyes, may represent a mask. The mask has a very human appearance, and closely resembles Incensarios Nos. 1, 2, and 3. Fangs project from the lower corners of the mouth, and again we may be dealing with an effigy combining the attributes of more than one deity. The face is painted blue, with orange and green stripes on the cheeks.

In summary, the effigies on the east side of the shrine (Fig. 31.1) have faces of quite human character, and one of them wears a Quetzalcoatl symbol as a breastplate. This group may be linked to Quetzalcoatl. The effigies on the west side of the shrine have combinations of attributes linked to Chac, Itzamna, and perhaps other deities. One of the effigies is probably a representation of Chac, and another, Itzamna.

TEMPORAL RELATIONS OF THE COLONNATED HALL

The fill under the floors produced no sherds from human effigy incensarios, a fact which indicates that the colonnaded hall was built before the introduction of this late form of incensario at Mayapán.

The building may be later than the substructure of Str. Q-80 to the north. This conclusion is based on a very tenuous indication that the hall cuts into a layer of grouting in the passage between the two structures.

SUMMARY

A colonnaded hall of conventional plan was built over an earlier structure of which little trace remains. It is possible that the bench around the sides was added after the hall was built. Such a sequence was not definitely established, however, and in other col-

onnaded halls the bench was built at the same time as the gallery.

The bench contained a central niche, the rear half of which was later sealed off by the construction of a wall across the niche and the placing of an altar over the cist thus formed. Subsequently, another wall was placed across the niche, reducing it further in size. At the same time, two cache vessels were buried behind the new wall, one of them being placed in a pocket formed by the removal of a stone from the wall under the altar. The final phase of construction consisted in the erection of walls around the altar area to form a room or shrine.

The top of the altar had been broken into, possibly in an attempt at looting, before the collapse of the roof of the structure.

The shrine room contained seven partly restorable human effigy incensarios, a lidded jar decorated with a "diving god" figure, and a limestone turtle. Great quantities of incensario sherds were found on the floor and benches, and the restorable incensarios had been crushed in place by debris from the roof and walls.

MATERIALS RECOVERED

The artifacts in the debris of the colonnaded hall would indicate that the building was a ceremonial structure. The sherds were preponderantly incensario fragments, and very few artifacts were found such as one would expect to be present in a structure primarily utilitarian in function.

Artifacts and pottery are listed below. Whole vessels are described in the legends to the photographs. The pottery was analyzed by E. M. Shook.

Lot C-70: fill over early construction (between Floors 1 and 2): pestle, probably fine-grained limestone (Fig. 31.2g); 66 small animal and bird bones; 5 fragments of obsidian flake blades; 2 flint chips; 2 fragments of unworked shell.

Total sherds: 765; 76 Puuc period; 689 Mayapán period (unslipped 300, Mayapán Red 290, Hard Red 2, Fine Orange 4, Black-on-Cream 93).

Lot C-71: fill between Floors 2 and 3: 2 obsidian flake blades; 9 fragments of small animal and bird bones.

Total sherds: 47; 7 Puuc period; 40 Mayapán period (Unslipped 13, Human Effigy Type censors 4, Mayapán Red 21, Black-on-Cream 2).

Lot C-71a: cache under altar: bluish stone bead, spherical, found under turtle effigy bowl (Fig. 31.2h,2). Two cache vessels (Figs. 31.2i; 31.3q,r).

Lot C-72: general excavation in the colonnade and shrine: limestone "pot lid" (Fig. 31.2h,1); pink shell bead (*Spondylus?*), disk-shaped (Fig. 31.2h,3),

found in disturbed fill in altar; limestone turtle (Fig. 31.2j,k); pottery "chile grinder," cat. no. 54-84; 6 obsidian flake blades; 1 flint chip; 4 stalactites; 7 animal bones.

Total sherds: 3,993; 22 Puuc period; 3,971 Mayapán period (unslipped 265, Human Effigy Type censers 3,472, Mayapán Red 221, Red-on-Cream 2, Fine Orange 4, Black-on-Cream 7).

THREE SERPENT COLUMN TEMPLES AND ASSOCIATED PLATFORMS AT MAYAPÁN

HOWARD D. WINTERS

The temples and platforms discussed in the following report were excavated during the 1954 field season. The primary objective in the excavation of the temples was the gathering of comparative data on serpent column temples at Mayapán. Two low platforms in front of Strs. Q-143 and Q-218 were cleared as examples of a minor and little-known architectural type. The structural details of the platforms were worked out satisfactorily, and some interesting clues were obtained as to their use.

Though it would be of interest to compare serpent column temples at Mayapán with those at Chichén Itzá, such a comparison is beyond the scope of this report. We shall limit the comparisons to the three temples reported herewith, and to Str. Q-58, excavated by Shook (1954: 254–258) in 1953.

Strs. Q-143 and Q-218, with their adjacent platforms, were excavated by the author; Str. Q-159 was excavated by Pollock. Emphasis was placed upon clearing the debris from the superstructures of the

temples, with particular attention to details pertaining to the serpent columns.

STRUCTURE Q-143 (270 S, 210 W)

Str. Q-143, on the east side of a small court to the east of the Castillo (Str. Q-162), was a mound about 7 m high before excavation. The temple faces west, and is flanked on the north and south by colonnaded structures which abut its terrace walls. Investigations by E. Wyllys Andrews in 1942 had exposed parts of the front and medial walls of the temple, the tops of the doorway columns, and the serpent heads. The only area of the temple interior left unexcavated during the 1954 season was the south end of the shrine room.

The pyramidal substructure probably has two terraces, but this point is not certain since the only excavation undertaken on the substructure was the uncovering of the balustraded stairway. If two

terraces are present, the adjacent structures, Q-142 and Q-144, almost certainly were constructed in part over the lower terrace of Q-143.

The stairway and balustrades are constructed of well cut stone, which seems to be almost entirely re-used material (Figs. 32.1a; 32.3a). Much of this stone is sufficiently well dressed to warrant comparison with masonry of the Puuc type. No trace of serpent heads was observed at the foot of the balustrades.

The walls of the superstructure still stand from 1 to 2 m high (Figs. 32.1a; 32.3e), except at the rear, where only a few courses of masonry are preserved. Parts of a battered basal zone were found on the exterior walls of the temple south of the south doorway and on the south side (Fig. 32.3b), presumably the walls rose vertically from the batter. No trace of a plinth was found anywhere around the superstructure. The outer walls of the temple are built of the usual rough slab masonry with interstitial chinking. Well dressed stone was used for the facing of the battered zone, the lower part of the front door-jambs, and the facing of the altar (Fig. 32.3b–d,f). The rear wall of the anteroom is constructed largely of well dressed, re-used stone, including several nicely carved pieces (Fig. 32.3f). The altar facing is dressed only on its outer and upper surfaces, and is probably dressed stone of the Mayapán type. It may be noted that in some cases the nicely cut and dressed stone is clearly re-used material of the Puuc type; in other instances, the decision as to whether the dressed stone is of Puuc or Mayapán type depends on rather subjective evaluation of the quality of the stone and the care taken in its dressing.

Patches of two thick coats of plaster still adhere to the inner walls of the temple. Careful examination failed to reveal any trace of painting or other decoration.

Large chunks of roofing plaster, averaging 0.15 m in thickness, were found in the debris filling the rooms of the temple. Underlying the plaster were many thin slabs of limestone. The flat upper surface of the plaster was invariably well smoothed. From this evidence, it may be inferred that the temple had a flat roof composed of a thick layer of plaster and thin slabs of limestone supported by wooden beams, all trace of which has disappeared.

In its final form the temple had an anteroom and a shrine room to the rear. Access to the anteroom was provided by a triple doorway formed by the two serpent columns, and a wide doorway in the rear wall of the anteroom opens into the shrine room (Figs. 32.1a; 32.3k).

The floor of the anteroom is raised above the level of the terrace, so that there is a low step in the front doorway, and a step down into the shrine room

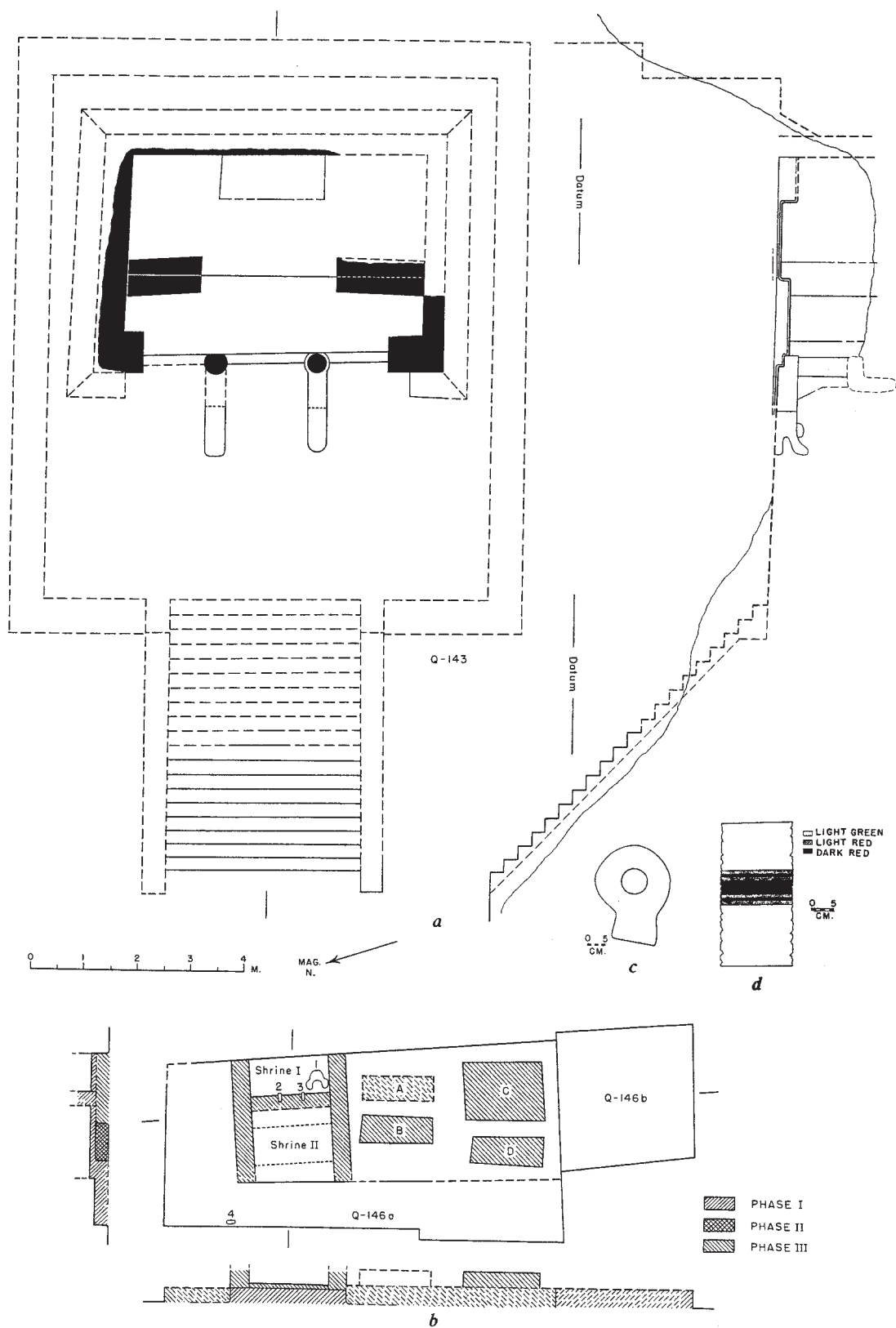
(Fig. 32.3c). A similar elevated flooring was found in the outer room of the Castillo, Str. Q-162 (Shook 1955).

A rectangular altar about 0.30 m high was in a central position against the rear wall of the shrine room (Fig. 32.1a). The altar was faced with dressed stone and filled with earth and rock (Fig. 32.3g). The floor plaster turned up smoothly over the altar face, forming a continuous surface over the top of the altar. Roofing debris was found inside the altar, and stones had been removed from the altar face, indicating that the altar may have been looted before the collapse of the roof.

Interior arrangements differed somewhat in earlier phases of the temple. Four floors were found in a test made in the shrine room (Fig. 32.1a, section). The first and lowest of these was covered by 0.20 m of earth and rock fill, on which the three later floors were placed. The relation of the lowest floor to the present superstructure could not be ascertained in the limited test made. The second floor ran under the platform in the anteroom, a fact which shows that the stepped arrangement was a later innovation. Traces of an altar which had been ripped out were found on this floor in the same position as the later one, but the earlier altar had been somewhat smaller than the later. The last two floors run over the anteroom platform and under the medial walls which divide the anteroom from the shrine room. Thus it can be seen that there were three phases of alterations in the interior of the temple:

1. A single, evenly floored room was built, with serpent columns forming a triple doorway. A rectangular altar was placed against the rear wall.
2. A platform was built across the front of the room, and the earlier altar was replaced by a larger altar.
3. A medial wall with a wide central doorway was built at the rear of the platform, making a definite separation between the anteroom and the shrine room.

A number of points should be noted about the serpent columns. The two tail pieces found on the platform indicate that the conventional rattles were placed on the tops of the pillars (Fig. 32.3h,i,k). The better preserved of the tail pieces has a dowel on its tip, indicating that an additional element was once present. The serpent heads, which were directly on the terrace floor, were not set against the columns, but about 0.70 m forward. The resulting space was filled with large and small stones, which were then covered with plaster, so that the heads were joined to the columns (Fig. 32.3k). The columns, like those of Strs. Q-159 and Q-218, are single shafts embedded in the rock fill of the terrace.



32.1. Strs. Q-143 and Q-146.

a. Plan and section of Str. Q-143. b. Plan and sections of Str. Q-146. 1. Base of statue (Fig. 4d,e). 2-4. "Ring stones" (Fig. 32.4d,e). c. "Ring stone" from Str. Q-146. Height 27 cm, max. width 20 cm, diameter of hole 7 cm. d. Drawing of painted decoration covering west side of buried platform under Shrine II of Str. Q-146.

The heads, which are shown with gaping jaws, are not identical (Fig. 32.3j-l). The north head is 0.97 m long, the south head only 0.86 m. The north head has two shallow holes, 0.045 m in diameter, in the nose, and the south head has none. The nose of the south head is rounded, and the nose of the north head is blunt and squared off. The south head is approximately 0.52 m high; the north head probably was somewhat higher. The north head lacks the supraorbital carving present on the south head. Finally, the fangs on the south head are shown in relief, and on the north head are outlined by incised lines. Other minor differences might also be noted.

Bits of painted plaster, which was applied to the heads and tail pieces as a very thin coating, give some indication of how the serpent columns must have appeared originally. The rattles of the tail (Fig. 32.3h,i) retain flecks of bluish-green paint, with red paint on the base of the tail. The sides of the tail were apparently bluish green from top to bottom. Fragments of bluish-green plaster were found in some quantity around the serpent heads. One fragment from the top and side of the body area between the head and the column was painted orange on one surface and green on the other. This would suggest that the top of the body was painted orange and the sides green. The third and fourth of the five coats of plaster on the south column have traces of green paint with indications of designs formed by black lines. Red paint was observed around the eyes of the south head and on the roof of the mouth of the north head.

No trace of plumage was present on the sculptured surfaces of the heads, but one cannot rule out the possibility that plumage was represented by painted decoration on the plaster coating. The pottery, which was concentrated in the shrine room, was predominantly from human effigy incensarios. A sherd of Mayapán Redware found embedded in ceiling plaster indicates that a few sherds may have come from this source.

A single subspherical bead of a dull greenish stone was found in the debris in the shrine room.

STRUCTURE Q-146 (270 S, 225 W)

Directly west of Str. Q-143 is a long platform standing about 0.30 m above the plaza floor (Fig. 32.1b). Since the platform is not centered on any adjacent structure, we are treating it as a separate unit. Before investigation it appeared as a raised area in the plaza, with an occasional section of the outer retaining wall exposed. The platform was covered by a thin layer of debris, and a few small trees and shrubs were growing on its surface.

When clearing was started on the platform, it was intended that excavation should be limited to obtaining a plan of the structure. The discovery of "ring stones" in situ and an earlier buried platform, however, led to more intensive excavation. Unfortunately, there was not sufficient time to work out all the details of construction and the temporal relation to adjacent structures.

In its final form the platform consisted of a rectangular unit with projecting bays at the southeast and southwest. The asymmetrical plan was the result of the incorporation of separate earlier platforms into a unified structure (Figs. 32.1b; 32.4a).

The retaining wall of the platform was constructed of well cut blocks of stone which may have been re-used. One upright stone was usually sufficient to give the wall its desired height, but in places two stones were used. The fill of the platform consisted of rocks and soil.

Near the north end of the platform are two shrines (Figs. 32.1b; 32.4b,e), the sides of which are parallel rows of well dressed stone. Another low stone wall, perpendicular to the side walls, serves as a common rear wall for the two shrines (Fig. 32.4e). Shrine II on the west is entered by a low step, which apparently extended south beyond the shrine, forming a step along most of the western side of the platform (Fig. 32.4a, b). The side walls of Shrine I extend to the edge of the east retaining wall of the platform. Since the walls are only one stone high and there was very little debris over the shrines, one may suggest that there had been a superstructure of perishable materials with a thatched roof.

Two unusual features were found in Shrine I, which is centered on the stairway of the serpent column temple, Str. Q-143, to the east. The first was the base of a limestone statue still retaining traces of red-painted plaster on the feet (Fig. 32.1b,1). Only the feet and the lower part of the limbs remained (Fig. 32.4d,e). The statue obviously had been moved, and may once have occupied a central position in the shrine. The second feature consisted of two "ring stones" incorporated in the rear wall of the shrine (Figs. 32.1b,2,3; 32.4d, e). There are two possible interpretations of the relation of the ring stones to the shrine. The first is that they were originally part of the furnishings of the shrine, and that the rear wall was only two stones thick. Accordingly, the row of stones incorporating the ring stones was a later addition which made the rear wall three stones thick. An alternative interpretation is that the ring stones were set into the top of an earlier platform which exists under the shrine, and that they were incorporated into the later shrine wall at the time of its construction. Thus, the rear wall of the shrine

would have been three stones thick in its original form. One might tend to favor the latter interpretation if the assumption is correct that a statue occupied a central position in the shrine.

A third ring stone (Fig. 32.1b, 4 and 1c) was found near the northwest corner of the platform. There is some doubt whether it was actually in place, although it was in an upright position when uncovered.

Any interpretation of the use of these ring stones must at present remain largely speculative. Perhaps men or animals which were to be sacrificed were tied to them. Several ring stones have been found at Mayapán, but it may be of particular interest to note that one was embedded in Floor 9 north of the Castillo, Str. Q-162 (Shook 1955). The base of the ring stony rested on a boulder in the fill between Floors 8 and 9, about 1.5 m from the bottom of the fifth step of Str. Q-77. The greater part of the top of the ring was missing, but it could not be ascertained whether this damage was associated with the laying of later floors or was accidental.

On the central part of Str. Q-146 are four small rectangular platforms (A, B, C, and D in Fig. 32.1b). These small platforms are about 0.30 m high and are constructed of fairly well dressed stone. They may have served as bases for stucco figures, since stalactites, a stucco face (Fig. 32.4f) and a stone foot were found near them. The stucco elements found here, and in other excavations at Mayapán, suggest that the stucco figures may have resembled human effigy incensarios very closely.

As was mentioned previously, Str. Q-146 incorporates earlier construction. The area designated as Q-146b in Figure 32.1b is one such earlier platform, with its north face almost entirely concealed by the later construction.

Under the shrines at the north end of the platform is another earlier platform, rectangular in plan (Figs. 32.1b; 32.4c). The top of the early platform is only slightly below the surface of the later one, and was presumably covered only by the plaster floor of the shrines. The north and south faces of the platform are directly under the side walls of the later shrines. The east face is exposed, having been incorporated into the east face of the retaining wall of the large, late platform. An addition on the west subsequently changed the plan of the early platform from rectangular to square, with the north and south faces again, directly under the walls of the later Shrine II.

Well preserved painted decoration was found on the west and north faces of the early rectangular platform, giving some idea of the original appearance of such platforms. The plaster on which the paint is applied forms a continuous surface with the plaza floor, and turns smoothly over the edge of

the platform (Fig. 32.4c). The decoration consists of a central band of light and dark red stripes, above and below which the plaster is painted a solid bluish green (Fig. 32.1d).

We do not know whether there was earlier construction under the central part of the late platform, since there was no time to excavate in this area. The bay on the southwestern part of the late platform, however, suggests the possibility of an earlier platform adjacent to Q-146b.

STRUCTURE Q-218 (330 S, 250 W)

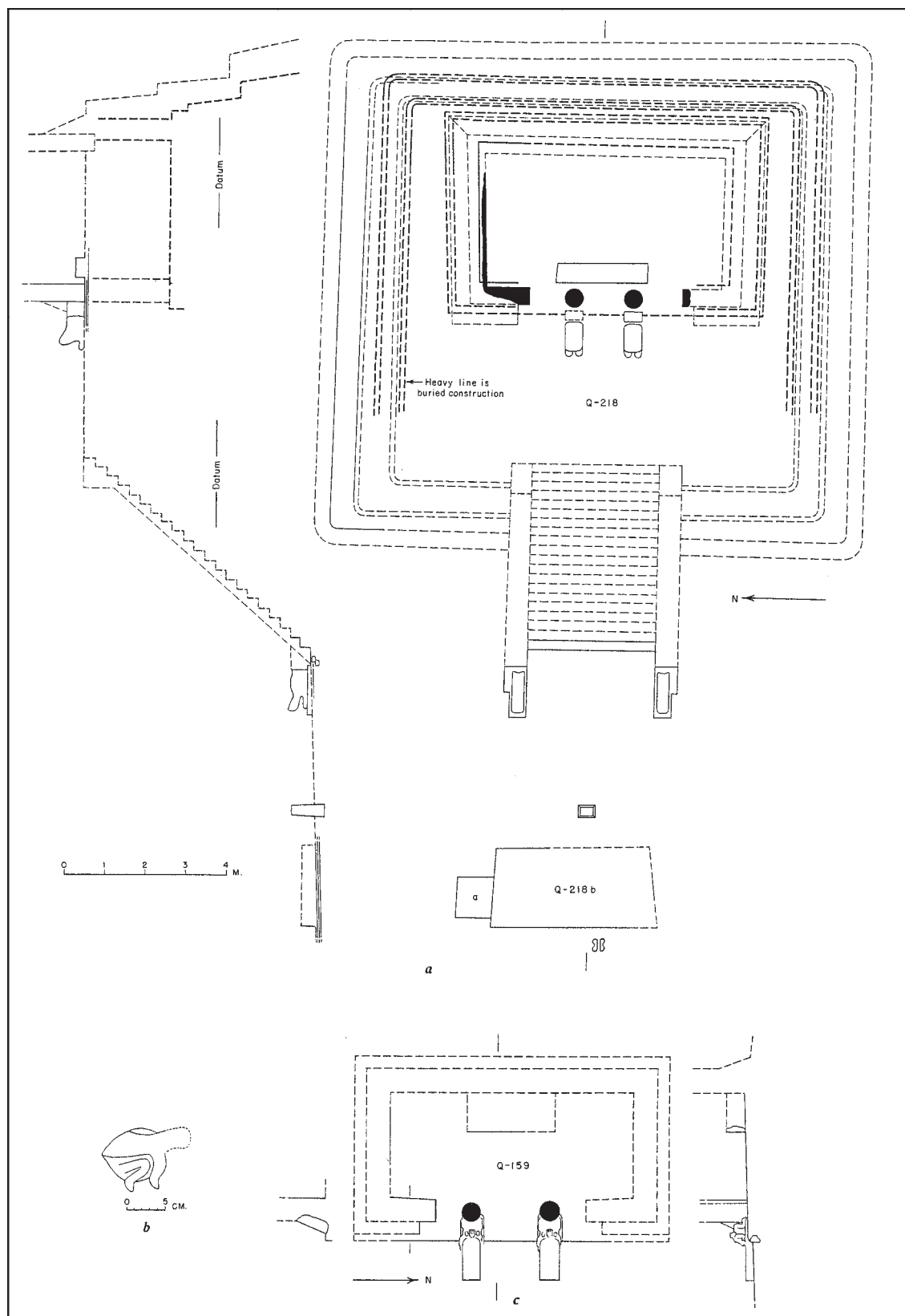
The temple Str. Q-218 is on the east side of a plaza and surrounding buildings that form a southern extension of the main ceremonial group. The structure faces west. At its northwest corner is the small building Str. Q-217, and to the west are the low platforms Q-218a and b (Figs. 32.2a; 32.5a).

Small excavations had been made by E. Wyllys Andrews in 1942 around the serpent heads on the summit of the pyramid and in the north doorway of the temple. The investigation reported here included the almost complete clearing of the superstructure, excavation at the bottom of the stairs, and partial exposure of the first and second terraces on the north side of the pyramid. The substructure of an earlier pyramid was investigated by cutting through the terraces of Str. Q-218 at two places on the north side.

A small test was also made at the puncture of Strs. Q-218 and Q-217. It was established that Str. Q-217 was of later construction, since it was built directly against the battered wall of the first terrace of the secondary substructure of Q-218. A considerable quantity of pottery and burned bone, both animal and human, was encountered along the east side of Str. Q-217, the bulk of the deposit consisting of a fine gray ash.

The substructure of Str. Q-218, which is constructed of roughly cut slabs of limestone, has three terraces, the lowest of which definitely has a batter (Fig. 32.5d). The second terrace now rises vertically, but it has been shoved out and bowed considerably, and so may also have had a batter originally. Roughly shaped quarter-round stones are used to form the rounded corners of the pyramid. The fill underlying the terraces consists of rather neatly stacked slabs of limestone placed on the terraces of the buried pyramid (Fig. 32.5b).

Clearing of the stairway on the west side was limited to uncovering the lower two steps and balustrades and the serpent heads at the foot of the balustrades (Fig. 32.5e). Both the steps and the balustrades are constructed of well dressed stone. The



32.2. Strs. Q-218, Q-218 SUB, Q-218a and b, and Q-159

a. Plan and section of Strs. Q-218, Q-218 sub, and Q-218a and b. b. Cache vessel between sculptured stones west of Str. Q-218b; Porous Gray Ware, painted blue on exterior. Height ca. 5.5 cm, length without head 8 cm, orifice diameter 3.1 cm. Lot C-98b. c. Plan and section of Str. Q-159.

stone in the steps is re-used material, but the rectangular blocks composing the balustrades may be dressed stone of the Mayapán type. The area directly in front of the stairway was leveled by footing composed of two courses of stone (Fig. 32.5e).

At the foot of each balustrade is a serpent head which rests on a platform about 0.10 m high (Fig. 32.5e–i). Both well cut stone and roughly dressed slabs were used in the construction of the platforms.

The north head is badly weathered, but seems to be identical in detail with the south one. The heads are portrayed with the conventional open haws, and the eyes are shown extruded from their sockets. Traces of red plaster were found on the roof of the mouth of the south head, and white plaster was noted on the tongue. No indication of plumage was seen. The space between the back of the head and the balustrade was filled with stone, which was presumably plastered over to form the body of the serpent.

The platforms on which the heads rest cover the lower part of the balustrades, and must have been constructed somewhat later than the balustrades. The backs of the heads are concave, a point which perhaps indicates that they were once placed directly against columns. The relation of the heads to the floors of the plaza could not be ascertained.

Directly in front of the stairway is a badly weathered altar or “sacrificial stone” shaped like a truncated pyramid (Figs. 32.2a; 32.5a). The altar, which rests on bedrock, stands 0.58 m above the plaza floor, and the dimensions of the partly destroyed top were approximately 0.32 by 0.29 m.

At the rear of the pyramid summit are the poorly preserved remains of a temple consisting of a single room. Parts of the walls were standing on the north and west sides, but the east and south walls had disappeared completely. Most of the stone from the walls was scattered over the pyramid terraces, and the thin layer of debris on the summit consisted mainly of earth, ceiling plaster, and a few stones. A small quantity of sherds, including effigy incensario fragments, was found on the temple floor.

The walls of the temple are constructed of rough slab masonry, and well dressed stone is used only in the facing of the battered lower wall zone, the doorjambs, the columns, and the facing of the altar. The altar facing is almost entirely reused stone of the Puuc type; the columns, battered wall facing, and doorjambs may be dressed stone of Mayapán type (Fig. 32.5j,k).

Traces of three floorings were found in the temple, but these were so poorly preserved that they could rarely be related to architectural features. The lowest of the floors was on a layer of grouting approximately 0.14 m thick.

A triple doorway formed by the two serpent columns provides entry into the temple on its west side. A rectangular altar stands only 0.15 m behind the columns. Near the northwest corner of the building a section of battered lower wall facing is still standing (Fig. 32.5k). Since the exterior face of the walls was not preserved elsewhere, it was impossible to ascertain whether the batter was present on the back and sides. It presumably was restricted to a basal zone, with the upper part of the walls rising vertically. No evidence was noted for a plinth’s ever having been present.

The serpent heads in front of the columns are badly damaged, with the south head the better preserved of the two (Figs. 32.4g,h; 32.5l). Very human-looking hands project forward from the bottom of the heads, which may have been of the conventional serpent type with gaping haws. A strikingly similar arrangement is seen on a carved stone from Champoton, Campeche (Fig. 32.4k). A fragment of undecorated stucco was found on the under side of the north head.

The heads were placed directly on the terrace floor, and a space of about 0.30 m between each head and its column was filled with rock, which was then covered with plaster.

It is difficult to relate the heads temporally to the temple, but there were indications that two, and possibly three, coats of plaster had been applied to the columns before the serpents were placed against them. The floors on the terrace were poorly preserved, and the relation between the floors and the heads could not be worked out satisfactorily. It might be suggested, however, that the serpent heads were put in place somewhat later than the construction of the temple proper. Since the tail elements would almost certainly have been contemporaneous with the building of the temple, the delay in placing the heads might be explained by assuming that the heads were not finished until later, or that they replaced earlier pieces. Perhaps the heads at the foot of the stairs were originally against the columns.

The upper part of a tail element was found on the southwest corner of the pyramid summit, and its base was found on the plaza floor off the southwest corner of the pyramid (Fig. 32.4i,j). Part of another badly weathered tail element was found on the terrace directly in front of the central doorway of the temple.

Investigation of the rectangular altar behind the columns (Fig. 32.5j) showed that it had been filled with earth and a few rocks. A few patches of plaster surfacing remain on top, and at least one floor runs under the altar. The floor at the rear of the room was checked for traces of an earlier altar, but



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i



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k



l

32.3. Str. Q-143

a. Stairway and balustrade from southwest. b. Battered basal zone and south doorjamb of temple from northwest. c. View looking into anteroom from northeast, showing south section of medial wall and step down into shrine room. d. South end of anteroom from north. e. North end of shrine room from south. North end of altar at lower right. f. South section rear wall of anteroom from west. g. Altar in shrine room after clearing, from northwest. Missing stones in face of altar had been removed before excavation. h,i. Serpent tail from between columns of doorway. Height 84 cm, max. width 33 cm. j. South serpent head from south. k. South serpent column from northeast. l. North serpent head from south.

if such an altar was present, all evidence for it has disappeared.

An effigy tripod cup had been buried in the center of the altar (Fig. 32.4o). The vessel was filled with earth in which were three small shell beads, two of them disk-shaped, one rectangular.

Just outside the central doorway was a concentration of obsidian chips, flake blades, and a single well chipped semicircular scraper. The obsidian seemed to be mixed with a thin layer of roofing debris and earth, but it may have been on a floor which has disintegrated.

Three carved stones were found in the debris of the temple. One was a spade-shaped element of limestone (Fig. 32.4m) found in the debris off the northeast corner of the altar. The other two were molding stones of the Puuc "guilloche and pleat" type (Fig. 32.4l), found in the debris on the terrace in front of the temple.

Examination of exposed portions of the buried pyramid, designated Str. Q-218 sub, showed that it was very similar to the later substructure. Rough slab masonry was used in the construction of the two narrow, battered terraces covered with white lime plaster. Crudely dressed quarter-round stones were used at the corners (Fig. 32.5b). The superstructure apparently consisted of a single room with a narrow plinth around it. Only the roof had been removed from the temple walls, which were then used as foundation for the later temple. Slab masonry, with an occasional well cut, re-used stone, was used in the walls of the room (Fig. 32.5c,d). The earlier temple was slightly larger than the one which covered it, but was probably very similar to it in plan. Excavation of the buried room was limited to removal of the upper part of the rock and earth fill at the north end of the room, and the only artifacts recovered were a few sherds. No plaster remained on the walls that were exposed.

The fill over the buried substructure contained a fair amount of pottery, a few obsidian flake blades, and pieces of two flint blades or projectile points. A few incensario sherds were among the pottery, but these may be intrusive, inasmuch as the terrace floors had disintegrated.

STRUCTURES Q-218A AND B (330 S, 265 W)

Directly west of Str. Q-218 is a nearly rectangular platform with a bay projecting on its north side (Figs. 32.2a; 32.5a). The platform, which stands only 0.36 m above the plaza floor, is faced with well cut, re-used stone, and is filled with earth in which a few sherds were mixed. Many of the sherds may have penetrated into the fill from above, since the plaster surface of the platform has completely disintegrated.

Str. Q-218a is faced with cut stone on all four sides, indicating that it was constructed before Q-218b. The plaza floors have disappeared around Str. Q-218a, but are well preserved under and around Str. Q-218b. On the west side of the latter, four floorings of the plaza were identified, of which three run under the platform and the uppermost turns up to it (Fig. 32.2a, section). Thus, we can say that Str. Q-218b was constructed rather late so far as the plaza floors are concerned, but we cannot infer how much earlier Q-218a is than Q-218b. The lowest two floors running under the platform may correspond to two floors found in front of the steps of Str. Q-218.

The platform was trenched thoroughly, but no caches were discovered. A few stalactites were found on the surface of the platform, indicating that stucco figures may have been present.

A pair of sculptured stones were set into the plaza floor about 0.30 m from the west side of the platform (Figs. 32.2a; 32.4n). The stones are set close together, and each has a groove running down its outer face. Since the upper part of the stones has disappeared, we can only suggest that they may have formed the lower limbs of stucco figures.

Two small cache vessels had been placed between the two stones at their bases. The vessels were poorly preserved, but enough of each was restored to show that they were almost identical effigies of a toad or frog (Fig. 32.2b). They are reminiscent of an effigy vessel from Str. Q-71 (Adams 1953, Fig. 9c, left).

When the four floorings of the plaza around the stones were examined, it was found that the stones cut through the lowest plaza floor, and that they may cut through the next floor as well. The upper two floors turn up to the stones. Since only the last floor of the plaza turns up to Str. Q-218b, the stones



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32.4. Strs. Q-146 and Q-218.

a. General view of Str. Q-146 from northwest. b. Str. Q-146. Shrine II from west. c. Str. Q-146. West face of buried platform from southwest. A single stone in wall of addition to buried platform shows beneath wall belonging to Shrine II. d. Str. Q-146. Shrine I from north. "Ring stones" and base of statue in situ. e. Str. Q-146. Shrines I and II from east. Shrine I in bottom half of picture; Shrine II in top half. f. Str. Q-146. Stucco face. Height 13 cm, width 10.5 cm, thickness 9 cm; Cat. no. 54-255, Lot C-102. g,h. Str. Q-218. South serpent head on temple summit from north and from south. i,j. Str. Q-218. Serpent tail from south (?) serpent column. Tail is 96 cm, high, 43 cm, wide at bottom, 92 cm long. k. Sculpture of serpent head in restaurant (1951) in Champoton, Campeche. l. Molding element from debris on summit of Str. Q-218. m. Str. Q-218. Limestone object from debris behind altar; 28 by 16.7 by 5.5 cm; Cat. no. 54-193, Lot C-96. n. Sculptured stones west of Str. Q-218b. Each stone is 32 cm high, 25 cm. wide. o. Cache vessel from altar of Str. Q-218. Porous Gray Ware; rear half painted white, front half light greenish blue, with features of the face painted red. Rim diameter 5.5 cm, height 10 cm. Lot C-96b.

must have been put in place before the construction of this part of the platform.

STRUCTURE Q-159 (260 S, 300 W)

The temple Str. Q-159 is directly south of the Castillo. The temple faces east, and is almost directly opposite Str. Q-143, described in the first part of this report. At the foot of the stairs on the east side is a low platform which is probably similar to the platforms Q-146 and Q-218a and b adjacent to Strs. Q-143 and Q-218, respectively. South of the southeast corner of the pyramid is a wall with a gateway leading to a shrine. West of the shrine is an atypical columnar building, and just beyond this is a small platform suggestive of living quarters. All these structures are above the level of the plaza floor.

Excavation was concentrated on the uncovering of the superstructure, with minor digging at the base of the stairs and on the sides of the substructure.

The substructure consists of three narrow terraces with battered walls and rounded corners formed by well shaped quarter-round stores. The second terrace has a batter of 0.15 to 0.20 m in a height of 1.40 m. The masonry of the substructure is of typical Mayapán slab type (Fig. 32.6a).

A balustraded stairway constructed of well shaped stone is on the west side of the pyramid (Fig. 32.6b). The stairs have a width of 3.60 m between balustrades, and each balustrade is 0.38 m wide.

At the rear of the pyramid summit is a temple consisting of a single room, with a triple doorway formed by two serpent columns (Fig. 32.2c). There was an altar at the rear of the room, but only the east face of this feature is preserved. The walls of the superstructure are in very ruinous condition, but sufficient portions of them remain on the east and south and at the southwest corner to permit reconstruction of the plan of the building.

The temple has a battered basal zone at least on the east side, where the outer facing of the walls is preserved (Fig. 32.6c). Perhaps the batter ran completely around the structure, but this point must

remain in question. A plinth runs across the front of the building (Fig. 32.6d,e), but the sides of the temple are in too ruinous condition to ascertain whether the plinth was present on the other three sides.

The walls of the temple are of typical Mayapán slab masonry. The plinth, jambs, one column, and the facing of the small platforms under the serpent heads are constructed of well cut, re-used stone of the Puuc type; the stone forming the battered wall zone and the altar facing may be dressed stone of the Mayapán type.

Two floors were found on the terrace in front of the building. Only one floor could be identified in the building, but it may be that the upper floor had disintegrated completely. The one that is present runs under the altar. The floors consist of the usual lime cap over a layer of marl (*sascab*) and pebbles which is about 0.10 m thick. Underlying the floors is the loose fill of the pyramid.

A serpent-tail base was found southeast of the north column of the temple, and its top was located on the side of the pyramid near the northwest corner (Fig. 32.6j,k). A dowel-like tip had been broken off the top of the tail. Another badly weathered tail of similar design was found at the foot of the pyramid near the southeast corner. Both tails are more elaborately carved than other examples observed at Mayapán.

The stucco figures in front of the columns of the temple were placed on low platforms faced with re-used, carved Puuc type stones which had been covered with a heavy coating of stucco (Fig. 32.6d-h). Large stones served as a sort of rough armature around which the stucco figures were modeled. The surviving parts of the stucco possibly portray an "earth monster" crouching, with the buttocks directly against the stone column at the rear. Since these figures are well to the rear of the platforms, there may well have been additional stucco work farther forward. Pollock suggests in his field notes that the figures in their original state may have consisted of a monster with open jaws, possibly containing a human face, and that the monster rested on the



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32.5. Strs. Q-218, Q-218 sub, and Q-218a and b.

a. View from top of Str. Q-218 over plaza to west. Altar at center; trench through Str. Q-218b just beyond altar. b. Northwest corner of buried structure, Q-218 sub, from northwest. c. Str. Q-218 sub. Interior of buried room from southeast. d. Strs. Q-218 and 218 sub. Substructure from north. Terraces 1 and 2 of secondary structure in bottom half of picture; wall of buried temple at top center. e. Str. Q-218. Stairway and serpent heads from northwest. f. North serpent head at base of balustrade, from north. Head is ca. 95 cm long, ca. 45 cm high. g-i: South serpent head at base of balustrade from north, from northwest, and from west. Head is ca. 1 m. long, ca. 45 cm high. j. Altar and columns of temple from northeast. k. Battered basal zone and north doorjamb from southwest. 1. Serpent heads and columns on temple summit from southwest. Head at lower right is 92 cm long, 65 cm high.

back of a serpent with the usual gaping jaws placed at the front of the platforms. No evidence of painted decoration was seen on the stucco.

A limestone turtle (Fig. 32.6p) with a hemispherical depression in its back was found in front of the altar. The turtle, which has a human head, was either directly on the floor or just above it. The presence of mortar on one side and on top of the head, however, suggests that it may have been set in masonry.

Several sculptured stones were found in the course of excavation. A spool-shaped element (Fig. 32.6n) with deep depressions in each end was found between the stucco figures, just south of the serpent tail. One of the depressions has plaster in it. Another carved stone was found just north of the north column (Fig. 32.6l). Three "guilloche and pleat" molding stones were found in the debris, one of them at the foot of the stairway (Fig. 32.6m). Another oddly shaped stone (Fig. 32.6i), possibly a mask element, was also found at the foot of the stairway. A banded column altar of Mayapán type (Fig. 32.6o), found off the southeast corner of the pyramid, may be from Str. Q-159, or it may be associated with the shrine to the south. A large female figure and an animal "banner holder" were also noted near the southeast corner.

The debris in the temple contained a single "jade" bead, a small tripod cup (Shook 1954, Fig. 32.10s, for illustration of a similar cup), and a quantity of sherds, many of them from human effigy incensarios.

COMPARISON OF STRUCTURES Q-58, Q-143, Q-159, AND Q-218

In the following comparison, we shall attempt to point out the major similarities and differences among the three structures covered in this report and Str. Q-58 (Shook 1954:254-258).

The substructures of Strs. Q-58, Q-159, and Q-218 consist of two or three battered terraces, but the terrace walls of Str. Q-143 may rise vertically. The stairways on two of the pyramids face west, and on the other two, east. Well cut stone was used in all the stairs and balustrades. Str. Q-218, unlike the other

pyramids, has serpent heads at the foot of the balustrades. In front of each structure there are one or more low platforms or shrines.

Strs. Q-159 and Q-218 each have a superstructure consisting of a single room. Str. Q-58 has a small enclosed shrine in the rear of the room, and Str. Q-143 has an anteroom and a shrine room, with the level of the anteroom higher than that of the terrace in front and the shrine room at the rear. Originally, Str. Q-143 had but a single, evenly floored room. Str. Q-58 is the only one of the four which has a shaft penetrating the pyramid from the floor of the temple.

Mayapán slab masonry is used for the walls of the temples, but well dressed stone of Mayapán or Puuc type is used in the battered lower wall and altar facings, plinths, and door columns.

The altars in Strs. Q-143 and Q-159 are placed against the rear wall of their shrine rooms, whereas the altar in Str. Q-218 is a freestanding feature placed very close to the central doorway of the room. Apparently Str. Q-58 had no altar.

A battered basal zone has been noted on the exterior walls of Strs. Q-143, Q-159, and Q-218, but the walls of Str. Q-58 rise vertically. Only Strs. Q-58 and Q-159 have a plinth.

Each of the temples has a triple doorway formed by two columns, apparently surmounted by serpent tails. The carving on all the tails is quite similar, except for the examples found on Str. Q-159.

The sculptured and modeled heads which abut the columns vary greatly in detail. The heads which Shook indicates as possibly belonging to Str. Q-58 were too badly damaged to permit any sort of detailed description. Str. Q-143 has stone serpent heads with gaping jaws and a body formed of rocks covered with plaster. The stucco figures on Str. Q-159 are grotesques, possibly representing an "earth monster" astride a serpent's back, the head of which may have been modeled in stucco in front of the monster. The heads on Str. Q-218 are probably of the gaping jaw variety, but have human hands. Like the serpent heads on Str. Q-143, these heads have a body consisting of rock covered with plaster. The serpent heads at the foot of the balustrades of Str. Q-218 are shown with gaping jaws, and have "extruded" eyes.



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32.6. Str. Q-159

a. Northwest corner of pyramid, from west. b. Foot of stairway and south balustrade, from northeast. c. South door-jamb and battered basal zone. d. View of temple from southeast, showing stucco figures, columns, and plinth. e. Stucco figures and columns from northeast. f,g. South stucco figure from south and from north. h. North stucco figure from south. i. Mask element (?) from debris at foot of stairway. Max. height 65 cm, max. width 38 cm. j,k. Serpent tail, presumably from north column. Height 70 cm, max. width 41 cm, thickness 21 cm. l. Carved element from debris in temple; 10 by 30 cm. m. Molding element found at foot of stairway; 20 by 44 cm. n. Spool-shaped element from between stucco figures. Height 27 cm; diameter at top ca. 23 cm; hole in top 12 cm in diameter, 12 cm deep. o. Column altar off southeast corner of pyramid. Max. height 56 cm, diameter 40 cm. p. Limestone turtle; 29.6 by 17.5 by 12.4 cm; Cat. no. 54-58, Lot C-66.

Low platforms were placed under the heads on Str. Q-159 and at the foot of the balustrades of Str. Q-218. All other heads were placed directly on the floor.

Painted plaster was noted on heads and tail pieces from Strs. Q-143 and Q-218. Sculptured plumage was not found on any of the heads, but, as was suggested above, one cannot rule out the possibility that such details were painted on the plaster covering the sculpture.

All the temples were probably in use late in the history of Mayapán, since sherds from human effigy incensarios were found on their floors.

Though we cannot set up a uniform type of architecture for serpent column temples at Mayapán, we can suggest that the four structures have sufficient elements in common to be regarded as variants of a basic type. We would define the basic type of building as one which has a pyramidal substructure with two or more battered terraces, a single stairway, a super structure consisting of a single room with a battered basal zone around the exterior, and a triple doorway formed by serpent columns with sculptured or modeled heads in front of them. Painted decoration on the temples may have been limited to the serpent columns, although it is possible that the lack of paint on the wall plaster is the result of the disappearance of fugitive colors.

MATERIALS RECORDED

Artifacts and pottery are listed below. The whole vessels illustrated in Figures 32.2b and 32.4o are described in their legends. The pottery was analyzed by E. M. Shook.

STR. Q-143.

Lot C-101: in debris inside temple: bead, greenish stone, subspherical, 1 cm in diameter, 0.7 cm thick, Cat. no. 54-267; 1 obsidian flake blade.

Total sherds: 1,339: 3 Puuc period; 1,336 Maya-pán period (Unslipped, 11; Non-Effigy censers, 16; Human Effigy Type censers, 1,285; Mayapán Red, 21; Fine Orange, 1; Black-on-Cream, 2).

STR. Q-146.

Lot C-102: in debris on surface of platform: stucco face (Fig. 32.4f); 16 stalactites; 8 fragments of modeled stucco; 2 animal bones; 1 obsidian flake blade.

Total sherds: 641: all Mayapán period (unslipped 284, Human Effigy Type censers 241, Mayapán Red 114, Fine Orange 1, Black-on-Cream 1).

STR. Q-159.

Lot C-66: from debris in front of altar: limestone turtle (Fig. 32.6p); 1 jade bead, Cat. no. 54-59; 2 limestone hammerstones, cat. nos. 54-56, 54-57; modeled stucco.

Total sherds: 653: all Mayapán period (Unslipped, 1; Human Effigy Type censers, 631; Mayapán Red, 21).

STR. Q-218.

Lot C-95: from fill over buried structure: blade tip, flint, 3.1 cm wide, 3.7 cm high, 0.8 cm thick, Cat. no. 54-197; projectile point fragment, flint, 1.8 cm wide, 3.7 cm high, 0.7 cm thick, Cat. no. 54-196; 42 fragments of obsidian flake blades; 1 obsidian chip; 3 unworked shells; 15 animal and bird bones.

Total sherds: 811: 6 Puuc period; 805 Mayapán period (Unslipped, 308; Non-Effigy Type censers, 8; Human Effigy Type (?) censers, 40; Unidentified, 6; Mayapán Red, 420; hard Redware, 1; Fine Orange, 2; Black-on-Cream, 20).

Lot C-96: in debris on summit of pyramid: obsidian scraper, semicircular in shape, 2.6 cm wide at base, 0.9 cm thick, Cat. no. 54-194; spade-shaped object of limestone (Fig. 32.4m); 21 obsidian flake blades; 3 obsidian chips; 1 flint chip.

Total sherds: 205: all Mayapán period (Unslipped, 11; Noneffigy Type censers, 14; Effigy Type (?) censers, 163; Mayapán Red, 17).

Lot C-96A: from fill in room of buried temple.

Total sherds: 24: 15 Puuc period; 9 Mayapán period (Unslipped, 5; Mayapán Red, 4).

LOT C-96B: contents of cache vessel (Fig. 32.4o) in altar: 3 shell beads, 2 disk-shaped, 0.5 cm in diameter by 0.1 cm thick, and 0.6 cm in diameter by 0.3 cm thick; one bead rectangular, 0.6 cm by 0.5 cm by 0.4 cm thick, Cat. no. 54-195.

LOT C-97: surface material from debris on north terraces of structure: 4 stalactites; 4 obsidian flake blades.

Total sherds: 288: 1 Puuc period; 287 Mayapán period (Unslipped, 90, Non-Effigy Type censers, 1; Human Effigy Type censers, 79; Mayapán Red, 109; Black-on-Cream, 8).

LOT C-98: surface material from base of stairs, plaza, and platform on west of structure: 4 stalactites; 6 obsidian flake blades; 1 bottle green obsidian flake blade.

Total sherds: 685: 10 Puuc period; 675 Mayapán period (Unslipped, 168; Non-Effigy Type censers, 1;

Human Effigy Type censers, 325; Mayapán Red, 174; Fine Orange, 3; Black-on-Cream, 4).

LOT C-98A: from surface to bedrock at base of stairway, mostly below plaza floor.

Total sherds: 106: 5 Puuc period; 101 Mayapán period (Unslipped, 37; Human Effigy Type censers, 2; Mayapán Red, 56; Black-on-Cream, 6).

LOT C-99: from northwest corner of substructure at juncture with southeast corner of Str. Q-217, mostly from an ashy midden: 92 human, animal, and bird bones and shell fragments; 1 fragment of bone awl (?).

Total sherds: 831: all Mayapán period (Unslipped 265; Non-Effigy Type censers, 76; Miscellaneous censers, 93; Human Effigy Type censers, 104; Mayapán Red, 282; Hard Redware, 1; Red-on-Cream, 2; Black-on-Cream, 2; Fine Orange, 3; Cream ware, 3).

A DWELLING AND SHRINE AT MAYAPÁN

ANN CHOWNING AND DONALD E. THOMPSON

Strs. Q-165 to 168 are situated in the Main Group, southwest of the Castillo (280 S, 350 W). The two principal structures are Q-165 and Q-168 (Fig. 33.1). The former, described in a following section of this report, is immediately adjacent to a colonnaded hall on the east. To the west, Strs. Q-166 to 168 stand on a single L-shaped platform. It was hoped that the chronological relation between these buildings and Str. Q-165 might be established, but the latter is built on a higher outcrop of bedrock and was not connected with the other structures by floors.

STRUCTURES Q-166, 167, AND 168

ANN CHOWNING

STR. Q-168

As indicated above, the principal building of the three discussed here is Q-168, a simple dwelling-type

structure (Fig. 33.1; see Ruppert and Smith 1951:231). It occupies most of the shaft of the L-shaped platform and faces east. In front of it is a small plaza, the terrace wall of which runs eastward from near the northeast corner of Q-168, then south toward Q-165. Another terrace wall supports the north side of Q-168. There are traces of what may have been a staircase on the north side of the plaza, which is roughly rectangular. A plaster plaza floor in fair condition extends under the front wall of Q-168, but the same or a later floor turns up to its exterior bench farther south.

Q-168 was in poor condition, as the result of exposure and the building of a post-conquest wall over its rear wall. The rear and side walls are low and constructed of rough masonry; the upper wall and roof were undoubtedly of perishable material. The front of the house is open, and faced with two parallel rows of stone slabs, set on edge; the back row is 0.05 m higher than the front one. The platform on

which the building is set extends about two-thirds of the way across the front of it; on its north side and for most of its length, it is a rough slab wall, but in front of the south passageway of the house. It becomes a low stone step, made of rectangular slabs laid flat. It is possible that this functioned as the entryway into the house, although the front wall is only 0.45 m high at other points.

The front room contains three benches, two of them rectangular and the third L-shaped. All were faced with a single course of rectangular stones, usually rough, but well cut, Puuc type stones were used for one side of the middle bench. Heights of bench faces vary from 0.17 to 0.50 m, sometimes on one bench. A medial wall, about 0.50 m high and composed of a double row of stones on edge, ran behind each bench. Two sets of roughly shaped jamb stones stood on either side of the passageways to the rear room; the jambs at the front corners of the benches face forward, and those on the medial walls face the passage. The back room is divided in two by a bench, 0.17 m high and faced on one side with one to two courses of well cut, flat stones, which fills the space between the medial wall behind the central bench and the rear wall. The depth of the debris in the northwest corner of the building suggests that a very crude bench may have stood there, but fall from the walls may also account for it. A broken metate rested at floor level in the debris. The plaster floor is well preserved in the other back room, in which a narrow passageway separates the medial wall from a small rectangular bench built against the rear. A wall across the end of the L-shaped front bench apparently was extended here to meet the medial wall; the stone or stones were subsequently removed, but the turn-up of the floor indicates their position.

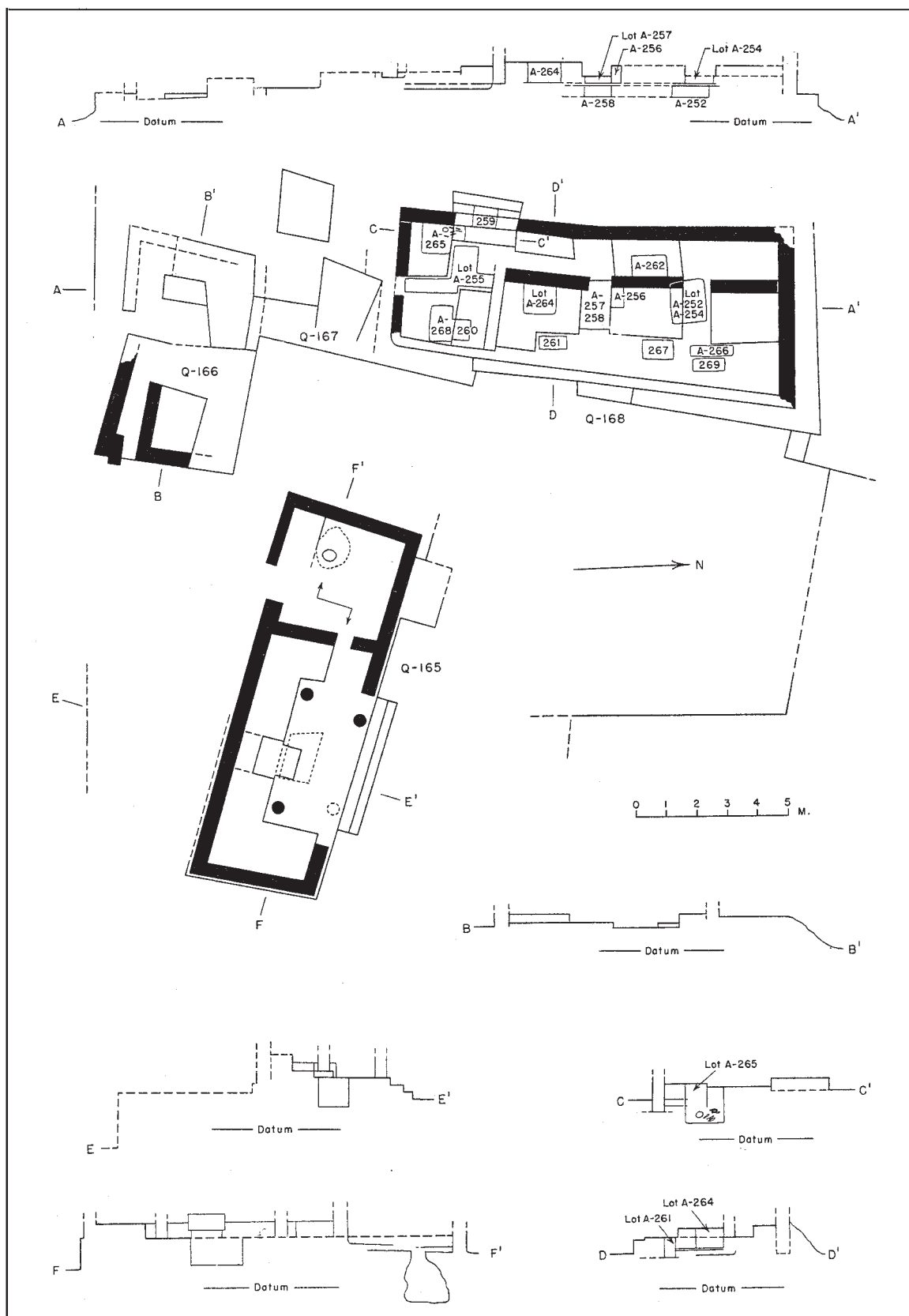
The narrow passageway just mentioned leads into a transverse room which contains two rectangular benches, one filling the southwest corner, and one, built against the end wall of the L-shaped bench, in the northeast corner. Between the bench of the adjoining back room and the southwest bench of this room is a lower line of stones which forms the front of a curious construction, composed of four rows of stone, separated by loose fill, which interrupts the back wall and extends beyond it. At the rear it consists of several neatly laid courses of stone. Excavation inside it gave no clue to its use; presumably it was some sort of exterior bench.

The lower of the two rows of stones across the front of the house ends just beyond the south wall of the front room, but the upper row continues to a point level with the southwest corner of the building. It is joined by a row of stones laid flat which extend, with interruptions, from the front edge of

the northeast bench in the transverse room. The two rows form a rounded corner and continue as a very low line of stones which ends 0.60 m short of the edge of the southwest bench and its side wall. There is some question as to whether this gap is a real doorway or not. The abrupt termination of the wall at the edge of the bench indicates that it is, but there are no jambs and very little room for them. A plaster floor extends through the doorway, but fragments of higher floors indicate that it belonged to an earlier period. It does at least show that there was once an opening here which postdated the construction of the southwest bench.

The passageways and interiors of the benches were investigated (Fig. 33.1), but Str. Q-168 yielded little in the way of human skeletal remains. Except for a few bone fragments in the fill, including several in front of the north bench in the front room, the only burial found lay in the fill under the edge of the southwest bench in the transverse room (Fig. 33.1, Section C-C'). The skeleton was that of a child of 11 or 12, and lay flexed on its left side, with its head and trunk under the edge of the bench. The pelvis and legs had been badly disturbed, and most of the lower bones were missing. There was no sign of a burial cist, and the body lay directly on dry fill. The burial clearly antedated the building of the bench. Near the neck were pierced cowrie shells, presumably part of a necklace, and sifting of the nearby debris yielded several other ornaments, including an engraved piece of flat bone, representing a serpent's head and apparently meant to be glued or sewed to some sort of backing. Two bone awls, one of which was broken, and an obsidian arrowhead probably were also grave goods (Fig. 33.2h; see Lot A-265).

Excavation also revealed that Str. Q-168 is at least the third building on this site. The earlier ones differed considerably in ground plan from each other and from the latest structure, though the earliest contained at least one L-shaped bench. Partial destruction in the course of remodeling, and insufficient excavation, make it impossible to be sure of their plans. Each set of floors was replastered at least twice, and the floor level was built up by the addition of dry fill between the first and second and between the second and third buildings, so that the floor of Q-168 is considerably higher than the upper floor of the earliest structure (Fig. 33.1, Section A-A', D-D'). Only one sealed lot was obtained; it lay between the first and second structures, and contained no Effigy Censer sherds, but only two Puuc period sherds (see Lot A-252). Most of the other lots from below the surface contained Effigy Censer sherds, and Red-on-Buff sherds were found in the fill of the front and side rooms, and inside three of the benches. Although the



33.1.
Strs. Q-165 to Q-168, Plans and Sections.

33.2. Strs. Q-165 and Q-168.

a. Str. Q-165. Interior of main shrine room from northeast, showing niche, altar, dais, and bench arrangement. b. Str. Q-165. Ossuary cist in front of altar, from southeast. c. Str. Q-165. Mayapán Red Ware pot from ossuary cist. Height 11.8 cm, diameter 13.0 cm. Lot A-445. d. Str. Q-165. Metate from interior surface of west room. Lot A-441. e. Str. Q-165. Bark beaters of fine grained limestone from interior surface of west room. Left: grooved on both sides; length 8.8 cm, width 5.3 cm, thickness 3.6 cm; Cat. no. 55-587. Right: grooves on one side covered with plaster, other side polished smooth as though used for rubbing stone; length 9 cm, width 7.2 cm, thickness 4.3 cm; Cat. no. 55-586. Lot A-441. f. Str. Q-165. Pottery figurines from ossuary cist. Left: probably female; has blue earplugs; measures 8.6 cm high. Right: probably male; left earplug outlined in black; two black or blue lines make a V from neck to belt, blue, black, and white *mactli*; black armband; measures 10 cm high. Both figures plastered before painting. Lot A-445. g. Str. Q-165. Mayapán Red Ware pot lid and Unslipped Cinnamon Ware restricted orifice bowl containing cremation, from cave in west room. Diameter of lid 18.3 cm. Height of bowl 14.5 cm, max. diameter ca. 20 cm. Lot A-448. h. Str. Q-168. Artifacts associated with Burial 1. 1. Bone awl, 8.1 cm long. 2. Obsidian arrow-head, 2.9 cm long. 3. Orange and white shell pendant, 2.7 by 2.1 cm. 4. Shell tinkler, 2.3 cm long. 5. Bone carving of serpent head, 2.7 by 2.0 cm. 6. Broken awl, 4.7 cm long, max. width 0.9 cm. 7. Pierced cowrie shells, length 1.0–1.2 cm. Lot A-265.

lots were unsealed, the number of such sherds is so large as to make it appear unlikely that all of them were intrusive, especially in view of the fact that so few sherds of these types were found on the surface. They indicate that the construction of Q-168 dates from late in the Mayapán period. The end wall of the L-shaped bench and the bench in the southwest corner of the transverse room dated from the second structure in that part of the building, where the building sequence differed somewhat from that of the main rooms; the wall behind the central bench dates from the second structure there. The present rear wall of the building is based on the level of one of the earlier floors, but is not connected with it.

In its latest form, Str. Q-168 was undoubtedly a simple residential building. In addition to the broken metate already mentioned, several broken *manos* were found on the surface, including one of which the missing part lay inside Str. Q-165. Large pieces of heavy utilitarian pottery were scattered around the benches, and some pots seem to have been broken in place. Although censer and figurine fragments in the fill indicate that the fill was taken from a place in which some form of religious observance was practiced, sherds from human Effigy Censers are so scanty in the surface debris as to make it clear that no concentrated ceremonial activity was carried on in this building. There are no indications of a shrine. Except for a fairly large number of Fine Orange sherds, the pottery confirms the impression that this was a domiciliary structure of the humbler sort. Ashy midden debris, full of sherds and animal bones, was heaped against the terraces around the building. The proximity of this house to the more elaborate structures, Q-155 and Q-164, is its only outstanding feature, and it is likely that it housed retainers or servants of those who lived in the latter buildings.

The pottery from Strs. Q-165, 167, and 168 was analyzed by R. E. Smith. Materials recovered from the last are as follows:

LOT A-250: surface material. 14 fragments of animal and bird bone; 3 shell fragments; 1 piece of coral; 3 broken *manos*; 2 hammerstones; 10 flint chips; 17 obsidian flake blades.

Total sherds: 1,068: 354 Unidentifiable; 8 Puuc type; remainder Mayapán period (39 Effigy Censers, 23 Fine Orange, 1 Black-on-Cream, 1 Red-on-Buffer).

LOT A-252: sealed lot from below floors of second structure and penetrating below floors of first structure, in north passageway. 9 animal, bird, and fish bones; 1 fragment of human skull; 1 white shell disk bead; 1 ornament of cut white shell; 2 obsidian flake blades.

Total sherds: 333: 48 Unidentifiable; 2 Puuc type; remainder Mayapán period (1 Black-on-Cream).

LOT A-254: north passageway, above second set of floors and Lot A-252, and below upper floor level. 5 animal and turtle bones; 1 shell fragment; 3 flint chips; 2 obsidian flake blades.

Total sherds: 257: 21 Unidentifiable; 5 Puuc type; remainder Mayapán period (1 Effigy Censer; 1 Black-on-Cream).

LOT A-255: trench in transverse room, from latest to lowest floor. 1 animal and bird bones; 1 spiral shell; 4 shell fragments; 1 *manos*; 2 obsidian flake blades.

Total sherds: 383: 39 Unidentifiable; 4 Puuc type; remainder Mayapán period (12 Effigy Censers; 4 Black-on-Cream or Buffer; 3 Fine Orange).



a



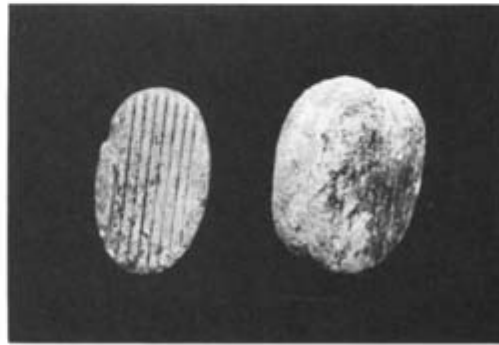
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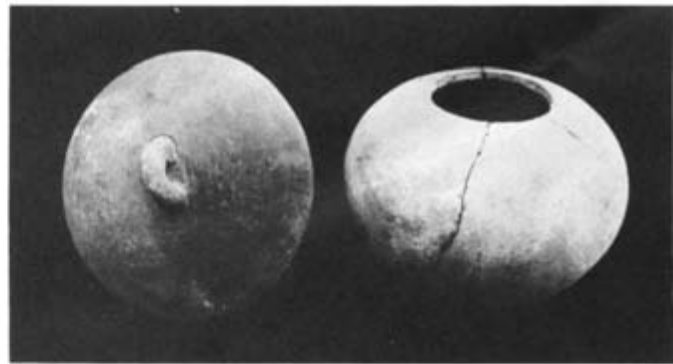
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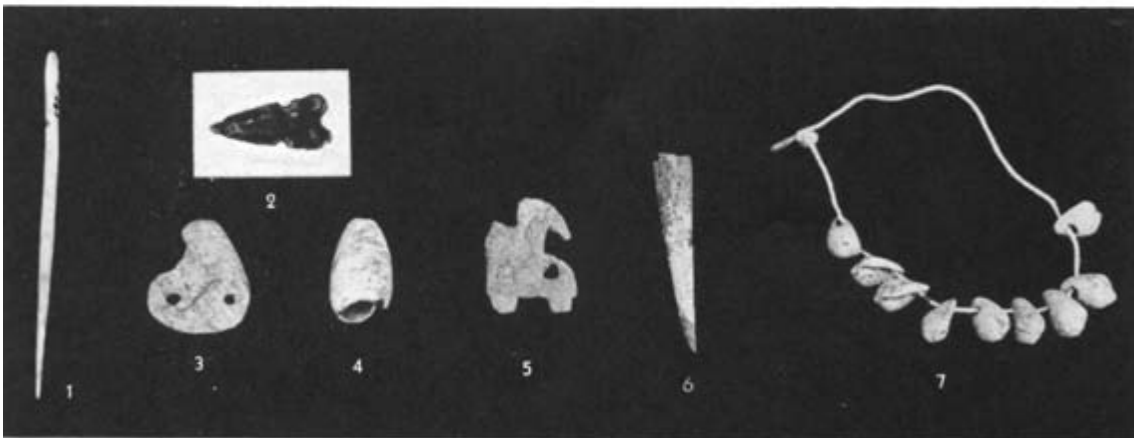
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h

LOT A-256: in central bench, front room, above floor under it. 1 fragment of greenstone celt; 1 fragment of human skull; 1 worked Redware sherd, possibly used for smoothing.

Total sherds: 120: 14 Unidentifiable; 1 Puuc type; remainder Mayapán period (1 Red-on-Buffer).

LOT A-257: south passageway, upper level (above second set of floors, below top floor level).

Total sherds: 31: 4 Unidentifiable; remainder Mayapán period.

LOT A-258: south passageway, below Lot A-257, between lowest and second sets of floors. 1 bone fragment (human?); 1 shell fragment.

Total sherds: 120: 3 Unidentifiable; remainder Mayapán period (2 Fine Orange).

LOT A-259: inside exterior construction (bench?) at rear of building. 2 animal bone fragments; 2 shell fragments; 1 obsidian flake blade; 1 highly polished burnishing (?) stone.

Total sherds: 89: 7 Unidentifiable; 5 Puuc type; remainder Mayapán period (2 Black-on-Cream).

LOT A-260: in northeast bench, transverse room. 1 fragment of human skull; 1 shell fragment; 1 flint chip; 3 obsidian flake blades.

Total sherds: 77: 17 Unidentifiable; remainder Mayapán period (6 Effigy Censors).

LOT A-261: fill in front of south bench, front room, down to lowest floor, 1 broken *mano*.

Total sherds: 31: 7 Unidentifiable; remainder Mayapán period.

LOT A-262: in central bench, back room. 1 flint chip.

Total sherds: 131: 34 Unidentifiable; 1 Puuc type; remainder Mayapán period (2 Red-on-Buffer; 1 Fine Orange).

LOT A-263: combined with Lot A-265.

LOT A-264: in south bench, front room. 1 hammerstone (?); 1 flint chip; 1 obsidian flake blade.

Total sherds: 88: 4 Puuc type; remainder Mayapán period (1 Fine Orange).

LOT A-265: inside southwest bench, transverse room, and area around burial. Incomplete skeleton of a child of 11 or 12. Presumably associated with burial (see Fig. 33.2h); 6 pierced cowrie shells; 1 whole cowrie shell; 1 shell tinkler; 1 shell pendant; 1

bone carving of a serpent head; 2 bone awls (1 broken); 1 obsidian arrowhead, with expanding base and side and basal notches; 1 flint chip. In fill, probably not associated with burial: 43 animal, bird, and fish bones; 1 flint point; 1 drilled flint chip; 1 obsidian core fragment; 1 obsidian chip; 19 obsidian flake blades.

Total sherds: 635: 77 Unidentifiable; 9 Puuc type; remainder Mayapán period (36 Effigy Censors; 5 Black-on-Cream; 1 Red-on-Buffer; 3 Fine Orange).

LOT A-266: trench parallel to front of north bench, front room, down to lowest floor. Small limestone carving (10 by 8 cm), probably of a monkey head; 1 flint chip; 1 obsidian flake blade.

Total sherds: 339: 62 Unidentifiable; 8 Puuc type; remainder Mayapán period (21 Effigy Censors; 1 Black-on-Cream; 1 Red-on-Buffer; 4 Fine Orange).

LOT A-267: trench in front of central bench, front room. 5 fragments of animal bone; 1 shell fragment; 1 broken flint point; 1 flint chip; 1 obsidian flake blade.

Total sherds: 87: 9 Unidentifiable; 2 Puuc type; remainder Mayapán period (5 Effigy Censors).

LOT A-268: trench in transverse room parallel to the east bench. 11 fragments of animal and bird bone; 2 shell fragments.

Total sherds: 462: 50 Unidentifiable; 4 Puuc type; remainder Mayapán period (19 Effigy Censors; 2 Fine Orange).

LOT A-269: trench in front of north bench, front room, in front of wall at lowest level. Fragments of human bone; 1 jaguar tooth; 2 shell tinklers; 1 flint chip; 1 obsidian flake blade.

Total sherds: 61: 5 Unidentifiable; 2 Puuc type; remainder Mayapán period.

STRS. Q-166 AND Q-167

As has been mentioned, the platform in front of Str. Q-168 terminates in a low step. Another platform, faced with large flat stones set on edge, begins opposite the inner wall of the transverse room, and forms an exterior bench at that point. The platform continues 4 m beyond Str. Q-168, and intersects an earlier terrace wall which forms the short leg of the L. Between Q-168 and the end of this leg is the complex of benches and walls designated as Strs. Q-166 and 167 (Fig. 33.1, plan and Sections A-A', B-B').

The plan of Q-167 is uncertain, and it is possible that more than one structure is represented. One part

of the structure centers about an L-shaped bench. Its back (north) wall is an extension of the terrace wall, and it is evident that the short leg of the L-shaped platform is earlier than the long one. In front of the bench is a small rectangular platform or step of plaster, with ill defined edges; The sides of the bench are badly fallen, but there are traces of a west wall which extends south of the bench and meets a wall that is parallel to the front (south) of the platform. This last wall ends abruptly 0.70 m from the corner of Q-166, and the break may be the doorway of the room. The construction of the bench indicates that, unlike the surrounding structures but like the colonnaded hall next to Q-165, Str. Q-166 faced south, away from the Castillo. The walls enclose a sloping plaster floor which is lower than any of the floors around it, and if the wall is correctly reconstructed, this portion of the structure was cut off from the others or entered by a step-down. However, a low transverse bench connects the rear of the L-shaped one with another large bench built near or against the end wall of Str. Q-168. Two of the walls of the last bench are clearly defined, but on the side adjacent to Q-168, a line of well cut stones lies at a sharp angle to the rest of the bench. The stones rest on loose rubble, and although they were laid in place deliberately, it is not certain that they mark the edge of the bench. A single column drum forms its northwest corner; there were no other drums. If the bench actually extended to the wall of Q-168, the postulated doorway to the latter structure would have been almost blocked. Across from the small connecting bench is a squareish bench. Between the latter and the wall of Q-168 are the remains of the plaster floor which continues into Q-168 at a lower level than the latest floor there. No trace could be found of a wall behind this floor or behind the square bench. The area between the four benches consisted of soft, ashy earth mixed with stones and containing lenses of pure ash. Below the floor level, as indicated by the bases of the benches, two or more large striated pots, broken in place, lay in a deposit of ash. A similar broken pot lay immediately below the plaster floor between Q-168 and Q-167.

Structure Q-166 lies on the end of the short leg of the L-shaped platform. The platform continues east to a point level with the southwest corner of Str. Q-165, and then turns south, forming a right angle. Traces of two plaster floors, covered by midden debris, were found between the base of the platform and the abrupt rise in bedrock on which Q-165 is built. The terrace wall runs south for 4.7 m, and then turns again (Fig. 33.1). It is built up to form a wall across the south side of the structure. The continuation of the wall is not clear, but the abrupt change in

floor levels between this structure and Q-167 indicates that there was at least a retaining wall between them (Fig. 33.1, Section B-B'). A rectangular bench, with walls along the south and east sides, extends from the east side of the platform, and indicates that the structure faced north to the small plaza. It could have been entered directly from the platform in front, but there are also indications of a doorway, with a wide jamb, between the bench and the rear wall. The platform wall visible behind the adjacent parts of Q-167 could not be found here. Two fragments of human bone lay in the debris just outside the doorway.

The surface remains from Strs. Q-166 and 167 were treated as a unit. The earth in these structures and around them was extremely ashy and contained many fragments of animal bones. Some of the debris probably originated in Q-165. Of the identifiable sherds, only 69 came from Effigy Censers, and many of these were found in the debris tossed over the edges of the terrace. Several lay just beyond the end wall of Q-168. One moldmade figurine head was found behind Str. Q-165, and may come from it. Although no hearth was identified, the heavy deposits of ash, types of pottery, and general midden debris suggest that these structures were out-buildings attached to Str. Q-168 or possibly directly to Q-165. It is noteworthy that the debris is much thicker in and around these buildings than in Q-168. Possibly the fill of this part of the terrace was midden debris from elsewhere, but the sherds in it do not seem to be notably earlier than those in Q-168. If these buildings were used primarily for the preparation of food, while Str. Q-168 served as sleeping quarters, the heavier accumulation in the former would be explained. Whatever the exact function of this group, it was almost certainly not ceremonial.

The contents of the lots are as follows:

LOT A-251: surface of Strs. Q-166 and 167. 65 fragments of animal and bird bone; 7 fragments of turtle plastron; 5 shell fragments; 1 bivalve shell; 1 limestone "polishing stone"; 1 spherical stone; 1 *mano* fragment; 2 worked pieces of pottery; flint tool (?); 10 flint chips; 2 obsidian cores; 1 obsidian chip; 28 obsidian flake blades.

Total sherds: 3,389: 806 Unidentifiable; 16 Puuc type; remainder Mayapán period (69 Effigy Censers; 19 Black-on-Cream; 12 Red-on-Buff, 7 Red-and-Sepia-on-Buff, 27 Fine Orange).

LOT A-253: Str. Q-167, below floor level in upper part of structure. 5 fragments of animal and bird bone; 2 obsidian flake blades.

Total sherds: 699: 44 Unidentifiable; remainder Mayapán period (1 Black-on-Cream; 1 Fine Orange).

STRUCTURE Q-165

DONALD E. THOMPSON

As previously noted, Str. Q-165 lies between a long colonnaded hall, Str. Q-164, and a residential group, Q-166 to -168. It was hoped to discover the function of Q-165 and to determine whether it was primarily associated with the hall or residence. Although this hope was not fully realized, the structure proved interesting and a fairly good guess as to its association was possible.

Str. Q-165 is divided into two adjoining rooms connected by a doorway (Fig 33.1). The main room faces the same small plaza as the residential structure, Q-168. The smaller room to the west opens in the opposite direction but gives ready access to Strs. Q-166 and 167 and the southern end of Q-168. As already seen, the former two small structures seem to be associated with Q-168. The colonnaded hall faces south the same direction as the west room of Q-165. Since, as will be brought out later, the smaller room of Q-165 seems to have served as a kitchen and the main room as a family shrine, the association of Q-165 with the residential structure, Q-168, seems the most likely, though the group as a whole could be associated with the colonnaded hall.

The main room of Str. Q-165 is approached by three steps. It is built of fairly good masonry, especially the benches. Although badly disturbed in some places, notably the back wall, which has fallen below bench level, its essential plan and section were easily determined. Much of the roof debris had washed away from the benches, but on the floor of the room it was present to a depth of about 0.52 m, and consisted largely of the characteristic chunks of plaster which indicate a beam and mortar roof.

On the central axis of the structure the two L-shaped benches gave way to a niche and a higher altar. In front of the niche a small dais of the same height as the niche protruded into the room and slumped down and forward. The slumping of the dais and the absence of floor on the central axis suggested a collapse of the foundations of the floor and led to the discovery of an ossuary cist in front of the altar (Fig. 33.1, Section E-E').

The ossuary cast, 0.93 m deep from floor level, was built of crudely dressed stone. The floor and walls of the cist were completely covered with plaster. Aside from sherds, it contained 5 burials with 1 pot and 2 figurines as grave goods (Lot A-445;

Fig. 33.2b,c,f). Two of the burials lay face up, fully extended in opposite directions, on an east-west axis, and the other three were clustered on the front side of the cist. The three dislocated burials could have been put in disarticulated, or have been disturbed by looters, or, most likely, have been pushed aside to accommodate the two burials which were well articulated. This whole room bears a remarkable resemblance to Str. Q-172, reported and discussed at length in Thompson and Thompson (1955), and most likely served as family shrine and tomb. The one feature which sets it apart from Q-172 is the singular lack of large and numerous incensario sherds, the only fact which argues against a religious function.

Near the doorway leading from the main room to the west room of the structure two *mano* fragments, a hammerstone, and a higher proportion of pottery were found (Lot A-442). This fact is understandable in view of the richer debris in the west room.

The west room is built of much poorer masonry than the other chamber, and the floors too are in worse condition. The artifacts in the various lots from this room are listed in full below, as it is the quantity and type of artifacts that suggest that the room may have served as a kitchen.

In one sheltered spot by the north wall of the west room a small segment of floor was found which corresponds in height to the floor of the main room. It seems likely, then, that at one time the floor levels were the same. Below this level, the fill was dark and ashy and very rich in pottery, bone, and artifacts. In one corner of the room the sherds of at least 3 porous gray ware jars were found, broken probably by wall or roof fall (Lot A-441).

At a lower level in the room, fragments of a second floor were found sloping from below the eastern doorway toward the center of the room (Fig. 33.1, Section F-F'). At the narrow opening to a cave in the bedrock below the chamber, the rock was plastered, and to the south a low bench ran part way across the room. Since the bench is only slightly below the lowest discovered point on the lower sloping floor, it seems likely that they once joined and that the entrance to the cave was a few centimeters deeper, surrounded by low walls reaching to floor level.

Directly above the floor in the south part of the room a partly disturbed burial was found lying with its head almost due north. The long bones were out of position, but the arm bones suggested flexing rather than full extension. No grave goods were found.

In the west part of the room two burials, the upper badly disturbed, were encountered in a small natural pit in the bedrock. The lower burial was tightly flexed with its head to the west. Possibly

associated grave goods included one jade bead, one shell bead, two attractive oliva shells, and one drilled shell (Lot A-447).

Near the center of the room a small natural opening leading down to the previously mentioned cave had been artificially widened to a size large enough to admit a man (Fig. 33.1, Section F-F'). The cave was natural and no marks of excavation tools were found on its rough, jagged walls. When the room had been filled to build the upper floor, one large slab and two smaller ones had been placed over the opening, thus keeping out most of the fill, though fine dirt had managed to trickle in through various cracks.

Because of the small dimensions of the cave, excavation was difficult, especially when burials were found. The uppermost burial was in poor condition and disturbed. The head was to the west, and the confined quarters necessitated flexing. The next burial below was undisturbed, with its head northwest and body flexed. The deepest burial had its head almost due north and was undoubtedly flexed, though the long bones were badly disturbed, probably by the later burials. On the east side of the cave a restricted orifice bowl, broken but complete and in very large pieces, was found to contain cremation ashes, both human and animal and probably turtle (Fig. 33.2g). Very near by and facing the mouth of the bowl a Mayapán Redware pot lid was found. Although it did not fit well, it was probably used as a top (Fig. 33.2g).

The cave could have been used for burials before or after the construction of the room above it. In any case, the first floor of the room was arranged to give access to the entrance of the cave. Later, a floor, level with that of the main room, was laid, and the subsequent burials on top of the bedrock and of the first floor were made at the time of this latest floor, or later. From the quantity and type of artifacts found in the room, and the very ashy fill, it is inferred that at some time subsequent to the lower, and probably also the upper, floor the room served as a kitchen.

Chowning, in her discussion of Strs. Q-166 and 167, concludes that one or both of these structures may have served as kitchens. Q-168 seems definitely residential. The main room of Q-165, because of the direction it faces, is thought to have served as a shrine and burial place for the residents of Q-168. The adjoining room, if it was a kitchen, may have been used for the ritual preparation of food for the colonnaded hall or for persons secluded in the adjacent shrine room. Strs. Q-166 and 167, then, would have served the regular needs of the residents of Q-168. It is possible, though by no means sure, that the whole group, Q-165 to 168, housed persons connected with the colonnaded hall.

The pottery from Str. Q-165 was analyzed by R. E. Smith. Materials recovered from the excavations are as follows:

LOT A-440: exterior surface. 1 spindle whorl with incised geometric design; 1 hammerstone; 14 obsidian flake blades; 10 flint chips; 4 shell fragments; 68 animal, bird, and turtle bones.

Total sherds: 1984: 412 Unidentified; 12 Puuc type; remainder Mayapán period (100 Effigy Censers; 33 Black-on-Cream; 36 Red-on-Buff and Red-and-Black-on-Buff; 14 Fine Orange).

LOT A-441: interior surface of west room. 1 *metate* (Fig. 33.2d); 1 fragment of torso of pottery figurine; 1 worked long bone; 1 shell tinkler; 1 conch shell trumpet; 1 obsidian core; 6 *mano* fragments (the other half of one found in Str. Q-168, Lot A-250); 4 hammerstones; 2 bark beaters (Fig. 33.2e); 2 fragments of conch trumpets; 1 bone awl; 1 fragment of stone pendant; 1 polishing stone; 1 crude pottery head; 1 stucco amulet; 1 antler fragment; 5 shell fragments; 2 flint chips; 8 obsidian flakes.

Total sherds: 2,177: 339 Unidentified; 11 Puuc type; remainder Mayapán period (63 Effigy Censers; 14 Black-on-Cream; 9 Red-on-Buff and Red-and-Black-on-Buff; 5 Fine Orange).

LOT A-442: interior surface of shrine room. 1 fragment of rocker stamp; 1 hammerstone; 2 *mano* fragments; 2 animal bones; 1 obsidian flake blade fragment.

Total sherds: 259: 60 Unidentified; remainder Mayapán period (17 Effigy Censers, 1 Fine Orange).

LOT A-443: Under poor floor in west room.

Total sherds: 87: 3 Unidentified; 2 Puuc type; remainder Mayapán period (2 Black-on-Cream).

LOT A-444: level in west room deeper than A-441 but not sealed. 1 drilled pig's tusk; 1 shell pendant; 4 hammerstones; 1 obsidian scraper; 1 side scraper; 1 egg-shaped stone; 1 rubbing stone; 41 obsidian flake blade fragments; 4 obsidian chips; 1 flint chip; 4 shell fragments; 36 animal and bird bones.

Total sherds: 1,371: 132 Unidentified; 21 Puuc type; remainder Mayapán period (13, Effigy Censers; 37 Black-on-Cream; 1 Red-on-Buff; 21 Fine Orange).

LOT A-445: Ossuary cist in front of dais in shrine room; not sealed. 1 pot (Fig. 33.2c); 2 figurines (Fig. 33.2f); 7 obsidian flake blade fragments; 7 animal bones.

Total sherds: 910: 111 Unidentified; 6 Puuc type; remainder Mayapán period (54 Effigy Censors; 9 Black-on-Cream; 6 Red-on-Buffer; 5 Fine Orange).

LOT A-446: below floor level of shrine room; not sealed. 2 flint chips; 2 shell fragments; 3 obsidian flake blade fragments.

Total sherds: 207: 30 Unidentified; 7 Puuc type; remainder Mayapán period (4 Effigy Censors; 2 Black-on-Cream; 1 Fine Orange).

LOT A-447: small cist in bedrock in west room. Artifacts possibly associated with burials found therein. 1 jade bead; 1 drilled shell; 1 shell bead; 2 whole shells.

Total sherds: 7: all Mayapán period.

LOT A-448: deep cave in west room. 1 Mayapán Redware pot lid (Fig. 33.2a); 1 restricted orifice bowl containing cremation (Fig. 33.2a).

Total sherds: 473: 29 Unidentified; 6 Puuc type; remainder Mayapán period (6 Effigy? Censors; 6

Black-on-Cream, 2 Red-and-Black-on-Buffer; 4 Fine Orange).

LOT A-449: surface by rear terrace wall. 2 stone balls; 3 flint chips; 1 tinkler fragment; 2 obsidian flake blade fragments; 65 animal, bird, and turtle bones.

Total sherds: 1,769: 398 Unidentified; 1 Puuc type; remainder Mayapán period (70 Effigy Censors; 2 Black-on-Cream; 3 Red-on-Buffer; 17 Fine Orange).

LOT A-X50: under dais behind ossuary cist in shrine room; sealed. 1 flint chip; 1 obsidian flake blade fragment.

Total sherds: 52: 6 Unidentified; remainder Mayapán period (7 of Effigy Censors).

LOT A-451: lowest 10–20 cm in cave in east room; below undisturbed burials. 1 bone awl; 1 bone needle.

Total sherds: 89: 1 Unidentified; 1, Puuc type; remainder Mayapán period (43 Black-on-Cream).

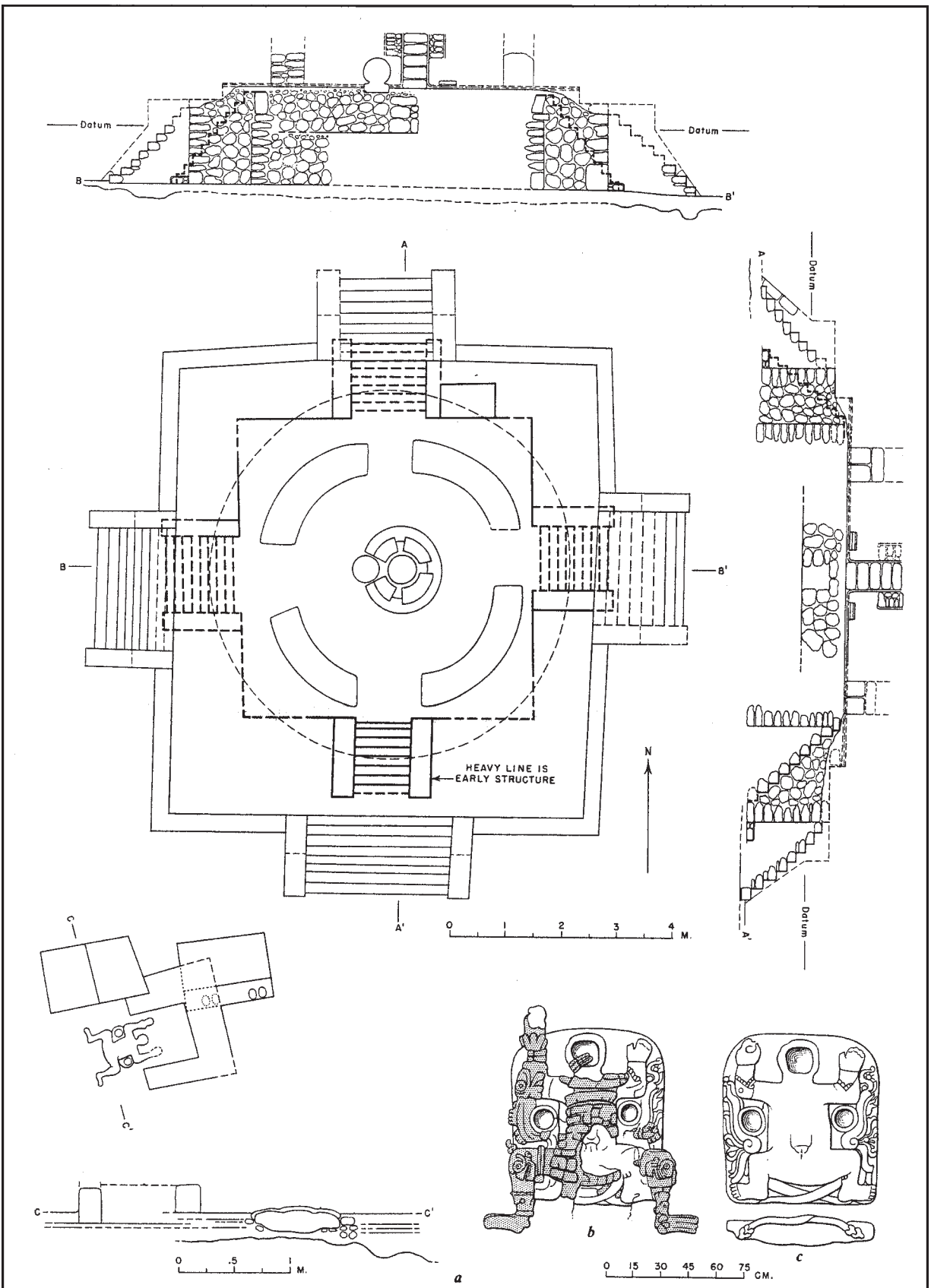
A ROUND TEMPLE AND ITS SHRINE AT MAYAPÁN

ANN CHOWNING

During the 1955 season at Mayapán, the small ceremonial group in Square H, next to Cenote Itzmal Ch'en, was partially excavated and mapped. The original purpose was to remove enough of the overburden so that the plans of the buildings would be evident, but preliminary excavation of one of the structures, H-18, revealed so many features of interest that it was investigated in more detail (Fig. 34.1). Str. H-18 stands near the center of the plaza and is depicted on the map of Mayapán as a round structure facing and connected with the large pyramid, H-17, to the north of it (Jones 1952). Excavation revealed no physical connection between the two structures. The superstructure and upper part of the substructure of H-18 were badly fallen, but in spite of the debris there were indications of four doorways. This fact was particularly interesting because none of the three round buildings in the Main Group agrees in this respect with the report in Landa of a "building of a round form, with four doors" at

Mayapán (Tozzer 1941:25; cf. Jones 1952, Square Q; Proskouriakoff 1953, Fig. 1; Shook 1954:17 and Fig. 1). It seems evident, however, that Landa was referring to a building in the Main Group. In the course of excavation of H-18, the surface of the structure, except for parts of two staircases, was completely cleared. Investigation of earlier constructions was confined to the exposure of part of the exterior of a buried substructure, and a narrow trench inside the west doorway of the temple.

The Itzmal Ch'en group is set on a natural knoll which is highest at the center of the plaza. The area had been built up so as to form a relatively level plaza floor, but even at the latest period, the base of Str. H-18 is only 20 cm above bedrock. A plaza floor was laid down here, apparently before any structure was built; it is visible under the west side of H-18, and traces of it appear under the east side. The plan of the lowest structure found is uncertain, and it will be considered in relation to what was presumably



34.1. Strs. H-18 and H-18a.

a. Plan and sections. b. Str. H-18a. Stucco figure. c. Str. H-18a. Sculptured stone after removal of stucco.

the second structure erected in the middle of the plaza.

This second structure was a square platform, with its sides oriented to the cardinal directions (Fig. 34.1). Its height was about 1.7 m but on the east, where bedrock is not so high, the walls are based on a slightly lower level. The construction of the walls shows minor variations from one side to another; on the east, the lowest course consists of rectangular stones averaging 15 by 35 cm, above which are narrower, roughly cut stones, laid in mortar and chinked with small stones. A heavy layer of plaster, much of which still remains, covered this wall. The central section of the upper part is intact on the east and west sides. On the west, it consists of a line of dressed stones, 10 cm high and set back 5 cm from the lower part of the wall, surmounted by rectangular stones, 40 cm high which rise vertically and flush with the lower line (Fig. 34.2b). Both sections of this cornice are composed of re-used, plain, Puuc type stones, including boot-shaped vault stones. The lower course is covered on top by a heavy layer of smooth plaster, which extends almost the depth of the stone, and the outer surface of both sets of stones is covered with plaster. The eastern cornice is similarly composed of two layers of Puuc style stones, but in this case the lower course, which is again 10 cm high, projects 10 cm from the face of the wall below it. The upper course, which is only 35 cm high, is set back 10 cm at the bottom and then slants forward so that the top is even with the front of the lower course. This slant is perfectly regular and seems to be intentional, despite the fact that there is no sign of it on the other side. The projection of the lower stones continues only to a point which apparently marked the edge of a staircase, and beyond that the lower course is flush with the bottom of the upper one (Fig. 34.2c,d). Some stones of the lower course are again topped by a layer of plaster, which curves forward over the front surface of the stone. On neither side, however, is there any indication in the dry fill behind the wall that this ever represented the top level of the platform. On both sides, the stones of the upper cornice were occasionally surmounted by a narrow stone which would bring the whole to the proper height. Even more interesting than the difference between the two sides is the fact that there is no sign of a similar cornice on the north and south. It is difficult to be certain, because the top level is missing on those sides except behind the south stairway, and all corners are partially destroyed. On the north side, however, the level of the crude Mayapán masonry is so high that if a cornice existed, it could have been no more than 35 cm high, and on the south side, the masonry behind the stairs is uniform, although

it is reasonably certain that the cornice continued behind the stairs on the east and west. Any explanation of this phenomenon leaves the structure curiously unbalanced. Either there never were cornices on the north and south, or they were removed so that the Puuc type stones could be re-used, and the walls were built up again with Mayapán masonry. This latter theory hardly explains conditions behind the south stair; there is no reason to think that there was a cornice there but it is possible that the cornice began on either side of the staircase.

As has been indicated, this platform had a staircase on each side. Only the south one was left intact by later remodeling; the others are represented by fragments of their balustrades. The south staircase is notable for the relative width of its balustrades: 0.75 m of the total width of 1.75 m. Several Puuc-style stones were used for narrow steps, which are still covered with two layers of plaster (Fig. 34.2e). The top step is at the level of the top of the platform, and projects only 6 cm from it. The tops of the balustrades are unfortunately missing; it is assumed that they were composed of square blocks of masonry. The other staircases differed somewhat in size (Fig. 34.1), the north one being almost 2 m wide with narrower balustrades. They seem to have been well centered on the terrace walls, but the fragmentary condition of the latter makes this point difficult to judge. There is a well-defined rectangular hole in the plaza floor under the west staircase, but excavation in it yielded only sterile earth. Two replasterings of the plaza floor turn up to these staircases.

No trace remains of the superstructure which belonged to this platform, if there was one. Eighty centimeters below the top of it, however, a well-made plaster floor covers about four square meters in the central and west parts of the structure. Beyond this area, the floor continues as hard-packed earth, which, as far as could be ascertained, extended to the wall of the platform. There was no obvious change in the masonry at this level, such as would indicate that the earlier height had been increased, and attempts to find the same floor in other parts of the platform were inconclusive. Resting on this floor, almost exactly in the center of the platform, is a crude three-sided crypt which faces west. Its back is formed by a column drum set on edge, and the sides and top are crudely constructed of unshaped stones, laid without mortar. The inner space, 38 cm wide, 40 cm deep, and 45 cm high, was empty except for eight obsidian flake blades which lay inside and in front of it. Either this is all that remains of an earlier structure, of unknown dimensions, or it was a subterranean crypt contemporaneous with the platform. The fill of the platform, which is composed of large



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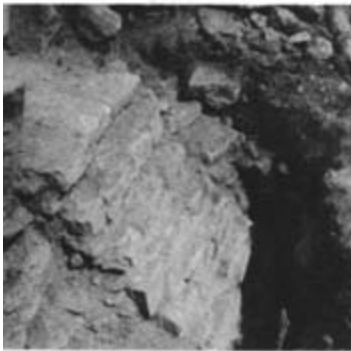
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34.2. Str. H-18.

a. View from north. North stairway under debris in foreground; top of inner substructure visible on left. b. View from west. Cornice of inner substructure visible behind west stairway. c. View from east. Cornice of inner substructure visible behind top of east stairway. d. East cornice of inner substructure. e. Buried south stairway of inner substructure, from west. f. Masonry pier from west, with altar in place; east jamb of north doorway of temple on left. g. Masonry pier from south. h. Interior of temple from southeast, showing north doorway and east niche in masonry pier. i. Stone turtle with glyphs on back, found by northwest corner of substructure. Measures 25.0 by 18.2 by 10.7 cm. Cat. no. 55-307, Lot C116.

stones including column drums, and contains very little dirt and pottery, now shows no indication of steps leading down to the lower level, but they may have been removed when the structure was remodeled. In any case, the use of the crypt is unknown.

In the next stage, parts of the upper courses and the staircases of the earlier platform were torn out; all the corners are at least partially destroyed. Another platform, about a meter wider on three sides, and almost two meters wider on the south, was then constructed around it. The increased size of the platform on the south made possible the retention of the inner staircase. Only on the north side is the inner wall complete enough for its original dimensions to be retained. The cornerstones of the outer platform are large, roughly rectangular stones set on end, and similar large stones, laid on their sides, form part of the lowest course of the wall (Fig. 34.2a,b). One of these was 1 m long, and half as wide. In other parts of the wall the lowest course, like the upper ones is composed of long flat stones; averaging 10 cm by 20 to 35 cm, laid in mortar with very little chinking. No trace of wall plaster remains.

At this time, a crypt was built in the north side of the platform (Fig. 34.1). One wall was formed by the wall of the buried platform, and another by the east balustrade of its north stairway. The north wall is the wall of the outer substructure, which was laid at this point so that an inner row of cut stones faced the crypt. The east wall seems to be composed of stones from the inner platform; they interlock with the stones of the north and south sides, and are laid in mortar. The crypt apparently was not plastered, and the plaza floors within it had been destroyed and replaced by a layer of uncut stones, in which was included a large conch shell, broken at one end. Above this layer were four skeletons, complete except for two skulls and three mandibles. This is particularly interesting because the top two vertebrae of each skeleton were present, indicating that the skulls were removed after the flesh had decomposed. Sherds, including many from a Mayapán Redware grater bowl, were mixed in the dirt and small stones around the bones. Above them was another layer of stones and loose plaster, and above that eleven more skeletons. The bodies were well articulated, but

every skull was out of place, and in only one case was the mandible articulated with the skull. Stones, dirt, sherds, and the bones of small animals filled the crypt. There were no grave goods, unless a stalactite which had been plastered and painted with a curvilinear design in light green, black, and red was such. A broken stone figure and a large piece of molded plaster were the only other artifacts in the crypt. No complete pots were included. All the bodies were those of adults, except one, which was that of a boy in late adolescence. Both sexes and a wide age range were represented, and most but not all of the skulls seem to have been deformed (occipital flattening), though the fragmentary condition made it impossible to be certain in many cases. The bodies were all flexed, usually rather loosely, and lay on side, back, or stomach, or in an intermediate position. The crypt widens slightly from top to bottom, but its maximum length is 1.1 m, and its width varies from 46 to 65 cm. The bones are piled to a height of less than 1 m, including the layer of stones above the bottom skeletons. It is obvious that the bodies could not have been put in simultaneously, since the perfect articulation of hand and foot bones and vertebrae makes it evident that the flesh had not rotted when they were buried. It is most likely that they were added one or two at a time, and dammed down on the bodies below them, which became broken and disarranged in the process (only two complete long bones were recovered from the crypt). There was no indication of a removable capstone for the crypt, though one may have existed, but the finding of bones between the stones of the outer wall indicates that some stones may have been removed in order that the bodies might be put in. The lack of ceremony with which they were treated, and the fact that this crypt is directly opposite a shrine, Str. H-17a, in front of which stands a stone of the type thought to have been used for human sacrifice, suggest that this was the repository for the victims.

Around the base of the substructure runs a step 30 cm wide, composed of a row of flat rectangular stones laid edge to edge to form a strip 15 to 20 cm wide, behind which is a fill of small unshaped stones. The step has been heavily plastered twice. It is 14 cm high, and the plaza floors turn up to it. After this step

34.3. Str. H-18a.

a. Bench h remains of feet in front of it, from south. b. Hands of stucco figure which stood in front of bench. c. Shrine with stucco figure inside, from north. d. Stucco figure as found inside shrine, from west. Carved stone visible between legs. e. Sculptured stone slab after removal of stucco, from west. f. Offerings found around sculpture. Lot C-122. Upper row: burned jade bead found between legs (Cat. no. 55-225); jade bead found by head (Cat. no. 55-222); pottery turtle from effigy censer; burned jade bead found between legs (Cat. no. 55-223); incised jade bead found on left side (Cat. no. 55-224). Diameter of largest bead (Cat. no. 55-222) is 2.0 cm. Lower row: pink-and-white shell bead found on left side (Cat. no. 55-227); black-and-white shell bead found by head (Cat. no. 55-228); gray shell ornament found on left side (Cat. no. 55-226); pink-and-white shell bead found by head (Cat. no. 55-227). Diameter of bead at right is 0.8 cm. g. Offerings found under sculptured slab. Lot C-137. Two jade beads (Cat. nos. 55-501 and 55-502), and copper fragment. Length of larger bead (55-501) is 2 cm.

had been constructed, staircases were built on each side of the platform. The south and west ones were completely cleared, and the other two were examined sufficiently to reveal their features. The south staircase is the largest, being 3.25 m wide, although it only faces a colonnaded hall, Str. H-15. The shrine near its foot may have contributed to its importance, however, if its size has any significance. The terrace in front of the temple is also widest on this side. The east and west staircases are of approximately the same width, but the east one is very much off center. The north staircase is the smallest, being 2.5 m wide. All four differ in such details as width and degree of slant of the balustrades, which end in well-cut stones. On the south side, the second plaza floor from the top is well above the base of the bottom step, and there are indications on the west side that the plaza floor was replastered at least three times after the building of the substructure.

Unless the top steps of the staircases were inset, the outer substructure was at least 20 cm lower than the inner one, and since the full height of the buried platform was retained as a base for the superstructure, it is likely that there was a plinth around the temple. The buried platform was covered with a thick plaster floor which extended well beyond its edges; on the west side it is preserved for a distance of 35 cm. No trace remains of the plinth, if there was one, but the other circular buildings at Mayapán rest on circular plinths (Proskouriakoff 1953, Fig. 34.1; Shook 1954, Fig. 34.1). If the plinth here was circular, it would account for the removal of the upper courses of the earlier platform only at the corners, since these would be outside the circle and on a lower level (Fig. 34.1).

On top of the floor which covered the earlier platform, a round temple was built (Figs. 34.1; 34.2a,b). Although the temple does not extend beyond the edges of the buried platform, it definitely postdates it. The walls are badly fallen; the maximum height is only 63 cm above the floor, and in most places it is considerably lower. The shape of the temple is an irregular circle, flattened on the north side. The wall

is a double row of fairly long, thin stones, set in mortar with a little chinking. It is 55 cm thick, and broken opposite each staircase by a doorway. These vary in width, but except for the west one, which now is only a gap, are well marked by their jambs. These are composed of rather small Puuc type stones, possibly those removed from the cornice of the buried platform. The most complete jambs each consist of two rectangular stones about 35 cm high, placed side by side and surmounted by one or more longer stones laid lengthwise (Fig. 34.2f,h). A column drum set on end may have functioned as one jamb of the east doorway, or may simply have backed it.

A little to the east of the center of this building a stone column, composed of drums 45 cm in diameter, was erected. It now stands less than 1 m high, but drums found in the debris which filled the temple and spilled over the sides indicate that it may once have been twice as high, in which case it probably helped support a flat beam and mortar roof. The depth of plaster and stone inside the temple indicates that the roof was of this type. After the column was erected, it and the floor around it were plastered twice; both floors turn up to the column (Fig. 34.1, sections). Only traces of these two floors remain, but they show signs of burning in the area south of the column.

The final step in the building of the temple was the construction of a stone and plaster pier, possibly conceived as a miniature temple, around the column (Figs. 34.1; 34.2a-c,f,h). Though irregular in shape, varying in diameter from 1.06 to 1.24 m, it is basically circular. It stands on a circular plinth, 20 cm wide. Flat stones covered with plaster were laid around the base of the column and act as supports for the walls. The latter are composed of uncut flat stones, laid in mortar and chinked. The whole construction now stands 92 cm high, and probably was higher originally. There is no indication as to whether it reached the ceiling. The upper part of the pier shows no sign of a projection or other roof feature to carry out the design of a miniature temple, nor was any paint visible on the smooth plaster which



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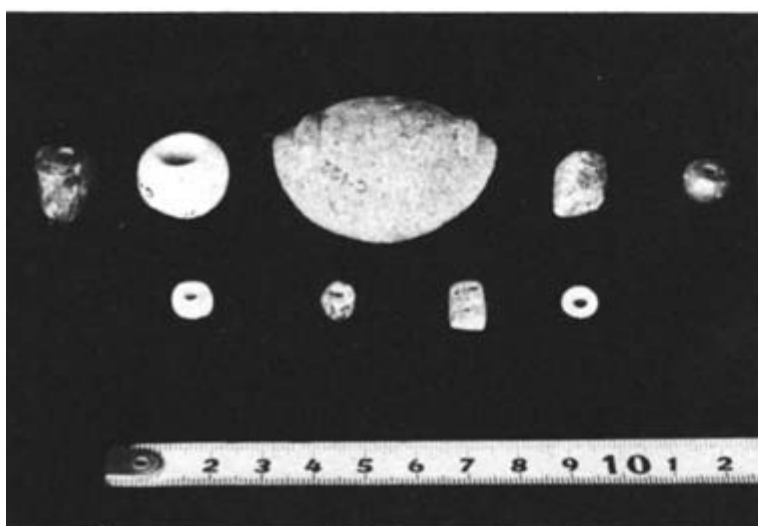
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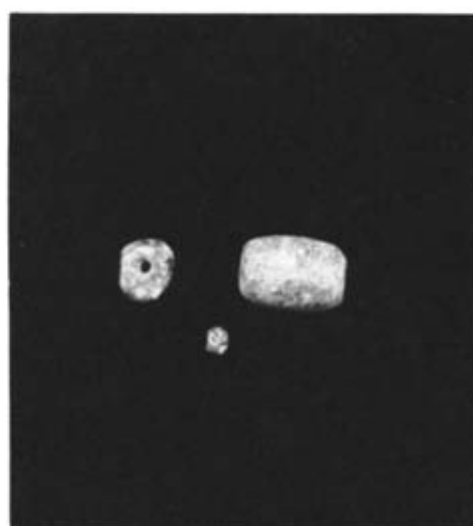
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completely covered the stones. Four open niches, backed by the central column, face the doorways of the main temple. They seem to have had plaster floors which were destroyed, possibly in a search for offerings. The niches are in the form of doorways; their jambs are large rectangular stones set on end and placed so that the niche narrows from front to rear (Fig. 34.2g). In some cases a small flat stone rests on top of the jamb; on it or directly on the jamb is the lintel, a single rectangular stone spanning the niche (Fig. 34.2f-h). All but one of these were in place. The niches vary somewhat in size, the north and south ones being 38 cm high, the east and west ones 45 cm. In front of the south niche lay the pieces of a plain censer and a weathered limestone carving, possibly of a monkey, with tenons on its back. The north and south niches face slightly west of the cardinal directions, so that three niches seem to be crowded toward the west side of the structure. The west niche is by far the largest, being 45 cm wide, and it seems to have been built especially to accommodate a well-made, round altar which stood in front of and partly within it (Figs. 34.1; 34.2b,f,g). The altar, 72 cm high and 48 cm wide, is carved of hard limestone in the shape of a ball set on a circular pedestal which narrows at the base. When found, it rested on loose fill, the floor all around it having been broken, but the shakiness of its position and traces of plaster on its base indicate that it originally stood on the floor and was later moved, perhaps by looters who sought a cache beneath it. One polished jade bead was discovered well down in the fill below it. The masonry pier seems definitely to have been designed to hold the altar, but the destruction of the floor makes it impossible to be sure whether the altar stood here before the pier was built.

Very little pottery was found inside the round temple, and it is possible that most ceremonial activity was carried on outside it, perhaps because there is so little space inside. As in the case of the round temple excavated by Shook (1954:18), there is no evidence of the frequent replasterings of the floors and walls found in many Mayapán temples. Fragments of Human-Effigy censers were scattered around the base of the substructure, but they were not heavily concentrated at any point. A badly weathered stone carving of a turtle, possibly with a human head, lay by the northwest corner of the substructure; its back seems to have been decorated with glyphs (Fig. 34.2i). Two fragments of carved stone rings were also found by the substructure. Little except pottery was found below the surface of the structure, but it is interesting that effigy censers, which appear late in the Mayapán period, are found in only one of these lots. This is from the fill under the round

altar, which otherwise, according to Shook, contains pottery of "fairly early Mayapán period." The combination probably resulted from the fact that the lot contains sherds incorporated into the late plaster floor as well as those included in the earlier fill, though the breaks in the floor might also account for it. All the lots differ from those obtained by Shook from the other round temple, Str. Q-214, in that the pottery from H-18 contains a much higher percentage of sherds of the Puuc period, and, in the surface lot, a much smaller proportion of sherds from effigy censers (see Shook 1954:20-21). The earlier parts of Str. H-18 may date from fairly early in the Mayapán period, but there is no evidence that a round structure was associated with them.

The pottery in the lots listed below was analyzed by E. M. Shook. Lots are listed in presumed chronological order.

Lot C-132: sealed lot inside substructure, between inner floor and plaza floor (below Lot C-124), 1 obsidian flake blade; 1 flint blade or tool.

Total sherds: 43: 4 Puuc type; remainder Mayapán period (6 Black-on-Cream).

Lot C-13: fill of outer substructure. 1 stone turtle fragment; 2 obsidian flake blades.

Total sherds: 118: 16 Puuc type; remainder Mayapán period (4 Black-on-Cream).

Lot C-124: fill between floor of round temple, under altar and floor inside substructure. 27 obsidian flake blades; 1 jade bead; 2 fragments of uncorked shell; 2 bird bones; 1 fragment of limestone *mano*.

Total sherds: 234: 6 unidentifiable; 15 Puuc type; remainder Mayapán period (52 of Human-Effigy censers, 13 Black-on-Cream).

Lot C-126: burial crypt. Human, animal, bird, and fish bones; 1 large conch shell; 1 obsidian flake blade; 1 broken stone carving (seated figure?); 5 fragments of modeled and painted stucco; 1 painted stalactite.

Total sherds: 132: 3 Puuc type; remainder Mayapán period (2 Tulum or East Coast incised Redware, 1 Black-on-Cream).

Lot C-116: surface of temple and substructure. 1 carved stone turtle (Fig. 34.2i); 2 fragments of carved stone rings; 1 carved stone monkey (?); 3 obsidian flake blades.

Total sherds: 345: 1 unidentified; 8 Puuc type; remainder Mayapán period (86 of Human Effigy censers, 2 Black-on-Cream).

Trenches were dug from Str. H-18 to two of the buildings which it faced, but in both cases plaza floors were so fragmentary that it proved impossible to establish chronological relations between the structures. This was particularly true in the case of the main structure of the group, H-17. Two plaza floors were visible between H-18 and the east colonnaded hall, H-16. The upper one ran under the outer substructure of H-18, but was broken beyond that point. It stopped 1.6 m short of H-16. The lower floor, which ran under H-16, did not reach to H-18. Both floors were broken, and neither turned up to a structure; they only indicate that H-16 was built on an earlier plaza floor than was the latest substructure of H-18. Lots from the trenches were separated into those from above and those from below the plaza floors, but breaks in the floors prevent the latter from being pure samples. The contents were as follows:

Lot C-134: between Strs. H-18 and H-17, below plaza floors.

Total sherds: 52: 11 Puuc type; remainder Mayapán period (16 of Human-Effigy censers).

Lot C-129: between Strs. H-18 and H-17, above plaza floors.

Total sherds: 46: 1 Puuc type; remainder Mayapán period (22 of Human-Effigy censers).

Lot C-136: between Strs. H-18 and H-16, below plaza floors. 1 obsidian flake blade.

Total sherds: 56: 5 Puuc type; remainder Mayapán period (14 of Human-Effigy censers, 1 Black-on-Cream).

Lot C-135: between Strs. H-18 and H-16, above plaza floors.

Total sherds: 49: 1 Puuc type; remainder Mayapán period (27 of Human-Effigy censers, 1 Red-on-Cream; 3 Black-on-Cream).

STRUCTURE H-18A

One meter southwest of the south staircase of Str. H-18 is the small structure, which probably functioned as a shrine, designated as H-18a (Fig. 34.1). It is composed of three contiguous parts, all built directly on the plaza floor. Nearest to H-18, but facing away from it, a low stone bench, 1.5 by 0.75 m, is based on a plaza floor which seems to correspond to the one that runs under the staircase. The present height of the bench is 45 cm; the top is covered with flat stones, but there is no trace of plaster, and it may

once have been higher. The sides of the bench are composed of well cut stones covered with plaster. A low step, made of flat stones covered with plaster, projects from the south side, and on it are the remains of two pairs of feet made of stucco modeled over stone (Fig. 34.3a). Evidently two figures had stood in front of the bench or been seated on it. One of them was removed in ancient times, but the remains of the other were scattered in front of the bench. Only the hands were identifiable; made of limestone covered with stucco, they grasp hemispherical objects (Fig. 34.3b). The statue may have been broken up deliberately, or may have collapsed in the course of time.

After this bench was built, another plaza floor, which turns up to it, was laid down. A second construction was erected on this, 60 cm west of the bench. It consists of two rectangles side by side; the walls are composed of a single row of stones, many of which are roughly triangular, set on end, and the centers are filled with dirt and small stones. The use of this is purely conjectural; it may have formed a companion bench to the first one, but it was much more crudely made, and apparently had no step in front of it. The south side stands on a higher plaza floor than does the north side, and therefore seems later (Fig. 34.1, Section C-C'), but the floors in between are so poorly preserved that the exact relation between the two sides could not be determined.

The sequence of plaza floors indicates that this was also the period during which the carving that is the principal feature of the shrine was set in place. Three early plaza floors end so abruptly that they seem to have been cut through, in order to leave a space about 1.3 m square just south of the second construction (Fig. 34.1, Section C-C'). A thin layer of dirt covers the bedrock, and two fade beads had been deposited in it, presumably as an offering. A tiny piece of copper may have been included accidentally (Fig. 34.3g). Then a carved stone slab, 90 by 85 by 20 cm, was laid down and kept level by the insertion of small stones under the ends and larger stones between it and the edges of the plaza floors. The slab is roughly rectangular, but rounded at the corners, and is of hard, fine grained limestone, of much better quality than that commonly used for carving at Mayapán.

The main part of the sculpture is badly chipped and worn, but it clearly depicts a squat anthropomorphic figure in fairly high relief, lying so that its elbows and knees form right angles (Figs. 34.1c; 34.3,e). All that remains of the head is a rough stone circle with a large hole through it, and it is impossible to be sure whether the figure is prone or supine; the position of the hands, which seem to be palm

upward, may indicate that it lay on its back. It is, of course, possible that the stone was originally designed to be stood on end, so that the figure was standing or falling in the so-called "Diving God" posture. The hands are empty, and the wrists are encircled by a carved line. Another line runs just behind the toes, which are depicted side by side in an anatomically impossible position. An incised pattern on the abdomen (?) is of unknown meaning, but on one elbow is the clear depiction of a crude, stylized death's-head, its gaping jaws facing the hand. Sections of similar toothy jaws are still visible on the other elbow and one knee; the other knee is chipped but presumably bore a similar design. Death's-heads on the joints do not characterize any known Maya deity, but Proskouriakoff has pointed out their presence on the Aztec "Earth Monster." This figure may be another example of the worship of Mexican gods at a late date in Mayapán history; or the motif may have been added to a Maya god. On either side of the figure, between the arms and legs, a large serpent head is carved in low relief. The two heads differ in details, but, in contrast to the crudity and lack of grace of the central figure, both of them exhibit the scrolls and flourishes of serpent heads of the Classic Maya period. The usual elongated eye, however, is replaced by a large circular hole, surrounded by an incised line. The holes pierce the stone, and presumably had some function, perhaps that of containers for offerings. There are no signs of burning on the sides, and they were empty when discovered. The bodies of the serpents, in higher relief than the heads, cross between the legs of the central figure, and the tails, each of which ends in two stylized rattles, are carved on the ends of the stone (Figs. 34.1c; 34.3e). There is no indication, however, that the rattles were visible when the stone was in this position, and it seems likely that the carving was originally exhibited elsewhere, and was placed here only as a basis for a later stucco sculpture (Figs. 34.1b; 34.3c,d). The plaza floor reached the edge of the stone only after the addition of the stucco sculpture (Fig. 34.1, Section C-C'). This plaster floor covers the flat stones which were placed around the edges of the slab, and also covers large flat pieces of a pottery altar or box. This lay at the foot of the slab, and under the pottery were two jade beads, both of which had been burned (Fig. 34.3f). The floor which covered these is the one on which the south side of the second "bench" is built; on the other side of the shrine, it turns up to both earlier parts of the structure, and also to H-18.

The stucco figure, with which the floor blends, follows the contours of the stone one as far as the torso and upper parts of the limbs are concerned, but the arms and legs have been elongated by the

addition of uncarved stones beyond the edges of the slab (Fig. 34.1b). The stucco is thick, and almost as hard as stone. A thin black coating on the slab may be paint or smoke, or some sort of foundation for the stucco. In many places the stucco was badly damaged or destroyed as the result of exposure and root action, and the head and hands were completely missing. Details of the costume were still fairly clear. The figure wore a one-piece tunic-like garment, made of horizontal strips of tabs with notched edges which may represent feathers. Traces of red paint were visible on this and on a button on the shoulder. The rest of the shoulder ornament was destroyed, but a flaring cuff still remained on one wrist. A band encircled the thigh, and some sort of ankle ornament was worn. The feet are not shod with sandals; they are arched, with parallel lines running the length of them, and may be claws rather than human feet. On each knee and elbow, facing the hands and feet, is modeled a large death's head. These are toothless and much more detailed than those carved on the stone, but obviously represent the same thing. The holes in the serpents' eyes were left open, but the rest of the carving was covered by the plaza floor and by stucco which looks like pure decoration, or a winglike element from elbow to waist, rather than an attempt to duplicate the snake motif. Except where the holes exposed it, the stone was entirely hidden. Plume-like pieces of stucco modeled over stalactites lay between the legs and in the hole through the stone head, and may be the remains of a headdress. The hole in the head, which is much cruder than the eye holes, may have received the tenon of a raised head, which probably faced sideways or toward the feet, since the face would be invisible otherwise. The complete absence of any other trace of the head indicates that it was removed deliberately.

After the stucco figure had been modeled, another very thick plaza floor was laid down around Str. H-18a and the south stairs of H-18. It was probably at this time that one of the figures in front of the bench was removed. Subsequently a three-sided enclosure was built around the upper part of the stucco figure (Figs. 34.1; 34.3c). It consists of a double row of rectangular stones set on edge, and one corner of it hides part of the step in front of the bench and the remains of feet on it. The outer part of the north wall is formed partly by the edge of the second "bench" and a continuation of it which linked the two early structures; this part is based on a lower level, and an earlier plaza floor turns up to it. The wall ends near the waist of the figure, and the stone actually touches it on one side. If there were an upper wall and a roof, they were of perishable materials.

There is a space above the head of the figure which was filled with at least three layers of plaster that produced a sort of plain step or low altar, about 14 cm high. This was badly damaged by roots, but there was no great accumulation of pottery on it, and the difficulty of entering the enclosure without stepping on the figure makes it likely that ceremonial activity was concentrated outside the wall. This supposition is borne out by the extremely heavy deposit of pottery, mostly sherds from small Human-Effigy censers, between the legs of the figure and on the plaza floor around it. One of the censers was decorated with death's-heads, a common headdress. At least one censer was inside the shrine. Other offerings found on the surface include two broken stone turtles, five beads, and a small shell ornament. The turtles lay by the legs of the figure. One fade bead incised with a design of radiating lines, a pink shell bead, and a small ornament of gray shell, possibly made to be sewed to cloth, lay between the arm and leg on one side, and three other beads, of fade, pink shell, and black and white shell, lay near the head (Fig. 34.3f). Fragments of miniature vessels, such as often hold offerings in caches, were found in the shrine and may originally have held the beads. All these must have been in clear view before the figure was covered with humus; even if a superstructure existed, it would not have covered the legs. Unless the beads are simply the remnants of a larger offering, their presence indicates that this shrine, at least, was not robbed. The missing head, however, presents a problem, unless it was removed later, after the rest of the figure was covered.

There is no evidence, except proximity, to prove that Str. H-18a was actually connected with the round temple. Whatever the deity represented may have been, worship of him was clearly very active during the latest period of occupation of this part of Mayapán.

Lot C-137: under sculptured slab in shrine. 2 jade beads; 1 fragment of copper (see Fig. 34.3g). No pottery.

Lot C-122: surface of shrine. 2 stone turtles; 2 fragments of carved stone rings; 1 unworked shell; 1 broken flint point; 4 jade beads; 3 shell beads; 1 shell ornament (see Fig. 34.3f).

Total sherds: 660: 6 Puuc type; remainder Mayapán period (341 of small unpainted Human-Effigy censers). No attempt was made to recover all the effigy censer sherds scattered at the foot of the stucco figure.

Chronologically, the relation of Str. H-18a to H-18 is fairly clear. The first bench is probably contemporary with the buried platform, and the shrine around the stucco figure is the latest construction. The stucco figure probably postdates the erection of the later substructure of H-18, but parts of the second bench may be contemporary with it. A trench was dug from H-18a, parallel to the foot of the carved stone, to the colonnaded hall south of it, Str. H-15 (Fig. 34.1, Section C-C'). In the vicinity of the shrine, five plaza floors were visible. The first and third from the bottom end 20 cm from the south edge of the carved slab, and the one between them ends 50 cm from it. The fourth floor extends to the stucco figure. On the north side of the shrine, the floors are in poorer condition, but there are traces of three floors, the third of which ends, or is cut through, about 10 cm from the stone. A fourth floor again extends to the stucco figure. Although the floors cannot be traced all the way around the shrine, it is clear that the walls around the sculpture postdate the construction north of it (Fig. 34.1, Section C-C'). In the direction of Str. H-15, the second and fourth floors end, respectively, 1.5 and 2.1 m south of the shrine, and the fifth floor is visible only immediately around it. The other two floors end 1.9 m north of H-15, and the bits of floor which continue under the colonnaded hall cannot be linked with them. The contents of lots from the trench are listed below. Breaks in the floors undoubtedly added later sherds to the lower lot.

Lot C-130: trench between Strs. H-18a and H-15, below the plaza floor level. 1 obsidian flake blade.

Total sherds: 55: 2 unidentifiable; 4 Puuc type; remainder Mayapán period (14 of Human-Effigy censers, 1 Black-on-Cream).

Lot C-125: trench between Strs. H-18a and H-15, above level of plaza floors.

Total sherds: 59: 2 unidentifiable; 3 Puuc type; remainder Mayapán period (17 of Human-Effigy censers).

EXPLORATION OF THE CAVE OF DZAB-NA, TECOH, YUCATÁN

GUSTAV STRÖMSVIK

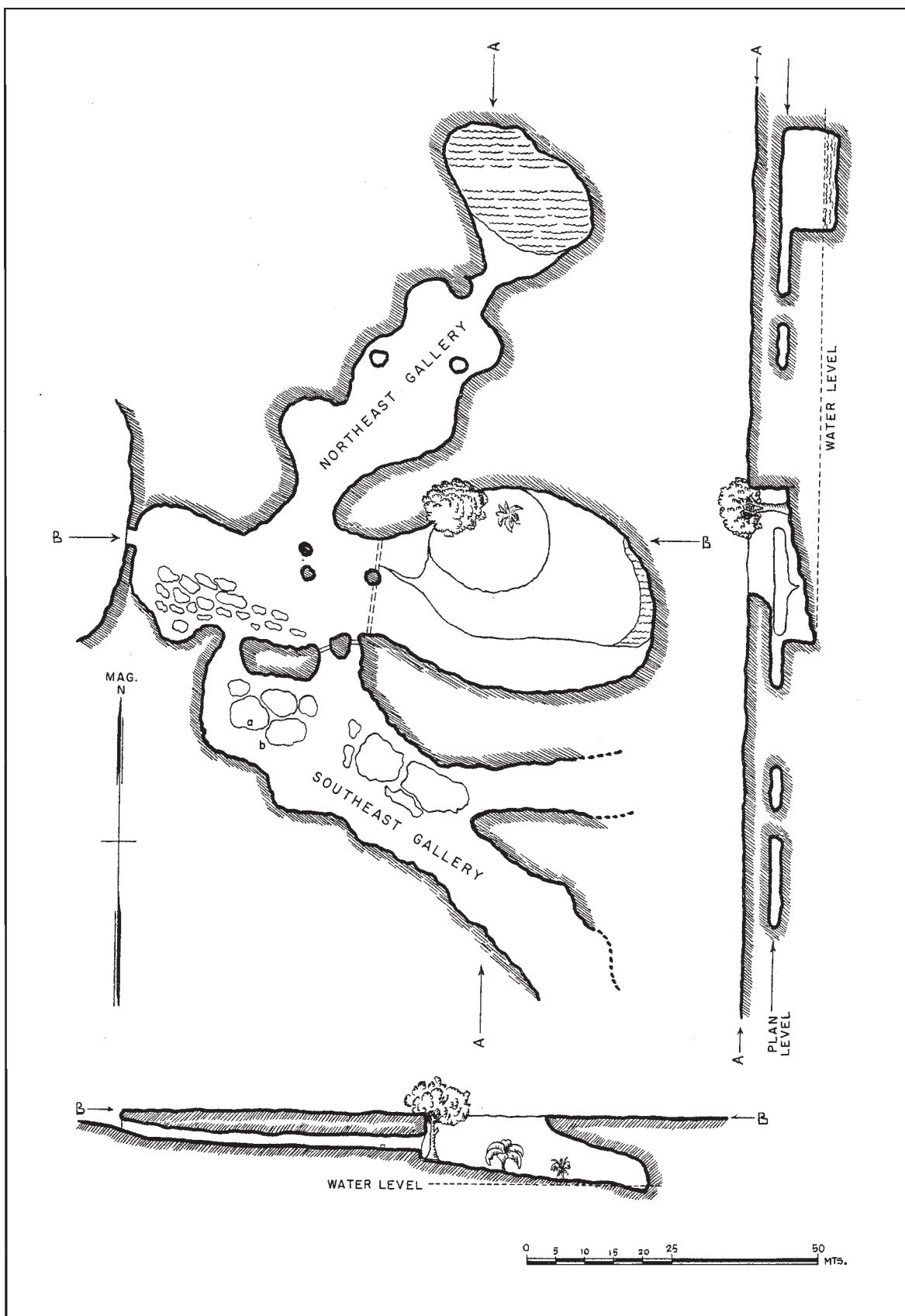
Late in 1954, while I was exploring the environs of Mayapán and Telchaquillo for pre-Spanish occupation sites, Felix Pat, the *comisario municipal* of Telchaquillo, told me about cenotes near the town of Tecoh, the municipal seat. Pat's description of these water sources, and an interesting legend associated with one of them, suggested they should be investigated.

The first cenote visited, called Itza Ch'en, is about 2 km southeast of the plaza in Tecoh. It is entered from the south by a path leading north under the high, dome-shaped natural vault. There are crudely cut, much-worn steps in the abruptly sloping, slippery bedrock, down to clear water. These steps are certainly of pre-Spanish origin. A few sherds of pottery water jars that could be from almost any period, even from modern times, were seen.

The next cenote visited, called Dzab-Na (*Casa de Cascabeles* or The House of the Rattles), is about 1 km south of the plaza in Tecoh, on the land of Quinta

San Antonio, about 200 m south of the hacienda house. The name alludes to the large cave in the side of the cenote wall. According to Felix Pat, his grandfather told him the story that when Mayapán was destroyed a young man of the family of the chief of Mayapán, with a large retinue, took refuge in the cave of Dzab-Na and lived there for many years.

Examination of the cave in June 1955 revealed it to be a rather extensive complex of caverns. The cave can most conveniently be approached through an opening above ground about 50 m to the west of the cenote opening (see plan and sections, Fig. 35.1). Entering through a 1.70 m wide doorway with the remnants of crudely erected doorjambs still showing (Fig. 35.2a), we found the opening to be partly filled with debris that had fallen from the higher ground outside. Once inside, it was noted that the center part of the cave had been cleared of the many rocks fallen from the roof. This was done early in 1942, by order of the commanding general in Yucatán, for



35.1. Plan and Sections of Dzab-Na Cave and Cenote.
a. Statuette and bowl. b. "Mushroom stone."

adaptation to a possible air-raid shelter. The cave is low, between 2 m and 1.5 m in height, and even lower in narrow passages, but in spots it is over 3 m high. Any number of budding stalactites hang overhead, and many potsherds are on the floor (Fig. 35.2b,c).

Proceeding eastward by the trail, cleared of fallen rocks, for about 50 m at 101 degrees from magnetic north, and side-stepping large columns formed by stalactites, we found the open cenote mentioned above (Fig. 35.1). A straight wall, about 0.50 m high, heavily encrusted with calcium deposits from water filtration, crosses the path 43 m in from the entrance. It appears to have been constructed by man. Beyond the wall, to the left of the path, begins an abruptly widening gully in the cave floor that debouches into the cenote. From this gully it is a short drop to the earth of the partly filled cenote. Only along its east edge is there a constant pool of water. This used to be the drinking supply for the cattle on Quinta San Antonio.

About 30 m in from the entrance of the cave, and on the north side, is the opening to a large hall over 2 m high. We called this the Northeast Gallery (Fig. 35.1). Here the floor is level and dry, with few potsherds showing. Moving approximately northeast, and passing a stalactite column on either side, we came to a narrow passage 40–45 m from the entrance to the gallery. Another 10–12 m brought us to the slippery edge of an absolutely dark underground cenote. The water is 5.50 m below the edge of the cave floor and a little over 2 m deep. By the electric light, small fishes could be seen moving about in the clear water. This dark cenote measures about 30 m northwest-southeast and about 15 m across. The water table here is 12–13 m below ground surface; with 5.50 m from the water to the cave floor, and about 3 m head room, some 3.50–4.50 m is left for the thickness of the limestone cap, a respectable roof thickness.

Returning to a point approximately 15 m in from the main entrance to the cave, we proceeded southward over some very rough terrain, crossing large, jumbled rocks fallen from the roof. We advanced about 15 m in this direction through a narrow passage into a fairly spacious hall, which we called the Southeast Gallery, badly cluttered with fallen rocks. Approximately 30 m south of our starting point, and about 4 m east, we found under a large fallen rock a black wooden statuette and about three-fourths of a pottery bowl (Figs. 35.1a; 35.2d–f). These objects had been protected by the flat slab and by the dry, loose debris around them. The objects no doubt were shoved underneath a slab already fallen; otherwise they would have been crushed by the great rock falling from the roof. A few meters southeast of

this was found what looks like a “mushroom stone” (Figs. 35.1b; 35.2g). It was broken across the stem, and only the head was recovered. Worn and broken *metates* and *manos* were also seen here.

The easiest way to get into the Southeast Gallery is to strike south from a point 35 m in from the main doorway to the cave. At 15 m a passage a little over 3 m wide and 1.75 m high, now closed by a wall about 1 m high, leads into the Southeast Gallery (Fig. 35.1). Fifteen meters beyond the wall we found a fumble of fallen rocks, and due west of this, over very rough ground, is a passage. At 35 m west there was a shallow water hole in the floor, and water was dripping from the roof everywhere. The passage continues, but was not explored further by us. The water hole and the drizzle from above are probably features of the rainy season only.

The undulating southern wall of the Southeast Gallery runs in a generally southeast direction for an unknown distance. Following this wall is a cleared path marked by small cairns. About 50 m along the trail is found a small, dome-shaped hall housing a large colony of bats. Potsherds were seen on the floor for about 100 m along the trail, and exploration was continued another 100 m, but by then no signs of human occupancy could be seen. The cave extended onward in various directions, but for lack of electric cable we could go no farther. Gregorio Patron, a merchant in Tecoh, reports that there are seven cenotes in the cave. Others say that this cavern is connected with caves in Mayapán, but legends of underground passages are extremely common in Yucatán.

ARTIFACTS FROM DZAB-NA

The small black wooden statuette (Fig. 35.2d,e) found in the Southeast Gallery represents a man seated, cross-legged, with the left hand resting on the right foot and the right hand on top of the head, apparently in some kind of ceremonial gesture. No vestige of clothing or ornament is shown. The head is egg-shaped, with an exaggeratedly pointed chin. A raised ridge extends from the broad, flattened nose up the forehead. The eye sockets are slanting and oval and may have been inlaid. The mouth is vague and pouting. The right ear is missing, apparently carved away in the making, when a space was hollowed out between the head and the raised right arm. The left ear is well represented by a stylistic scroll and is pierced horizontally a little below the middle. On the left cheek, under the eye, is a circle, and below this is the Maya numeral 12; the two bars are horizontal with the two dots below. The circle and number may represent tattooing.



35.2. Dzab-Na Cave.

a. Entrance to cave. In right foreground can be seen stone of doorjamb. b,c. Interior of cave, showing roof, floor, and stalactitic columns. d. Wooden statuette. Height 14.5 cm; max. width 7.0 cm. e. Section and base of statuette in d. f. Medium Slate Ware pottery bowl; dark brown with faded black dribble decoration. Lip diameter 17.5 cm; height 7.5 cm; wall thickness 0.4–0.5 cm. g. "Mushroom stone." Diameter of top 26.0 cm, of stem 14.0 cm.

Some extraneous features of the statuette may be mentioned. A hole is pierced through the left shoulder and another under the right arm at about the same level, as if for suspension. These holes, as well as the hole through the ear, are drilled in the same manner as holes in objects of jade: a conical hole is drilled from each side, in this case at slightly different angles, to meet at the middle. In the back of the figure is a comparatively large, round hole (Fig. 35.2e), 4 cm deep and 4 cm wide; from this a vent 1 cm in diameter opens upward, emerging at the base of the neck. On the flat base of the statuette is carved a triangle, open toward the back; possibly these lines are supposed to represent the natural body folds of a seated person.

The ceremonial function of this statuette, if any, can only be guessed. It may possibly have been used as an amulet, suspended on a string and worn

around the neck. Extra charms could then be kept in the little depository in the amulet's back. No marks of the tools used in the making of the statuette can be detected. It apparently was fashioned mainly by rubbing or abrading, except for the cavity in the back, which is rough and no doubt was pecked out with some pointed instrument.

A broken "mushroom stone" (Fig. 35.2g), so called from its shape and the lack of a functional name, was also found in the Southeast Gallery, among the debris and rock fallen from the roof, about 2 m southeast of the slab under which the wooden statuette was found. The top is fairly large, as such stones go. The stem is broken, and there is no telling how long it originally was (Kidder, Jennings, and Shook 1946; Thompson 1948). The stem and under side of the "mushroom stone" are rather crudely finished, the marks of the pecking tool showing clearly. The

nicely rounded top surface is much better finished possibly rubbed smooth. In spite of extensive search, the lower end of the stone could not be found.

Around the cave, and particularly near the mushroom stone, were seen at least six *metates* in various stages of completeness and wear. With them were short manos. All *metates* were of the unfashioned, rough slab type, with the grooves formed by the short manos.

Together with the wooden statuette, under the same stone slab, was found a Medium Slateware (brownish) pottery bowl with one quarter of the side missing. The bowl is nicely burnished inside and outside. The outside is decorated with black dribble stripes, irregularly converging toward the rounding bottom (Fig. 35.2f). The break, where the piece is missing, is quite old, to judge by the heavy calcium coating. The missing fragment was not found.

During the exploration of the cave a great many holes were dug, in an attempt to find a place with enough accumulation of earth to provide some stratigraphy, but no depth was attained. In spite of lack of soil, over 1,300 potsherds were recovered in the digging, not including surface sherds. R. E. Smith examined the lot and gives the following statement:

"In the collection are included the following types of sherds: 2 recent, 408 Mayapán, 123 Puuc, 23 Classic (mostly Early Classic, Tzakol style polychrome), 420 pre-Classic, 341 unidentified (144 black slipped jars, 197 weathered and fragmentary). Thus, a very long occupation of the cave is indicated."

DISCUSSION

Within a radius of about 100 m from the entrance of the cave are found at least six small mounds or platforms. This indicates that there was a small settlement here, dependent, perhaps, not on the cave, but on the cenote as a constant source of water. About 1 km to the north lies the town of Tecoh, which apparently was an aboriginal site of some consequence (Roys 1952). The large church is built on an extensive artificial mound, and the town plaza, which apparently was the ancient plaza, has a cenote near the center. This cenote is now covered over, hidden beneath the cement walks of the modern plaza, but until recently it was the town's water supply. Just south of the municipal building can be seen an artificial mound, still large in spite of having served for centuries as a quarry for building the town of Tecoh.

Notwithstanding the more pretentious settlement of neighboring Tecoh to the north, Dzab-Na was probably a separate unit settlement during the Mayapán period, conforming with the apparent trend of that time toward decentralization from monumental ceremonial centers to small or family group units. The cave would have served as a safety refuge during times of unrest. Quite aside from the legend mentioned earlier, Dzab-Na was so considered as late as 1942. There is reason to believe that such periods were many and occurred from the earliest times.

EXCAVATIONS IN HOUSE MOUNDS AT MAYAPÁN IV

A. LEDYARD SMITH AND KARL RUPPERT

During the 1955 field season, the last season of work by Carnegie Institution at Mayapán, excavations were confined to three whole groups and to structures of unusual, not previously investigated plan.

The three groups chosen, all of the dwelling type with buildings facing on small courts, were J-71, K-67, and Q-244. Group J-71 was selected primarily because one of its four constructions faced in two directions. Two of the others were buildings of the normal dwelling type, one having once supported a beam-and-mortar roof, the other a roof of thatch grass. The fourth, a small altar shrine, was in the center of the court. Group K-67 was picked because it was a closely knit unit of four structures surrounded by a property wall. Three of the structures were of the dwelling type that had supported thatch or grass roofs, the fourth was an altar platform in the center of the court. Group Q-244, also a unit of four structures, was chosen because of Str. Q-244b, an elaborate dwelling that once supported a beam-and-

mortar roof and was obviously the home of a person of some importance. The other three structures were a single-room building that had supported a thatch or grass roof, a long low platform, and an altar platform, the last being in the center of the court.

The other structures excavated, chosen for their differences in plan from the normal dwelling type of building having a front and back room with benches in the front room, were those that faced in two directions and single-room constructions. These latter were found with and without benches, some with interior stone columns, some with interior altars built against the center of the back wall. It was hoped that through thorough investigation some idea of the function of these unusual buildings could be gained.

R. E. Smith, as in the past, examined the collection of sherds and furnished the data given in this report. A total of 34,568 sherds was recovered, of which 28,949 were identified. Of the latter, 28,872

(99.75 percent) were of Mayapán period, 75 (0.25 percent) of Puuc wares, and one sherd each of Classic and Plumbate wares. Among the Mayapán sherds those from censers number 5,438, those of Fine Orange 228.

With few exceptions, the contents of each lot of artifacts are listed in the caption of the drawing of the construction where the lot was found. Exceptions are Lot A-551 (Str. R-142e) and Lots A-513, -514, -517 (Group Y-2), which appear on no drawing and are listed under the descriptions of the respective structures.

STRUCTURE A-1 (540 N, 1232 W)

Str. A-1 consists of a terrace supporting a single-chambered building (Fig. 36.1f). The terrace, which to a great extent is formed of a natural rise, varies in height from 1.40 m at the northwest to no more than 0.50 m at a section on the south. Much of the facing has fallen, though in places very large, roughly weathered stones are still in position. On the north are remains of a stairway, approximately 5 m in width, formed of three risers averaging 0.40 m, and treads of 0.55 m. The stairway rises directly from bedrock and was made of very large stones.

The single-chambered building rises, on the north side, from a 0.30 m base somewhat suggestive of a plinth though there is no offset. The single doorway is to the north, with jambs of large stones. The masonry throughout is of irregular, mostly large, much weathered stones. Only two Puuc-type stones were noted; they formed part of the facing of the plinth at the doorway. The thickness of the wall varies from 0.50 m to 0.75 m, and its greatest height is 0.85 m at the east jamb.

Two floors were suggested. One is at bedrock on the north; the second, 0.30 m above the first, forms the sill of the doorway, and traces of it were found turning up at the back wall.

Material from within the structure from surface to bedrock includes a small tripod vase from below the upper floor (see Fig. 36.1f, Lot A-595).

GROUP J-71 (135 N, 510 E)

Group J-71, a unit of the dwelling type, consists of four structures resting on a terrace about 1 m high. The terrace was formed by building retaining walls around the sides of a natural rise and filling in to form a level area. Three of the structures, a, b, and c, are situated on the west, north, and east sides of the terrace and face a small court in which the fourth structure, d, an altar shrine, is placed. Access to the group is by means of a small stairway on its south

side, just east of Str. J-71a. The only construction not excavated in the group was Str. J-71c on the east side of the terrace. It is a house-type structure supported by a low platform

Str. J-71a (Fig. 36.1a), on the west side of the court, is supported by a low platform and faces both east and west. Its plan differs from that of the typical dwelling with front and back room, being much less closed in. It has entrances on four sides. The two main entrances, on the east and west sides, consist of large openings each divided into three doorways by two columns. At the north end of the structure there is a single doorway, and at the south is an opening with a single column in the center forming two doorways. A medial wall down the center of the structure divides it into an east and west room connected by a doorway in the center of the wall. The east room has a bench on either side of the doorway in the medial wall, and its north end, which is open, leads into a room extending the breadth of the building. This is an unusual plan, and, though the structure may have been used as a dwelling, one cannot be sure of its function.

Practically no Puuc-type stones were used in the construction of Str. J-71a, although the masonry is of fairly well cut and faced stones. From the good preservation of the floor and the debris on it, it was evident that a beam-and-mortar roof had been used. A considerable amount of charcoal on the floor may indicate that the roof was burned. An exploratory trench was dug to bedrock from the center of the east room through the doorway as far as the center of the west room. During the removal of the surface material from the structure, several broken pottery vessels, one of which we were able to mend (Fig. 36.7b), were found above the floor in the northeast corner of the north room (see Fig. 36.1a, Lot A-545).

Str. J-71b (Fig. 36.1b), on the north side of the court, is supported by a low platform and faces south. It consists of a long front room and two back rooms. The front room has a large opening on the south side divided into three doorways by two masonry piers, and a small doorway at either end. Benches extend along the back wall except where it is broken by two doorways leading into the two back rooms. The eastern of these back rooms, probably a shrine room, is small with a low bench or altar along its back wall. Its only doorway, which leads into the front room, is in line with the central doorway of the structure. Two whole pottery vessels (Fig. 36.7a) were found above the floor in this room (see Fig. 36.1b, Lot A-547). The western back room has no bench and extends to the west end of the building. There is no rear room at the east end of Str. J-71b to complement the west back room.

From the excellent condition of the floors and the amount of charcoal and remains of burned beams on them, there is no doubt that this structure, which was of the dwelling type, had a beam-and-mortar roof that was destroyed by fire. Although very few Puuc-type stones were used, the stones in the masonry were fairly well cut and faced. A strange feature in the front room was an olla neck set in the floor, which had been resurfaced several times (Figs. 36.1b,1; 36.5a; 36.7k). It was situated just northeast of the central doorway but had no companion on the other side. Its purpose is problematical. A trench in the center of the front room and leading back into the shrine room uncovered under the front room an early floor (Fig. 36.1b,2) which does not seem to have been associated with the structure. It probably had to do with an early platform.

Str. J-71d (Fig. 36.1e) is a small platform in the court centered on Strs. J-71a and b. The platform, made of well-cut stones, had stones lying around its edges except off the center of the north side. It probably supported a small structure with a doorway on its north side, presumably an altar shrine. A pit in the center of the platform proved that it rested on the court floor, and brought to light a cache put through the court floor. The cache (see Fig. 36.1e, Lot A-546) was put in at the time of the construction of the altar shrine or later.

GROUP K-67 (75 N, 475 E)

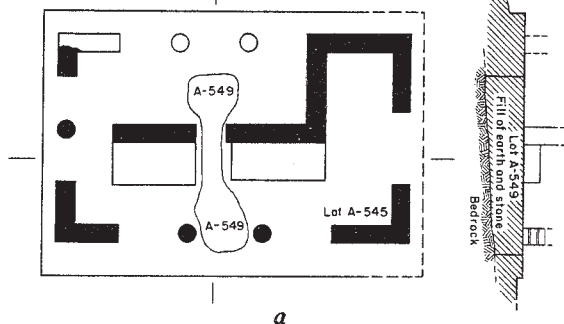
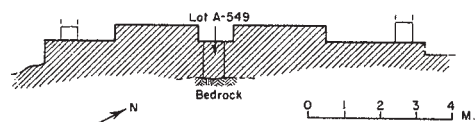
Group K-67 (Fig. 36.2), a compact group of the dwelling type consisting of four structures, a–d, rests on a terrace of two levels following the contour of the bedrock, which rises from north to south. The lower level, about 1 m high, supports the northern part of the group, Strs. K-67b, c, and d. The upper level, to the south, is about 2 m higher than the lower level and supports Str. K-67a. An inset stairway of six steps leads up to a broad terrace in front of Str. K-67a, which faces north upon a small court with Strs. K-67b and c on its east and north sides, and Str. K-67d, a small altar platform, in the center lined up with the stairway. A wall of rough stones, averaging about 0.60 m high and placed anywhere from 0.30 to 1 m apart, surrounded the group except to the south, where it runs into a *sascab* pit. This wall was probably solid at one time, except for entrances, the spaces between the large stones having been filled with rubble and mortar which has now washed out. Although there may have been several entrances through the wall, the most likely place was on the north, where there is a meter-wide opening with a jamb stone on one side. A pit (Lot A-541) was dug in the *sascab* pit mentioned above. Undoubtedly the

limestone used in the making of the lime mortar for the construction of the buildings, terraces supporting them, and floor of the court of Group K-67 came from this *sascab* pit. Very few Puuc-type stones were used in the masonry of this group, which was made almost entirely of roughly cut, unfaced stones.

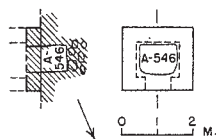
Str. K-67a, a house once covered with a thatch or grass roof and supported by a low platform, faces north on a terrace overlooking the court below. It has two rooms, front and back. The front room has a wide opening in its north side which was probably originally divided into three entrances by two wooden posts. At one time there were two doorways in the back wall of the front room leading into the back room, one doorway near the center of the wall, the other nearer the east end. A bench extended around three sides of the room except where it was interrupted by passageways leading to the two doorways to the back room. At some later date the eastern of the two doorways was blocked and the bench made continuous by filling in the passageway leading to the doorway. The floor in the passageway leading to the other doorway was 0.30 m higher than the rest of the floor in the room and had a low step against its north face. The back room had no doorways except the two leading into the front room. The floor level of the room was raised above the level of that directly in front of the western doorway. Here the level is the same as that of the passage between the benches in the front room, which continues part way across the back room a little wider than the breadth of the doorway, and then rises to within a few centimeters of the floor of the rest of the room, forming a sort of altar against the back wall.

A pit through the floor in the western of the two passageways in the front room exposed a tomb with roughly cut stone walls. It contained the skeleton of an adult male extended on its back, arms flexed and head to the northeast. The skull showed artificial occipital deformation, and some of the other bones showed an arthritic and degenerative condition. The only evidence of another skeleton was a fragment of mandible of an adult. Objects found with the skeleton are given under Figure 36.2, Lot A-539. Another pit directly north of the burial and in front of the platform supporting Str. K-67a brought to light a cache (see Fig. 36.2, Lot A-538) of two pottery turtles with human heads in their mouths (Figs. 36.2a,1; 8a–d).

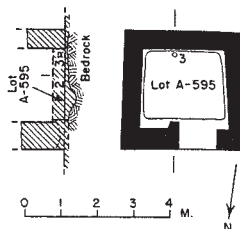
Str. K-67b is a two-room structure of the dwelling type facing west upon the court. It is supported by a low platform with two steps against the center of its west side leading up from the court. The front room is completely open on its west side, which was probably divided into three entrances by two posts



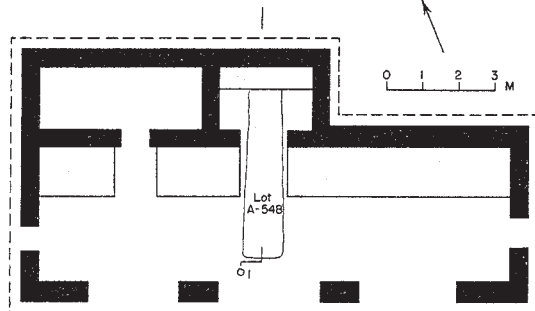
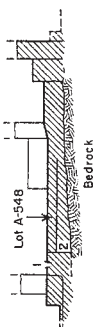
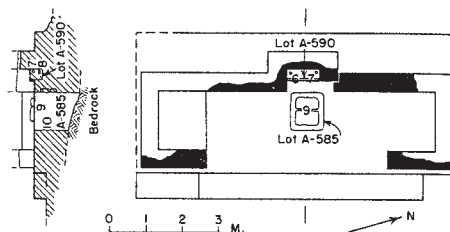
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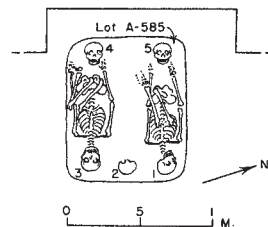
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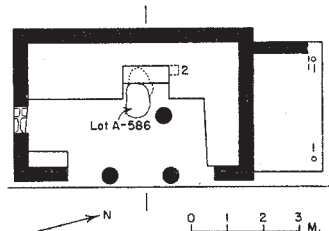
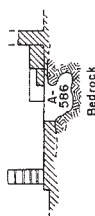
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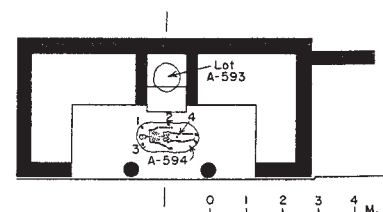
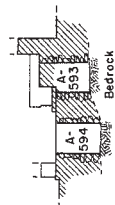
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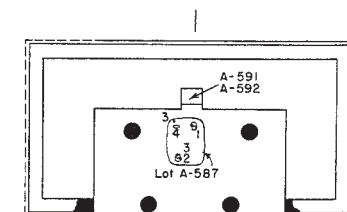
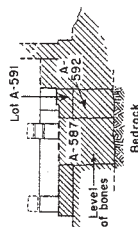
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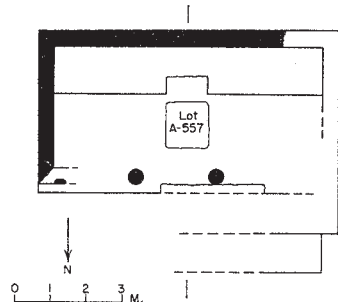
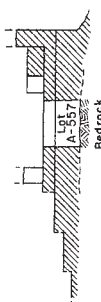
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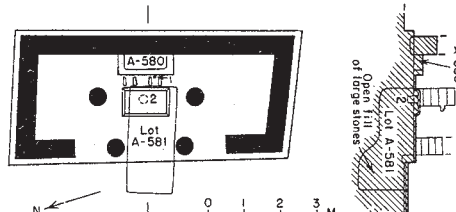
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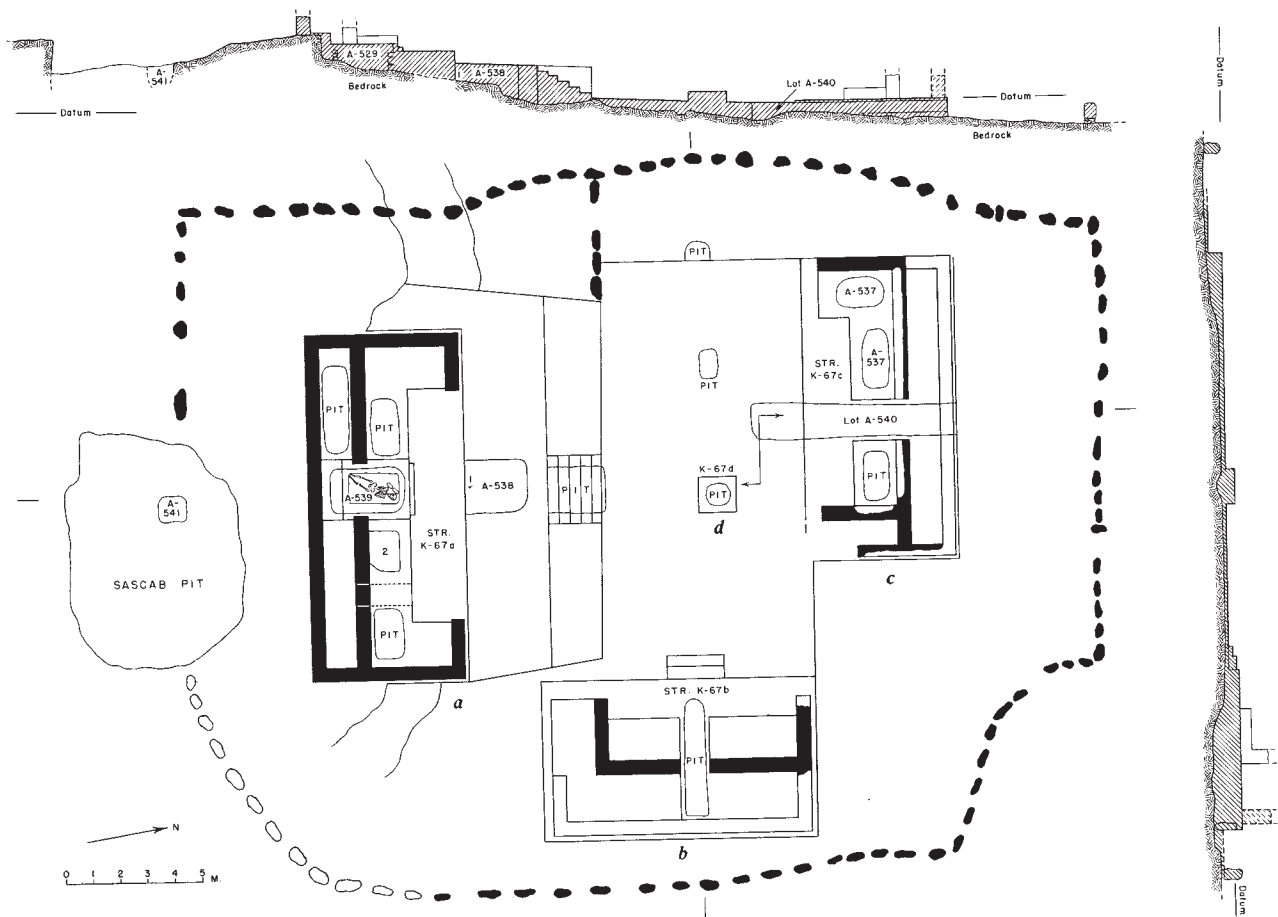
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36.1. Excavations in Strs. J-71a, J-71b, P-23c, R-30f, J-71d, A-1, P-14a, P-28b, Q-37a; and R-91.

a. Str. J-71a, plan and section. Lot A-542: from surface: *mano* (Fig. 36.9v); flint point (Fig. 36.10a); shell tinkler with evidence of carving. Sherds: 629; 131 unidentifiable, remainder of Mayapán period (1 Fine Orange, 11 of censers). Lot A-545: pottery vessel from above floor, northeast corner of north room (Fig. 36.7b). Sherds: 858; 131 unidentifiable, remainder of Mayapán period (1 Fine Orange). Lot A-549: from between floor and bedrock in trench extending from center of east room to center of west room: 2 bird bones; animal bone; shell; shell fragment; 2 flint chips; 3 obsidian flake blade fragments. Sherds: 155; 11 unidentifiable, remainder of Mayapán period. b. Str. J-71b, plan and section. 1. Pottery neck in floor. 2. Fragment of early floor. Lot A-543: from surface: stone alligator head (Fig. 36.9j); worked manatee rib (Fig. 36.11e); rubbing stone (Fig. 36.9v); pottery head (Fig. 7n); hammerstone; *mano* (?). Sherds: 865; 203 unidentifiable, 1 Puuc period, remainder of Mayapán period (1 Fine Orange, 47 of censers). Lot A-547: two pottery vessels from above floor on west side of east back room (Fig. 36.7a). Sherds: 149; all of Mayapán period. Lot A-548: from below floor of east passageway and front and east back rooms down to bedrock: flint point (Fig. 36.10c); pottery neck in floor of front room (Fig. 36.7k); hammerstone; fragment of greenstone celt; flint chip; fragment of obsidian blade; 4 bird bones. Sherds: 170; 7 unidentifiable, remainder of Mayapán period (1 Fine Orange, 4 of censers). c. Str. P-23c, plan, section, and detail of burial. 1. Portholes. 2. Niche: opening 0.15 m, high, 0.24 m, wide; interior 0.30 m high, 0.24 m wide and 0.25 m, deep. Lot A-583: from surface: worked shell disk with central hole and four peripheral notches; fragment of obsidian blade; 3 *metates*. Sherds: 284; 69 unidentifiable, 1 Medium Slate Puuc type, remainder of Mayapán period (4 Fine Orange). Lot A-586: from tomb in front of altar: deer antler awl (Fig. 36.11d); skeletal material, evidence of 3 old males and 1 female. No sherds. d. Str. R-30f, plan and section. Lot A-555: from surface: pottery spindle whorl (Fig. 36.10h). Sherds: 887; 283 unidentifiable, remainder of Mayapán period (3 Fine Orange, 5 of censers). Lot A-557: from below floor level in center of structure: stone monkey (Fig. 36.10e). Sherds: 75; 4 unidentifiable, remainder of Mayapán period (3 Fine Orange). e. Str. J-71d, plan and section. Lot A-546: from below court floor level under structure: flint arrow points (Fig. 36.10c); jade bead; 2 shell beads; segment of cut bone (Fig. 36.10f); remains of small pottery turtle with human face. Sherds: 87; 15 unidentifiable, remainder of Mayapán period. f. Str. A-1, plan and section. 1. Possible floor. 2. Possible floor. 3. Tripod pottery vessel containing 6 beads (Fig. 36.11f). Lot A-595: from surface to bedrock: tripod vessel; 6 beads in tripod vessel, jade bead (diam 2.3 cm), 4 shell beads, jade bead (Fig. 36.11f); fragments of 2 obsidian blades. Sherds: 160; 63 unidentifiable, 2 Puuc period, remainder of Mayapán period (46 of censers). g. Str. P-14a, plan, section, and detail of burial. 1. Old male lying on right side, face north, arms extended, legs flexed, copper tweezers under head. 2. Adult female (?), bones burned. 3. Old female lying on left side, face up, arms extended, legs flexed. 4. Very old female. 5. Adult male. 6. Pottery bowl and lid (Fig. 36.7l, bottom), contained shell bead. 7. Pottery bowl and lid (Fig. 36.7l, top), contained shed bead. 8. Conch shell trumpet (Fig. 36.11c). 9. Flat stones over burial. 10. Position of skull of 2. Lot A-584: from surface: flint point (Fig. 36.10b); green stone celt (Fig. 36.11h); fragments of 3 conch shells; stone fiber beater; 2 flint chips; 3 fragments of obsidian flakes; animal bones. Sherds: 765; 233 unidentifiable, remainder of Mayapán period (3 Fine Orange, 15 of censers). Lot A-585: from burial under two large slabs: 5 adult skeletons, 2 male, 3 female; carved deer antler (Fig. 36.11d); deer antler; copper tweezers (Fig. 36.10x); sting ray spine (Fig. 36.11a); sting ray spine, broken (Fig. 36.11a); sting ray spine, worked (Fig. 36.11a); worked bone (Fig. 36.11a); 4 fragments of obsidian blades; flint point with tenon (Fig. 36.10d); flint point, broken; piece of worked shell; pottery disk; shell fragment. Sherds: 135; 14 unidentifiable, remainder of Mayapán period (1 Fine Orange). Lot A-590: from cache under altar: conch shell trumpet (Fig. 36.11c); pounding stone; 2 small pottery bowls and lids (Fig. 36.7i); 2 shell beads, one in each bowl. h. Str. P-28b, plan, section, and detail of burial. 1. Two antler earplugs, on bedrock (Fig. 36.11a). 2. Hammerstone, on bedrock. 3. Pottery vessel and stone lid, on bedrock (Fig. 36.7p). 4. Miniature pottery vessel. Lot A-588: from surface: 3 flint chips; 1 animal bone. Sherds: 171; 40 unidentifiable, remainder of Mayapán period Fine Orange, 10 of censers). Lot A-593: from shaft inside altar: spiral shell; fragment of obsidian blade. Sherds: 237; 24 unidentifiable, 1 Puuc type, remainder of Mayapán period (2 Fine Orange, 14 of censers). Lot A-594: from burial in front of altar: adult skeleton extended on back resting on bedrock; pottery vessel 10 cm high with pedestal base and stone lid (Fig. 7p); hammerstone; fragment of bone point (Fig. 36.11a); fragment of green celt; miniature pottery vessel; 2 antler earplugs (Fig. 36.11a); 23 bird and animal bones. No sherds. i. Str. Q-37a, plan and section. 1. Old female. 2. Very old male. 3. Fragment of mandible belonging to 2.4. Plastron and carapace of turtle (Fig. 36.11b). Lot A-582: from surface: 3 fragments of obsidian flake blades. Sherds: 109; 25 unidentifiable, remainder of Mayapán period (1 Fine Orange, 3 of censers). Lot A-587: from burial in front of altar: remains of old female skeleton and very old male skeleton; turtle plastron and carapace, each with drilled hole (Fig. 36.11b); limestone *metate* (Fig. 36.9k); *mano*; 2 hammerstones; rubbing stone; whetstone of foreign stone; flint blade (Fig. 36.10a); five-sided rubbing stone Fig. 36.9k); rubbing stone inside turtle carapace; fragments of two deer antlers; worked and drilled shell (Fig. 36.10g); small shell; 2 animal (jaguar?) teeth; fragment of *tepesquintle* jaw; bone spindle whorl (Fig. 36.11a); 4 flint chips; piece of worked shell; fragment of sting ray spine; worked bone tube (Fig. 36.11a); bone awl (Fig. 36.11a); flint arrow point notched for hafting. Sherds: 647; 42 unidentifiable, 4 of Puuc type, remainder of Mayapán period (183 of censers). Lot A-591: from altar above lowest floor: perforated shell tinkler (Fig. 36.10x); shell. Sherds: 20; 8 of Puuc type, 2 probably of Puuc type, remainder of Mayapán period. Lot A-592: from below lowest floor below altar. Sherds: 8; 2 of Puuc type, remainder of Mayapán period (1 Fine Orange). j. Str. R-91, plan and section. 1. Position of Lot A-579. 2. Two upper floors and early floor cut through possibly to get some offering out of small cist which contained fragment of incensario Ware. Lot A-571: from surface: shell pendant (Fig. 36.10x); rubbing stone; animal bone. Sherds: 609; 70 unidentifiable, remainder of Mayapán period (1 Fine Orange, 403 of censers). Lot A-579: small pottery effigy vessel on top floor between south pair of feet in front of altar (Fig. 36.8i,1); 1 jade and 2 shell beads from pottery vessel above. Lot A-580: from inside altar: pottery bowl, once had three legs now missing (Fig. 36.7h); pottery effigy vessel containing jade bead, small shell, and a few small animal bones (Fig. 36.8o,p). Sherds: 15; all of Mayapán period. Lot A-581: from below floor in front of and inside structure: stone fiber beater (Fig. 36.9t). Sherds: 30; all of Mayapán period.



36.2. Group K-67, Plan and Sections.

a. Str. K-67a, house foundation and associated terrace. 1. Position of pottery turtles, Lot A-538 (Fig. 36.8a-d). 2. Cist 0.65 m to bedrock. b. Str. K-67b, house foundation. c. Str. K-67c, house foundation. d. Str. K-67d, altar platform. Areas marked PIT on plan indicate trenches yielding no sherds. Lot A-536: from surface: shaped piece of shell; shell fragment; 6 flint chips; flint point (Fig. 36.10d); 4 fragments of obsidian blades; pottery head (Fig. 36.7m); grooved rubbing stone (Fig. 36.9v); rubbing stone; *mano* fragment; 6 animal bones. Sherds: 2,500; 555 unidentifiable, 1 Plumbate, remainder of Mayapán period (11 Fine Orange, 122 of censers). Lot A-537: from below floor in west bench, Str. K-67c: small sea shell. Sherds: 151; 1 unidentifiable, remainder of Mayapán period (1 Fine Orange). Lot A-538: from below level of terrace in front of front room, Str. K-67a: turtle with human head in mouth (Fig. 36.8a,b); turtle with human head in mouth (Fig. 36.8c,d). Sherds: 2; both of Mayapán period. Lot A-539: from tomb under western passageway, Str. K-67a: 2 pieces of coral; fragment of bivalve shell; 2 stone disks (pot lids); 2 pottery legs standing on animals (Fig. 36.7o) pottery serpent head (Fig. 36.8l); pottery head (Fig. 36.8g,h); pottery head (Fig. 36.8m,n); 6 animal bones; skeletal material, an adult male and fragment of mandible of another adult. Sherds: 795; 9 unidentifiable, remainder of Mayapán period (510 of censers). Lot A-540: from under lowest pit in passageway, Str. K-67c. Sherds: 12; all of Mayapán period (1 Fine Orange, 3 of censers). Lot A-541: from pit in *sascab* pit south of Str. K-67a. Sherds: 69; 17 unidentifiable, remainder of Mayapán period (2 Fine Orange, 3 of censers).

that helped to support a thatch or grass roof. A single doorway in the center of the back wall leads into the back room. Benches against the back wall on either side of the doorway extend the length of the front room. The southern half of the back room was higher than the other part of the room. Unfortunately the walls, except for a small bit at the north end, had completely fallen, so it was impossible to know just

how far the room extended to the north. For a possible reconstruction of Str. K-67b, see Figure 36.2b.

Str. K-67c, a two-room building of the dwelling type, is supported by a low platform and faces south on the court. The front room, which does not extend to the east end of the platform, is completely open on the south side, which, like the open side of Str. K-67b, was probably divided into three entrances by

two wooden posts supporting the roof of thatch or grass. A single doorway in the back wall leads into the back room. There are two benches in the front room, one against the back wall to the east of the doorway, the other an L-shaped one along the back wall to the west of the doorway and along the west wall. The area east of the front room, formed by the platform extending beyond its east wall, had walls on its west and north sides and along half of its east side, forming what may have served as a partly enclosed exterior bench or kitchen. The back room extended the whole length of the platform and had no benches.

Str. K-67d, a small altar platform, rests in the center of the court in line with the stairway leading up to Str. K-67a. A pit sunk in the center of the altar produced nothing.

STRUCTURE P-14A (65 S, 680 W)

Str. P-14a, one of a group of two on a terrace about 1 m high, is supported by a low platform and faces east (Fig. 36.1g). It is a single-room building with a bench at its south end and an altar set in a recess in the center of the back wall. The back wall of the construction projected at this point to make room for the altar. The east side of Str. P-14a was open except for a short distance at either end. This wide opening was undoubtedly divided into three entrances by wooden posts which would have been necessary to support the roof. The latter must have been of grass or thatch, as there were no indications of its having been of beams and mortar. No Puuc-type stones were used in the masonry, which was very rough. At some date after the construction of the building, the platform supporting it was extended on the east side. Just what function this structure had is hard to determine. It certainly does not have the plan of the general dwelling type, but still may have been used as a place to live.

A pit sunk through the altar uncovered a cache including two small pottery bowls and lids (Fig. 36.7i; see Fig. 36.1g,6,7, Lot A-590).

Two large flat stones in the center of the room (Fig. 36.1g,9) proved to be capstones of a tomb roughly outlined with rough stones. There were five skeletons in the burial (Fig. 36.1g,1-5): 1. An old male lying on his right side, facing north, with arms extended along the sides, legs flexed, a pair of copper tweezers (Fig. 36.10g) under the skull; 2. An adult female (?), bones burned; 3. An old female lying on her left side, face up, arms extended along the sides and legs flexed; 4. A very old female; 5. An adult male. For other objects recovered from the tomb see Figure 36.1g, Lot A-585.

STRUCTURE P-23C (95 S, 510 W)

Str. P-23c is one of five structures included in Group P-23. It faces east and limits the west edge of a court bounded by Str. P-23a on the north, P-23b on the south, and the open edge of the terrace to the east.

The platform directly supporting the structure has a height of 0.15 m on the east side, where the edge of the platform is 0.15 m outside the wall of the building. The platform was not observed at the back of the structure.

The building consists of a single chamber (Fig. 36.1c) with two columns in the east entrance, averaging 0.38 m in diameter. When the columns were excavated, five drums were found associated with the column to the south and six drums (giving a height of 1.25 m) with the column to the north. One of the drums for the latter column had on one side a knob projecting 0.15 m (similar to Fig. 36.6c). There is a narrow doorway in the south wall. The sill of the doorway, having a height of 0.10 m, is formed of several stones laid with considerable care.

Within the building and just to the northeast of an altar had been a column. The lowest drum was still in position. Five drums had fallen en masse to the south. This column seems secondary, as there is much irregularity in diameter of the individual drums; the average diameter is 0.45 m. Possible remains of a floor were noted under the lowest drum.

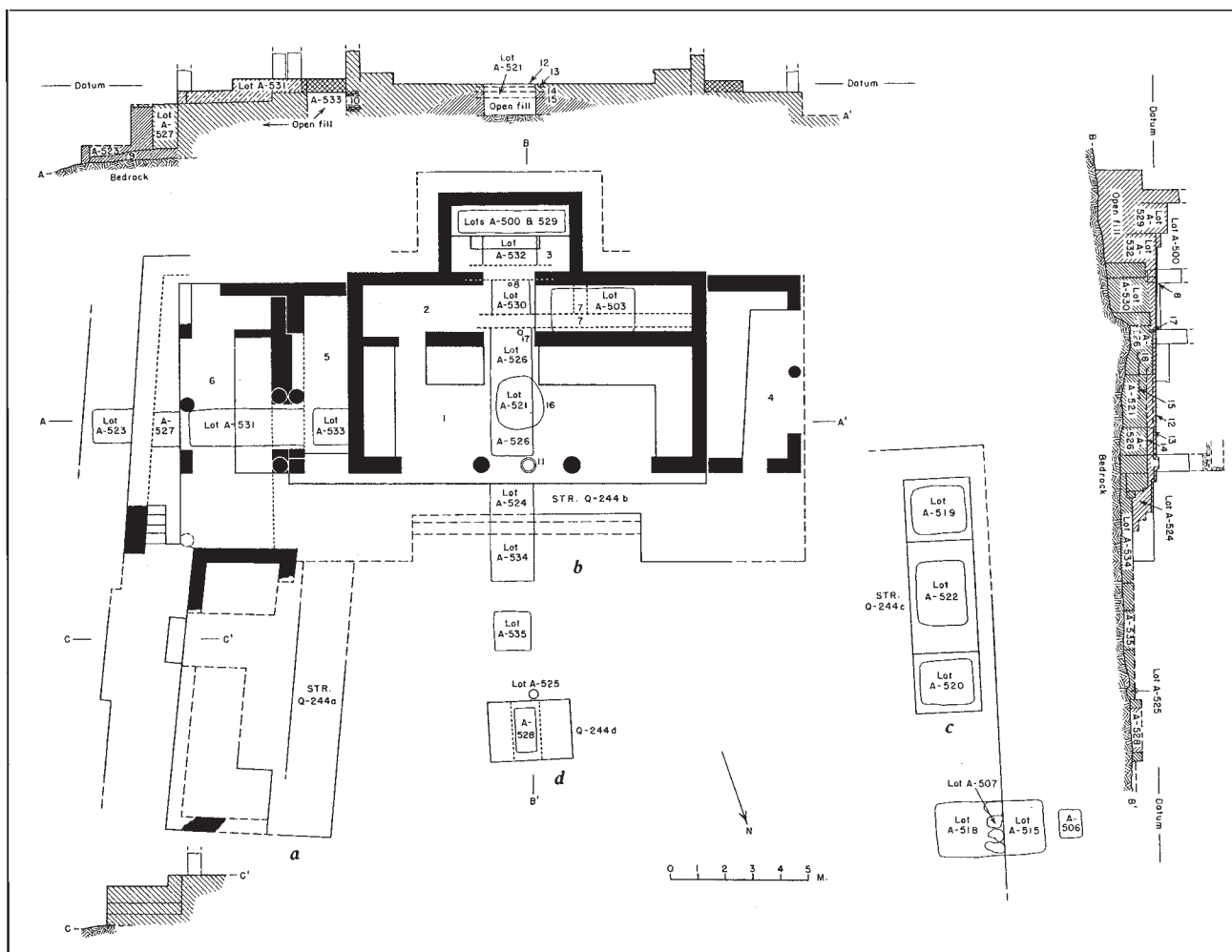
Within the chamber there is a bench built against the north and west walls. On the west the bench is interrupted, in line with the transverse axis of the structure, by an inset altar. Here the bench has a height of 0.40 m and a width of 1.55 m. On the north the width varies from 0.70 m to 1 m.

In the southeast corner of the room may be the remains of a narrow (0.45 m) bench, now in a very poor state of preservation. Its height was not clearly defined, though it seemed lower than the main bench.

The altar is somewhat similar to that in Str. R-126a. It is formed of a single step 0.15 m high and is recessed 0.45 m from the face of the bench (Fig. 36.1c).

A niche in the bench has its opening in the north side of the altar recess (Fig. 36.1c,2). The opening measures 0.15 m high by 0.24 m wide. Inside measurements are 0.24 m wide and 0.25 m deep. The inside height is 0.30 m; the floor of the niche is 0.10 m, below that of the altar step or entrance to the niche.

A pit directly in front of the altar disclosed a natural cavity in the bedrock which had been used as a tomb. Irregular in shape, it extends under the altar (Fig. 36.1c). Material from the tomb consisted



36.3. Group Q-244, Plan and Sections.

a. Str. Q-244a, house foundation. b. Str. Q-244b, house foundation. 1. Front room. 2. Back room. 3. Shrine room. 4. West room. 5. East room. 6. Room added on east side of east room. 7. Early construction, buried. 8. Stone disk covering small opening in top floor. 9. Earth and midden fill. 10. Foundation wall. 11. Plaster base, possibly for wooden post or statue (Fig. 36.5g). 12. Floor. 13. Floor. 14. Floor. 15. Floor. 16. Area where Floors 12-15 were broken through in ancient times. 17. Position of pottery vessel and lid (Fig. 36.7e) in Lot A-526. 18. Deposit of copal 0.40 m west of middle bench, Room 1. c. Str. Q-244c, long low platform. d. Str. Q-244d, altar platform. Lot A-500: from above floor of Room 3, Str. Q-244b: stone turtle (Fig. 36.9m,n); fragment of stone sculpture (Fig. 36.9o,p); small crouching idol (Fig. 36.9e,f); rubbing stone; cut and perforated shell tinkler (Fig. 36.10f); perforated shell, 2 holes (Fig. 36.10f); 2 flint nodules from which chips had been flaked off; 2 small shells; 3 flint chips; fragment of obsidian blade; miscellaneous animal bones. Sherds: 488; 100 unidentifiable, remainder of Mayapán period (1 Fine Orange, 151 of censers). Lot A-501: from surface: limestone *metate* from Room 2, Str. Q-244b (Fig. 36.9l); *mano* from Room 2, Str. Q-244b (Fig. 36.9l); *mano* from Room 2, Str. Q-244b; small crouching idol (Fig. 9c,d) fragment of lava *metate* (Fig. 36.9r); flint point (Fig. 36.10c); retouched obsidian flake blade (Fig. 36.10f); piece of bone with 4 perforations (Fig. 36.10f); 15 flint chips; flint tool (Fig. 36.10a); tang of flint point (Fig. 36.10d); 4 shells, 1 perforated; flint tool; flint arrow point (Fig. 36.10d); 32 pieces of obsidian blades; drilled re-used sherd, possibly a spindle whorl (Fig. 36.10h); stone sculpture; shaped sherd; shell bead; obsidian arrow point (Fig. 36.11h); perforated shell tinkler (Fig. 36.10g); fragment of *mano*; end fragment of *mano*, volcanic stone (Fig. 36.10e); fragment of obsidian core; pottery plate with pedestal base (Fig. 36.7g); fragment of *mano*; foreign stone; *mano*; *mano*, grooved (Fig. 36.9t); fragment of stone diving god; 14 miscellaneous animal bones; 7 human bones. Sherds: 6,062; 1,491 unidentifiable, 7 of Puuc type, remainder of Mayapán period (46 Fine Orange, 648 of censers). Lot A-503: from below floor of west end of Room 2, Str. Q-244b: flint point (Fig. 36.10d); notched obsidian arrow point (Fig. 36.11h). Sherds: 1,059; 79 unidentifiable, remainder of Mayapán period (5 Fine Orange, 152 of censers). Lot A-506: from pit off west side of Group Q-244 before trenching into west wall of platform supporting group, about 0.30 m between surface soil and bedrock. Surface level included in Lot A-501. Sherds: 209; 86 unidentifiable, remainder of Mayapán period (2 Fine Orange, 8 of censers). Lot A-507: from west wall of platform supporting Group Q-244. Sherd collection lost. Lot A-515: from west of wall in trench into west side of platform supporting Group Q-244: tinkler shell; fragment of obsidian blade; 2 animal bones. Sherds: 389; 89 unidentifiable, remainder of Mayapán period (2 Fine Orange, 32 of

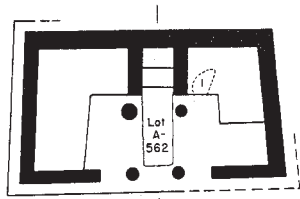
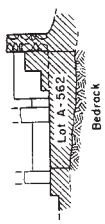
censers). Lot A-518: from east of wall in trench into west side of platform supporting Group Q-244: drilled re-used sherd, possibly a spindle whorl (Fig. 36.10h); 3 antler fragments; 2 conch shell fragments; bivalve shell fragment; 3 flint chips; flint scraper (Fig. 36.10b); 10 fragments of obsidian flake blades; 26 miscellaneous animal bones; 13 miscellaneous bird bones. Sherds: 1,264; 92 unidentifiable, 2 of Puuc type; remainder of Mayapán period (10 Fine Orange, 332 of censers). Lot A-519: from south end of Str. Q-244c, surface to bedrock: fragment of hatchet-shaped flint (Fig. 36.10d); hammerstone; fragment of conch shell; 17 flint chips; flint scraper; 7 fragments of obsidian flake blades; 49 miscellaneous animal and bird bones. Sherds: 895; 53 unidentifiable, 1 Classic type, remainder of Mayapán period (4 Fine Orange, 31 of censers). Lot A-520: from north end of Str. Q-244c, surface to bedrock: 2 shell fragments; flint chip; 3 fragments of obsidian flake blades; flint point (Fig. 36.10b). Sherds: 297; 30 unidentifiable, remainder of Mayapán period (2 Fine Orange, 31 of censers). Lot A-521: from broken area in floor in Room 1 from level of top floor to bedrock, Str. Q-244b: pottery figurine (Fig. 36.8e,f); 3 pottery figurines (Fig. 36.8e,f); flint point (Fig. 36.10c); tubular jade bead (Fig. 36.10c); jade bead; hammerstone; conch shell fragment; flint point (Fig. 10a); flint point (Fig. 36.10b); fragments of 5 obsidian flake blades; remains of 7 skeletons, probably 2 adult males, 2 adult females, 2 other adults, 1 infant. Sherds: 231; 23 unidentifiable, remainder of Mayapán period (3 Fine Orange, 34 of censers). Lot A-522: from below floor level to bedrock in center of Str. Q-244c; large tubular, jade bead (Fig. 36.10c); bone awl (Fig. 36.10f); perforated, jaguar tooth; perforated shell tinkler (Fig. 36.10f); piece of carved bone; drilled re-used sherd, possibly a spindle whorl (Fig. 36.10h); reused sherd, possibly for smoothing; 4 conch shell fragments badly burned; 2 coral pieces; 8 flint chips; used flint chip (Fig. 36.10b); round flint scraper (Fig. 10d); flint thumbnail scraper; obsidian thumbnail scraper (Fig. 36.11h); 8 fragments of obsidian flake blades; miscellaneous animal bones; skeletal remains of 2-year-old child. Sherds: 1,514; 57 unidentifiable, 2 of Puuc type, remainder of Mayapán period (13 Fine Orange, 116 of censers). Lot A-523: from inside most eastern terrace of Str. Q-244b: 2 shell fragments; 2 small shell tinklers; 3 flint chips; flint point (Fig. 10a); flint point (Fig. 36.10b); obsidian thumbnail scraper (Fig. 36.11h); 4 fragments of obsidian flake blades; 45 miscellaneous animal and bird bones. Sherds: 646; 35 unidentifiable, remainder of Mayapán period (6 Fine Orange, 11 of censers). Lot A-524: from trench into center of north side of Str. Q-244b between top floor of terrace in front of Room 1 and floor dust above bedrock: pottery mask, perforated pectoral ornament (Fig. 36.10f); flint point (Fig. 36.10c); bone ring (Fig. 36.10f); 8 flint chips; 2 fragments of obsidian flake blades. Sherds: 37, 2 unidentifiable, remainder of Mayapán period (6 of censers). Lot A-525: from below floor level of plaza south of Str. Q-244d: cache of two pottery vessels in hollowed-out circular hole in bedrock; one of the pottery vessels sealed (Fig. 36.7d); shell bead inside sealed vessel; jade bead inside sealed vessel. Sherds: 24; all of Mayapán period. Lot A-526: from below floor to bedrock, Str. Q-244b, extension of pit (Lot A-521) to south: stone bead; hammerstone; small object of unknown blue-green material; flint chip; 8 fragments of obsidian flake blades; pottery vessel and lid (Fig. 36.7e). Sherds: 309; 17 unidentifiable, 2 of Puuc type, remainder of Mayapán period (4 Fine Orange, 21 of censers). Lot A-527: from pit through terrace east of Room 6, Str. Q-244b: small turtle plastron fragment; 3 flint chips; fragments of 3 obsidian flakes; 30 miscellaneous animal and bird bones. Sherds: 919; 180 unidentifiable, remainder of Mayapán period (2 Fine Orange, 19 of censers). Lot A-528: from central area of Str. Q-244d, surface to bedrock: tripod Red Ware jar (Fig. 7l). Sherds: 108; 2 unidentifiable, remainder of Mayapán period. Lot A-529: from bench in Room 3, Str. Q-244b: stone pot lid; 2 flint chips; fragment of obsidian flake blade; small perforated bivalve shell. Sherds: 251; 15 unidentifiable remainder of Mayapán period (1 Fine Orange, 19 of censers). Lot A-530: from pit in center of Room 2, Str. Q-244b, from top floor to bedrock: flint point (Fig. 36.10c); stone disk pot lid; 2 flint chips; obsidian chip; pottery vessel (Fig. 36.7c). Sherds: 108; 5 unidentifiable, remainder of Mayapán period (13 of censers). Lot A-531: from between level of floor of Room 6 and upper floor, Str. Q-244b: flint chip. Sherds: 72; 9 unidentifiable, remainder of Mayapán period (6 of censers). Lot A-532: from below floor of Room 3, Str. Q-244b: tubular jade bead (Fig. 36.10c); shell bead; 3 flint chips; bivalve shell. Sherds: 86; 10 unidentifiable, remainder of Mayapán period (7 of censers). Lot A-533: from below floor of Room 5, Str. Q-244b: hammerstone. Sherds: 105; 4 unidentifiable, remainder of Mayapán period (5 of censers). Lot A-534: from between lowest plaza floor and bedrock off side of Str. Q-244. b: obsidian chip. Sherds: 66; all of Mayapán period (3 of censers). Lot A-535: from burial on bedrock south of Str. Q-244d: 2 fragments of bone awls (Fig. 36.10f); fragment of obsidian flake blade (Fig. 36.10f); remains of 2 skeletons, adult female (?) and child about 4 years old. No sherds.

of part of a deer antler awl (Fig. 36.11d) and skeletal remains of four adults, probably three male and one female (see Fig. 36.1c, Lot A-586).

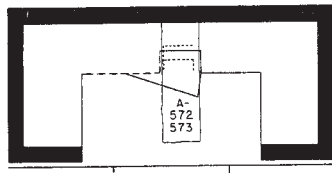
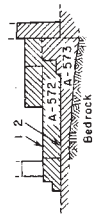
The terrace directly supporting the structure extends some distance to the north. On this had been built a raised area or platform 0.22 m, high and 1.90 m wide. Traces of masonry wall 0.35 m wide were found across the west end (back) of the platform and extending for a short distance along the north edge. What may have been postholes were noted in the northeast and northwest corners of the platform (Fig. 36.1c,1). The one at the northeast had a diam-

eter and depth, respectively, of 0.10 and 0.15 m, the one at the northwest of 0.12 and 0.20 m. No plaster floor was seen, and the small amount of debris on the platform suggests a thatch roof.

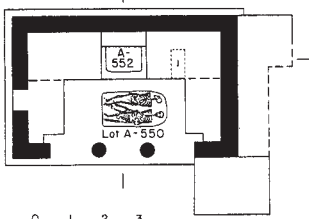
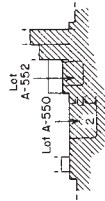
At the north end of the platform, and on what presumably was the floor level, was a considerable deposit of ash. Exterior to the west end wall was an even greater accumulation of ash, perhaps deposited there from the residue of fires within this addition. Such accumulation of ash together with the presence of *metates* leads to the supposition that this addition served as a kitchen.



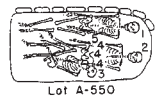
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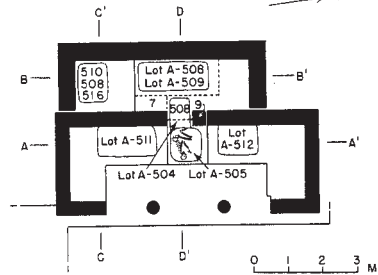
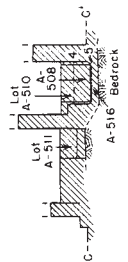
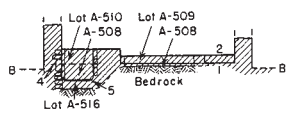
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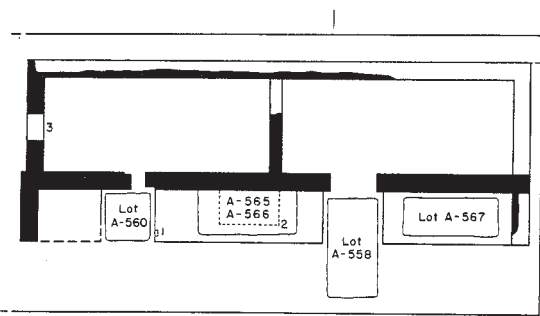
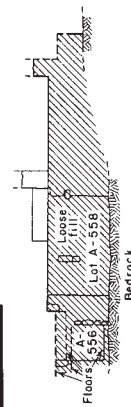
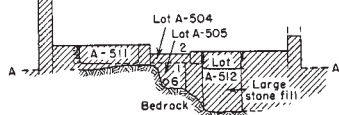
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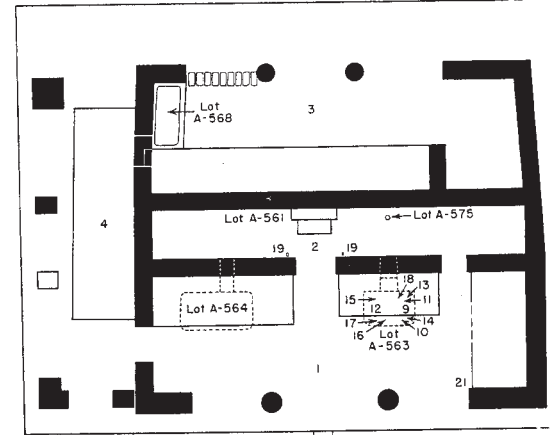
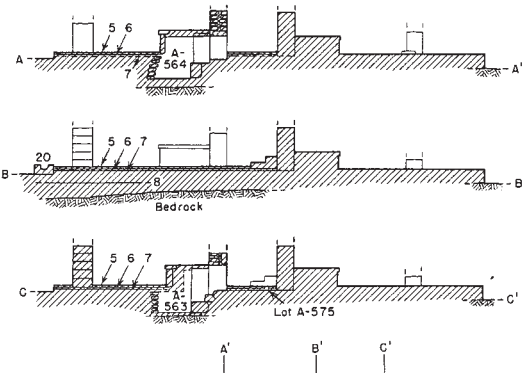
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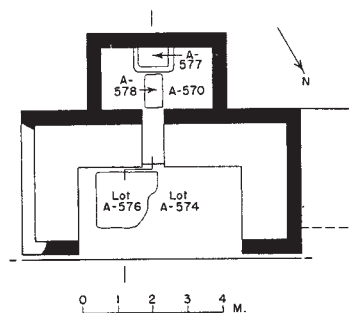
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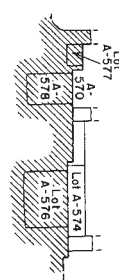
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36.4. Excavations in Strs. R-126a, R-17b, R-142c, S-133a, S-133b, Y-2d, and Y-8b.

a. Str. R-126a, plan and section. 1. Niche in face of bench. Lot A-559: from surface: flint point (Fig. 36.10a); flint point (Fig. 36.10d); cut shell tinkler; stone cube (Fig. 36.10e); fragment of lava *metate* (Fig. 36.9u); limestone tool; polishing pebble (Fig. 36.10e); 2 pieces of shell; small tripod vessel (Fig. 36.7j); pottery pot stand (Fig. 36.7j); pottery mold; 2 rubbing stones; fragment of *mano*; hammerstone; flint point with polished surface (Fig. 36.10l); 2 conch shell fragments; 3 flint chips; fragment of obsidian flake blade; bivalve shell (Fig. 36.10e). Sherds: 162; 32 unidentifiable, remainder of Mayapán period (8 Fine Orange, 10 of censers). Lot A-562: from below floor inside structure to bedrock: bone awl (Fig. 36.11a); piece of cut antler (Fig. 36.11a); small tripod cup (Fig. 36.7j). Sherds: 105; 4 unidentifiable, remainder of Mayapán period. b. Str. R-171b, plan and section. 1. Floor. 2. Floor. Lot A-569: from surface: rubbing stone (Fig. 36.9t); shell; stone disk; fragment of obsidian flake blade; 3 flint chips; 2 sections of human femur; 3 animal bones. Sherds: 163; 39 unidentifiable, 1 Puuc type, remainder of Mayapán period (5 of censers). Lot A-572: from trench in line with altar, from Floor 1 to Floor 2: fragment of obsidian flake blade; 1 animal and 1 bird bone. Sherds: 28; all of Mayapán period (1 Fine Orange, 2 of censers). Lot A-573: from trench in line with altar, from Floor 2 to bedrock: obsidian core (Fig. 36.11h); 4 pieces of shell; 2 fragments of obsidian flake blades; piece of coral; 3 flint chips; fragment of flint point; bird bone. Sherds: 194; 31 unidentifiable, remainder of Mayapán period (9 of censers). c. Str. R-142c, plan and section. 1. Niche roofed with flat stone. 2. Level of skeletal material in tomb. Lot A-544: from surface: green stone celt (Fig. 36.11g). Sherds: 116; 23 unidentifiable, remainder of Mayapán period (2 Fine orange, 1 of censers). Lot A-550: from burial below floor in center of structure: 3 adult skeletons, 1 male, 2 female; copper ring (Fig. 36.11g); copper ring (Fig. 36.11g); copper ring with human head (Fig. 36.11g, i, j); copper ring (Fig. 36.11g); fragment of textile; jade bead; 2 fragments of obsidian flake blades. Sherds: 262; 13 of Puuc type, remainder of Mayapán period (1 Fine Orange). Lot A-552: from below floor under altar. Sherds: 64; 5 unidentifiable, 2 possibly of Puuc type, remainder of Mayapán period (1 Fine Orange). d. Detail of tomb in Str. R-142c. 1. Skeleton of adult female extended at full length. 2. Skeleton of adult male extended at full length. 3. Skeleton of adult female, arms and legs flexed. 4. Position of copper rings (Fig. 36.11g). 5. Position of copper ring with human head (Fig. 36.11g, i, j). e. Str. S-133a, plan and section. 1. Re-used cord holder in face of bench. 2. Stone-lined cast in central bench; 0.40 m below top of bench is early floor which extended to within 0.60 m of east edge of cist. 3. Doorway sill 0.20 m, above floor of room. Lot A-553: from surface: flint point (Fig. 36.10a); 3 fragments of conch shell; 2 flint chips. Sherds: 137; 60 unidentifiable, remainder of Mayapán period (5 Fine Orange, 5 of censers). Lot A-556: from burial north of platform supporting Str. S-133a: flexed skeleton of an adult female; sting ray spine. Sherds: 31; 3 unidentifiable, remainder of Mayapán period (1 of censer). Lot A-558: from below floor level in trench in front room extending into west passageway: fragment of obsidian flake blade. Sherds: 90; 10 unidentifiable, remainder of Mayapán period (5 of censers). Lot A-560: from below floor level of front room between benches at east end. Sherds: 52; 2 unidentifiable, remainder of Mayapán period (1 of censer). Lot A-565: from between top of central bench and floor 0.40 m below, in stone-lined cist. Sherds: 29; 5 unidentifiable, remainder of Mayapán period. Lot A-566: from below floor 0.40 m below top of central bench, in cast. Sherds: 127; 14 unidentifiable, 7 of Puuc type, remainder of Mayapán period (8 of censers). Lot A-567: from inside west bench of front room. Sherds: 71; 7 unidentifiable, remainder of Mayapán period (6 of censers). f. Str. S-133b, plan and sections. 1. East room. 2. Central room. 3. West room. 4. South room. 5. Floor. 6. Floor. 7. Floor. 8. Floor. 9. Approximate position of child. 10. Approximate position of child. 11. Approximate position of adult. 12. Approximate position of young adult. 13. Approximate position of old male. 14. Pottery doll, torso only (Fig. 36.8q-s). 15. Jade bead. 16. Copper ring (Fig. 36.10g). 17. Arms and legs of pottery doll (Fig. 36.8q-s). 18. Stone pestle (Fig. 10e). 19. Stone cord holders set in floor. 20. Pottery vessel set in plaster block. 21. Position where two stone cord holders were found (Fig. 36.9h). Lot A-554: from surface: fragment of flint knife (Fig. 36.10b); miniature stone temple (Fig. 36.9q); flint nodule; lava implement or *metate* leg; fragment of lava *mano*; miniature stone sculptured altar (Fig. 36.9s); polishing pebble (Fig. 36.10e); 2 stone cord holders (Fig. 36.9h); 2 stone cord holders (Fig. 36.9i); pottery mold; fragment of stone implement; 4 rubbing stones; 2 fragments of *manos*; fragment of rubbing stone; fragment of *mano*, foreign stone; small shell (*Marginella labiata*); flint chip; stone sculpture (Fig. 36.9a, b. Sherds: 1,635; 426 identifiable, 14 of Puuc type, remainder of Mayapán period (16 Fine Orange, 75 of censers). Lot A-561: from above floor just south of altar in Room 2: rubbing stone, wedge-shaped with plaster on three sides. Sherds: 689; 16 unidentifiable, remainder of Mayapán period (344 of censers). Lot A-563: from tomb under central bench in Room 1: remains of 5 skeletons, 3 adults and 2 children; complete pottery doll with movable arms and legs (Fig. 36.8q-s); small stone pestle (Fig. 36.10e); copper ring (Fig. 36.10g); jade bead. Sherds: 28; all of Mayapán period (4 of censers). Lot A-564: from stone-lined cist under south bench in Room 1: flint blade (Fig. 36.10b). Sherds: 77; 2 unidentifiable, 2 of Puuc type, remainder of Mayapán period (2 of censers). Lot A-568: from inside bench at south end of Room 3: fragment of 3-legged *metate*, foreign stone (Fig. 36.9u); shell bead. No sherds. Lot A-575: pottery neck in floor of Room 2, north of altar. Sherds: 4; all of Mayapán period. g. Str. Y-2d, plan and sections. 1. Floor. 2. Secondary floor. 3. Floor fragment. 4. Building level. 5. Floor. 6. Skull of young adult female. 7. Raised area 0.10 m above Floor 1. 8. Large rock. 9. Secondary masonry block put in to narrow doorway. Lot A-502: from surface: 3 stone pot lids, average diam. 14 cm; obsidian arrow point (Fig. 36.10f); stone ring (Fig. 36.9g); stone cord holder (Fig. 36.9r); small conch shell. Sherds: 1,134; 43 unidentifiable, remainder of Mayapán period (16 Fine Orange, 889 of censers). Lot A-504: from below level of secondary construction and above Floor 1 between benches in front room and leading back into back room. Sherds: 386; 7 unidentifiable, remainder of Mayapán period (1 Fine Orange, 297 of censers). Lot A-505: from tomb under passageway between benches in front room: skeleton of young adult female; fragment of baby skull; bone spindle whorl (Fig. 36.10f); 2 copper rings (Fig. 36.11g); flint arrow point (Fig. 36.10c); fragment of conch shell; fragment of obsidian blade. Sherds: 78; 4 unidentifiable, remainder of Mayapán period (3 Fine Orange, 37 of censers). Lot A-508: from under Floor 1 in back room and from under same level under bench at south end of back room down to floor of cast: fragment of lime-

36.4. Excavations in Strs. R-126a, R-17b, R-142c, S-133a, S-133b, Y-2d, and Y-8b—continued

stone vessel; 2 rubbing stones; 2 stone disks; unfinished flint blade (Fig. 36.10a); perforated shell, 2 holes (Fig. 36.10g). Sherds: 393; 37 unidentifiable, 1 Puuc type, remainder of Mayapán period (12 Fine Orange, 50 of censers). Lot A-509: from bench along back wall in back room: shell bead; perforated shell (Fig. 36.10g). Sherds: 34, all of Mayapán period (24 of censers). Lot A-510: from below top of bench at south end of back room down to level of Floor I: pottery figurine, human (Fig. 36.8e,f); rubbing stone. Sherds: 33, all of Mayapán period (20 of censers). Lot A-511: from inside south bench, front room. Sherds: 11; all of Mayapán period (4 of censers). Lot A-512: from inside north bench, front room, down to bedrock: flint point (Fig. 36.10c); 2 perforated shell disks (Fig. 36.10f); hammerstone. Sherds: 70; 2 unidentifiable, remainder of Mayapán period (1 Fine Orange, 7 of censers). Lot A-516: from below floor of cist under bench at south end of back room: fragment of obsidian flake blade. Sherds: 18; all of Mayapán period (1 of censer). h. Str. Y-8b, plan and section. Lot A-570: from surface of shrine room: tripod vessel (Fig. 36.7f); flint chip; 5 obsidian flake blade fragments; 2 incensario heads (Fig. 36.8k). Sherds: 857; 112 unidentifiable, remainder of Mayapán period (1 Fine Orange, 494 of censers). Lot A-574: from surface in main room: shell tinkler; 3 conch shell fragments; 3 obsidian flake blade fragments; 2 flint chips; flint thumbnail scraper; human molar. Sherds: 279; 88 unidentifiable, remainder of Mayapán period (4 Fine Orange, 6 of censers). Lot A-576: from below floor in main room: 11 obsidian chips; 29 flint chips; 2 small notched flint arrow points (Fig. 36.10d); large flint blade (Fig. 36.10a); perforated shell; 2 worked stingray spines; curved bone with spines; perforated stingray spine (Fig. 36.11a); cylinder-shaped piece of gum of tree or plant, probably copal mixed with chicle or rubber; jade bead; 2 shell fragments; tripod grater bowl (Fig. 36.7g); pottery vessel with pedestal base (Fig. 36.7f); pottery ladle (Fig. 36.7h); 3 obsidian flake blade fragments; skeletal material, adult skeletons, positions disturbed. Sherds: 537; 77 unidentifiable, 3 of Puuc type, remainder of Mayapán period (2 Fine Orange, 16 of censers). Lot A-577: from inside altar, shrine room: shell disk. Sherds: 40; 7 unidentifiable, remainder of Mayapán period (21 of censers). Lot A-578: from below floor in shrine room: flint arrow point (Fig. 36.10d); hammerstone; 3 flint chips. Sherds: 313; 40 unidentifiable, remainder of Mayapán period (1 Fine Orange, 42 of censers).

Surface material from Str. P-23C is listed under Figure 36.1c, Lot A-583.

STRUCTURE P-28B (142 S, 512 W)

Str. P-28b is the better preserved of the two structures making up Group P-28. The group rests on a terrace at least 1 m in height. No terrace facing was seen, and a stairway on the north side is indicated only by the slope of the debris.

Str. P-28b, a single-room building, rises directly from a platform 0.15 m high, and was entered by a triple doorway. The remains of two columns, each 0.40 m in diameter, were found in the entrance (Fig. 36.1h).

The roof was most likely of beams and mortar, as large areas of the plaster floor were in good condition where protected by the fallen roof material.

Within the room a bench extends around the three sides, interrupted in the center of the back wall by an altar. The bench face has a height of 0.45 m and is topped by a 0.10 m vertical cornice overhanging 0.06 m.

The altar, 1.08 m wide, is recessed 0.50 m with a 0.10 m step projecting 0.20 m out from the line of the bench face (Fig. 36.5b). The inner section of the altar rises 0.35 m. On either side of the altar and rising from the top of the bench were remains of a masonry wall 0.30 m wide and in places 0.20 m high.

A masonry-lined shaft averaging 0.75 m in diameter (Fig. 36.1h) was built inside the altar. The

shaft extends to bedrock, which here is 0.95 m below the floor of the room (see Fig. 36.1h, Lot A-593). The upper part of the shaft was interrupted by the setback of the altar.

In front of the altar and beneath the floor of the room was a masonry-lined cist roughly 1.75 m in length by 0.80 m in width, its floor being the bedrock, which here is 1.10 m below the floor of the chamber. The cist is roughly lined; no faced stones were seen. The cist was filled with sweepings, bits of plaster, and some stones. Lying on the bedrock was the skeleton of an adult male with head to the east. Near the left hand was a hammerstone. On the floor, in the southeast corner, were two bone or antler ear-plugs placed one on top of the other (Fig. 36.11a). In the northeast corner was found a jar with a stone lid (Fig. 36.7p). Other material from the cist is listed under Figure 36.1h, Lot A-594.

Abutting the chamber to the west is a platform similar to the one associated with Str. P-23c which has been identified as probably a kitchen. The platform is on the same level as the one directly supporting the chamber. The only masonry wall noted is at the south end where it abuts the west wall of the main structure.

At the northwest corner of the platform is a large stone with a hollow area, perhaps worked in it for the placing of a post. No plaster floor was seen, so it is presumed that this extension had a thatch roof.

Surface material recovered is listed under Figure 36.1h, Lot A-588.

STRUCTURE Q-37A (27 S, 480 W)

Str. Q-37a (Figs. 36.1i; 36.5d), one of a group of two constructions resting on a natural rise about 2 m high, was supported by a low platform and faced east. It is a single-room building with a bench extending around three sides. The east side has a large opening divided into three entrances by two columns. Two interior columns are placed on either side of the room slightly out from the corners formed by the bench. The original floor of the room goes under all four columns, but it was resurfaced twice with thin layers of plaster which turn up to them. A small altar, with some burned copal on it, was set into the center of the bench against the back wall. The area between the back of the altar and the back wall of the room may have risen a little higher than the rest of the bench. A good many Puuc-type stones were used in the masonry. Evidence on the floor proved the roof to have been of the beam-and-mortar type. There was no sign of its having been destroyed by burning.

The function of this structure is hard to determine. It is certainly unlike the ordinary dwelling in plan, but may have served as living quarters for someone who held an office of some kind, such as that of a priest.

A pit dug in the center of the room in front of the altar uncovered a rough cast containing the remains of two skeletons, an old female and a very old male (Fig. 36.1i,1,2). The bones of these two skeletons had been badly disturbed. The floor over the burial had been cut through, probably after the interment, to judge by the disturbed condition of the bones. For a complete list of contents of this tomb see Figure 36.1i, Lot A-587.

GROUP Q-244 (475 S, 10 W)

Group Q-244 (Fig. 36.3), consisting of four structures, rests on a terrace about 1 m high on top of a natural rise 2 m high. This group was selected because it is a dwelling unit with a house of a very elaborate type as its main building, Str. Q-244b. Three structures of the group face upon a small court with the fourth, an altar platform, Str. Q-244d, in the center.

Str. Q-244a, a rectangular one-room building supported by a platform, lies on the east side of the court. Very little of the superstructure remained, but there was enough to show that its main entrance was on the west side, where there was a wide opening probably divided into three entrances by two wooden posts that supported a thatch roof. A doorway in the back wall near the south end of the room leads out to a terrace at a lower level. A step projected from the back of the building in front of the

rear doorway. Although badly destroyed, there evidently had been two benches in the room, one filling its south end from the rear doorway to the south wall, the other an L-shaped bench extending from the rear doorway along the back wall and continuing along the north wall to the west wall.

Str. Q-244b (Figs. 36.3; 36.5c,e-h), a six-room structure on the south side of the court, is supported by a platform rising 0.70 m above the court floor. A broad inset stairway, now destroyed, led up to a wide platform in front of the north side of the building. Originally Str. Q-244b had only three rooms, Rooms 1-3.

The main room, Room 1, which extends the length of the original structure, faces upon the platform mentioned above and has a wide opening in its north wall divided into three entrances by two stone columns. Between these two columns is a round plaster base which may have held a wooden post, stone idol, or stucco image (Figs. 36.3b, 11; 36.5g). Benches extend around three sides of the room except where they are interrupted by two doorways in the back wall leading into Room 2, one approximately in the center, the other to the east. With the exception of the one against the east wall these benches have a 0.12 m molding along their upper edge which projects 0.08 m from the face. Room 2, directly south of Room 1, is the same length as Room 1, and besides the two doorways leading into that room has another in its south wall, in line with the one approximately in the center of the north wall, leading into Room 3. The floor level at the west end of Room 2 is about 0.20 m higher than that of the rest of the room. A small cist in the floor of the doorway into Room 3 was covered by a stone disk (Fig. 36.3b,8). Room 3, a small room projecting from the rear wall of the building, was probably used as a shrine. It has a bench or altar extending along its back wall with a step against its face. Several interesting objects were found on the floor of this room: a stone turtle (Fig. 36.9m,n), a fragment of stone sculpture (Fig. 36.9o,p), and a small crouching idol of stone (Fig. 36.9e,f). There was also a great quantity of sherds of censers (see Fig. 36.3, Lot A-500).

At some later date Rooms 4 and 5 were added to either end of the original structure. Room 4, built against the west end of the building, faces west and has a wide opening in its west wall divided into two entrances by a single stone column in the center. Another doorway leads out of the north end of the room of the broad platform which extends across the front of the building. An L-shaped bench runs the length of the east and south walls. Although no stairway was found, the masonry having fallen at the west end of the structure, there must have been

36.5. Views of Strs. J-71b, P-28b, Q-244b, Q-37a, Y-8b, and R-126a.

a. Pottery neck in floor of Str. J-71b (Fig. 36.1b,1). b. Looking south at altar in Str. P-28b (Fig. 36.1h). c. Early terrace wall on north side of Str. Q-244b (Fig. 36.3). d. Looking southwest at Str. Q-37a (Fig. 36.1i). e. Southwest corner of Room 1, Str. Q-244b (Fig. 36.3). f. Northeast corner of Room 8, Str. Q-244b (Fig. 36.3). g. Looking south down center of Str. Q-244b; notice possible posthole or base of stone sculpture (Fig. 36.3b,11). h. Looking west at Room 3, Str. Q-244b (Fig. 36.3). i. Looking south at altar in Str. Y-8b (Fig. 36.4h). j. Looking south at Str. R-126a (Fig. 36.4a).

steps leading up to the entrances into Room 4 on this side. Room 5, built against the east end of the building, faces east and has a wide opening in its wall on this side divided by a single stone column into two entrances. These lead out to a wide terrace at a slightly lower level. The east wall of this terrace was formerly a freestanding wall of some earlier construction. Another entrance, in its north end, leads out to the platform on the north side of the structure. The whole room, except for the space in the entrances, is occupied by a large bench or raised area 0.45 m high. This bench was built on the floor, against the plaster on the walls, after the room was finished.

Following the construction of Room 5, Room 6 was added to its east side. There seems to have been a change of plan during the construction of this last room, for first the floor in Room 5 was raised to the level of its bench and continued at that level halfway across Room 6 and to within 1.30 m of its south wall. This formed a bench along the west side of Room 6. Traces of red showed that the bench had once been painted. A narrow wall rose from its south end. After the raising of the floor of Room 5 a stone column was placed against the east side of the original column in the center of the opening on the east side of its north jamb. These were next enclosed in masonry, and the southern half of the opening was blocked so as to leave only a single doorway into Room 5, Room 6 was open at its north end, and had a doorway in its south wall and a wide opening on its east side divided into two entrances by a stone column. The floor level of Room 6 was 0.50 m higher than the terrace the room faced on. At the north end of the terrace is a stairway leading to a terrace at a lower level.

Excavations under the floors of Str. Q-244b showed several earlier floors and walls and definite evidence of an earlier building which had been razed to its floor level, when Rooms 1–3, the original Str. Q-244b, were built. Without a great deal more excavation it was impossible to tell what the plan of the earlier building was.

In Room 1 we found the floor in the center of the room had been broken through before the roof collapsed (Fig. 36.3b,16). Digging brought to light a disturbed burial (Lot A-521) which contained the remains of seven skeletons, apparently two adult

males, two adult females, two other adults and one infant. The cast had no definite walls, as it was simply cut out of the fill. Objects of interest probably associated with the burial (see Fig. 36.3, Lot A-521) included pottery figurines (Fig. 36.8e,f, middle and right), flint points (Fig. 36.10a–c), and a tubular jade bead (Fig. 36.10c). Further excavation (Fig. 36.3, Lot A-526) uncovered a deposit of copal (Fig. 36.3b,18) and a pottery vessel and lid (Figs. 3b,17; 7e).

The masonry in Str. Q-244b contained many Puuc-type stones and for the most part was fairly well coursed (Fig. 36.5c,e–h). Figure 36.5f shows an example of Puuc-like stones and fairly well cut and faced stones used in a corner of Room 3. The roof of the building, which left no signs of destruction by fire, was of beams and mortar. The façade above the three entrances on the north side had fallen intact in places when the beams that supported it had given way. It rose five courses, 0.60 m above the beams, which was probably the height of the top of the roof. The jamb at the west end of the opening on the north side, plus the stone which had fallen off it and which we replaced (Fig. 36.5e), measured 1.70 m from floor to top. Allowing 0.30 m for the thickness of the beams that supported the roof, the total height of the building from floor to top of roof was about 2.45 m, and from floor to ceiling about 2 m.

Str. Q-244c, a low rectangular platform that may once have supported a structure of posts and thatch, bordered the west side of the court. It originally was about half its final length, having been added to at either end (Fig. 36.3c). Pits were sunk in the center and two ends of this platform (see Fig. 36.3, Lots A-519, A-520, A-522). The center pit in the original platform (Lot A-522) contained midden material and the skeletal remains of a 2-year-old child.

Str. Q-244d, an altar platform, was in the center of the court in line with the central doorway of Str. Q-244b. A pit in the center of the altar platform (see Fig. 36.3, Lot A-528) produced no cache, but in front of its south side a cast cut out of bedrock (see Fig. 36.3, Lot A-525) contained a tripod cylindrical vase in a bowl (Fig. 36.7d).

An excavation through the court floor south of Str. Q-244d disclosed a burial with two skeletons, an adult female (?) and a child about 4 years old (Fig. 36.3, Lot A-535). With the burial were fragments of



a



b



c



d



e



f



g



h



i



j



a



b



c



d



e



f



g



h



i



j

36.6. Views of Strs. R-91, S-133b, and Y-2d.

a. Looking east at Str. R-91 (Fig. 36.1j). b. Looking east and down on altar in Str. R-91 (Fig. 36.1j). c. Southern inner column in Str. R-91 (Fig. 36.1j). d. Looking southwest at columns on east side of Str. S-133b (Fig. 36.4f). e. Looking east at entrance into tomb under central bench in Room 1, Str. S-133b; entrance is in east wall of Room 2 (Fig. 36.4f). f. Looking east at entrance into stone-lined cist under south bench in Room 1, Str. S-133b; entrance is in east wall of Room 2 (Fig. 36.4f). g. Looking southwest into stone-lined cist under bench at south end of Room 1, Str. S-133b (Fig. 36.4f). h. Small altar with pottery vessel imbedded in center in front of center of platform and attached to it on east side of Str. S-133b (Fig. 36.4f). i. Looking at south side of Str. Y-2d (Fig. 36.4g). j. Looking at Str. Y-2d from the east (Fig. 36.4g).

two bone awls (Fig. 36.10f) and a fragment of an obsidian flake blade (Fig. 36.10f).

STRUCTURE R-30B (72 S, 360 E)

Structure R-30b is a simple altar now consisting of a masonry wall 2 m long and 0.60 m wide of Puuc-type stones one course high. The long axis is north-south. On the west side of the masonry wall is a platform 0.05 m high, 1.10 m wide where it abuts the masonry wall, and projecting 1.30 m. An exploratory pit in the altar was carried to bedrock at a depth of 0.40 m. No material was encountered.

This altar is located east (in front) of Str. R-30d, the principal structure of the group.

STRUCTURE R-30F (65 S, 350 E)

Resting on the north edge of a large terrace supporting a group of possibly six structures is Str. R-30f. This is a single-chambered building now very much in ruin (Fig. 36.1d).

On the south side (front) are remains of two broad steps leading up to the platform directly supporting the building. Some of the platform facing on the south side has been removed; none of it remains on the east side.

Two columns, one now rising three drums in height, have the basal drums *in situ*. The bench within the chamber, built against the north wall, had a height of 0.45 m. It was interrupted approximately in line with the transverse axis of the building by an inset area, most likely an altar, 1.15 m long by 0.50 m deep. Only the sides of this inset are now faced with carefully worked stones.

All masonry of this structure is of carefully worked Puuc-type stones. Since debris on the floor did not rise to the height of the top of the bench, and no plaster floor was seen, it is assumed that the structure had a thatch roof.

Surface material (see Fig. 36.1d, Lot A-555) included a pottery spindle whorl (Fig. 36.10h).

A pit dug directly south of the altar measured 1 m by 1.30 m and had a depth, from floor of building to bedrock, of 0.95 m. Material recovered (see Fig.

36.1d, Lot A-557) includes a small stone monkey figure (Fig. 36.10e).

STRUCTURE R-91 (275 S, 30 E)

Str. R-91 (Figs. 36.1j; 36.6a–c) rests upon an artificially raised area 1 m high and about twice the size of the structure, which is supported by a low platform and faces west. It is a single-room building with a wide opening on the west side divided by two columns into three entrances. On either side of a rectangular raised area in the center of the room is a column, the one on the south having a projecting knob in the shape of a jaguar head on its fourth drum from the floor (Fig. 36.6c). Against the center of the back wall there is an altar faced with Puuc-type stones. The altar once supported two seated stucco figures, of which only the feet remain. These are in front of the altar and show traces of red and blue paint. Sandals on the feet had two thongs, one between the big toe and the next toe, the other between the third and fourth toes. Several large pieces of stalactites found near the altar probably were used in the legs of the stucco figures, and traces of plaster on the altar indicated that the two figures were seated.

There are three floors in the structure, the top floor being a thin resurfacing. The lowest and middle floors are from 0.01 to 0.04 m apart. The early or first floor goes under the raised area in the center of the room, the altar, the stucco feet in front of it, and the two interior columns. The two upper floors turn up to the altar and columns and continue in thin layers over the stucco feet and the raised area in the center of the room. The stone used in the walls of the building was roughly cut and faced. From evidence on the floor of the room it was obvious that the structure carried a beam-and-mortar roof which had not been destroyed by fire. All the evidence, no benches, the raised area in the center of the room, the altar with two seated stucco figures, the high percentage of sherds from censers, indicates that Str. R-91 was a purely ceremonial structure, probably used as a place of worship.

Excavations in the altar uncovered a cache (see Fig. 36.1j, Lot A-580) consisting of a pottery bowl



a



b



c



d



e



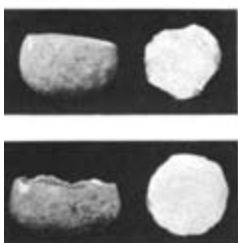
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g



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i



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36.7. Pottery Recovered During Excavation in Strs. J-71b, J-71a, Q-244b, Y-8b, R-91, P-14a, R-126a, Q-244d, K-67a, and P-28b, and Groups Q-244 and K-67.

a. Pottery vessel, 15 cm high, from Str. J-71b, Lot A-547 (Fig. 36.1b). b. Pottery vessel, 25 cm high, from Str. J-71a, Lot A-545 (Fig. 36.1a). c. Pottery vessel, 20 cm high, from Str. Q-244b, Lot A-530 (Fig. 36.3). d. Pottery vessels from Group Q-244, Lot A-525 (Fig. 36.3). Vessel on left, 11 cm high, was inside vessel on right, 7 cm high. e. Pottery vessel, 12 cm high, and lid from Str. Q-244b, Lot A-526 (Fig. 36.3b,17). f. Left to right, tripod pottery vessel, 11 cm high, from Str. Y-8b, Lot A-570 (Fig. 36.4h); pottery vessel with pedestal base, 14 cm high, from Str. Y-8b, Lot A-576 (Fig. 36.4h). Left to right, pottery plate with pedestal base, diam 21 cm, from Group Q-244, Lot A-501 (Fig. 36.3, caption); pottery tripod grater bowl, 9 cm high, from Str. Y-8b, Lot A-576 (Fig. 36.4h). h. Left to right, pottery vessel, originally tripod, diam 12 cm, from Str. R-91, Lot A-580 (Fig. 36.1j); pottery ladle, handle gone, diam 17.5 cm from Str. Y-8b, Lot A-576 (Fig. 36.4h). i. Pottery vessels, diam 7.5 and 8 cm, and lids from Str. P-14a, Lot A-590 (Fig. 36.1g, 6,7). j. Left to right, tripod pottery vessel, 8 cm high, from Str. R-126a, Lot A-559 (Fig. 36.4a); pottery pot stand, 6 cm high, from Str. R-126a, Lot A-559 (Fig. 36.4a, caption); tripod pottery cup, 7 cm high, from Str. R-126a, Lot A-562 (Fig. 36.4a). k. Pottery neck 8.5 cm, high, from Str. J-71b, Lot A-548 (Fig. 36.1b,1). l. Tripod pottery vessel from Str. Q-244d, Lot A-528 (Fig. 36.3). m. Pottery head, 19 cm high, from Group K-67, Lot A-536 (Fig. 36.2, caption). n. Pottery head, 6 cm high, from Str. J-71b, Lot A-543 (Fig. 36.1b). o. Pottery feet, 5 cm wide, standing on animal figures, from Str. K-67a, Lot A-539 (Fig. 36.2). p. Pottery vessel with pedestal base, 10 cm high, and stone lid, diam 11 cm, from Str. P-28b, Lot A-594 (Fig. 36.1h,3).

that once had three legs (Fig. 36.7h), and a pottery effigy vessel (Fig. 36.8o,p). On the floor in front of the altar was a small pottery effigy vessel (Figs. 36.1j, Lot A-579; 36.8i,j). The floors of the raised area in the center of the room had been cut through at some time before the roof collapsed, possibly to remove some offering from a small cist directly below the cut (Fig. 36.1j,2).

STRUCTURE R-126A (255 S, 382 E)

Str. R-126a lies on the south side of a low terrace supporting two constructions. The platform directly supporting Str. R-126a averages 0.25 m in height and extends approximately 0.35 m beyond the walls of the building proper.

The building, facing north, consists of a single chamber with two columns in the entrance, two columns within the chamber, and a bench extending across the east and south walls and part of the west wall (Fig. 36.4a). On the south the bench is interrupted in line with the medial axis of the structure by an inset altar somewhat similar to the one in Str. P-28b (Fig. 36.1h).

The lower part of the altar does not project as in Str. P-28b, but is inset 0.20 m from the line of the face of the bench. The inner section of the altar is 0.15 m higher than the top of the bench. In Str. P-28b it is 0.10 m lower. Rising from the bench on either side of the altar is a masonry wall. The greatest height of the walls now is 0.50 m above the top of the bench.

In the face of the south bench, 0.60 m west of the altar, is a niche. The opening is 0.40 m wide and 0.30 m high and has its sill on the level of the floor of the chamber. The niche is irregular in shape (Fig. 36.4a,1). Its floor, 0.40 m below the floor of the cham-

ber, was carefully plastered; its roof was of stone slabs.

Masonry of Str. R-126a is mixed, showing some coursing with thin slabs, some large roughly worked stones. No Puuc-type stones were noted. The two interior columns differ in size, one having a diameter of 0.35 m, the other a diameter of 0.50 m. A heavy coating of plaster at the base of the smaller might indicate an attempt to make them somewhat uniform in size.

Surface material is listed under Figure 36.4a, Lot A-559.

A trench beneath the floor of the structure, in line with the medial axis, was extended to bedrock, which was encountered at a depth varying from 0.65 to 0.80 m. Material recovered from the trench is given under Figure 36.4a, Lot A-562.

STRUCTURE R-142C (387 S, 425 E)

Str. R-142c (Fig. 36.4c) is one of five structures resting on a raised area about 2 m high. This building was chosen for examination because of its unusual plan.

Resting on a low platform, the single-room structure faces south. The original platform supporting Str. R-142c was later covered at the east end by an exterior bench. Another change the builders made was to extend the platform to the south at the east end of the south side. A large opening on the south side of the building was divided into three entrances by two columns. Another entrance was through a small doorway in the west wall.

In the early stage of the building there was a bench along the back wall with a small altar sunk into the center of the bench but not back as far as



a



b



e



c



d



f



g



h



i



j



k



l



m



n



o



p



q



r



s

36.8. Pottery Objects Recovered During Excavation in Strs. K-67a, Y-2d, Q-244b, R-91, Y-8b, and S-133b.

a. Front view of pottery turtle with human head in mouth, from Str. K-67a, Lot A-538 (Fig. 36.2a,1). b. Side view of a, 17 cm long. c. Front view of pottery turtle with human head in mouth, found in Str. K-67a, Lot A-538 (Fig. 36.2a,1). d. Side view of c, 16 cm long. e. Left to right, front view of pottery figurine, 12 cm high, found in Str. Y-2d, Lot A-510 (Fig. 36.4g); front view of 3 female figurines, 9.5 cm high, found in Str. Q-244b, Lot A-521 (Fig. 36.3); front view of pottery figurine, male, 15 cm high, found in Str. Q-244b, Lot A-521 (Fig. 36.3). f. Side view of e. Front view of pottery head, 6.5 cm high, found in Str. K-67a, Lot A-539 (Fig. 36.2). h. Side view of y. i. Front view of pottery vessel, 7 cm high, with human face on side, found in Str. R-91, Lot A-579 (Fig. 36.1j,1). j. Side view of i. k. Left to right part of pottery incensario found in Str. Y-8b, Lot A-570 (Fig. 36.4h); pottery head, from Str. Y-8b, Lot A-570 (Fig. 36.4h). l. Pottery serpent head, 11 cm long, found in Str. K-67a, Lot A-539 (Fig. 36.2). m. Front view of pottery head, 12 cm high, found in Str. K-67a, Lot A-539 (Fig. 36.2). n. Side view of m. o. Front view of pottery vessel, 12 cm high, with human face on side, found in Str. R-91, Lot A-580 (Fig. 36.1j). p. Side view of o. q. Front view of pottery doll with movable arms and legs, showing limbs articulated, total height 25.5 cm, found in Str. S-133b, Lot A-563 (Fig. 36.4f,14,17). r. Front view of q, showing limbs disarticulated. s. Side view of q.

the wall. The area behind the altar extending to the back wall was higher than the rest of the bench. A niche in the bench east of the altar was roofed with flat stones (Fig. 36.4c,l). At some later date benches were placed against the east and west walls. These extended from the original bench against the back wall, at the same height, as far as the front wall.

Although a few Puuc-type stones were used in the masonry, for the most part the stones were roughly cut and faced. From the condition of the floor and the debris on it there is no doubt that this building carried a beam-and-mortar roof.

A pit in the altar disclosed no cache, but a larger excavation in the center of the room uncovered a rough cist containing three skeletons (Fig. 36.4d,1–3). The central skeleton, that of an adult male, lay extended at full length, head to the east, between two adult females with their heads also to the east. The skeleton on the north side was extended at full length; the one on the south was lying on its right side facing north and had its arms and legs flexed. For material recovered from the burial, see Figure 36.4c, Lot A550, and for position of copper rings (Fig. 36.11g,i,j) found with the skeletons, see Figure 36.4d,4,5.

Surface material is listed under Figure 36.4a, Lot A-559.

A trench beneath the floor of the structure, in line with the medial axis, was extended to bedrock, which was encountered at a depth varying from 0.65 to 0.80 m. Material recovered from the trench is given under Figure 36.4a, Lot A-562.

STRUCTURE R-142C (387 S, 425 E)

Str. R-142c (Fig. 36.4c) is one of five structures resting on a raised area about 2 m high. This building was chosen for examination because of its unusual plan.

Resting on a low platform, the single-room structure faces south. The original platform supporting

Str. R-142c was later covered at the east end by an exterior bench. Another change the builders made was to extend the platform to the south at the east end of the south side. A large opening on the south side of the building was divided into three entrances by two columns. Another entrance was through a small doorway in the west wall.

In the early stage of the building there was a bench along the back wall with a small altar sunk into the center of the bench but not back as far as the wall. The area behind the altar extending to the back wall was higher than the rest of the bench. A niche in the bench east of the altar was roofed with flat stones (Fig. 36.4c,1). At some later date benches were placed against the east and west walls. These extended from the original bench against the back wall, at the same height, as far as the front wall.

Although a few Puuc-type stones were used in the masonry, for the most part the stones were roughly cut and faced. From the condition of the floor and the debris on it there is no doubt that this building carried a beam-and-mortar roof.

A pit in the altar disclosed no cache, but a larger excavation in the center of the room uncovered a rough cist containing three skeletons (Fig. 36.4d,1–3). The central skeleton, that of an adult male, lay extended at full length, head to the east, between two adult females with their heads also to the east. The skeleton on the north side was extended at full length; the one on the south was lying on its right side facing north and had its arms and legs flexed. For material recovered from the burial, see Figure 36.4c, Lot A550, and for position of copper rings (Fig. 36.11g,i,j) found with the skeletons, see Figure 36.4d,4,5.

During the excavation of Str. R-142c a pit was sunk in Str. R-142e, a small altar platform in the court south of Str. R-142c in line with its main entrance.

Lot A-551: from fill in Str. R-142e. Mayapán Redware jar sherd with used edge; 6 flint chips. Sherds: 99; 13 unidentifiable, the remainder of Mayapán period (3 Fine Orange, 5 of censers).



a



b



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d



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h



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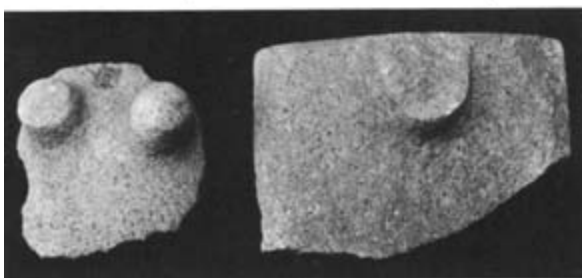
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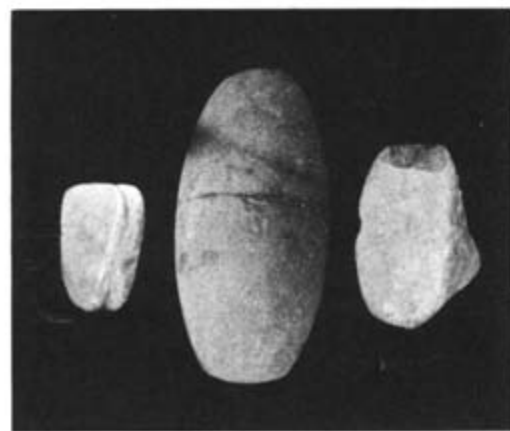
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v

36.9. Stone Objects Recovered During Excavation in Strs. S-133b, Q-244b, Y-2d, J-71b, Q-37s., R-171b, R-91, R-126a, and J-71a, and Groups Q-244 and K-67.

a. Front view of stone sculpture, 18.7 by 11.4 by 15.5 cm found in Str. 5-133b, Room 2, Cat. no. 55-296, Lot A-554 (Fig. 36.4f, caption). b. Side view of a. c. Side view of stone sculpture, 21.9 by 13.7 by 16.6 cm, found in Group Q-244, Cat. no. 55-11, Lot A-501 (Fig. 36.3, caption). d. Front view of c. e. Front view of stone sculpture, 11.7 by 16.4 by 11.9 cm, found in Str. Q-244b, Cat. no. 55-12, Lot A-500 (Fig. 36.3). f. Side view of e. Tenoned stone ring, 31 cm long with tenon, diam 23 cm, hole diam 10 cm, ht. 17 cm, found in Str. Y-2d, Cat. no. 55-333, Lot A-502 (Fig. 36.4g., caption). h. Stone cord holders found in Str. 5-133b, Lot A-554 (Fig. 36.4f,21). i. Stone cord holders found in Str. 5-133b, Room 2, near cord holders in floor, probably fell out of wall above them, Lot A-554 (Fig. 36.4f,19). j. Tenoned stone alligator head, 42 by 16 by 9.5 cm, found in Str. J-71b, Cat. no. 55-122, Lot A-543 (Fig. 36.1b, caption). k. Limestone *metate* from Str. Q-37a, Lot A-587 (Fig. 36.1i); l. Limestone *metate* and *mano* from surface of Str. Q-24Z Room 2, Lot A-501 (Fig. 36.3, caption). *Metate* 46 cm long, 38 cm wide, 20 cm thick; *mano* 22 cm long, diam 11 cm. m. Front view of stone turtle, 21.7 by 13.6 by 13.6 cm, found in Str. Q-244b, Room 3, Cat. no. 55-9, Lot A-500 (Fig. 36.3). n. Side view of m. o. Front view of fragment of stone carving of human figure, 12.4 by 7.9 by 7.3 cm, found in Str. Q-244b, Room 3, Cat. no. 55-10, Lot A-500 (Fig. 36.3). p. Side view of o. q. Miniature stone temple, 8.4 by 7 by 13.5 cm high, found in Str. 5-133b, Room 2, Cat. no. 55-286, Lot A-554 (Fig. 36.4f, caption). r. Left to right, fragment of lava *metate*, 17.6 by 13.6 by 3 cm max. thickness, found in Group Q-244, Cat. no. 55-14, Lot A-501 (Fig. 36.3, caption); stone cord holder, 20 by 16.5 by 6.7 cm, found in Str. Y-2d, Cat. no. 55-621, Lot A-502 (Fig. 36.4g, caption). s. Small stone sculptured altar, 10.6 cm high by 10.9 by 9.7 cm, found in Str. 5-133b, Room 2, Cat. no. 55-295, Lot A-554 (Fig. 36.4f, caption). t. Left: grooved *mano*, 19.3 by 9.7 by 6 cm, found in Group Q-274, Cat. no. 55-574, Lot A-501 (Fig. 36.3, caption). Center: five-sided rubbing stone, 9.9 by 5.1 by 3.8 cm, found in Str. Q-37a, Cat. no. 55-579, Lot A-587 (Fig. 36.1i). Right top: rubbing stone, 10.6 by 7.5 by 3.8 cm, from Str. R-171b, Cat. no. 55-297, Lot A-569 (Fig. 36.4b, caption). Right bottom, stone fiber beater, 8 by 5.2 by 4.6 cm, from Str. R-91, Cat. no. 55-580, Lot A-581 (Fig. 36.1j). u. Left to right, fragment of lava *metate*, 18.5 by 16.3 by 7 cm, from Str. R-126a, Cat. no. 55-294, Lot A-559 (Fig. 36.4a, caption); fragment of *metate*, foreign stone, 28 by 20.5 by 10.5 cm, found in Str. 5-133b, Cat. no. 55-287, Lot A-568 (Fig. 36.4f). v. Left to right, grooved rubbing stone, 7.5 by 5.8 by 3 cm, found in Group K-67, Cat. no. 55-607, Lot A-536 (Fig. 36.2, caption); stone *mano*, 18.5 by 9 by 8 cm, from Str. J-71a, Cat. no. 55-289, Lot A-542 (Fig. 36.1a, caption); rubbing stone, 10.6 by 6.8 by 6.6 cm, from Str. J-71b, Cat. no. 55-290, Lot A-543 (Fig. 36.1b, caption).

STRUCTURE R-171B (480 S, 100 E)

Str. R-171b, facing north, is the central of one of three on a poorly defined terrace. The building rises directly from a platform having a projection and height on the north side of 0.15 and 0.30 m, respectively. The platform was reached by a single step, the riser measuring 0.25 m and the tread 0.30 m; the length is not known, but if the step was centrally placed it measured 3.3 m.

Some changes were observed in the bench of this single-chambered structure. The latest period shows a bench abutting the end and back wall, having a height of 0.50 m and a width varying from 1.45 m to 1.65 m (Fig. 36.4b). At one time the bench had been interrupted in the medial axis by a recess for an altar. Only the back and west face of this recess now remain. The east face as well as the section of facing at the corner had been removed. This area was then filled and faced by a triangular section projecting into the room. The facing of the addition was of much larger and rougher stones than that of the original bench.

An earlier floor was encountered 0.50 m beneath the one associated with the bench and altar just described. This earlier floor was traced northward and extends under the step of the final construction. At the south were remains of an altar 0.85 m wide with a step 0.40 m deep by 0.10 m high.

Masonry of the structure is for the most part of large, roughly worked stones with one of Puuc type occasionally noted. The roof was undoubtedly of beam-and-mortar construction.

Surface material recovered in the excavation of the structure (see Fig. 36.4b, Lot A-569) included a rubbing stone (Fig. 36.9t) and two sections of a human femur found on the plaster floor.

A trench 1.20 m wide through the medial axis of the building yielded from between Floors 1 and 2 the material listed under Figure 36.4b, Lot A-572.

Material from below Floor 2 to bedrock (see Fig. 36.4b, Lot A-573), which was from 0.25 to 0.55 m below the floor, included an obsidian core (Fig. 36.11h).

STRUCTURE S-133A (345 S, 520 E)

Str. S-133a (Fig. 36.4e), one of a group of six structures, rests on a large terrace about 2 m high. It is supported by a low platform and faces north on a small court. This building, which is of the dwelling type, has a long front room open to the north. Three benches against the back wall are separated by two doorways leading into two back rooms of approximately the same size and separated by a thin wall. The eastern of the two a doorway in its east end with a sill 0.20 m above the floor level of the room (Fig.



a



b



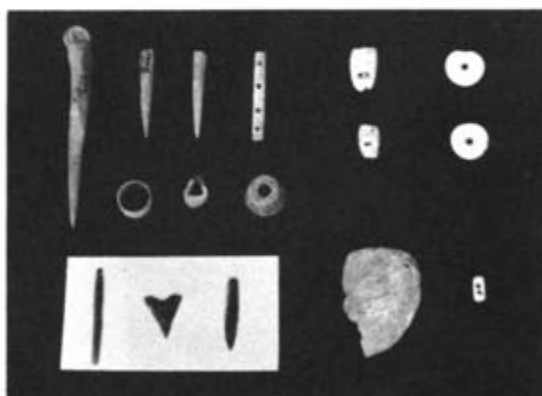
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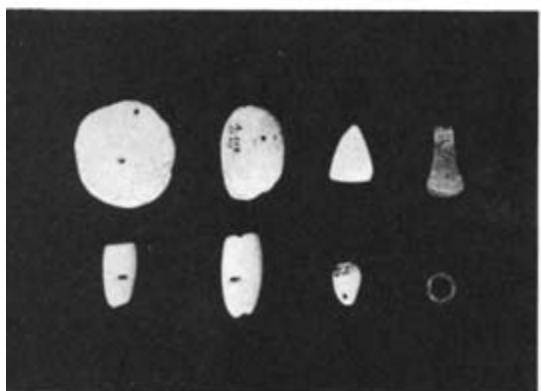
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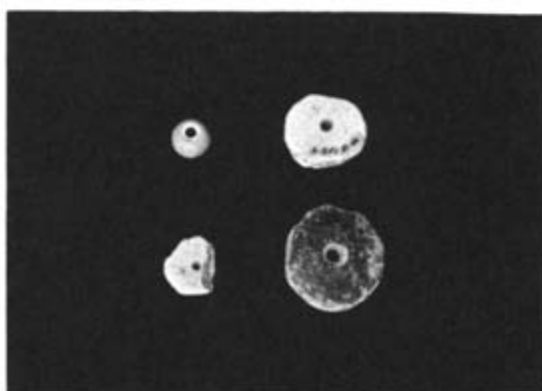
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g



h

36.10. Artifacts Recovered During Excavation in Strs. Y-8b, R-126a, S-133a, J-71a, Y-2d, Q-37a, Q-244b, Q-244c, S-133b, P-14a, J-71b, J-71d, R-30f, and R-91, and Groups Q-244 and K-67.

a. Top, left to right, large flint blade, 12.2 by 5.2 by 1.4 cm, from Str. Y-8b, Cat. no. 55-271, Lot A-576 (Fig. 36.4h); flint point, 11 by 3.1 by 1.3 cm, from Str. R-126a, Cat. no. 55-173, Lot A-559 (Fig. 36.4a, caption); flint point, 10.3 by 3.25 by 1.45 cm, from Str. 5-133a, Cat. no. 55-178, Lot A-553 (Fig. 36.4e, caption); flint point, 7.6 by 5 by 1.2 cm, from Str. J-77a, Cat. no. 55-543, Lot A-542 (Fig. 36.1a, caption). Bottom, left to right, unfinished flint blade, 7.3 by 4 by 2.7 cm, from Str. Y-2d, Cat. no. 55-315, Lot A-508 (Fig. 36.4g); flint tool, 6.2 by 4.6 by 1.7 cm, from Group Q-244, Cat. no. 55-165, Lot A-501 (Fig. 36.3, caption); flint blade, 7.2 by 3.1 by 1.5 cm, from Str. Q-37a, Cat. no. 55-526, Lot A-587 (Fig. 36.1b, flint point, 5.1 by 3.8 by 1.3 cm, from Str. Q-244b, Cat. no. 55-337, Lot A-521 (Fig. 36.3); flint point, 4.4 by 3.3 by 1.2 cm, from Str. Q-244b, Cat. no. 55-342, Lot A-523 (Fig. 36.3). b. Top, left to right, flint point, 8.5 by 3.2 by 0.9 cm, from Str. Q-244c, Cat. no. 55-339, Lot A-520 (Fig. 36.3); flint blade, 7.9 by 3.3 by 0.9 cm, from Str. 5-133b, Cat. no. 55-171, Lot A-564 (Fig. 36.4f); flint point 7 by 3 by 1.4 cm, from Str. P-14a, Cat. no. 262, Lot A-55-564 (Fig. 36.1e, caption); flint point, 5.6 by 3.6 by 1 cm, from Str. Q-244b, Cat. no. 55-343, Lot A-523 (Fig. 36.3). Bottom, left to right, fragment of flint knife, 5.7 by 3.1 by 1.3 cm, from Str. 5-133b, Cat. no. 55-175, Lot A-554 (Fig. 36.4f, caption); flint point, 5.1 by 3 by 1 cm, from Str. Q-244b, Cat. no. 55-338, Lot A-521 (Fig. 36.3); used flint chip, 5.7 by 3.1 by 0.7 cm, from Str. Q-24c, Cat. no. 55-340, Lot A-522 (Fig. 36.3); flint scraper, 5 by 3.5 by 0.6 cm, from Group Q-244, Cat. no. 55-321, Lot A-518 (Fig. 36.3). c. Top, left to right, flint point, 12.2 by 5 by 1.8 cm, from Str. J-71b, Cat. no. 55-82, Lot A-548 (Fig. 36.1b); flint point, 13 by 4.5 by 1.1 cm, from Str. Y-2d, Cat. no. 55-44, Lot A-512 (Fig. 36.4g); flint point, 8.9 by 3.9 by 1.2 cm, from Group Q-244, Cat. no. 55-48, Lot A-501 (Fig. 36.3, caption); flint point, 8.4 by 3.4 by 1.3 cm, from Str. Q-244b, Cat. no. 55-49, Lot A-521 (Fig. 36.3); flint point, 7.5 by 2.6 by 1.1 cm, from Str. Q-244b, Cat. no. 55-50, Lot A-524 (Fig. 36.3); flint point, 5.4 by 2 by 0.9 cm, from Str. Q-244b, Cat. no. 55-47, Lot A-530 (Fig. 36.3); flint arrow point, 3.5 by 1.65 by 0.65 cm, from Str. Y-2d, Cat. no. 55-67, Lot A-505 (Fig. 36.4g). Bottom, left to right, large tubular jade bead 6 by 2.4 by 2.25 cm, from Str. Q-244c, Cat. no. 55-51, Lot A-522 (Fig. 36.3); tubular jade bead, 2.55 by 1.35 by 1.05 cm, from Str. Q-244b, Cat. no. 55-52, Lot A-521 (Fig. 36.3); tubular jade bead, 1.9 by 1 by 1 cm, from Str. Q-244b, Cat. no. 55-56, 0.5 cm (Fig. 36.3); flint arrow point, 5.3 by 2.45 by 0.5 cm, from Str. J-71d, Cat. no. 55-87, Lot A-546 (Fig. 36.1e); flint notched arrow point, 4.55 by 1.9 by 0.6 cm, from Str. J-71d, Cat. no. 55-85, Lot A-546 (Fig. 36.1e); flint arrow point, 4.2 by 2.1 by 0.75 cm, from Str. J-71d, Cat. no. 55-84, Lot A-546 (Fig. 36.1e); flint arrow point, 4.2 by 2.05 by 0.5 cm, from Str. J-71d, Cat. no. 55-86, Lot A-546 (Fig. 36.1e). d. Top, left to right, flint point, 8 by 2.1 by 0.8 cm, from Str. R-126a, Cat. no. 55-174, Lot A-559 (Fig. 36.4a, caption); flint point with tenon, 6.5 by 1.2 by 0.5 cm, from Str. P-14a, Cat. no. 55-507, Lot A-585 (Fig. 36.1g); tang of flint point, 5.5 by 3.9 by 0.9 cm, from Group Q-244, Cat. no. 55-166, Lot A-501 (Fig. 36.3, caption); fragment of hatchet shaped flint, 4.7 by 4.7 by 1.15 cm, from Str. Q-244c, Cat. no. 55-335, Lot A-519 (Fig. 36.3); flint point, 4.1 by 3 by 0.8 cm, from Group K-67, Cat. no. 55-535, Lot A-536 (Fig. 36.2, caption); flint point, 4.5 by 2.8 by 0.7 cm, from Str. Q-244b, Cat. no. 55-274, Lot A-503 (Fig. 36.3). Bottom, left to right, flint point with polished surface, 4.8 by 2.1 by 0.8 cm, from Str. R-126a, Cat. no. 55-177, Lot A-559 (Fig. 36.4a, caption); flint arrow point, 4.4 by 2.3 by 0.65 cm, from Group Q-244, Cat. no. 55-167, Lot A-501 (Fig. 36.3, caption); flint arrow point, 3.8 by 1.6 by 0.6 cm, from Str. Y-8b, Cat. no. 55-276, Lot A-578 (Fig. 36.4h); notched flint arrow point, 2.7 by 1.45 by 0.3 cm, from Str. Y-8b, Cat. no. 55-273, Lot A-576 (Fig. 36.4h); notched flint arrow point, 2.2 by 1.3 by 0.3 cm, from Str. Y-8b, Cat. no. 55-272, Lot A-576 (Fig. 36.4h); round flint scraper, 2.7 by 2.6 by 0.7 cm, from Str. Q-244c, Cat. no. 55-341, Lot A-522 (Fig. 36.3). e. Top, left to right, stone cube, 5.7 by 5.7 by 5.3 cm, from Str. R-126a, Cat. no. 55-291, Lot A-559 (Fig. 36.4a, caption); bivalve shell from Str. R-126a, Lot A-559 (Fig. 36.4a, caption); end fragment of mano, volcanic stone, 6.3 by 5.8 by 9.9 cm, from Group Q-244, Cat. no. 55-298, Lot A-501 (Fig. 36.3, caption). Bottom, left to right, stone pestle, diam 3.8 to 4.1 cm, length 5.5 cm, from Str. 5-133b, Cat. no. 55-303, Lot A-563 (Fig. 36.4f, 18); small stone monkey figure, 5 by 4.3 by 4.1 cm from Str. R-30f, Cat. no. 55-304, Lot A-557 (Fig. 36.1d); polishing pebble, 3.7 by 3.5 by 1.8 cm, from Str. R-126a, Cat. no. 55-300, Lot A-559 (Fig. 36.4a, caption); polishing pebble, 4.3 by 4.4 by 2.6, from Str. 5-133b, Cat. no. 55-301, Lot A-554 (Fig. 36.4f, caption). f. Top, left to right, bone awl, 12.4 cm long, from Str. Q-244c, Cat. no. 55-60, Lot A-522 (Fig. 36.3); fragment of bone awl, 5.6 cm long, from Group Q-244, Cat. no. 55-61, Lot A-535 (Fig. 36.3); fragment of bone awl, 5.5 cm long, from Group Q-244, Cat. no. 55-61, Lot A-535 (Fig. 36.3); piece of bone with 4 perforations, 5.7 by 0.7 by 0.3 cm, from Group Q-244, Cat. no. 55-64, Lot A-501 (Fig. 36.3, caption); cut and perforated shell tinkler, 2.7 by 1.6 by 1.5 cm, from Str. Q-244b, Cat. no. 55-93, Lot A-500 (Fig. 36.3); perforated shell disk, diam. 2.2 cm, 2.3 cm thick, from Str. Y-2d, Cat. no. 55-53, Lot A-512 (Fig. 36.4g). Middle, left to right, bone ring, 2 cm, outside diam, by 0.9 cm, from Str. Q-244b, Cat. no. 55-65, Lot A-524 (Fig. 36.3); segment of cut bone, 1.7 by 1.7 by 1.4 cm, from Str. J-71d, Cat. no. 55-91, Lot A-546 (Fig. 36.1e); bone spindle whorl, 2.4 cm max. diam by 1.3 cm, from Str. Y-2d, Cat. no. 55-46, Lot A-505 (Fig. 36.4a); perforated shell tinkler, 2 by 1.3 cm from Str. Q-244c, Cat. no. 55-70, Lot A-522 (Fig. 36.3); perforated shell disk, diam 2.2 cm, 2.3 cm thick, from Str. Y-2d, Cat. no. 55-53, Lot A-512 (Fig. 36.4y). Bottom, left to right, fragment of obsidian flake blade, 5.6 by 0.6 by 0.1 cm, from Group Q-244, Cat. no. 55-72, Lot A-535 (Fig. 36.3); obsidian arrow point, 2.5 by 2.2 by 0.05 cm, from Str. Y-2d, Cat. no. 55-59, Lot A-502 (Fig. 36.4g, caption); retouched obsidian flake blade, 4.1 by 0.9 by 0.3 cm, from Group Q-244, Cat. no. 55-55, Lot A-501 (Fig. 36.3, caption); pottery mask, pectoral ornament, 6.1 by 4.4 by 0.8 cm, from Str. Q-244b, Cat. no. 55-45, Lot A-524 (Fig. 36.3); perforated rectangular shell, 2 holes, 1.45 by 0.65 by 0.35 cm, from Str. Q-244b, Cat. no. 55-92, Lot A-500 (Fig. 36.3). g. Top, left to right, worked and drilled shell, diam 6.2 to 6.5 cm, max. thickness 0.55 cm, from Str. Q-37a, Cat. no. 55-530, Lot A-587 (Fig. 36.1); perforated shell 5.7 by 3.8 cm, from Str. Y-2d, Cat. no. 55-317, Lot A-508 (Fig. 36.4); shell pendant, 3.4 by 2.6 by 0.8 cm, from Str. R-91, Cat. no. 55-172, Lot A-571 (Fig. 36.1j, caption); copper tweezers, 4.2 by 2.1 by 0.6 cm, from Str. P-14a, Cat. no. 55-277, Lot A-585 (Fig. 36.1g). Bottom, left to right, perforated shell tinkler, 3.6 by 2.1 by 1.8 cm, from Str. Q-37a, Cat. no. 55-536, Lot A-591 (Fig. 36.1i); perforated shell tinkler, 4.5 by 2.4 by 2.1 cm, from Group Q-244, Cat. no. 55-176, Lot A-501 (Fig. 36.3, caption); perforated shell, 2.4 by 1.7 by 1.3 cm, from

36.10. Artifacts Recovered During Excavation in Strs. Y-8b, R-126a, S-133a, J-71a, Y-2d, Q-37a, Q-244b, Q-244c, S-133b, P-14a, J-71b, J-71d, R-30f, and R-91, and Groups Q-244 and K-67—continued

Str. Y-2d, Cat. no. 55-316, Lot A-509 (Fig. 36.4g); copper ring, diam 1.65 cm, ht. 0.9 cm, from Str. 5-133b, Cat. no. 55-183, Lot A-563 (Fig. 36.4f,16). h. Top, left to right pottery spindle whorl, diam 2.3 by 1.5 cm, from Str. R-30f, Cat. no. 55-182, Lot A-555 (Fig. 36.1d, caption); drilled re-used sherd, possibly a spindle whorl, 4.9 by 4.6 by 0.9 cm, from Group Q-244, Cat. no. 55-136, Lot A-501 (Fig. 36.3, caption). Bottom, left to right, drilled re-used sherd, possibly a spindle whorl, diam 3.5 cm, thickness 0.8 cm, from Str. Q-244c, Cat. no. 55-347, Lot A-522 (Fig. 36.3); drilled re-used sherd, possibly a spindle whorl, max. diam. 6.2 cm, thickness 0.7 cm, from Group Q-244, Cat. no. 55-320, Lot A-518 (Fig. 36.3).

36.4e,3). A few Puuc-type stones were used in the masonry, but for the most part the stones were only roughly faced. The structure, which once carried a thatch roof, must have had a row of wooden posts set in the platform on its north side to support such a roof.

A pit sunk in the central bench uncovered a stone-lined cist and a fragment of early floor 0.40 m below the top of the bench (see Fig. 36.4e, Lots A-565, A-566).

Another pit, in front of the platform supporting Str. S-133a, disclosed a tomb which had been cut through two early court floors; it was impossible to tell if the latest or top floor had been cut through, as it was in very poor condition. The south and west sides of the tomb were of rough masonry, but the other two were simply cut from the fill. Its floor, 0.15 m above bedrock, was plastered. The tomb contained the skeleton of an adult female lying on its right side in a flexed position, head north. Two of the lumbar vertebrae were fused and the skull was artificially deformed, having sagittal flattening (see Fig. 36.4e, Lot A-556).

STRUCTURE S-133B (325 S, 508 E)

Str. S-133b (Figs. 36.4,f; 6,d-h) lies a little to the northwest of Str. S-133a and faces east on the same court. The very fragmentary remains of a small altar platform, Str. S-133c, are directly in front of and centered on it. Str. S-133b, a good-sized construction possibly used as a dwelling, has an unusual plan. Supported by a low platform, it has four rooms, three parallel, long axis north and south, and one lateral at the south end. A small plaster block with a pottery bowl set in it projects from the center of the east side of the platform supporting Str. S-133b and rises slightly above the level of its floor (Figs. 36.4,f,20; 6,h).

Room 1, the east room of the building, facing on the court, has a large opening in its east side with two columns dividing it into three entrances, the central one being the widest of the three. The columns are larger than those usually used in dwellings, being 0.60 m in diameter, and are in a good state of preservation, the plaster being intact on one (Fig. 36.6,d).

At the south end of the room is a doorway leading into Room 4, the lateral room at the south end of the building. The west wall is pierced by two doorways leading into Room 2, the central room. Benches extend along the back wall of Room 1, except where it is broken by the two doorways leading into Room 2, and along the wall at the north end. The benches had a 0.10 m molding along their upper edge which projected 0.01 to 0.03 m from the face of the benches. Two stone cord holders were found near the north jamb of the large opening on the east side of the room (figs. 36.4f,21; 9h). They probably had been in the wall, which had almost completely fallen at this point.

Room 2, the central room, has only two doorways, those leading into Room 1. The southern of the doorways, which is nearer to the center of the room and is its main doorway, has two stone cord holders set in the floor, a little in from either jamb (Fig. 36.4f,19). They each had a hole and were similar to those found in Room 1 (Fig. 36.9h). All that protruded above the floor was the end with the hole. Two other cord holders found on the floor nearby (Fig. 36.9i) probably fell out of the wall above the two set in the floor. A small altar built in two levels was placed against the back wall of the room in line with the doorway with the cord holders. The floor at the south end of the upper level of the altar had been broken through, possibly to remove an offering from a small cist. The floor just south of the altar was covered with fine ash and a large number of sherds, many of censers (see Fig. 36.4f, Lot A-561). To the north of the altar a pottery neck had been placed in the floor at the time of its construction (Fig. 36.4f, Lot A-575).

There are two other openings in the east wall of Room 2, besides the two doorways. These are in the approximate center of the wall sections on either side of the main doorway and lead down into rectangular stone-lined vaults under the benches on the other side of the wall in Room 1 (Figs. 36.4f; 36.6e,f,g). Both vaults extended under the east face of the bench above them, and in each case the stones forming the face of the bench fell into them, probably when the wooden beams which must have rested on

the walls of the vaults to support the masonry and fill above collapsed. The walls of the vaults were made of roughly cut stones and the floors were plastered. The vault under the south bench had nothing in it except some sherds (Fig. 36.4f, Lot A-564) and a flint blade (Fig. 36.10b). The vault under the center bench held a burial containing the remains of five skeletons, three adults and two children. Very few long bones were found, so the positions of the skeletons could not be determined, only the locations of the skulls. One of them, that of an old male (Fig. 36.4f, 13), was burned black. Objects found with the burial (Fig. 36.4f, Lot A-563) included a pottery doll with movable arms and legs (Fig. 36.8q-s), a small stone pestle (Fig. 36.10e), and a copper ring (Fig. 36.10x). For position in the tomb of the skulls and the associated objects see Figure 36.4f, 9-18.

Floors 5-8 are associated with Rooms 1 and 2. The top floor, Floor 5, turns up to all walls in both rooms, the columns and benches in Room 1, and the altar in Room 2. Floor 6, about 0.06 m below Floor 5, goes under the columns (they rest on it) in Room 1, turns up to the benches in this room, goes under the altar in Room 2, and turns up to the walls in both rooms. Floor 7, about 0.06 m below Floor 6, goes under everything in both rooms except where it was broken to put in the two vaults under the benches in Room 1, It must have been associated with an early construction destroyed at the time of the building of Str. 5-133b. Floor 8, 0.40 m below Floor 7 under Room 1, is probably an early floor of the terrace supporting the group.

Room 3, the western of the three parallel rooms, has a large opening in its west wall divided into three entrances by two columns. A row of stones found on the floor between the south column and south jamb may have fallen from the roof. Originally Room 3 had a doorway in its south end partly blocked by a bench extending along the east wall of the room to within about 2 m of its north end. This bench had a narrow wall along its north end, rising 0.35 m above the level of the top of the bench, and a molding along its west face similar to the molding on the benches in Room 1. At some later date the doorway in the south end of the room was blocked and a bench placed against the south wall.

Room 4, a late addition, was a long lateral room at the south end of the building. Its south side, which was completely open except for masonry blocks at either end, was divided into three entrances by two square masonry columns. Both ends of the room had entrances, the one at the west end being the width of the room. A doorway from Room 1 leads into the east end of the room, and a large bench extended along its north wall.

The masonry in Str. S-133b, except for the facing of the benches which was of stones of the Puuc type, was of roughly cut and faced stones laid in fairly even courses with the use of many spalls (Fig. 36.6f). The roof, which had been of beams and mortar, was destroyed by fire.

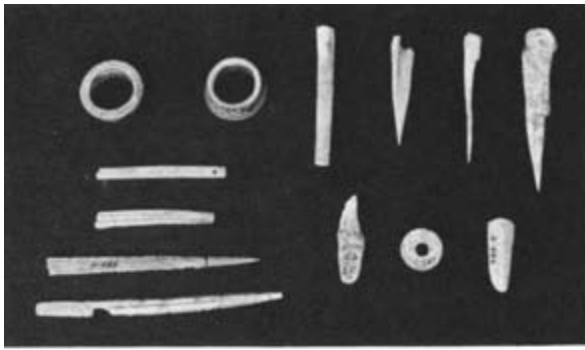
STRUCTURE Y-2D (570 S, 20 E)

Str. Y-2d (Figs. 36.4g; 36.6i,j) is one of a group of four structures on the northwest corner of a large terrace about 2 m high. The group surrounds a small court, Str. Y-2d being on its west side and facing upon it. This building, of the dwelling type, is supported by a low platform and has a front and rear room. The front room has a wide opening on its east side which is divided into three entrances by two columns, the central opening being the widest of the three. A doorway in the center of the back wall leads into the rear room. At some time after the construction of the building this doorway was narrowed by placing a masonry block against its north jamb (Fig. 36.4g, 9). On either side of the doorway are benches that extend to the ends of the room and along the north and south walls. The northern of these L-shaped benches is about 0.20 m lower than the southern.

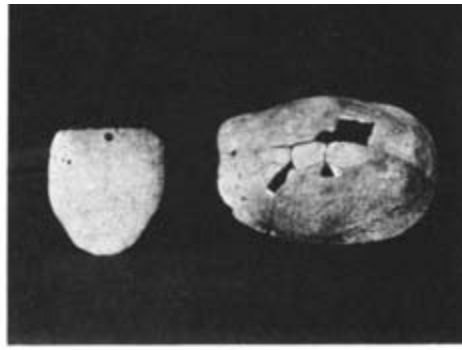
A pit between the two benches in the front room brought to light not only a burial (Lot A-505) but several floors. The earliest floor, Floor 1, continued into the back room. Later a sill was placed in the doorway leading into the rear room. The sill rested on a fragment of floor, Floor 3, which may have been a later floor in the back room, but which was not found elsewhere. The burial mentioned above was put through Floor 1 and then the area between the benches was covered by a new floor, Floor 2, 0.25 m above Floor 1. Floor 2 was continued through into the rear room. The cist containing the burial was cut out of the fill and had bedrock as its floor. The skeleton of a young adult female lay on its right side at the bottom of the cist, head to the east, legs flexed, and arms crossed at the abdomen. The only other bone found was a fragment of a baby skull. Some charcoal was found with the burial, as well as a bone spindle whorl (Fig. 36.10f), two copper rings (Fig. 36.11g), a flint arrow point (Fig. 36.10c), and one or two other objects (Fig. 36.4g, Lot A-505).

Pits sunk in the two benches in the front room showed that each contained a stone-lined cist with a plastered floor. The cists (Fig. 36.4g, Lots A-511, A-512) were filled with earth and stones and covered by the plastered tops of the benches. They were undoubtedly built to hold future burials.

The back room did not extend to the north end of the structure. Although built at the same time as the



a



b



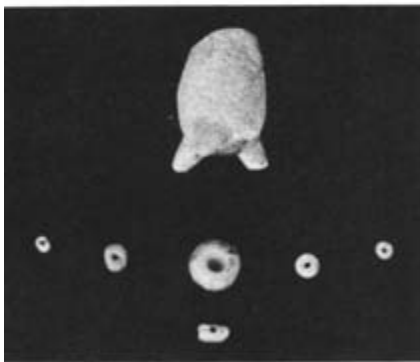
c



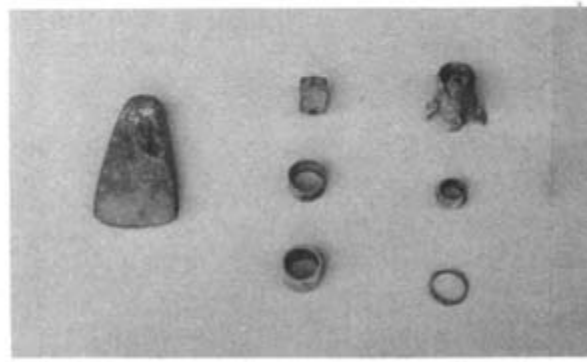
d



e



f



g



h



i



j

36.11. Artifacts Recovered During Excavation in Strs. P-28b, Q-37a, R-126a, Y-8b, P-14a, P-23c, J-71b, A-1, Y-2d, R-142c, Q-244b, R-171b, and Q-244c, and Group Q-244.

a. Top, left to right, pair of bone or antler earplugs, max. diam 3.8 cm, ht. 1.4 cm, from Str. P-28b, Cat. no. 55-531, Lot A-594 (Fig. 36.1h,l); worked bone tube, 8.6 by 1.1 by 0.95 cm, from Str. Q-37a, Cat. no. 55-511, Lot A-587 (Fig. 36.1i); fragment of bone point, 6.7 by 1.4 by 0.8 cm, from Str. P-28b, Cat. no. 55-519, Lot A-594 (Fig. 36.1h); bone awl, 8 by 1.2 by 0.8 cm, from Str. Q-37a, Cat. no. 55-512, Lot A-587 (Fig. 36.1i); bone awl, 10 by 2.1 by 1.6 cm, from Str. R-126a, Cat. no. 55-184, Lot A-562 (Fig. 36.4a). Lower left corner, above: perforated stingray spine, 7.8 by 0.8 by 0.3 cm, from Str. Y-8b, Cat. no. 55-268, Lot A-576 (Fig. 36.4h). Below: 3 stingray spines, from Str. P-14a, Cat. no. 55-506, Lot A-585 (Fig. 36.1g). Lower right corner, left to right, piece of cut antler, 5.2 by 1. by 0.7 cm, from Str. R-126a, Cat. no. 55-188, Lot A-562 (Fig. 36.4a); bone spindle whorl, diam. 2.5 cm, ht. 1.1 cm, from Str. Q-37a, Cat. no. 55-514, Lot A-587 (Fig. 36.1i); piece of worked bone, 4.2 by 1.4 by 1.4 cm, from Str. P-14a, Cat. no. 55-505, Lot A-585 (Fig. 36.1g). b. Perforated plastron and carapace of turtle, latter 15.1 by 10.5 by 6.7 cm from Str. Q-37a, Cat. no. 55-278, Lot A-587 (Fig. 36.1i,4). c. Conch shell trumpet, 16.8 by 12.3 by 9.7 cm, from Str. P-14a, Cat. no. 55-279, Lot A-590 (Fig. 36.1g,8). d. Left to right, carved deer antler, 14.7 by 4.2 by 1.6 cm from Str. P-14a, Cat. no. 55-260, Lot A-585 (Fig. 36.1g); deer antler awl, 14 by 2.2 by 2.1 cm, from Str. P-23c, Cat. no. 55-527, Lot A-586 (Fig. 36.1c). e. Worked manatee rib, 28.5 by 4.4 by 3.1 cm, from Str. J-71b, Cat. no. 55-135, Lot A-543 (Fig. 1b, caption). f. Cache in Str. A-1, Lot A-595 (Fig. 36.1f). Top: tripod pottery vessel, 6.5 cm, high (Fig. 36.1f,3). Middle, left to right, shell bead, Cat. no. 55-542; jade bead, Cat. no. 55-541; jade bead, diam 2.3 cm, ht. 1.7 cm, Cat. no. 55-540; shell bead, Cat. no. 55-542; shell bead, Cat. no. 55-542. Bottom: shell bead, Cat. no. 55-542. g. Top, left to right, copper ring, 2.1 by 1.5 cm. from Str. Y-2d, Cat. no. 55-54, Lot A-505 (Fig. 36.4g); copper ring human head, diam 2.1 cm, ht. of body 1.9 cm, total ht. 3.2 cm, from Str. R-142c, Cat. no. 55-96, Lot A-550 (Fig. 36.4d,5). Middle, left to right, green stone celt, 7.6 by 4.5 by 2.3 cm, from Str. R-142c, Cat. no. 55-83, Lot A-544 (Fig. 36.4c, caption); copper ring, 2.1 by 1.5 cm, from Str. Y-2d, Cat. no. 55-54, Lot A-505 (Fig. 36.4g); copper ring, max. diam. 1.8 by 1.1 cm, from Str. R-142c, Cat. no. 55-95, Lot A-550 (Fig. 36.4d,4). Bottom, left to right, copper ring, max. diam. 2.3 cm, ht. 1.6 cm, from Str. R-142c, Cat. no. 55-94, Lot A-550 (Fig. 36.4d,4); copper ring, max. diam. 2.1 cm, ht. 0.35 cm, from Str. R-142c, Cat. no. 55-97, Lot A-550 (Fig. 36.4d,4). h. Top, left to right, obsidian arrow point, 3.65 by 1.6 by 0.35 cm from Group Q-244, Cat. no. 55-186, Lot A-501 (Fig. 36.3, caption); obsidian thumbnail scraper, 2.6 by 2.5 by 0.65 cm, from Str. Q-244b, Cat. no. 55-344, Lot A-523 (Fig. 36.3). Middle, 169, Lot A-573 (Fig. 36.4b); green stone celt, 3.9 by 3 by 1.5 cm, from Str. P-14a, Cat. no. 55-264, Lot A-584 (Fig. 36.1g, caption). Bottom, left to right, obsidian thumbnail scraper, 2.4 by 1.4 by 0.3 cm, from Str. Q-244c, Cat. no. 55-345, Lot A-522 (Fig. 36.3); notched obsidian arrow point, 4.5 by 2.8 by 0.7 cm, from Str. Q-244b, Cat. no. 55-274, Lot A-503 (Fig. 36.3). i. Front view of copper ring with human head, diam 2.1 cm, ht. of body 1.9 cm, total ht. 3.2 cm, from Str. R-142c, Cat. no. 55-96, Lot A-550 (Fig. 36.4d,5). j. Side view of i.

front room, it was built against its back wall. There is evidence that the builders originally intended not to have the back room extend to the south end of the building, but to have it stop short as it does at the north end, and then changed their minds. The only doorway in the room is the one leading into the front room. Originally there was a bench at the south end of the room. Later a lower bench was placed against the center of the back wall. This central bench was eventually covered by Floor 2, which covered all of the back room except the bench at its south end. A pit in the bench at the south end of the room brought to light a stone-lined cist with a plastered floor 0.20 m above natural rock, probably another place prepared for future interment.

The masonry of Str. Y-2d is of very rough stones set in good lime mortar (Fig. 36.6i,j). Traces of plaster on the walls show a thickness of as much as 0.05 m in one place the wall at the south end of the building rises 1.70 m above the floor of the front room. This was probably not far from the height of the room. The roof had been of beam-and-mortar construction. There was no sign of its having been burned.

While excavation was going on in Str. Y-2d, R. E. Smith did some trenching for pottery in Group Y-2.

Lot A-513: cut into dry rock fill in center of Group Y-2 along outer face on east side of an early terrace inside the larger terrace supporting the group. Cut goes down to bedrock: spiral shell fragment; 3 obsidian flake blades. Sherds: 68; unidentifiable, the remainder of Mayapán period (5 Fine Orange, 1 of censers).

Lot A-514: cut into terrace about 0.40 m below broken floor level found only on east side of Str. Y-2a. Cut goes down to dry rock fill of terrace: 3 flint chips. Sherds: 189; 105 unidentifiable, the remainder of Mayapán period (21 of censers).

Lot A-517: trench between benches in Str. Y-2a down to bedrock, which uncovered corner of an early terrace: obsidian flake blade; conch shell fragment. Sherds: 225; 72 unidentifiable, the remainder of Mayapán period (2 Fine Orange, 4 of censers).

STRUCTURE Y-8B (567 S, 135 E)

Str. Y-8b is the central building of three forming Group Y-8, which rises from a natural hillock. Only suggestions of terrace facing remain, though the hillock was definitely leveled and prepared for the support of the buildings.

Str. Y-8b faces northeast, rises from an independent platform 0.15 m high, and is composed of a single chamber with a small projecting shrine room at the back (Fig. 36.4h). The building is in a poor state of preservation. In some places walls could not be followed. Two column drums, 0.40 m in diameter, were encountered across the front of the structure, but it is doubtful whether either was *in situ*. Small patches of floor plaster were seen in the passageway between the benches leading into the shrine room and in the shrine room itself. Because of the poor condition of the plaster floor and the lack of debris, it is thought that the roof was of thatch.

The main chamber has two L-shaped benches each rising 0.50 m. Surface material from the main chamber and the passageway is listed under Figure 36.4h, Lot A-574.

A pit in the floor of the east half of the chamber was sunk to an average depth of 1.30 m. No outlines of a cast were seen. Material recovered had apparently been rather indiscriminately dumped into the fill. This material included parts of eight adult skeletons. In some cases long bones and vertebrae may have been associated with skulls, but in general the

skeletal material was found scattered throughout the fill. See material listed under Figure 36.4h, Lot A-576.

The floor of the passageway steps up 0.15 m at a point 0.10 m in from the corner of the bench. This raised level extends into the shrine room. The projecting shrine room measures 1.80 by 3.25 m. Surface material from here is given under Figure 36.4h, Lot A-570.

A pit in the floor directly in from the doorway was carried to a depth of 1.45 m. Bedrock was not encountered. Material from the pit is listed under Figure 36.4h, Lot A-578.

Built against the inner face of the back wall of the shrine room is an altar 0.70 m wide, 1.20 m long, and 0.28 m high. Each front corner is formed of a Puuc-type spool ornament (Fig. 36.5i). A pit opened in the altar was carried to a depth of approximately 1.40 m without encountering bedrock. Material recovered is given under Figure 36.4h, Lot A-577.

At the west exterior of the main chamber are remains of a platform 1.50 m wide. Though in very poor state of preservation, it is similar to those associated with Strs. P-23c, P-28b, and R-142c, and may have served a like purpose.

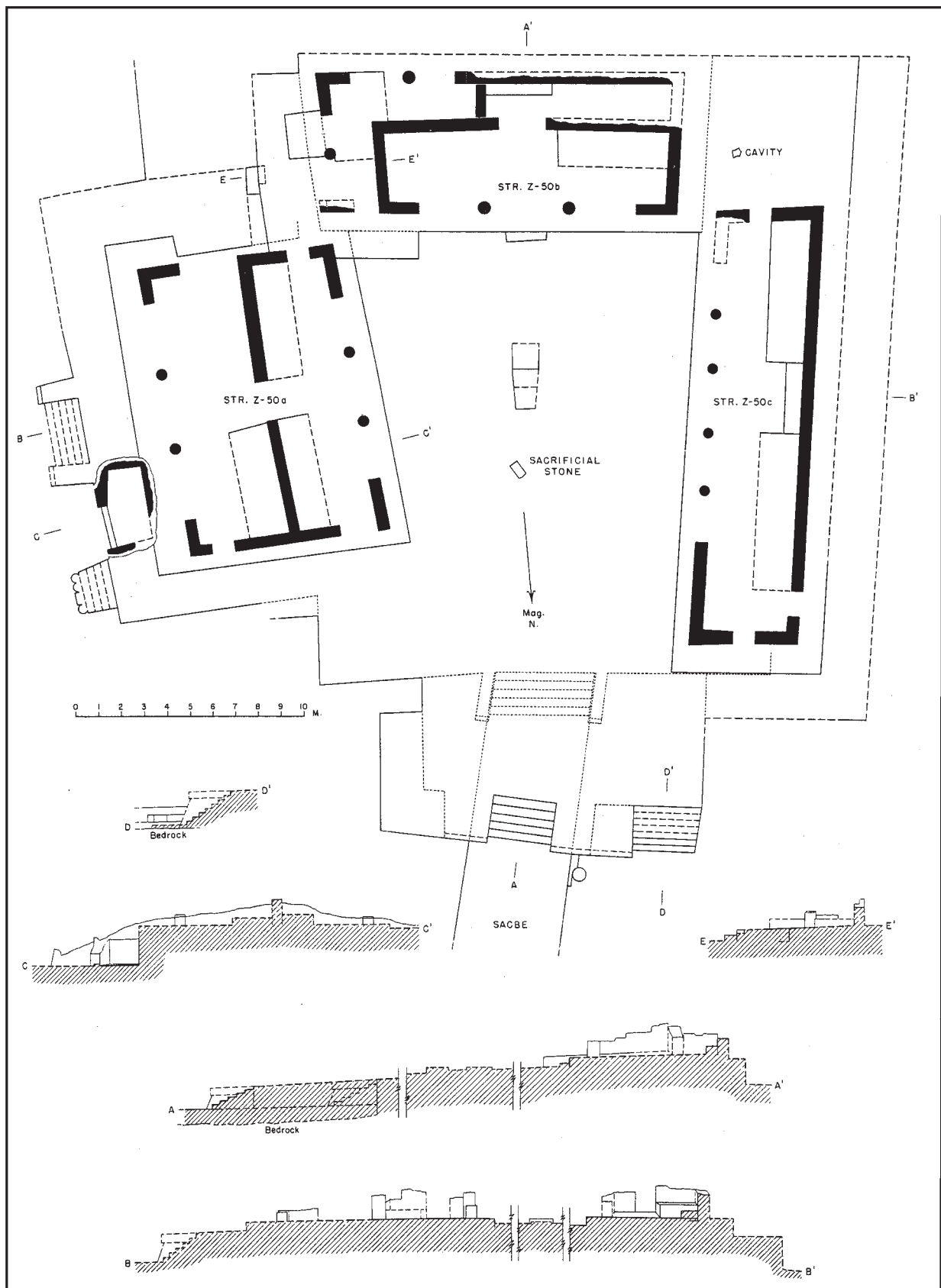
THE SOUTHERN TERMINUS OF THE PRINCIPAL SACBE AT MAYAPÁN, GROUP Z-50

H.E.D. POLLOCK

The principal sacbe at Mayapán has been referred to in an earlier report in this series (Pollock, 1950). The road runs from a large group of buildings in the western part of Square R to a somewhat smaller group in the northeastern part of Square Z (Jones 1952, map). The limited excavations described in the 1954 report were at the northern terminus of the sacbe and were made with the purpose of determining the age of the road. It was fairly well demonstrated that the sacbe was a late construction in the history of the city and also was late in relation to the quadrangle of buildings (Strs. R95 to R-99) at the northern end of the road. Although the excavations were not sufficiently extensive to throw any light on the character or function of the group, the opinion was expressed that the quadrangle was domiciliary and might accurately be termed a palace. Recent work by Proskouriakoff and Temple (1955) in a strikingly similar nearby assemblage of structures (R-85 to R-90) has amply demonstrated the domiciliary character of such groups,

and we now feel little doubt that the quadrangle at the northern end of the sacbe served as living quarters for the well-to-do.

The group of buildings at the southern end of the road (565 S, 120 W), which is the subject of this report, is less securely defined as to function. As will be seen from the plan and sections (Fig. 37.1), Group Z-50 consists of a raised courtyard with buildings on three sides. A few meters west of the group an opening in the bedrock, now choked by the roots of trees, may be the mouth of a cenote that once served as a source of water. The main approach is from the north, where the sacbe enters, and secondary approaches in the form of stairways are at the northwest and the east. None of the three buildings is characteristically residential in plan. The southern building, Str. Z-50b, has a single enclosed rear chamber affording the privacy that seems to be a mark of household architecture, but the rest of the structure is very open, and the other two buildings are quite different



37.1.
Plan and Sections of Group Z-50.

in plan from the usual dwelling. Though the character of the architecture is atypical for a residential group, the ceramic remains recovered are very much in the nature of household material. One is therefore tempted to believe that this assemblage of buildings had both residential and ceremonial functions.

No earlier archaeological work, other than the general mapping of the site, is known to have been carried on at Z-50. Our excavations began with the intention of developing a relatively detailed plan of the group in its final stage of occupation and of trenching through the sacbe at its southern end in order to check the time of construction of the road against the findings of similar work a year earlier at the northern terminus (Pollock 1950). As work progressed, there were indications that something might be learned of building sequence by carrying our excavations somewhat further. This was done, still on a limited scale, with the results that appear below (also see Pollock 1955). Our work here seems to confirm the relatively late time of construction of the sacbe that was indicated by the earlier digging at the north. Parts of Group Z-50 were built even later than the road.

BUILDING SEQUENCE

It will be seen from the plan of Group Z-50 that the sacbe, which enters the group from the north, originally extended some 5 m south of the stairway that now forms the terminus of the sacbe and the principal approach to the assemblage (Fig. 37.1). In the earlier stage the sacbe ended against a terrace wall that was subsequently buried for the most part by the extension northward of the main basal platform of the group. This fact was discovered by means of a pit that uncovered the east side of the sacbe at its junction with the buried terrace wall (Fig. 37.2a). Both are footed on bedrock and have the appearance of being contemporaneous. This pit also exposed remnants of what seemed to have been the east balustrade of a stairway that once rose from the sacbe to the top of the terrace. If there was indeed such a stairway, the upper steps and part of the balustrade were demolished in ancient times. Our pit did not extend outward from the terrace wall far enough to determine the presence or absence of lower steps. Because of the obvious necessity for a stairway, at this point, and because of the slight evidence of a balustrade, a stairway has been restored here in our plan and section (Fig. 37.1, Section A-A').

The buried terrace wall we have been referring to was uncovered by another pit at the northeast corner of the building platform, or plinth, of Str. Z-50c. At this point the buried wall continues

westward under the plinth (Fig. 37.2b), but ends, or more probably turns a corner, at a point short of the northwest corner of the building platform. This was determined by an excavation at the northwest corner that showed the building platform to rest on loose fill rather than on the old terrace wall. It seems clear from these findings that Str. Z-50c was built in a later stage of development of the group than that of the buried terrace.

East of the sacbe the buried terrace emerges within a few meters to form one wall of the main platform of the group in its final stage. The wall continues east a short distance, turns south, and then east again. In the angle made by the last turn a secondary wall (Fig. 37.1) had been constructed. This could be followed to a point about 2 m eastward, where all traces disappeared. Still farther east, the early wall turns south to form the eastern side of the main platform of the group. The small ground-level room (Figs. 37.1, Section C-C'; 37.2c) between the stairways on that side seems to have been made at the time when the main platform was built. The east wall of the platform behind both stairways, but this is normal construction practice at Mayapán, and there is no reason to think that the main stairway on that side is not to all intents and purposes contemporaneous with the platform. The smaller stairway (Fig. 37.2d), on the other hand, to judge by its position and poor construction, may well represent a later addition.

South of the main east stairway the platform wall is badly fallen and was followed only a short distance. The position of wall seems to be as shown on the plan, but this is largely reconstruction and we do not know the relation between this part of the main basal platform, which supports Str. Z-50a, and the part of the platform supporting Str. Z-50b. It may all be one unit, or the part of the platform beneath Z-50b may be earlier. It is unlikely that the latter is later, as Str. Z-50b seems to have been built before Z-50a, and the last-named structure seems to be contemporaneous with its basal platform.

Returning to the northern side of the group, it will be seen from the plan that the main platform was extended northward at a period subsequent to that we have been discussing. Several meters of the sacbe were thus buried, and the presumed early stairway at its end, or at least the upper part of the stairway, was removed. In place of the earlier stairway a new one was built upon the sacbe (Figs. 37.1, Section A-A'; 37.2e-g). In its original form this stairway carried balustrades almost 2 m wide. Later, a block of masonry was added east of the east balustrade and was carried around the northeast corner of the extension of the main platform to within a



a



b



c



d



e



f



g



h



i



j



k



l

37.2. Views of Excavations and Details of Construction.

a. Wall of buried terrace (upper left), east edge of sacbe (center), and remains of what probably was a balustrade (right), looking southwest. b. Buried terrace running under northeast corner of building platform (center) of Str. Z-50c, from northeast. c. Ground-level room between stairways to Str. Z-50a, from northeast. d. Northern stairway at east side of Str. Z-50a, from northeast. Note column drums in lowest step, ground-level room beyond stairway. e. Stairway forming principal approach to Group Z-50, looking south. Trench through sacbe at foot of stairway. f. East edge of sacbe and principal stairway to group, from northeast. Wide balustrade at east side of stairway extends almost to left margin of picture. West edge of sacbe, column drum and step, principal stairway beyond, from northwest. h. Southwest corner of Str. Z-50a, from west. Late addition to building platform of Str. Z-50b is seen just right of center of picture, low plinth of Z-50a just below center. i. Building platform of Str. Z-50c, from northeast. East end of trench cut to floor level along east-west axis of building appears in upper left of picture. j. Altar at rear center of Str. Z-50c, from southeast. Higher bench, which is primary to altar, is seen at right of picture. k. North doorway of Str. Z-50c, from north. Burned roof (?) beam was found on floor inside doorway. l. Opening to cavity in terrace south of Str. Z-50c, from south. Remains of plaster floor at top of picture.

short distance of the early platform wall first discussed. A deep niche was thus formed in the side of the platform.

As might be expected, this recess held a relatively deep deposit of debris and yielded a good return of pottery and other materials (Lot C-142). All the pottery was of Mayapán period, and a good proportion, about one-quarter, was of types late in that period. Two small limestone sculptures of animals, one of a jaguar, burned almost beyond recognition (Fig. 37.3a), the other possibly of a turtle (Fig. 37.3b), came from this deposit (see Lot C-142 under Pottery and Other Materials).

West of the new main stairway to the group a block of masonry was added, and another stairway, rising from ground level, was built (Fig. 37.1, Section D-D'). Near the foot of the west balustrade of the main stairway is an altar or large column drum, and between it and the side of the sacbe is a step leading from ground level to the surface of the road (Fig. 37.2g). The step is clearly secondary to the sacbe and to the balustrade, and probably is secondary to the altar or drum.

It is not known how the western addition to the main platform that forms the base of Str. Z-50c fits into the above described sequence of building. It is possible that the northward and westward extensions of the early platform were coeval. On the other hand, the northward extension may have come first. The latter condition is indicated on the plan by the buried southern end of the west side of the northern extension (Fig. 37.1). Excavation did not disclose what the situation is here, and this part of the plan is reconstruction. Certain fragmentary constructions (not shown on plan) below court level off the northeast corner of Str. Z-50c suggest that a stairway once rose from ground level at the west to the level of the court. If such a stairway did in fact exist, the western part of the main basal platform under Z-50c must almost certainly have been built after the northward extension of the platform.

Whatever the relative age of the northern and western extensions of the platform, the building Z-50c appears to have been erected later than the early buried platform, on which it only partly rests. It has already been noted that Str. Z-50a seems to be contemporaneous with that early platform but is later than Str. Z-50b. The apparent order of building of these structures is, then, Z-50b, Z-50a, and, lastly, Z-50c. The evidence suggesting this sequence will be given in more detail below.

STRUCTURES Z-50A, Z-50B, AND Z-50C

MASONRY. Our excavations, spotted here and there to develop the plan of the assemblage and to discover so far as possible the sequence of construction, did not uncover large enough wall areas to provide an adequate sample of the masonry of the group. It would be particularly hazardous to attempt to define differences between early and late constructions. One of the characteristics of Mayapán masonry is the relative crudity of the stonecutting and the seeming lack of uniformity in the way the stone was shaped and laid even within a single building. Observation of small areas of wall can, therefore, be highly misleading.

Speaking within these limitations, our impression was that the masonry seen here is typical of that observed in structures of comparable size or importance elsewhere in Mayapán, and described, with its range and variations, in a number of places in this series of reports. The views in Figure 37.2 will give an impression of the masonry. There is the usual sprinkling of finely cut and shaped stone of Puuc style, quite obviously a secondary use of these elements. In a number of buildings elsewhere in the city, stone of this sort was reserved particularly for stairways and plinth courses. This does not seem to be so at Group Z-50, where the only concentration of Puuc-style stones observed was in the face of the altar in Str. Z-50c (Fig. 37.2j).

STR. Z-50b. Facing the main approach and looking the length of the court, Str. Z-50b occupies the most important position in the group (Fig. 37.1). Natural ground level here rises gently from north to south and from west to east (Fig. 37.1, Sections A-A', B-B'), culminating in a little hillock beneath Str. Z-50b. The north-south rise has been maintained in the artificial surface of the court, and when one stands in the main entrance of Str. Z-50b and looks northward, one has the impression of occupying a position of eminence, even though the floor of Str. Z-50c is on approximately the same level. Considering the terrain, and the orientation imposed on the group by the *sacbe*, it is not surprising that Str. Z-50b was the first to be built.

In its original form, or at least in the earliest form exposed by our excavations, Str. Z-50b rested on a roughly rectangular platform that provided a terrace of a meter or less all around the building (Fig. 37.1). Sometime later there occurred a series of renovations that resulted in the enlargement of the platform toward the east and northeast, but before this happened Str. Z-50a seems to have been built. This sequence is indicated by the juncture of the low plinth across the front (west) of Z-50a with the original platform of Z-50b, where the low plinth is clearly secondary to the platform. The plinth along the south side of Str. Z-50a at this time ran westward to a point opposite the west doorway on that side, where it turned south and presumably formed a low step across the east end of the platform of Z-50b.

After Str. Z-50a was built, or while it was being built, the renovations of the east end of the platform of Z-50b were begun. These consisted in the enlargement of the platform to the east and the filling of the corner between Z-50a and b to the level of the platform of the latter, which stands some 0.35–0.40 m above the plinth of Z-50a (Fig. 37.2h). As the successive steps in enlarging the platform do not seem particularly significant, merely leading to the final plan, only the last stage is shown in Figure 37.1.

Changes were also made inside Str. Z-50b, most of which cannot be related to those just described. The short transverse wall at the east end of the southwest room is secondary to the main longitudinal walls and to the altar, which seems to be contemporary with the rear wall (Fig. 37.1). The western jamb of the south doorway carries a secondary facing, added, one suspects, when the transverse wall was installed. The bench that is shown on the plan as filling the southeast corner of the east room is secondary to the column in the east doorway and very probably represents a renovation of the original structure. We cannot be certain of this, but the fact that the bench blocks half of the east doorway

and nearly blocks the eastern half of the south doorway strongly suggests that it is a later addition. We are not sure of the position of the bench, because of limited excavation. It is possible that a passage exists between the bench and the inner walls, but the height and slope of the debris indicate that conditions were as shown in the plan.

It will be seen in the plan that the bench we are discussing first extended only to the line of the outer face of the east doorway. Later it was added to so that a part of the bench lay outside the building (Fig. 37.1, Section E-E'). This change could only have come with or after the final eastward extension of the terrace here, as no earlier stage of this terrace provided sufficient space to accommodate the addition to the bench. It will also be noted in the plan that the masonry pier at the northeast corner of Str. Z-50b carries a secondary extension at its east end. As the late addition to the bench lay entirely outside the building, quite open to the elements, one wonders if this extension of the pier was not intended to provide one support for a thatched roof over the terrace, the other supports presumably being wooden posts.

Our excavations in Str. Z-50b yielded little material that sheds any light on the character and use of the building. The depth and kind of debris within the structure leave no doubt that it carried a beam-and-mortar roof, thus being typical of Mayapán construction. The columns in the front and rear doorways are of exceptionally large diameter, but beyond this the structure is undistinguished except possibly for its unusual plan.

The interior and exterior bench arrangement at the eastern end of the building and the wide terrace suggest to the writer the possibility that the east room was used as a kitchen, but this is no more than a guess. Just off the edge of the platform and south of the eastern of the two southern doorways in Str. Z-50a, we ran into a deposit with much ash and bone, suggesting kitchen midden refuse. The refuse may have come from Str. Z-50a, Z-50b, or both, but its presence strengthens the likelihood that the eastern room and terrace of the latter served as a kitchen.

Excavation in the altar of Str. Z-50b uncovered a cache typical of similarly located offerings in Mayapán. The cache consisted of a miniature tripod vase or cup (see Shook and Irving 1955, Fig. 37.7i,j) and a jade bead. The cup was broken and the bead was loose in the fill of the altar, but there is little doubt that, as in similar caches found elsewhere, the bead was inside the cup when the offering was made. Also from inside the altar (Lot C-139) came an animal-head effigy foot from a bowl of Red-on-Cream or Buff Ware, a late type of pottery in Mayapán. As

the altar seems to have been installed contemporaneously with the construction of the building, and Str. Z-50b appears to be the earliest of the three buildings in the group, the implications are that the entire assemblage is late in the history of Mayapán.

STR. Z-50A. It has already been mentioned that the eastern building, although erected after Str. Z-50b, seems to be contemporaneous with the earliest part, of which we have any knowledge, of the general basal platform of the group. This conclusion is based on the finding that the low plinth of the building rests directly upon the fill of the platform, with no earlier floor underlying the plinth. It has also been mentioned that the ground-level room (Figs. 37.1; 37.2c) between the stairways to this building seems to have been built at the same time. The front walls of the chamber tie into the platform wall with no sign of a break, and the other walls of the room retain the loose fill of the platform. The only features connected with this structure that suggest later construction are the short stretch of secondary platform wall north of the building, and the northeast stairway (Figs. 37.1; 37.2d). As it was common practice in Mayapán to erect the terrace wall before building the stairway, we cannot be certain that this stairway was not part of the original plan. The unsymmetrical location and the slipshod construction involving the re-use of column drums in the bottom step, however, strongly suggest that this stairway was an afterthought.

The relatively slight amount of debris in Str. Z-50a, together with the absence of the plaster, small stone, and mortar associated with a fallen beam-and-mortar roof, leaves little doubt that this building carried a roof of perishable materials, presumably of thatch. The ground-level chamber, on the other hand, was roofed with beam-and-mortar construction, as indicated by the character of the debris inside the room. Whether the upper surface of the roof was level with the surrounding terrace, level with the plinth, or even higher, we do not know (Fig. 37.1, Section C-C'). It seems unlikely it would have been higher than the plinth.

Excavations in Str. Z-50a yielded, in addition to potsherds, a fragment of a *mano*, a sculptured stone head with a long tenon at the rear (Fig. 37.3c), and two carved stone elements of architectural decoration of Puuc type (Fig. 3d,e). All were on or above the floor, the first two between the west and medial doorways, the larger architectural element in the medial doorway, the smaller one on the surface of the debris in the east room. The midden material south of the southeast doorway has been mentioned in connection with Str. Z-50b.

Str. Z-50a presents a ground plan that is rare in Mayapán. A notably similar structure is J-71a; somewhat similar is Str. S-133b (Smith and Ruppert 1956, Figs. 1a; 4f). Each of these two buildings is in a group of structures of which at least one is typically a dwelling. By and large there is little to distinguish these groups from the majority of dwelling groups except the buildings to which we are now particularly referring. We do not know the function of this sort of structure. It may have been a dwelling of a rare and aberrant design. More likely, it seems to the writer, it fulfilled some function such as entertainment of visitors or some minor ritual, rather than being the dwelling of a family.

STR. Z-50C. The evidence for considering the western building to be the latest of the three has been brought out earlier in this report. The structure appears to rest partly on a western addition to the main basal platform that supports Str. Z-50a, and the latter has been shown to be later than Z-50b. That Str. Z-50c was built later than Z-50b is clearly shown by the joint between their respective building platforms.

The platform of Str. Z-50c, which is prolonged at its southern end to form a small courtyard or terrace in the angle between the ends of the two buildings, is secondary to that of Str. Z-50b. Both platforms and the terrace are on the same level.

The altar in Str. Z-50c is unusual in being lower than the benches on either side of it (Figs. 37.1, Section B-B', 37.2j). It was built after the benches, and the floor of the building runs under it. The plastered upper surface of the altar is gone but for fragments at the edges, and beneath the center of the altar, toward the rear, is a rough break in the floor of the building 0.10–0.15 m in diameter. Approximately 0.10 m farther down is an earlier floor that extends out from the rear wall a short distance, then dwindles away.

As might be expected from the conditions, just described, no cache was found in the altar. The cache presumably had been removed long ago. In front of the altar was an area of ash and a stone "pot lid." Also in the debris in front of the altar was the turtle effigy sculpture shown in Figure 37.3f. Just off the front of the platform of the building (Fig. 37.2i), a few meters north of center, was found another stone "pot lid." A fragment of a *mano* came from debris in the angle between the platforms of Strs. Z-50b and Z-50c. Several elements of Puuc-type architectural decoration were found near the building, but not directly associated with it (Fig. 37.3g–i).

The character of the debris in Str. Z-50c leaves no doubt that the building carried a beam-and-mortar roof. Just inside the north doorway (Fig. 37.2k) our



a



b



c



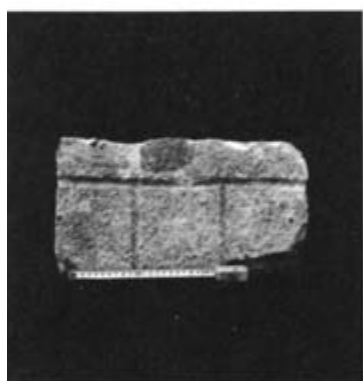
d



e



f



g



h



i



j



k



l

37.3. Miscellaneous Sculpture.

a. Carving in soft limestone, considerably burned and broken in two pieces, of snarling jaguar with creature on back. Length 15 cm, width 7.5 cm, height 9.2 cm. Cat. no. 55-281, Lot C-142. b. Carving in soft limestone, probably burned, of animal with receptacle on back. Length 10.5 cm, width 4.8 cm, height 6.8 cm. Cat. no. 55-280, Lot C-142. c. Human head with tenon at back, from debris in Str. Z-50a; d,e. Architectural elements, presumably re-used, from debris in Str. Z-50a. Height of [d] 0.40 m, of [a] 0.33 m. f. Carving in limestone of turtle with human head in beak and with hands holding rattles (?). Deep oval receptacle in center of carapace. Length 18.2 cm, width 11 cm, height 8.2 cm. Cat. no. 55-283, Lot C143; g-i. Architectural elements from near Str. Z-50c. Height of [h] 0.42 m, of [i] 0.32 m; j,k. "Sacrificial stone" from center of court of Group Z-50. Measures 0.28 by 0.38 m at base, 0.18 by 0.35 m at top, 0.74 m high. l. Serpent head from surface of sacbe. Measures 0.33 m from upper tooth to point of chin.

excavations uncovered a burned wooden beam, presumably a roof beam, and there were ample signs of burning on the floor nearby. This is a condition that has been found frequently in Mayapán. In the present instance, however, there were no signs of a burned roof at the center of the building. If the structure was intentionally or accidentally set fire to, the fire does not seem to have spread to the center of the building. Our excavations did not include the southern end beyond clearing the doorway there.

Str. Z-50c is in many respects similar in plan to the colonnaded halls in the main ceremonial group of the city. We know little of the purpose of such buildings, but there are indications that they were used for residence as well as ceremonial (Proskouriakoff 1954:268-269; Shook and Irving 1955).

MINOR CONSTRUCTIONS

Near the center of the court of Group Z-50 is a little platform divided into three parts (Fig. 37.1). Each part is outlined by a single course of stones, many pushed out of alignment, and the upper surfaces, presumably once of plaster, are now only dirt and rubble. To judge from the barest traces of a court floor at the side of the platform, the northern and southern parts stood about 0.20 m above court level, the central part about 0.07 m (Fig. 37.1, Sections A-A', B-B'). This last part is formed by courses of stone along each side that connect with the higher ends, and it may well have been built after the others. Along the east edge of the platform, near the center, were small fragments of modeled stucco. Remains of stucco figures associated with small platforms have been found in a number of instances in Mayapán (see, e.g., Shook 1954:261; Thompson 1955:284; Winters 1955:402).

Just north of the small platform, almost exactly at the center of the court, is a monument of the sort known as a "sacrificial stone." It was lying on its side in the position shown in the plan (Fig. 37.1), with nothing to indicate whether it had been moved from some other location or had merely toppled

over where it now rests. One is tempted to think that the stone was once associated with the little platform; against this conjecture is the fact that it is now located so near the exact center of the court.

The stone is severely weathered but still shows on each of the broader faces a design in low relief consisting of a deep V bordered at the upper margins by a series of points or triangles (Fig. 37.3j). The band that forms each V runs horizontally across the narrow sides of the stone (Fig. 37.3k) so that the design is continuous all around the monument. So far as we know, this is the only "sacrificial stone" in Mayapán that carries carving, or for that matter any decoration, although other examples may once have been plastered and painted.

Somewhat east of center of the terrace or small courtyard south of Str. Z-50c our excavation uncovered the opening (Fig. 37.1) to an underground construction superficially resembling the ancient cisterns in Yucatán known as chultunes. The present example, which is roughly in the shape of the neck and shoulder of a bottle, the bottom coming immediately below the shoulder, is of crudest construction. The neck (Fig. 37.2l), which is less than 0.50 m across at its widest, and about 0.90 m deep, is built of five to seven courses of rough masonry which rests on the loose fill and dirt that form the core of the terrace. The bottom is bedrock, rough and fissured. The total depth of the cavity is about 1.50 m, and the greatest width is not much over 1 m. Only a small boy could enter here, so our observations are of necessity somewhat vague.

The debris from within the cavity was removed so far as that could be done without danger of undermining the surrounding fill of loose rock. The quantity of objects recovered was disappointing (included in Lot C-143). A fair amount of sherds, all of Mayapán period, three broken flint implements, nine flint chips, a limestone "pot lid," a double handful of animal bones, and two bits of charcoal complete the inventory.

One can only guess at the purpose of this cavity. It most certainly never held water and was not a

cistern. Whatever other purposes it served, it likely was a drain, as the floor around the opening sloped down to it. That the cavity could have served as a receptacle for refuse is obvious, but if such was its use, the small amount of remains that came from the debris inside is puzzling, unless we assume that the group, or at least this cavity, was in use for only a short time. We have no information, nor any particular evidence up to the present, that the Maya provided toilet facilities within, or in connection with, their buildings. If they did, this construction could have served that purpose.

SACBE

On several occasions we traversed the sacbe from end to end, observing such features as were visible without excavation. It will be seen on the map (Jones 1952) that, starting at the southern terminus, the road takes a course directly toward the large quadrangle of buildings R-85 to R-90 (see Proskouriakoff and Temple 1955). About halfway along its course the sacbe swings slightly eastward, brushes the fringes of a sizable group (Q-242) on the zero grid line of the map, and continues in a straight line to terminate at the quadrangle formed by Strs. R-95 to R-99 (see Pollock 1950). Whether or not the bend in the road indicates a change in plan on the part of the builders, Strs. R-85 to R-90 having first been selected as the northern terminus, we cannot say. We do not know that construction started at the southern end, and if it began at the north, any plan to link R-85 to R-90 with Group Z-50 would be out of the question. We do not know the relative dates of the three groups, other than that all seem late in the history of the city. There are indications that the sacbe is a late construction relatively to the quadrangle at its northern terminus, and we know that a fair amount of building went on in the southern group after that end of the road had been built. These findings lead to speculation but do not prove which end of the road was built first.

Throughout its length the sacbe maintains a width of close to 4.50 m. At no point does it seem to stand appreciably higher than at its northern terminus (Pollock 1954, Fig. 37.1). In places the side of the road is formed by a single course of stone, 0.20–0.30 m high, and where it crosses a relatively high slope of bedrock the upper side disappears entirely, the surface of the sacbe simply merging with the slope of the bedrock. Details of construction of the road have been given in the 1954 report.

Few additional features of the sacbe are worthy of mention. About 15 m southwest of the zero grid line on the map, and due south of Group Q-242, is a

mound of rubble with the remains of a low wall on the surface of the road. The wall has a generally east-west direction, at an angle to the course of the sacbe. Whether this small structure rests on the road or is an earlier construction incorporated in the road, we do not know. Its apparent orientation, judged from the one visible wall, suggests the latter.

About 35 m south of the bend in the sacbe a stone serpent head (Fig. 37.31) lies on the surface of the road (410 S, 60 W). It is associated with no construction and gives every indication of having been transported there from somewhere else.

As is the case of our work at the northern end of the sacbe, we cut an exploratory trench through the road at the foot of the principal stairway to Group Z-50 (Fig. 37.2e). About 0.20 m of surface debris and fill was first removed, in order to keep separate, so far as possible, any intrusive materials. Next we cut through the fill of the sacbe to within 0.05–0.10 m of bedrock, at which point we struck what appeared to be an earlier soil surface. Material from this lowest layer was kept separate from that of the clearly artificial fill.

It was determined that the side walls of the road were footed on bedrock, the thin layer of soil apparently having been removed to accomplish this. In contrast to our findings at the northern end of the sacbe, where the loose fill of the construction was almost wholly of rock (Pollock 1950), the fill here contained a relatively high proportion of dirt. There seemed rather too much to be explained by the washing of dirt from the stairway above. Not here, nor anywhere in the entire course of the road, is there any trace of a plaster floor that might have served as the final surface of the sacbe. This matter has been discussed in the earlier report.

The time of construction of the road in relation to Group Z-50 has already been discussed. The pottery from our cut gives some indication of the time of construction in relation to the principal period of occupation of the city. The lowest stratum, presumably a layer of soil that antedates any visible construction here, produced the only two sherds of pre-Mayapán date found at Group Z-50 (Lot C-140). Also included was one Black-on-Cream sherd, a very early Mayapán period type. Only one other such sherd came from all our excavations here. The remainder of the sherds were of typical Mayapán period types, including one sherd of a Human Effigy incensario, a very late type. This last may well have been intrusive.

The pottery from the fill of the sacbe above this lowest stratum, but excluding the surface cut, was all of Mayapán period (Lot C-141). A fair amount was from Human Effigy incensarios. A human man-

dible and several small skull fragments came from the edge of this cut, a few centimeters above bedrock. It is possible our trench just missed a burial.

POTTERY AND OTHER MATERIALS

Pottery and other remains have been mentioned in the text whenever they might be chronologically or functionally significant. Here the materials recovered are listed in somewhat more detail. The pottery was analyzed by E. M. Shook.

LOT C-139: from sealed deposit in fill of altar in Str. Z-50b: 1 jade bead (Cat. no. 55-208); 1 miniature tripod vase or cup of Unslipped Coarse Paste ware; 1 animal-head foot of a Red-on-Cream or -Buff bowl.

LOT C-140: from soil layer immediately above bedrock under sacbe: 1 flint point (Cat. no. 55-215); 1 flint chip.

Total sherds: 104: 7 unidentified; 2 Puuc period; 95 Mayapán period (Human Effigy incensario, 1; Black-on-Cream, 1; Fine Orange, 3).

LOT C-141: from fill of sacbe, 0.20 m below surface to old soil layer (C-140): 7 flint chips; 11 obsidian chips; 1 pottery spindle whorl or bead; right half of human mandible and small fragments of skull; animal and bird bones.

Total sherds: 634: 32 unidentified; 602 Mayapán period (Human Effigy incensario, 87; Red-on-Cream or -Buff, 1; Tulum or East Coast Redware, 5; Fine Orange, 3).

LOT C-142: from unsealed debris in niche in basal platform, north of Str. Z-50a: 1 fragment of flint blade (Cat. no. 55-217); 5 flint chips; 1 oliva shell with longitudinal groove and perforation at center of groove (Cat. no. 55-221); small, burned, limestone sculpture, in 2 pieces, of snarling jaguar with creature on its back (Fig. 37.3a); small, probably burned, limestone sculpture of animal (turtle?) with receptacle on its back (Fig. 37.3b); animal and bird bones.

Total sherds: 474: 7 unidentified; 467 Mayapán period (Human Effigy incensario, 90; Red-on-Cream or -Buff, 19; Mayapán Red-and-Black-on-Orange, 7; Tulum or East Coast Redware, 2).

LOT C-143: from surface and general excavations, all deposits unsealed: 1 flint hatchet (Cat. no. 55-216); 3 fragments of flint implements (Cat. no. 55-218, -219, -220); 18 flint chips; 2 obsidian flake blades; 12 obsidian chips and fragments of blades; 4 chipped limestone disks or "pot lids" (Cat. no. 55-210, -211,

-212, -213); 2 fragments of limestone manos; 1 hammerstone of limestone (Cat. no. 55-209); 1 limestone sculpture of a turtle (Fig. 37.3f); 1 fragment of bird bone painted red; animal and bird bones.

Total sherds: 2,504: 56 unidentified; 2,448 Mayapán period (Human Effigy incensario, 187; Red-on-Cream or -Buff, 100; Black-on-Cream, 1; Tulum or East Coast Redware, 4; Fine Orange, 17).

DISCUSSION

To judge from the ceramic remains uncovered by our excavations, there is every reason to believe that Group Z-50 and the sacbe were built relatively late in the life of Mayapán. So far as the sacbe is concerned, this conclusion agrees with our earlier findings at the northern end of the road. It is quite clear that a certain amount, possibly a considerable amount, of construction at Group Z-50 continued after the southern end of the sacbe had been built. As our limited work at the northern terminus suggested that the road was built when the assemblage of buildings there had reached virtual completion, there is the implication that Group Z-50 at the south is generally later than Group R-95 to R-99 at the north. This is, however, in no sense certain.

One can speculate on the planning and growth of the complex formed by the road and the assemblage of buildings at either end. This question has been touched upon in our section dealing with the sacbe. Group R-95 to R-99 at the north is one of the largest, and we may assume one of the more important, assemblages of buildings outside the main ceremonial group at Mayapán. There is a high degree of probability that the group is domiciliary in character, a sort of palace. If we are correct in our belief that the assemblage for the most part antedates the sacbe and Group Z-50 at the south, it seems probable to the writer that the building of the road, and quite possibly the building or enlargement of Group Z-50, was at the behest of the inhabitants of the northern buildings. This would rule out the possibility that the sacbe was once planned to proceed northward to Group R-85 to R-90. Why the location now occupied by Z-50 was selected as the site of the southern terminus, or why the road took the course it did, we do not know. It can be seen from the map (Jones 1952), however, that a direct course would have involved crossing a sizable sink hole, and that the sacbe avoids other groups and buildings. It may have been such simple yet basic factors as terrain and existing structures that determined the course of the road.

We have previously given attention to the possible function of Group Z-50, and we have advanced the rather unsatisfactory suggestion that these

buildings were partly ceremonial, partly residential. To put this another way, we think of the group as being used for ceremonial or religious observances that involved temporary residence. This suggestion, and it certainly is no more than that, is based on what we now know of architecture and pottery in Mayapán. We have studied the general surface collections of pottery from Group Z-50 with some care, in the hope that those remains would yield information concerning the use to which the buildings were put. Although most of the surface pottery is grouped in a single lot (C-143), it comes from over a dozen locations spotted around the assemblage, and our records of course show the content of each small collection. We are not happy about the results of this study. One can say that pottery types which give every indication of having been utilitarian form over two-thirds of the ceramic remains. Effigy censers, which it seems fair to assume, were of ceremonial use, form less than one-tenth of the identifiable pottery. These are the clearest divisions we can make. Should we distinguish imported and relatively rare types as pottery that probably was not utilitarian and that might have been ceremonial, the latter category would rise to about one-eighth of the total. The rest of the ceramic material could, for all we know, have been used in the household, or for ceremony, or interchangeably, and there is enough of this to affect considerably the above proportions. Lastly, in excavations as limited as ours, a single additional trench might well have yielded pottery in quantities and types that would widely alter these proportions. By and large, it seems to the writer that the pottery is too heavily laden with utilitarian types to characterize Group Z-50 as an assemblage of buildings that

involved no residence, but he most certainly is far from adamant in this opinion.

Looking at the whole architectural complex, the road and the assemblage of buildings at either end, we can summarize our thoughts somewhat as follows. At a point in time pretty clearly late in the history of the city, and quite possibly when Group R-95 to R-99 had mainly been completed, the inhabitants of that "palace" felt the need for an assemblage of buildings such as that seen in Group Z-50. On architectural grounds, not to mention the existence of a "sacrificial stone" at Z-50, it seems unlikely that the occupants of the northern group were merely creating additional living quarters, although that possibility cannot be ruled out. It appears more likely that certain acts demanded by the ceremonial and religious life of the time were best, or of necessity, carried on away from the family residence. Presumably the occupants of the "palace" were sufficiently powerful, or sufficiently imbued with the importance of these ceremonies, to expend the very considerable effort of constructing the *sacbe* and of building or enlarging Group Z-50.

It is obvious that in this effort to breathe some faint spark of life into the remains with which we have to deal the writer is making use of inference based on evidence varying in quantity and reliability. The importance of the large northern assemblage of buildings and its residential character are conclusions which we think rest on rather good evidence. That the northern quadrangle is for the most part earlier than the *sacbe* and the southern group, and that the last was primarily ceremonial in function, are inferences supported by less reliable evidence.

SKELETAL REMAINS FROM MAYAPÁN

EDWARD I. FRY

The field work on which this report is based was carried on from July 4 to July 12, 1955, at the Department's camp in Telchaquillo, Yucatán. A survey was made of all skeletal remains preserved from the past five seasons of digging, with primary attention to evidences of pathology, anomalies, and deformations.

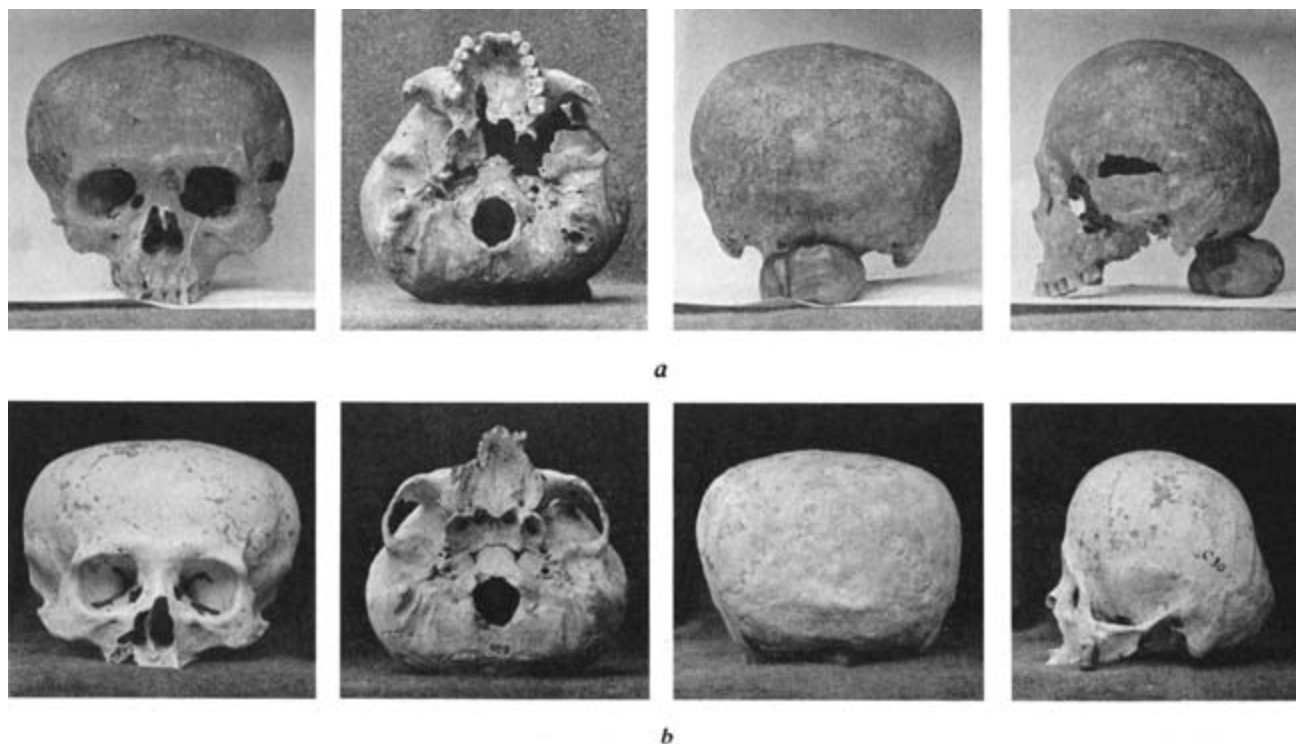
This paper is divided into three sections. Section one discusses the finds in general, with specific remarks on remains of extraordinary interest. The second section is a technical appendix in which all finds described in the field notebooks are listed. Section three, also an appendix, consists of a summary table of cranial observations on the few complete or nearly complete skulls in the collection.

Many of the remains were labeled with a field number indicating the site from which they were dug; others were in cloth sacks, with their field number indicated by a label. A few specimens lacked numbers, either because they had never been numbered or because the labels had been lost in some

manner. In particular, a number of loose teeth lacked numbers.

No accurate count was kept of the number of individual bones of each type examined, since it was known that many specimens had not been preserved, and in any case, so many fragments were present that lack of time would have prevented their accurate identification. Consequently, nothing very specific can be told of the relative incidence of various features among the finds. It is possible, however, to note the low incidence of carious teeth and healed fractures of long bones, and the high incidence of anteroposterior cranial flattening and degenerative arthritis, even though percentages cannot be given.

A few of the more important measurements were taken on those skulls whose condition warranted it, but the proper type of flexible tape was not available for measuring cranial circumferences and arcs; nor were any long bones measured, since an osteometric measuring board was lacking.



38.1.

a. Skull from Lot A-539. Frontal, inferior, posterior, and left lateral views. b. Skull [a] from Lot C-30. Frontal, inferior, posterior, and left lateral views.

The seven skulls (Lot A-539, C-22, C-29, C-30[a], C-30[b], C-126[a], C-126[b]) and eight mandibles (Lot A-539, A-576[a], A-576[b], A-586, C30[a], C-30[b], C-126[a], C-126[b]) in complete or nearly complete condition were observed first. Each was thoroughly described and a few measures were taken. Secondly, the other bones and fragments were inspected for evidences of pathology, deformation, or anomalies, and all that failed to exhibit any of these were discarded. Those that did have some of these symptoms were described in a field notebook. The last step was to redescribe and measure the "complete" skulls and mandibles, recording their features on the standard Harvard Cranial Observation blank, and to take photographs of them (Figs. 38.1; 38.2). It was planned to restore two skulls (Lot A-2, A-563) which were in good and nearly complete condition, but there was not sufficient time.

Particular items will be discussed under the general headings: Teeth, Cranial Bones, Other Bones.

TEETH

Only three filed teeth were seen, although over 1,000 teeth were examined, of which approximately 500

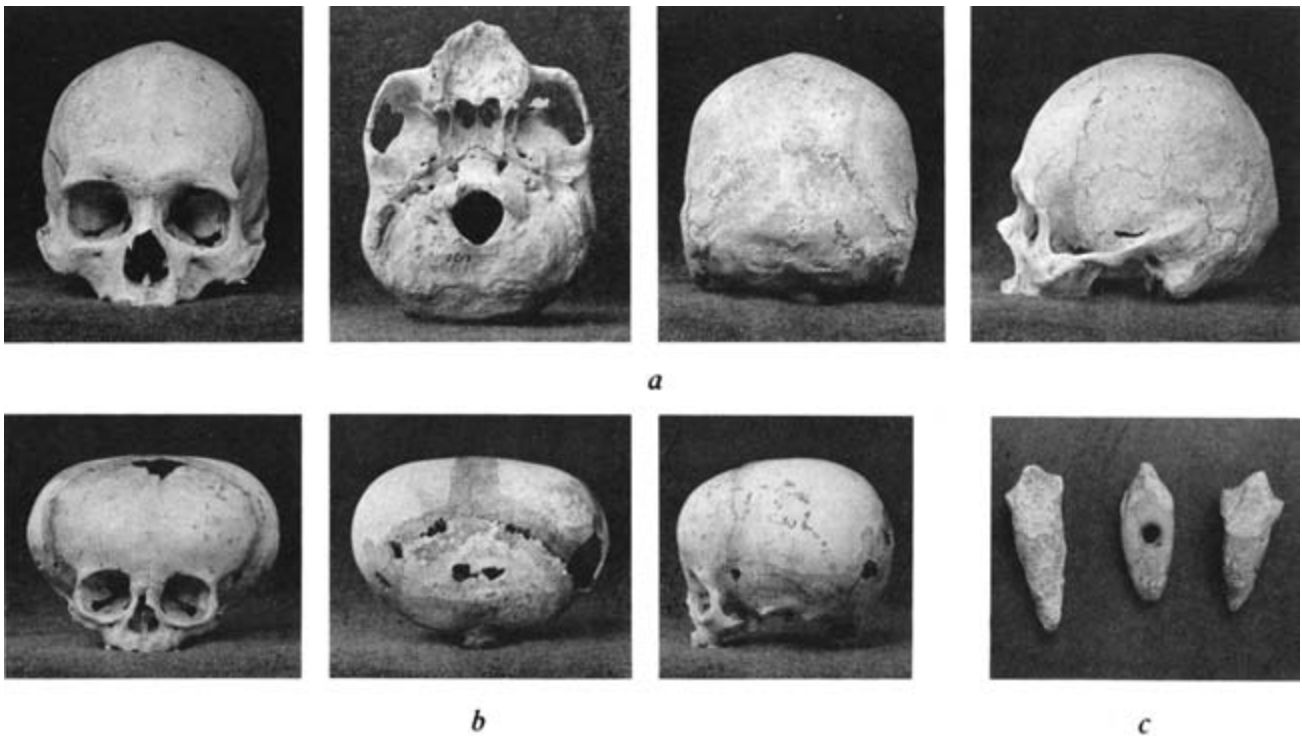
were canines and incisors, the two kinds on which filing is done.

Since the filing patterns are different, each tooth will be described separately:

1. Lot C-22 (Fig. 38.2c, left). This tooth is an upper left central incisor, with the mesial and distal edges filed before death. It has a pronounced cingulum on the lingual surface, and is shovel-shaped. This pattern of filing corresponds to type C-4 of the classification presented by Romero and Fastlicht (1951). The same type has been reported from British Honduras (Belize, and San Jose) at the A.D. 800–1000 time level Guatemala (Alta Vera Paz, and Zaculeu [Stewart 1953]) at A.D. 800–1000; and Mexico (Labna, Yucatán, and Tamuin, San Luis Potosi) at A.D. 700 and 1000–1200, respectively.

2. Catalogue no. 52-226, Lot A-2 (Fig. 38.2c, right). A right lateral maxillary incisor with C-7 pattern filing. This pattern is very similar to the C-4 type, but does not exhibit the sharp edges of the latter. The type has previously been reported only from Guasave, Sinaloa, at the A.D. 1000–1200 time level.

3. Catalogue no. 52-121, Lot A-13 (Fig. 38.2c, center). A lower left (?) canine. A hole has been drilled in the root of this tooth, which is one of thirty forming



38.2.

a. Skull [b] from Lot C-30. Frontal, inferior, posterior, and left lateral views. b. Skull [c] from Lot C-30. Frontal, posterior, and left lateral views. c. Filed teeth. Left: Lot C-22. Center: Cat. no. 52-121. d. Lot A-13. Right: Cat. no. 52-226, Lot A-2, fragment: only right molars present; rest of teeth lost ante mortem; slight mandibular torus.

a necklace. The hole was drilled in the anteroposterior direction from both sides, probably with a bow drill similar to that shown on page 52 of Romero and Fastlicht (1951). The posterior, inferior portion of this tooth has been filed off, so that the dentin is exposed. It seems likely that this filing was carried out post mortem, though the broken parts of the crown preclude a clear decision on this. It is of the C-8 type found in Tamuin, San Luis Potosi, from A.D. 1000–1200.

The fact that one type was previously known only from Guasave, Sinaloa, and another from Tamuin, San Luis Potosi, about 2,000 and 1,000 km away, respectively, and at time levels which barely overlap with known dates for Mayapán, does not argue any real connection between these areas and Mayapán. A sharp line of distinction between the various types of mutilation is difficult to demonstrate, and although it is possible that a given trait was brought to Mayapán from these areas either by individuals with such a pattern of filing in their teeth, or as a product of stimulus diffusion, it seems more likely that these two types were by-products

of experimentation with the difficult art of dental filing.

One molar (Lot C-8) had four roots and, in addition, a peculiar cusp which resembled that of Carabelli, but which in conjunction with the roots indicates that perhaps the molar had fused with a premolar.

The incidence of caries and of alveolar abscesses was very low, and is estimated to be about 3 per 100 teeth, mostly confined to molars. Although in a number of cases it was obvious that teeth were lost ante mortem, it cannot safely be assumed that this was due to extensive caries. Causative factors may include accidental or purposeful trauma, and alveolar diseases.

The degree of wear, particularly on molars, was fairly heavy, and in a few cases the molar pattern had been virtually obliterated. This amount of wear is no more than was to be expected for a population eating *metate*-ground corn with its numerous particles of grit, and is about the same as that for skeletons from the United States Southwest. On a five-point scale, the average wear was about three to

four (medium to pronounced). This is considerably heavier than that seen by Stewart (1953) in Zaculeu remains.

One case (Lot A-447) of lateral incisor rotation was seen, and several jaws exhibited considerable crowding. Most mandibles and maxillae, however, showed very good spacing of the teeth, and the incidence of either crowding or rotation was extremely low.

The number of shoveled incisors was rather high. Most incisors showed some degree of shoveling, and in general the average was from two to three (slight to medium) on the four-point Harvard scale.

CRANIAL BONES

The most striking feature of the whole collection was a curious sulcus which appeared on six of ten artificially flattened skulls (Lot A-265, A-539, C-22[two], C-30[a], C-126[a]). This depression appeared from 1.5 to 2.0 cm above lambda, and extended about the same distance on both sides of the sagittal suture. One explanation of this curious phenomenon is that the sulcus is a functional result of the flattening pressure, which, applied in an anteroposterior direction, may have caused a buckling of the parietals. The sulcus area, however, was not any thinner than the surrounding wall, and the depression was noticeable on the inner table as a slight mound. It is also possible that it arises from direct and localized pressure by a flattening board or some device attached to it. This sulcus does not appear in any of the undeformed Mayapán skulls.

Several cases of extreme thickness of the vault were seen (Lot A-2, A447, A-448, C-126, D-5). One parietal fragment measured from 6 to 10 mm thick; an occipital fragment was 14 mm thick, and this was not on an internal or external ridge. Conflicting reports on this material have been received from the four experts who examined it: (1) A pathologist saw nothing unusual about it. (2) Dr. T. D. Stewart (personal communication) said, "Probably some disease condition is represented, but I have never had an opportunity to relate this sort of thing to clinical findings." (3) A medical doctor was of the opinion that Paget's disease (osteitis deformans) was the cause. (4) A second pathologist agreed with the Paget's disease diagnosis. E. A. Hooton's report (1940) on the Sacred Cenote material from Chichén Itzá notes several cases of pathological thickness of the vault, and it is possible that the Chichén Itzá and Mayapán individuals suffered from the same disease or condition.

The following table shows length and breadth dimensions taken on the five skulls in good enough condition to be measured. The data are offered only because the amount of such material from Mesoamerica is so small.

Table 38.1. Dimensions of Skulls.

<i>Lot No.</i>	<i>Sex</i>	<i>Age</i>	<i>Max. Length (mm)</i>	<i>Max Breadth (mm)</i>
A-539	m	35-40	156	176
C-22	m	40+	163	—
C-29	f	ca. 40	162	—
C-30 [a]	f?	36-55	151	182
C-30 [b]	m	36-55	168	141

The figures are not reliable, since all five skulls were deformed. As an indication of this unreliability, it can be seen that two skulls (Lot A-539, C-30[a]; see Fig. 38.1) have greater breadth than length.

OTHER BONES

Arthritis was a fairly common disease in Mayapán. Unfortunately, age estimates of its onset cannot be given, since in most cases only the vertebrae themselves were available. In several sacra (Lot C-126, D-30) almost complete ankylosis had occurred, with the lowest lumbar vertebra fused to the sacrum. Exceptionally heavy bony outgrowths were seen on some lumbar vertebrae, and this "lipping" must have meant considerable immobility of the lower spine. In addition, arthritic growths were seen on thoracic and cervical vertebrae, though these cases were far less numerous and the growths were not so heavy as those in the lumbar region. No arthritis deformans was found in bones other than those of the spinal column, nor was there any evidence of Pott's disease (tuberculosis of the spine).

Although over two hundred long bones were examined, only one case which might be considered to be a healed fracture was found (Lot D-7). The bone was an adult right femur, and the fracture had moved the distal part laterally and posteriorly. There was no evidence of fracturing on the external table, therefore the injury must have occurred sometime before death.

About one-third of the humeri exhibited perforated olecranon fossae, and though it is not certain, most of these appeared to have been perforated before death. The author finds isolated humeri difficult to sex with any degree of validity, so no report can be given on the sex incidence of olecranon perforation.

There is no evidence in the Mayapán remains of any of the following conditions which have com-

monly been reported from Mexican skeletal finds: ear exostosis, dehiscence of the auditory floor, osteoporosis, osteomyelitis, and periostitis.

TECHNICAL APPENDIX

In this section reference will be made to other publications in the *Current Reports* series. Each report which lists human bones as part of the finds, and for which skeletal remains were preserved and available at Telchaquillo, is listed, and the major features of the finds are described.

CR 4. EXCAVATIONS IN HOUSE MOUNDS AT MAYAPÁN, BY K. RUPPERT AND A. L. SMITH (1952).

STR. J-131A, LOT A-1.

1. Adult mandible: no teeth in situ; left third molar never erupted; some crowding in front at incisors.
2. Maxilla fragment: left side; third molar never erupted; second premolar and first and second molars present; medium wear on these teeth.
3. Sixteen loose teeth: 6 molars; 4 canines; 3 premolars; 3 incisors (1 shovel-shaped).
4. Part of adult cranium: strong brow ridges with deep superciliary foramina; Inca bone at lambda.
5. Mandible fragment: very heavy and thick.

STR. J-131A, LOT A-2.

1. Cranial fragments: surface very rough and pitted; greatly thickened.
2. Filed tooth (cat. no. 52-226); right lateral maxillary incisor. Maximum length 25 mm, maximum breadth 9 mm, crown height 10 mm. See Figure 38.2c, right.

STR. J-50A, LOT A-13.

1. Filed tooth (cat. no. 52-121); lower left (?) canine. Maximum length 21 mm, maximum breadth 8 mm, crown height 5 mm. Drilled hole in root measures 2 mm internal diameter, 6 mm external diameter. See Figure 38.2c, center.

CR 5. CENOTE X-COTON AT MAYAPÁN, BY R. E. SMITH, 1953.

CENOTE X-COTON, LOT D-5.

1. Cranial fragments: left parietal (four parts) and part of right temporal; very thick; surface smooth.

CENOTE X-COTON, LOT D-7.

1. Right adult femur: third trochanter about 0.9 cm at widest part and 3 cm long; possibly fractured in childhood, so that distal part displaced posteriorly and laterally.

CR 9. SOME SMALL CEREMONIAL STRUCTURES OF MAYAPÁN, BY R. M. ADAMS (1953).

TRENCH NORTH OF STR. Q-79, LOT C-8.

1. Molar tooth: four roots, giving appearance of Carabelli cusp, but perhaps molar fused with premolar.

STR. Q-69, LOT C-28.

1. Frontal bone fragment: adult female; minimum frontal breadth 9.4 cm.

STR. Q-71, LOT C-22.

1. Calvarium with broken base: male aged 40-plus years; some lambdoid flattening; small sulcus above lambda; sagittal suture slightly keeled; double metopic suture; very high and broad palate; three cavities in 13 teeth; small Inca bone and several small Wormian bones.
2. Two clavicles: very strong muscle attachment ridges on both.
3. Perforated sternum: perforation 7 by 11 mm.
4. Part of calva: some anteroposterior flattening; small sulcus on rear part of sagittal suture.
5. Filed tooth: upper incisor. Maximum length 21 mm, maximum breadth 9 mm, maximum crown height 10 mm. See Figure 38.2c, left.

STR. Q-90, LOT C-37.

1. Sternum: "bullet-hole" perforation 3 by 4 mm, from imperfect ossification.
2. Right femur: Porrier's facet.

STR. Q-84, LOT C-49.

1. Right ramus of adult mandible: heavily ridged gonial angle for attachment of what must have been very powerful jaw muscles.

CR 12. CENOTE EXPLORATION AT MAYAPÁN AND TELCHAQUILLO, BY R. E. SMITH (1954).

CENOTE CH'EN MUL, LOT D-30.

1. Sacrum: fifth lumbar vertebra completely fused to sacrum anteriorly, about 90 percent posteriorly, and about 75 percent on wings.

**CR 14. THREE TEMPLES AND THEIR
ASSOCIATED STRUCTURES AT MAYAPÁN,
BY E. M. SHOOK (1954).**

STR. Q-95, LOT C-29.

1. Facial skeleton: very broad U-shaped palate; very deep infraorbital foramina; only right first and left second premolars present; left third molar not erupted.
2. Part of facial skeleton: right canine impacted and shifted laterally to lie above and between incisors.
3. Facial skeleton plus part of frontal bone: probably male; all teeth lost post mortem; metopic suture present.
4. Calvarium: female about 40 years old; slight to moderate flattening above lambda, pushing whole vault down; large parietal bosses; very slight keeling of first half of sagittal suture; sulcus at lambda; H-form pterion; no teeth present, but possibly right and left incisors and right first premolar and second molar lost before death; spongy mass where right third molar would normally be found.

STR. Q-95, LOT C-30.

1. Cranium[a]: middle-aged female (?); strong nuchal crest; anteroposterior and superior deformation; very large Inca bone; double metopic suture; H-form pterion; bone scar about 3 cm long on right frontal, probably incurred shortly before death; most of teeth lost after death; shallow sulcus above lambda. See Figure 38.1,b.
2. Cranium[b]: middle-aged male; right occipital bulge and left occipital flattened; metopic suture; slight keeling of sagittal suture; K-form pterion; deep nasal depression, with pronounced concavo-convex curve to nasal bones; only one tooth present, rest lost ante mortem; mandible appears to be very robust. See Figure 38.2a.
3. Cranium[c]: infant 2-plus years of age; bregmatic fontanelle not closed; some lambdoid flattening; two fragments missing from occiput, and this area very thin; crown of first permanent molar present. See Figure 38.2b.
4. Seven vertebrae: thoracic, lumbar, and cervical, all with heavy arthritic lapping.
5. Metatarsal: arthritic lapping.
6. Right astragalus: arthritic lapping.
7. Right radius: arthritic lapping.
8. Left mandible fragment: impacted third molar.

**CR 17. EXCAVATIONS IN HOUSE MOUNDS
AT MAYAPÁN, III, BY K. RUPPERT AND
A. L. SMITH (1954).**

STR. Q-62, LOT A-125.

1. Part of child's (9–10 years) mandible: two central incisors shoveled, and canines erupting.

**CR 22. COLONNADED BUILDINGS
AT MAYAPÁN, BY E. M. SHOOK AND
W. N. IRVING (1955)**

STR. Q-151, LOT C-86, -87.

1. Two thoracic and one lumbar vertebrae: all with arthritic lapping.
2. Sacrum: some arthritic lapping, four segments.
3. Right mandible fragment: second and third molars lost ante mortem; condyle and most of ramus missing.

STR. Q-151, LOT C-88.

1. Three mandible fragments: two from left side and one from right side; all teeth lost after death.
2. Thoracic vertebra: medium arthritic lapping on inferior and anterior surface.

STR. Q-151, LOT C-89.

1. Lumbar vertebrae: two, both showing signs of arthritic lipping.
2. Mandible fragment: no teeth present.

STR. Q-151, LOT C-90.

1. Maxilla fragment: five teeth present; third molars not erupted.
2. Maxilla fragment: right side; deciduous canine and molars present; first permanent molar about to erupt.
3. Maxilla fragment: left side; heavy wear on one tooth present (second molar).
4. Humeri: two, both with perforated olecranon fossae.
5. Pubic symphyses: two; according to Todd's system of aging, one 20–21 years of age, other 22–24.
6. Hyoid bone body.
7. Lumbar vertebra: submedium to medium arthritic lapping.
8. Thoracic vertebrae: two, one with medium arthritic lipping, one with heavy arthritic lapping.
9. Incisor teeth: four, all with shoveling.
10. Left mandible fragment: central incisor lost ante mortem.
11. Loose teeth: 14 molars (13 with medium wear, 1 with submedium wear); 6 premolars (all with medium wear); 3 canines (all with medium wear); 5 incisors (2 shovel-shaped, 2 with medium wear, 3 with heavy wear).

STR. Q-151, LOT C-91.

1. Mandible: no teeth present; right first molar lost ante mortem; third molars never erupted; bilateral chin.

2. Femur: third trochanter present.
3. Two left scapula fragments: medium arthritic lipping around humeral socket.
4. Lumbar vertebrae: probably L-1; medium to strong arthritic lipping.
5. Cranial fragments: show some evidence of being above average in thickness.
6. Seven deciduous teeth.

**CR 29. A RESIDENTIAL QUADRANGLE:
STRUCTURES R-85 TO R-90, BY T.
PROSKOURIAKOFF AND C. R. TEMPLE (1955).**

**TRENCH SOUTH OF VAULTED PASSAGE, GROUP R-85-90,
LOT A-214A.**

1. Cranium: child 5 years old; deformed (post mortem) and flattened (ante mortem); Wormian bone at lambda; lower left deciduous canine slightly rotated; cavity in lower left first molar tooth.

**CR 33. A DWELLING AND SHRINE
AT MAYAPÁN, BY A. CHOWNING AND
D. E. THOMPSON (1956).**

STR. Q-168, LOT A-265.

1. Calvarium: child 10 years old; many fragments; some evidence of lambdoid flattening; slight lambdoid depression.
2. Mandible: right canine; first premolar and second molar erupting; perhaps decay in right canine.

STR. Q-165, LOT A-445.

1. Left femur: Porter's facet.
2. Two mandible fragments from two individuals.
3. Teeth: 6 molars (with medium wear); 3 canines; 5 premolars; 9 incisors (3 shoveled, 4 heavily worn, 4 with medium wear, 1 with slight wear).

STR. Q-165, LOT A-447.

1. Cranial fragments: spongy texture; above average in thickness.
2. Mandible: some central crowding; right central incisor, right and left premolars, left first molar, and left and right third molar present; the rest lost ante mortem; two large cavities.

STR. Q-165, LOT A-448.

Portions of at least three individuals represented two males and one female).

1. Calvarium fragments: parietal fragment above average in thickness, with spongy texture; occipital fragment with very rough nuchal ridge.
2. Lumbar vertebrae: medium to heavy arthritic lipping.
3. Right femur: crista hypotrochanterica present; bone feels very heavy.
4. Sacrum: arthritic lipping.

**CR 34. A ROUND TEMPLE AND ITS SHRINE
AT MAYAPÁN, BY A. CHOWNING (1956).**

STR. H-18, LOT C-126.

1. Cranium[a]: male of 40-plus years; strong brow ridges; artificial ante-mortem deformation and some post-mortem flattening; slight lambdoid depression; all of right maxillary teeth present except first molar; left maxillary canine, second premolar, first molar present; rest of teeth lost ante mortem; H-form pterion; double metopic suture.
2. Mandible[a]: only right and left molars present, rest lost ante mortem; moderate tooth wear; bilateral chin.
3. Cranium[b]: probably female about 35 years of age; submedium flattening; very deep nuchal sulcus; all of maxillary teeth present.
4. Mandible[b]: all of teeth present except right third molar, which never erupted; medium tooth wear; medium chin, fractured post mortem through symphysis.
5. Calva fragments: badly broken; some flattening above lambda; some ante-mortem warping; moderate nuchal sulcus.
6. Hyoid bone fragments.
7. Calva fragments: two individuals represented; one of the specimens with rough and pitted external table and greater than normal thickness.
8. Teeth: 41 molars (2 with large cavities, 1 with Carabelli cusp, 22 with heavy wear); 38 incisors (13 shoveled, 18 with heavy wear); 53 premolars (2 with cavities); 13 canines.
9. Mandible: third molar socket greatly reduced, probably third molars also greatly reduced.
10. Sacral fragments: sacralized fifth lumbar vertebra; 2 mm separation between first and second sacral vertebrae.
11. Sacrum: 1 mm separation between first and second sacral vertebrae.
12. Sacrum: less than 1 mm separation between first and second sacral vertebrae; submedium arthritic lipping.
13. Sacrum: medium arthritic lipping.
14. Sternum: "bullet-hole" perforation 8 by 12 mm, due to ossification failure.

15. Two ribs: top of one fused to bottom of other for length of 51 mm.
16. Mandible: no teeth in situ; large perforation 5 by 3 mm under right premolars, indicating drainage for abscess.
17. Mandible: both canines and all premolars only teeth present; third molars never erupted; right ramus rocker-shaped.

**CR36. EXCAVATIONS IN
HOUSE MOUNDS AT MAYAPÁN, IV,
BY K. RUPPERT AND A. L. SMITH (1956).**

STR. K-67A, LOT A-539. A LARGE DEPOSIT WITH REMAINS FROM AT LEAST THREE AND POSSIBLY FOUR INDIVIDUALS.

1. Calvarium: male 35–40 years of age; anteroposterior flattening; several post-mortem depressions on frontal bone; lambdoid depression. See Figure 38.1,a.
2. Mandible: probably goes with the calvarium; bilateral chin; left second premolar carious; third molars never erupted.
3. Sacrum: some arthritic lipping.
4. Axis and atlas: fused at the dens.
5. Femur: pronounced crista; slight third trochanter; medium Porier's facet.
6. Tibia: medium squatting facet.

STR. P-23C, LOT A-586.

1. Mandible fragment: adult male; bilateral chin; impression of extreme robustness; crowded incisors and canines; small occlusal cavity on right second molar.
2. Two lumbar vertebrae: very heavy arthritic lipping.

STR. Q244B, LOT A-521.

1. Mandible: large cavity in left third molar; left second molar lost just before death; left first molar has cavity; medium wear.
2. Mandible fragment: heavy wear on outside edges of teeth.

3. Sacrum: submedium arthritic lipping on first sacral vertebra.
4. Left femur: strong crista hypotrochanterica; submedium third trochanter.

STR. 5-133B, LOT A-563.

1. Cranium: heavily carbonized vault fragments.
2. Mandible: also carbonized; ante-mortem loss of central and lateral incisors, first molars, and left third molar; only left second molar *in situ*.

STR. Y-2D, LOT A-505.

All the following remains belong to the same individual, probably a middle-aged female.

1. Mandible: heavy tooth wear; strong genial tubercles.
2. Cranial fragments: parts of occipital and right parietal; most of right temporal and frontal present; moderate anteroposterior flattening.
3. Two maxilla fragments: left third molar lost antemortem; small cavity on left first molar; teeth well worn.

STR. Y-8B, LOT A-576.

1. Mandible fragment [a]: adult female (?); right and left condyles and right coronoid process missing; moderate tooth wear; bilateral chin; moderate alveolar prognathism.
2. Mandible fragment [b]: adult male (?); right and left condyles missing; some crowding of incisors and canines; third molars never erupted.

**CR 37. THE SOUTHERN TERMINUS OF THE
PRINCIPAL SCABE AT MAYAPÁN; GROUP Z-
50, BY H.E.D. POLLOCK (1956).**

TRENCH IN SACBE, GROUP Z-50, LOT C-141.

1. Mandible fragment: only right molars present; rest of teeth lost ante mortem; slight mandibular torus.

APPENDIX OF CRANIAL OBSERVATIONS

<i>Cranial Description</i>	<i>Observation</i>	<i>Cases</i>	<i>Frontal Region, Glabella</i>	<i>Observation</i>	<i>Cases</i>
	Cranium	5		Small	3
	Calvarium	2		Medium	3
<i>Condition</i>	<i>Observation</i>	<i>Cases</i>		Large	1
	Poor	3	<i>Frontal Region, Height</i>	<i>Observation</i>	<i>Cases</i>
	Fair	2		Low	1
	Good	2		Medium	3
<i>Sex Criteria</i>	<i>Observation</i>	<i>Cases</i>		High	1
	Uncertain	1		Very High	2
	Certain	6	<i>Frontal Region, Slope</i>	<i>Observation</i>	<i>Cases</i>
<i>Muscularity</i>	<i>Observation</i>	<i>Cases</i>		Slight	2
	Small	2		Medium	3
	Medium	4		Pronounced	2
	Large	1	<i>Frontal Region, Metopism</i>	<i>Observation</i>	<i>Cases</i>
<i>Age</i>	<i>Observation</i>	<i>Cases</i>		Traces	5
	Young Adult (21–35)	1		Complete	2
	Middle Aged (36–55)	4	<i>Frontal Region, Postorbital Constriction</i>	<i>Observation</i>	<i>Cases</i>
	Old (56–75)	2		Small	5
<i>Weight</i>	<i>Observation</i>	<i>Cases</i>		Medium	1
	Light	1		Large	1
	Heavy	5	<i>Frontal Region, Bosses</i>	<i>Observation</i>	<i>Cases</i>
	Medium	1		Small	6
<i>Deformation (10 skulls)</i>	<i>Observation</i>	<i>Cases</i>		Medium	1
	Occipital	5	<i>Frontal Region, Median Crest</i>	<i>Observation</i>	<i>Cases</i>
	Right Occipital	1		Small	6
	Left Occipital	1		Medium	1
	Lambdoid	1	<i>Frontal Region, Breadth</i>	<i>Observation</i>	<i>Cases</i>
	Fronto-Occipital	2		Medium	3
<i>Degree of Deformation</i>	<i>Observation</i>	<i>Cases</i>		Large	4
	Small	1	<i>Parietal Region, Sagittal Elevation</i>	<i>Observation</i>	<i>Cases</i>
	Medium	3		Small	2
	Pronounced	2		Large	4
	Trace	4		Very Large	1
<i>Cause of Deformation</i>	<i>Observation</i>	<i>Cases</i>	<i>Parietal Region, Postcoronal Depression</i>	<i>Observation</i>	<i>Cases</i>
	Artificial	10		Small	6
<i>Form</i>	<i>Observation</i>	<i>Cases</i>		Medium	1
	Ellipsoid	1	<i>Parietal Region, Bosses</i>	<i>Observation</i>	<i>Cases</i>
	Ovoid	1		Small, Medium	3
	Pentagonoid	1		Large	4
	Rhomboid	2	<i>Parietal Region, Foramina</i>	<i>Observation</i>	<i>Cases</i>
	Sphenoid	1		None	3
<i>Sex</i>	<i>Observation</i>	<i>Cases</i>		Small, Medium	4
	Male	4	<i>Frontal Region, Brow Ridges</i>		
	Female	3		Median	2
				Divided	5
<i>Frontal Region, Brow Ridges</i>	<i>Observation</i>	<i>Cases</i>	<i>Frontal Region, Brow Ridges, Size</i>	<i>Observation</i>	<i>Cases</i>
	Small	3		Small	3
	Medium	2		Medium	2
	Large	2		Large	2

continued on next page

APPENDIX OF CRANIAL OBSERVATIONS—*continued*

<i>Temporal Region, Fullness</i>	<i>Observation</i>	<i>Cases</i>	<i>Occipital Region, Serration, Sagittal</i>	<i>Observation</i>	<i>Cases</i>
	Flat	1		Unknown	1
	Small	5		Submedium	2
	Medium	1		Medium	3
<i>Temporal Region, Mastoids</i>	<i>Observation</i>	<i>Cases</i>		Pronounced	1
	Small	2	<i>External Occlusion, Coronal</i>	<i>Observation</i>	<i>Cases</i>
	Medium	2		Medium	2
	Large	3		Advanced	5
<i>Temporal Region, Supramastoid Crest</i>	<i>Observation</i>	<i>Cases</i>	<i>External Occlusion, Saggital</i>	<i>Observation</i>	<i>Cases</i>
	Small	3		Beginning	1
	Medium	5		Medium	3
<i>Temporal Region, Sphenoid Depression</i>	<i>Observation</i>	<i>Cases</i>		Advanced	2
	Small	1		Complete	1
	Medium, Large	6	<i>External Occlusion, Os Incae</i>	<i>Observation</i>	<i>Cases</i>
<i>Occipital Region, Curve</i>	<i>Observation</i>	<i>Cases</i>		Single	2
	Small	1	<i>External Occlusion, Lambdoid</i>	<i>Observation</i>	<i>Cases</i>
	Medium	4		Beginning	5
	Pronounced	2		Medium	1
<i>Occipital Region, Inion</i>	<i>Observation</i>	<i>Cases</i>		Advanced	1
	Small	2	<i>Wormian Bones, Lambdoid</i>	<i>Observation</i>	<i>Cases</i>
	Medium	2		None	5
	Large	2		Few (1–3)	2
<i>Occipital Region, Torus</i>	<i>Observation</i>	<i>Cases</i>	<i>Pterion Form</i>	<i>Observation</i>	<i>Cases</i>
	Absent	1		Right	
	Small	2		H	3
	Medium	2		Retourné	1
	Large	1		Left	
<i>Occipital Region, Torus Shape</i>	<i>Observation</i>	<i>Cases</i>		H	2
	Ridge	3		K	3
	Mound	2		Retourné	1
<i>Occipital Region, Lambdoid Flattening</i>	<i>Observation</i>	<i>Cases</i>	<i>Median Occipital Fossa</i>	<i>Observation</i>	<i>Cases</i>
	Small	4		Small	2
	Medium	1		Medium, Large	3
	Pronounced	2	<i>Condyles, Elevation</i>	<i>Observation</i>	<i>Cases</i>
<i>Occipital Region, Transverse Suture</i>	<i>Observation</i>	<i>Cases</i>		Small	2
	Absent	5		Medium	1
	Present	2		Large	2
<i>Occipital Region, Serration, Lambdoid</i>	<i>Observation</i>	<i>Cases</i>	<i>Basion</i>	<i>Observation</i>	<i>Cases</i>
	Pronounced	5		Low	1
	Very Pronounced	2		Medium	4
<i>Occipital, Coronal</i>	<i>Observation</i>	<i>Cases</i>	<i>Styloids</i>	<i>Observation</i>	<i>Cases</i>
	Simple	2		Small	1
	Submedium	2		Medium	1
	Medium	1		Large	1
	Pronounced	1	<i>Pharyngeal Tubercle</i>	<i>Observation</i>	<i>Cases</i>
	Very Pronounced	1		Absent, submedium	7

APPENDIX OF CRANIAL OBSERVATIONS—*continued*

<i>Pharyngeal Fossa</i>	<i>Observation</i>	<i>Cases</i>	<i>Lacrimo-Ethmoid Articulation</i>	<i>Observation</i>	<i>Cases</i>
	None, submedium	1		Small	1
	Medium	5		Medium, Large	1
<i>Lacerate Foramina</i>	<i>Observation</i>	<i>Cases</i>	<i>Infraorbital Suture</i>	<i>Observation</i>	<i>Cases</i>
	Small	5		Right	
	Large	1		None	3
<i>Glenoid Fossa, Depth</i>	<i>Observation</i>	<i>Cases</i>		Facial	1
	Small	1		Orbital	2
	Medium	2		Left	
	Large	3		None	3
<i>Postglenoid Process</i>	<i>Observation</i>	<i>Cases</i>		Facial	1
	Small	1		Orbital	3
	Medium	5	<i>Suborbital Fossa</i>	<i>Observation</i>	<i>Cases</i>
	Large	1		Slight	1
<i>Tympanic Plate</i>	<i>Observation</i>	<i>Cases</i>		Medium	4
	Thin	4		Deep	1
	Medium	2	<i>Os Japonicum</i>	<i>Observation</i>	<i>Cases</i>
	Thick	1		Absent	6
<i>Auditory Meatus</i>	<i>Observation</i>	<i>Cases</i>	<i>Malars, Size</i>	<i>Observation</i>	<i>Cases</i>
	Oval	1		Small	1
	Ellipse	5		Medium	2
	Slit	1		Large	3
<i>Petrous Depression</i>	<i>Observation</i>	<i>Cases</i>		Very Large	1
	Small	1		<i>Malars, Lateral Projection</i>	<i>Observation</i>
	Medium	5			<i>Cases</i>
	Large	1		Small	2
<i>External Pterygoid Plate</i>	<i>Observation</i>	<i>Cases</i>		Medium	4
	Small	2		Large	1
	Medium	2	<i>Malars, Anterior Projection</i>	<i>Observation</i>	<i>Cases</i>
	Large	2		Small	3
<i>Internal Pterygoid Plate</i>	<i>Observation</i>	<i>Cases</i>		Medium	3
	Small	4		Large	3
<i>Pterygobasal Foramina</i>	<i>Observation</i>	<i>Cases</i>	<i>Marginal Preocess</i>	<i>Observation</i>	<i>Cases</i>
	Right			Absent, Submedium	1
	Absent	4		Medium, Large	4
	Indicated	1	<i>Zygomatic Process, Thickness</i>	<i>Observation</i>	<i>Cases</i>
	Left			Small	2
	Absent	3		Medium	3
<i>Orbits, Shape</i>	<i>Observation</i>	<i>Cases</i>	<i>Nasion Depression</i>	Pronounced	1
	Rhomboid	5		<i>Observation</i>	<i>Cases</i>
	Square	1		Absent	1
	Ellipse	1	<i>Nasal Root, Height</i>	Small	4
<i>Orbits, Inclination</i>	<i>Observation</i>	<i>Cases</i>		Medium	2
	Small	2		<i>Observation</i>	<i>Cases</i>
	Medium	3		Very Low	3
	Pronounced	2		Low	2
				Medium	2

continued on next page

APPENDIX OF CRANIAL OBSERVATIONS—*continued*

<i>Nasal Root, Breadth</i>	<i>Observation</i>	<i>Cases</i>	<i>Palate, Height</i>	<i>Observation</i>	<i>Cases</i>
	Small	3		Low	4
	Large, Very Large	4		High	2
<i>Nasal Bridge, Height</i>	<i>Observation</i>	<i>Cases</i>		Very High	1
	Very Low	3	<i>Palatine Torus, Form</i>	<i>Observation</i>	<i>Cases</i>
	Low	2		Ridge	2
	Medium	2	<i>Palatine Torus, Size</i>	<i>Observation</i>	<i>Cases</i>
<i>Nasal Bridge, Breadth</i>	<i>Observation</i>	<i>Cases</i>		Small	2
	Small	5	<i>Palatine Transverse Suture, Direction</i>	<i>Observation</i>	<i>Cases</i>
	Medium	2		Transverse	3
<i>Nasal Profile</i>	<i>Observation</i>	<i>Cases</i>		Anterior	1
	Concavo-Convex	5		Posterior	1
<i>Nasal Sills</i>	<i>Observation</i>	<i>Cases</i>	<i>Postnasal Spine</i>	<i>Observation</i>	<i>Cases</i>
	Absent	2		Small	1
	Dull	2		Medium	4
	Medium	2	<i>Mandible, Size</i>	<i>Observation</i>	<i>Cases</i>
	Sharp	1		Medium	5
<i>Nasal Spine</i>	<i>Observation</i>	<i>Cases</i>		Large	2
	Medium	3		Very Large	1
	Large	1	<i>Chin, Form</i>	<i>Observation</i>	<i>Cases</i>
<i>Subnasal Grooves</i>	<i>Observation</i>	<i>Cases</i>		Median	1
	Absent	3		Bilateral	7
	Small	2	<i>Chin, Projection</i>	<i>Observation</i>	<i>Cases</i>
	Medium	2		Small	1
	Pronounced	1		Medium	6
<i>Midfacial Prognathism</i>	<i>Observation</i>	<i>Cases</i>		Large	1
	Absent	2	<i>Mandible, Alveolar Prognathism</i>	<i>Observation</i>	<i>Cases</i>
	Slight	3		None	3
	Medium	2		Slight	1
<i>Alveolar Prognathism</i>	<i>Observation</i>	<i>Cases</i>		Medium	2
	Absent	1		Pronounced	2
	Slight	3	<i>Mandible, Genial Tubercles</i>	<i>Observation</i>	<i>Cases</i>
	Pronounced	3		Small	1
<i>Total Prognathism</i>	<i>Observation</i>	<i>Cases</i>		Medium	2
	Absent	1		Large	5
	Slight	3	<i>Mandible, Mylohyoid Ridge</i>	<i>Observation</i>	<i>Cases</i>
	Medium	2		Absent	7
	Pronounced	1		Slight	1
<i>Alveolar Border, Absorption</i>	<i>Observation</i>	<i>Cases</i>	<i>Gonial Angles, Pterygoid Attachment</i>	<i>Observation</i>	<i>Cases</i>
	None	2		Medium	3
	Slight	1		Pronounced	3
	Medium	1		Very Pronounced	2
	Pronounced	3	<i>Gonial Angles, Eversion</i>	<i>Observation</i>	<i>Cases</i>
<i>Alveolar Border, Preservation</i>	<i>Observation</i>	<i>Cases</i>		None	8
	Poor	2			
	Fair	3			
	Good	2			
<i>Palate, Shape</i>	<i>Observation</i>	<i>Cases</i>			
	Parabolic	1			
	Hyperbolic	1			
	Elliptical	5			

APPENDIX OF CRANIAL OBSERVATIONS—*continued*

<i>Tooth Eruption</i>	<i>Observation</i>	<i>Cases</i>	<i>Teeth, Caries</i>	<i>Observation</i>	<i>Cases</i>
	Complete	6		None	6
	3d Molar Suppressed	1		1–4	1
<i>Teeth Lost Ante Mortem</i>	<i>Observation</i>	<i>Cases</i>	<i>Abscess</i>	<i>Observation</i>	<i>Cases</i>
	0	2		None	7
	1–4	2	<i>Pyorrhea</i>	<i>Observation</i>	<i>Cases</i>
	5–8	1		Absent	7
	9–12	1	<i>Shovel Incisors</i>	<i>Observation</i>	<i>Cases</i>
	17–20	1		Slight	2
	25–28	1		Medium	3
<i>Mandibular Torus</i>	<i>Observation</i>	<i>Cases</i>	<i>Bite</i>	<i>Observation</i>	<i>Cases</i>
	Small	2		Under	1
<i>Teeth, Wear</i>	<i>Observation</i>	<i>Cases</i>		Slight over	2
	Medium	5		Medium over	2
	Pronounced	2	<i>Crowding</i>	<i>Observation</i>	<i>Cases</i>
	Very Pronounced	1		Absent to Slight	4
<i>Teeth, Quality</i>	<i>Observation</i>	<i>Cases</i>		Medium	3
	Good	4			
	Excellent	3			

HOUSE TYPES IN THE ENVIRONS OF MAYAPÁN AND AT UXMAL, KABAH, SAYIL, CHICHEN ITZA, AND CHACCHOB

KARL RUPPERT AND A. LEDYARD SMITH

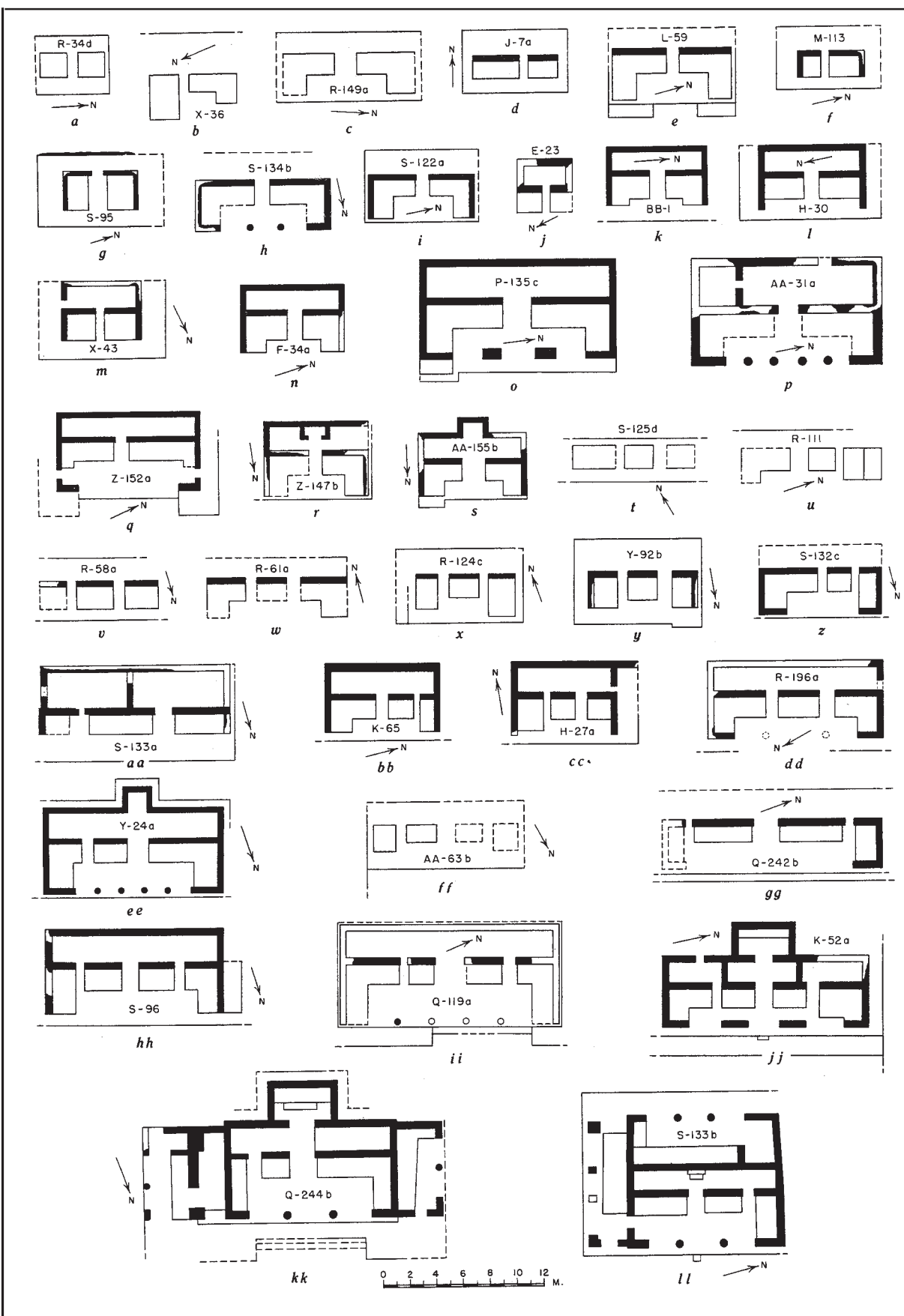
During the 1955 field season the area around Mayapán was explored to a radius of about 20 km. The purpose of the survey was to see how the house types compared to those at Mayapán and to determine the extent of the Mayapán types. Other places investigated in order to obtain data on their house types were Uxmal, Kabah, Sayil, Chichen Itza, and Chacchob. On our return trip from the last, Hacienda Ukum was visited, where a worked rectangular stone with glyphs was discovered.

All pottery recovered from the various sites visited was examined by R. E. Smith.

The above survey showed that house types similar to the typical common dwelling found at Mayapán (Fig. 39.1) occur, with two possible exceptions, one at Uxmal and the other at Chichen Itza, only in the vicinity of Mayapán, the farthest away being Itzin Can, 12 km to the west. This does not mean, however, that certain small nonceremonial structures, which may have served as dwellings,

did not have their counterparts at Mayapán. The typical house types of the sites investigated, other than those in the environs of Mayapán, consist of single-room buildings with a doorway in one wall, or a series of adjoining single rooms each with its separate doorway (Figs. 39.3–39.7). The back room so characteristic of Mayapán is lacking.

Figure 39.1 shows a series of dwelling-type structures from the simplest to the more elaborate forms, all typical of Mayapán. This type of house, with a front room open on one side, a medial wall, and one or more doorways leading into a back room, is essentially the same as that described by Landa, who says, "And then they build a wall in the middle dividing the house lengthwise, leaving several doors in the wall into the half which they call the back of the house, where they have their beds; and the other half . . . has no doors, but is open the whole length of the house" (Tozzer 1941: 85–86).



39.1. Plans of Dwelling-Type Structures with Front and Back Room, Typical of Mayapán, from Simplest to More Complex Forms.

a–s. Houses with two benches in front room and single doorway leading to back room; t–ee. Houses with three benches in front room and two doorways leading to back room; ff–jj. Houses with four benches in front room and three doorways leading to back room; kk, ll. Two houses of more elaborate type. Where no medial, end, or back-room masonry walls are shown (heavy black), the walls were presumably of perishable materials of which no trace remains.

ENVIRONS OF MAYAPÁN

With the study of dwelling-type structures at Mayapán, it was felt that a survey should be made in the adjacent region. Since we were primarily interested in the Mayapán type of dwelling, the area of the survey was limited to the extent of the Mayapán dwelling type.

Several men from the village of Telchaquillo were employed for this survey. These men had worked with us at Mayapán and were familiar with the material wanted. Two of them, Fausto Uc and Esteban May, were especially sharp-eyed and clever at spotting the Mayapán type of structure.

By the time the desired area had been investigated, the men going further in each direction until no more dwellings of Mayapán type were seen, a total of 111 distinct groups or settlements were examined. These, for the most part, were found near cenotes. At the end of the season Ruppert and Smith visited 16 of these sites, choosing those that apparently had houses similar to the Mayapán structures and that were situated at the greatest distance in all directions from that center.

Buildings from 10 of the sites revisited by Ruppert and Smith are described below. Their plans are shown in Figure 39.2.

JABA

The site of Jaba lies about 1 km west of the ruined main house of Hacienda Pixya, which is 5 or 6 km northeast of Mayapán. Jaba is a very extensive site, much overgrown, and built around an ample and easily accessible cenote. No property walls were seen. Much stone has been taken for hacienda buildings and fences, and for the roadbed of the tramway. Of the many structures noted, only representative types of those comparatively well preserved were recorded.

Str. 1 (Fig. 39.2a) has a platform approximately 0.50 m high with a single step extending across the entire front. The building proper is a single bench 0.25 m high with remains of a wall across the back. On the bench rests a circle of stones having a diameter of 0.80 m and rising 0.10 m. The structure is one of two which formed the group. The other building

now shows only traces of a bench. Str. 1 has its counterparts in Strs. N-49b and O-15b at Mayapán.

Str. 2 (Fig. 39.2b) shows similarities in plan to Strs. J-4a, J-130, S-156c, and Z-168b at Mayapán. The bench has an average height of 0.25 m. The masonry wall noted on the sides and back rises 0.30 m above the bench.

Str. 3 (Fig. 39.2c) and Str. 5 (Fig. 39.2d) are similar in plan. This plan is common and characteristic of Mayapán (e.g., Mayapán Strs. P-81a and X-31 like Jaba Str. 3; Mayapán Strs. E-50b, F-12a, H-30 (Fig. 39.11), and O-32b like Jaba Str. 5). The two structures are each formed of an outer and an inner room, the outer room having two simple rectangular benches separated by a passageway. In both these structures the side walls project beyond the front edges of the benches. Str. 5 shows no doorway in the back or end walls. Str. 3 was probably without one also, though the partially fallen wall makes this uncertain.

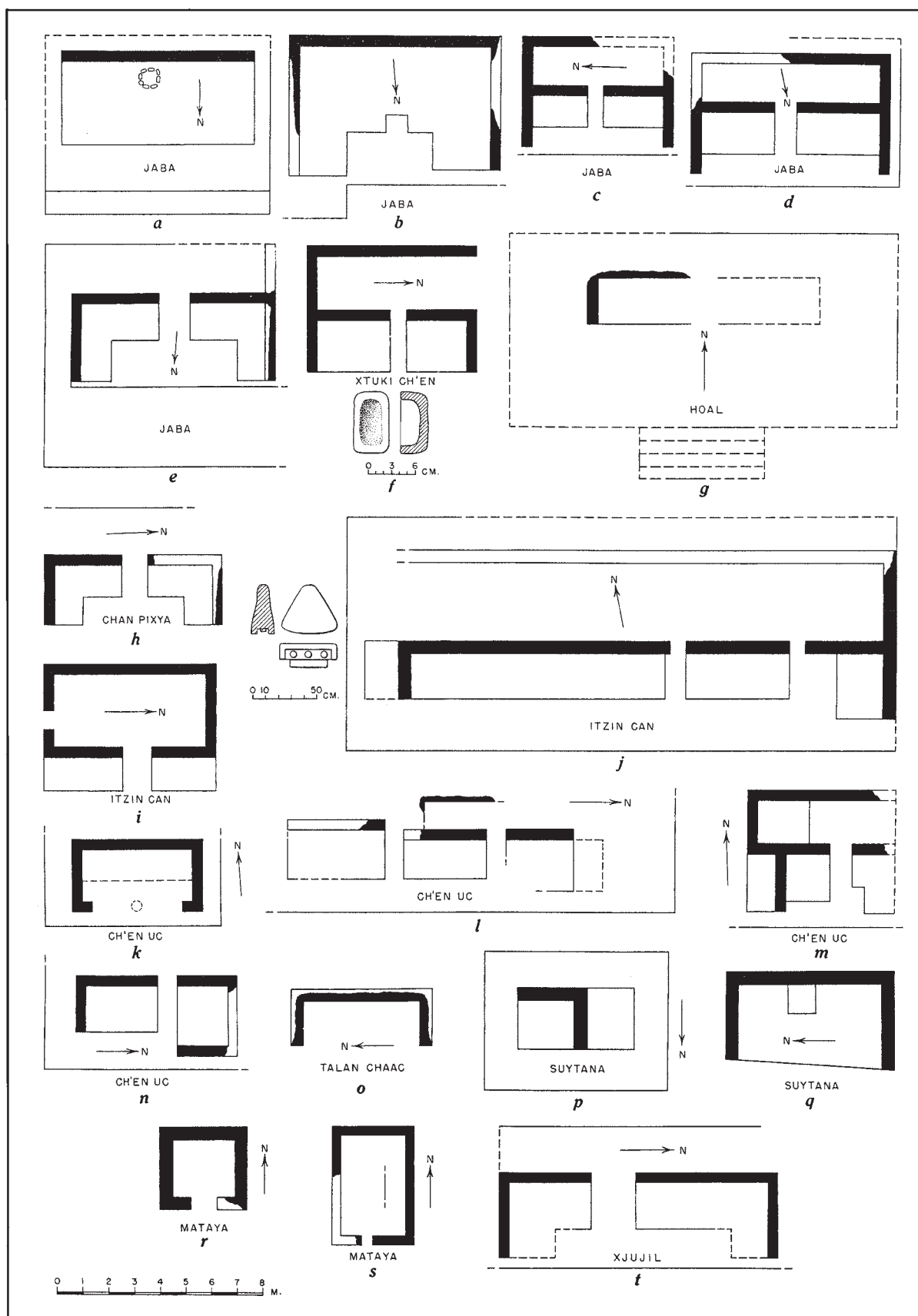
The plan of Str. 4 (Fig. 39.2e) is similar to that of Strs. P-149b, S-17b, and EE-26b at Mayapán, all having two L-shaped benches, a single passageway, and a back room. Str. 4 rests directly on a 0.15 m high platform. The benches average 0.35 m in height, and the walls rise another 0.20 m.

XTUKI CH'EN

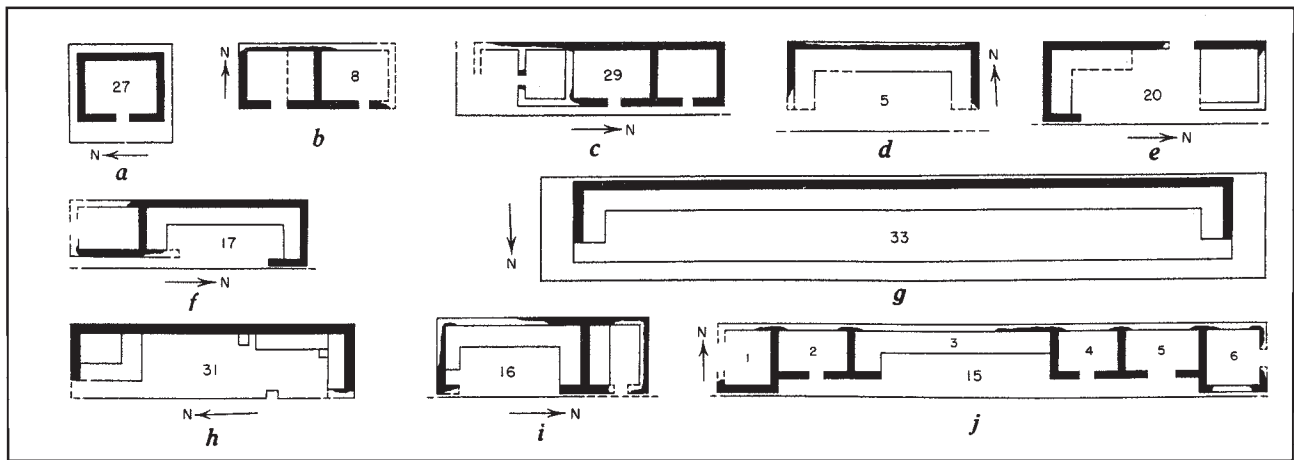
Xtuki Ch'en lies 12 km north of west of Mayapán. The only structure of which a plan could be made out shows two benches (Fig. 39.2f) with back and end walls and a back room open at one end. This plan is very common at Mayapán, being found, for example, in Strs. P-5a, T-60b, and AA-96c. The masonry is rough and much weathered. No Puuc type stones were seen. A large, well-preserved *pila* (Fig. 39.2f) was noted.

HOAL

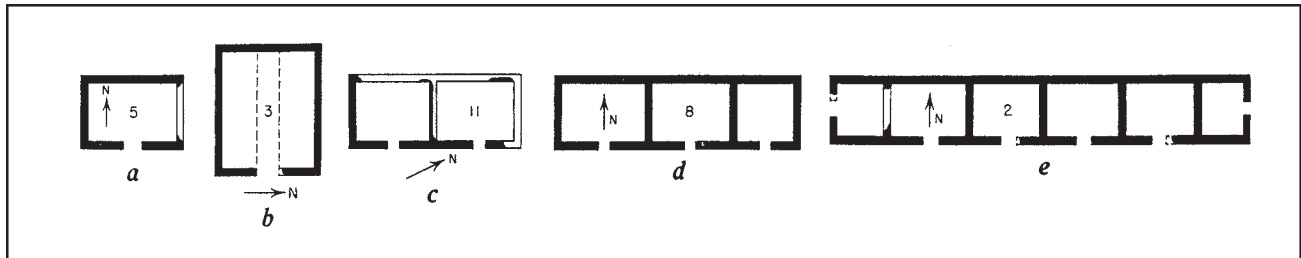
Hoal is 3.5 to 4 km north of Mayapán. This is the site of which Roys (1943:180) says, "In all the documents the survey of the frontier of the province [Mani] begins at a well, named Hoal, a short distance north of Tichac, the modern Telchaquillo." The "well" is a cenote. No water was seen, even though



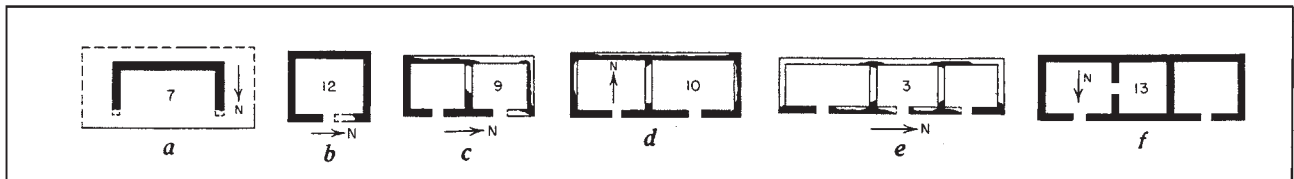
39.2. House Types from Environs of Mayapán.



39.3. House Types at Uxmal.



39.4. House Types at Kabah.



39.5. House Types at Sayil.

underground passageways were followed for some distance. It may be that the water pockets are filled with silt.

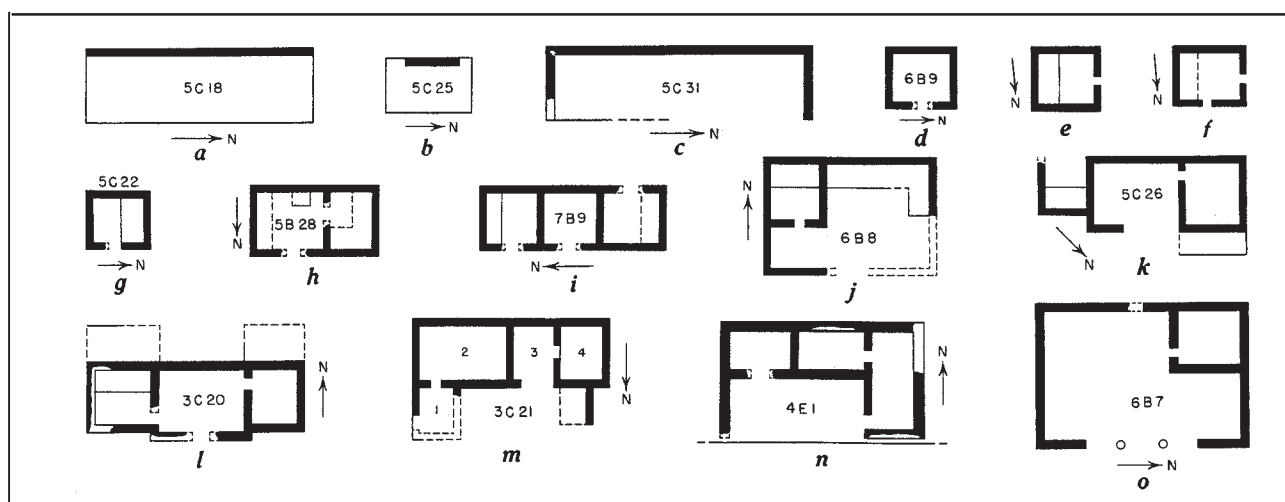
There are remains of a number of structures to the east of the cenote. Though much in ruin, they give the impression of being of Mayapán type. The plan of one (Fig. 39.2g) shows portions of a bench resting on a platform 1 m high. There may have been a narrow back room.

All sherds collected are from the cenote. One collection (Lot E-37) from far back in the cenote cave contains 12 sherds of pre-Classic type and 1 unidentified. The other lot of 55 sherds (Lot E-154) includes 5 of recent wares, 31 of Mayapán, 14 of Puuc types, and 5 unidentified.

CHAN PIXYA

Chan Pixya lies approximately 3 km north-northeast of Mayapán. A cenote furnishes an ample supply of water. Although the cenote is somewhat difficult to enter, water could easily have been pulled up in bark buckets through the somewhat restricted opening.

Little remains of the structures in the area. Many of the building stones no doubt have been removed for milpa fences. The single example (Fig. 39.2h) of which a plan could be made shows the structure to be of Mayapán type. It has two L-shaped benches, with end and back walls rising above the tops of the benches. The two-L-shaped-bench type of structure is very common at Mayapán, e.g., Strs. R-132, S-122a (Fig. 39.1i), and S-135a.



39.6. House Types at Chichén Itzá.

ITZIN CAN

Itzin Can lies about 12 km slightly north of west of Mayapán. There is a large cenote with ample water. Somewhat centrally located in relation to several groups of buildings is a "castillo" or pyramid type of structure. It is roughly 8 m high and shows traces of a building on top. No Puuc-style stones were seen.

To the west of the Castillo are remains of a long structure with columns, one of which has a shaft of a single stone 1.40 m in length and 0.50 m in diameter and another has a shaft 0.90 m long. A few Mayapán-type column drums were noted. The building shows traces of benches, and, most likely, there had been a back room.

Another large structure south of the Castillo is indicated by large jamb stones and what possibly was a stone lintel. The masonry is not of Puuc type.

To the north of the Castillo is a group of three structures, two of which were in sufficiently good condition to indicate plans.

Str. 1 (Fig. 39.2i) lies on the west side of the group. In the front room there are two simple rectangular benches now rising 0.30 m in height. A passageway between them leads to a back room, the walls of which rise one course. Masonry is of rough, much-weathered stones; none of Puuc type was noted. Structures of similar plan are not uncommon at Mayapán; e.g., F-40b, N-42a, and X-43 (Fig. 39.1m).

Str. 2 (Fig. 39.2j), forming the north side of the group, is composed of three benches in the front room, each 0.40 m high, and a single exterior bench 0.15 m high. Near duplicates of this arrangement are seen at Mayapán in Strs. P-1a and P-46b, which lack the exterior bench, and Str. R-35b. The walls rise an

average of 0.35 m above the tops of the benches, a height that is comparable to that found at Mayapán. The platform directly supporting Str. 2 has a height on the south of 0.10 m. Masonry is rough and much weathered. Several Puuc type stones were re-used in the structure, and a single sculptured Puuc-style stone was noted (Fig. 39.2j). This stone is apparently the eyebrow and upper lid from a mask panel.

Shook (1952:251), who visited the site in 1952, says, "the architecture and pottery . . . indicate occupation, perhaps continuously, from Classic through the Mayapán Period."

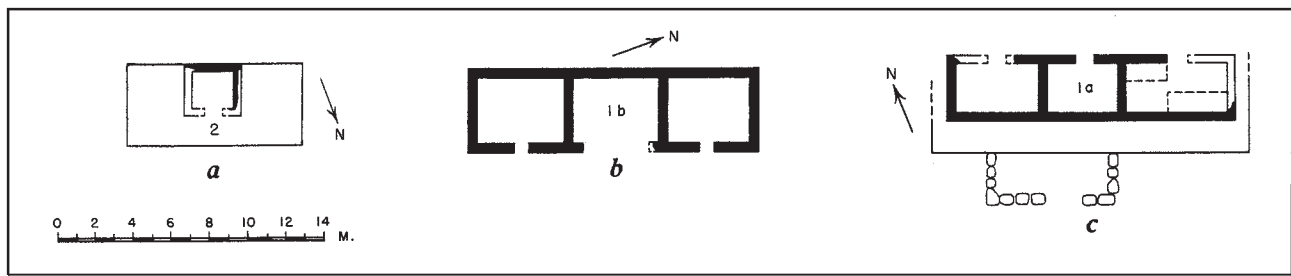
CH'EN UC

This group is slightly to the west of, and between, Mayapán and Telchaquillo. It is not compact, the structures appearing on the summits of natural hill-ocks. It is now much in ruin, the stones probably having been removed for fences outlining milpas in the vicinity.

Str. 1 (Fig. 39.2m) is a simple building with a front and back room. The front room has two benches, one of which is L-shaped, and there is a single exterior bench. The back room has a bench at one end. Much similarity in plan is seen in a number of structures at Mayapán, especially in Strs. R-49b and T-39a, the latter even having the bench in the back room.

Str. 2 (Fig. 39.21) now shows three simple benches with traces of a back room. The benches rise 0.25 m. The one at the north has seemingly been enlarged by a 1.10 m addition.

Str. 3 (Fig. 39.2k) may possibly have had a single column in the entrance. Built across the back of the chamber was a bench. It is impossible to find a



39.7. House Types at Chacchob.

structure at Mayapán having an identical plan, but some show great similarity. At Mayapán Str. DD-2a has approximately the same interior measurements, though there is no inward turning of the end walls or any indication of a column in the entrance. Mayapán Str. S-130b has one column in the entrance, but it is a two-chambered building and the two benches in the front room are L-shaped, so that this structure cannot rightly be compared to Ch'en Uc Str. 3.

Str. 4 (Fig. 39.2n) shows two benches; a passage-way suggests the former existence of a back room, though none now remains. A counterpart of this plan, except for slight difference in size, is seen in Mayapán Str. AA-114.

TALAN CHAAC

This site lies roughly 11 km south of Mayapán. It is much in ruin, and only one structure was seen that furnished a plan. All masonry was of rough, much-weathered stones. No Puuc-type stones were seen.

The single structure (Fig. 39.2o) resembles Str. T-68b at Mayapán, but such plans are not at all typical and have not been classed as dwellings at Mayapán.

A total of 28 sherds (Lot E-121), all of recent slipped red jar types, were collected from the surface.

SUYTANA

Suytana is approximately 4 km southwest of Mayapán. Structures are all in a poor state of preservation but show similarities to some at Mayapán. Of special interest was a group of four on top of a natural hillock. Around the base of the hillock is a property wall of large stones, so common at Mayapán. All exposed masonry is rough and much weathered. No Puuc-type stones were noted.

Str. 1 (Fig. 39.2q) rests on a platform, not over 0.10 m high, on three sides of which rises a masonry wall to a height of 0.40 m. Built against the center

of the back wall is a bench or altar approximately square in plan and 0.10 m high.

Str. 2 (Fig. 39.2p) is a platform 0.20 m high on which rests the building proper, composed of a bench 0.30 m high with a wall rising to a height of 0.50 m on two of its sides, and an exterior bench. The building probably faced north. Counterparts of this structure are seen at Mayapán in Strs. S-158a, X-52, Z-144, and EE-24b.

The sherds (Lot E-110), of which only 7 were collected, came from within the nearby cenote; 2 are of Mayapán ware, 5 of Puuc type.

MATAYA

Mataya lies about 7 km south of Mayapán. The two structures for which plans could be made may not be representative of the site. Although counterparts of these plans can be seen at Mayapán (Strs. AA-41a, Y-126a, Z-39a, and Z-114), some are not considered dwellings but shrines, and others, which may be dwellings, are not typical of Mayapán.

Str. 1 at Mataya (Fig. 39.2r) has a single large stone forming one jamb of the doorway. Much of the masonry is of slabs laid horizontally.

Str. 2 (Fig. 39.2s) has masonry of large, much-weathered stones. Remains of a bench appear against the east interior wall.

A total of 11 sherds (Lot E-108) recovered from within the cenote includes 1 of Mayapán ware, 6 of Puuc, and 4 unidentified.

XJUIL

Xjuil, some 7.5 km to the north of Mayapán, is by a good cenote. The remains of a number of structures were noted, all in poor state of repair. No Puuc-type stones were seen.

One structure (Fig. 39.2t) yielded a plan. It shows two L-shaped benches and a possible back room. Strs. O-3c, S-122a (Fig. 39.1i), and S-81b at Mayapán are comparable to the one recorded from Xjuil.

From inside the cenote 29 sherds (Lot E-155) were collected: 1 of recent ware, 3 of Mayapán, 6 of Puuc types, and 19 unidentified.

UXMAL

During the last week in April and the first few days in May of 1953, Ruppert and Smith, through the kindness of Dr. Alberto Ruz, stayed at the field quarters of the Instituto Nacional de Antropología e Historia at Uxmal. At that site, 33 house-type structures were examined and drawn to scale. The areas covered, besides the Main Group, were about 4 km along the road to San Simon south of the Governor's Palace and a shorter distance beyond the Main Group west of the Governor's.

It was found that some houses were associated with ceremonial groups and others were away from them. Those at a distance were usually on slight rises. Several groups of houses were found on rises with one or more chultuns and a small temple pyramid. The chultuns were extremely large, roughly 4 m deep from the base of the neck by 5 or 6 m across, and many still had plaster on the neck and interior walls. Houses associated with a ceremonial group were either on terraces supporting the group or in inner courts of the group.

The most common type of house is either the single-room building with a doorway in one wall, or a series of adjoining single rooms each with its doorway. In a few structures of this type, benches were found, and one had what may have been an altar against the back wall. As no excavation was carried on at Uxmal, it cannot be stated positively that none of the other structures of this type had benches, but as benches were visible in structures of other types it is likely that they would have been observed in the single-room buildings if they had been present. Small one-room buildings were found at Mayapán, but there they were used as shrines. The long single-room type of structure with a bench around three sides is not uncommon at Uxmal and has its counterpart at Mayapán. At Uxmal, it often has a room with a doorway in one wall added at one or both ends.

From the evidence of the debris, without excavating, there was no reason to believe that the houses investigated at Uxmal had roofs other than of perishable materials. Masonry of walls, standing about 0.40 m high, varied from well-cut re-used stones to rough stones. Many stones had been so calcined and cracked from milpa fires that it was impossible to say what their original condition had been.

Of the 33 plans made of buildings during the survey, 10 are shown in Figure 39.3.

Str. 27 (Fig. 39.3a) lies on the east side of a group of house mounds, surrounding a chultun, west of a small ceremonial group which we named the Court of the Eagles because of two stone bodies and heads of birds found there. The Court of the Eagles is about 4 km southeast of the Governor's Palace. Str. 27 consists of a platform about 0.30 m high supporting a single room dwelling with walls that at present stand only 0.25 m high.

Str. 8 (Fig. 39.3b) is situated south of the Governor's Palace, off the San Simon road. On the east side of the west room is a raised area which may well have served as a bench.

Str. 29 (Fig. 39.3c) lies south of the ceremonial archway (Smith and Ruppert 1954) about 3 km south of the Governor's Palace. It is one of a large group of house mounds associated with four chultuns, one of which is directly in front of it. Structure 29 is supported by a platform 0.10 m high. Probably this construction originally had four rooms in a row. At present the south room is almost completely gone; the room next to it has a doorway only in the wall leading to the south room. This feature is unusual for buildings consisting of rooms in a single row, which commonly have only doorways leading to the outside. One structure at Sayil, Str. 13 (Fig. 39.5f), and two at Chichen Itza, Strs. 5C29 (not illustrated) and 5B28 (Fig. 39.6h), however, do have inside doorways.

Str. 5 (Fig. 39.3d) lies west of the Phalli Group off the road to San Simon. It rests, along with another single-room structure to the west, on a platform 0.10 m high. Str. 5 has a bench 0.20 m high which extends around three sides. This type of structure, a single room with a bench around three sides, occurs at Mayapán, an example being Str. Z-168b.

Str. 20 (Fig. 39.3e) is situated in the court of a small ceremonial group southwest of the Governor's Palace. An unusual feature is a doorway in the back wall, the only one at Uxmal. The room has two benches, one in the north end and the other, L-shaped, against the west and south walls. This arrangement of benches in a front room with a doorway in the back wall is not uncommon at Mayapán in the typical house with front and back rooms, examples being Strs. 5-147a, T-24, and T-60a, but there is no evidence that Str. 20 had a back room.

Str. 17 (Fig. 39.3f) is in the same court as Str. 20. It rests on a 0.20 m high platform. The main room has a bench 0.20 m high around three sides. South of the main room is a smaller one which is badly destroyed but probably had a doorway in its south wall.

Str. 33 (Fig. 39.3g) is located near the southeast corner of the great lower platform supporting the Governor's Palace. It is a long building resting on a

0.30 m high platform. The floor of the room is 0.15 m above the level of this platform and extends forward 1.10 m beyond the end walls of the room to form a terrace. Inside the room is a bench 0.15 m high extending around three sides. This is the longest construction of this type encountered (35.25 m).

Str. 31 (Fig. 39.3h) is in the court of the Monjas Quadrangle; it is a long building raised 0.13 m above the floor of the court. There are two benches in the single room, each 0.20 m high. One bench in the northeast corner has a rectangular sunken area 0.08 m deep; the other, resting against the east and south walls, is L-shaped. Against the back wall, a little south of center, is a small raised area 0.17 m high which may have served as an altar. The small niche or inset area in the front of the platform supporting the room is faced with re-used colonnettes placed on their sides. The walls of Str. 31, as well as the faces of benches and the platform, are constructed of well-worked stones.

Str. 16 (Fig. 39.3l) lies in the court of a small ceremonial group west of the Palomas. The floor of the building is raised 0.10 m above the court floor. The south room, the larger of the two, has benches 0.20 m high extending around three sides except for a small area in the southeast corner. The north room has a bench against the south wall extending the full breadth of the room.

Str. 15 (Fig. 39.3l) is situated in the same court as Str. 16. The floor level of the rooms is 0.10 m above the level of the court, and there is a terrace in front at the same level as the room floors. Room 1 originally had a doorway in its west wall, but this side is so far gone that it is impossible to say how wide the entrance was. Room 3, the longest room, has an L-shaped bench against the north and west sides. Several stone metates and *pilas* were found near Str. 15.

KABAH

During the stay at Uxmal in 1953, two days were spent at Kabah investigating house-type structures. The excellent map of the site (unpublished) made by Shook in 1935 was of great assistance. The main areas covered were the terraces on the north side of the main group to the east of the highway to Uxmal and to the west and southwest of the Portal Vault west of the highway.

At Kabah all structures investigated were either of the single-room type, with a doorway in one wall, or were a series of adjoining single rooms each with its separate doorway. Benches were found in one single-room building (Fig. 39.4b). Many well-cut re-used stones were seen in the walls, which now stand

about 0.40 m high. Some houses were situated on terraces supporting a ceremonial group; others were apart from ceremonial buildings. They occurred in groups of two, three, and four, as well as singly, sometimes on raised areas. Two groups had chultuns nearby. There were undoubtedly chultuns near other house-type structures which were not discovered. Large rectangular stone *pilas* were found associated with five structures.

Fourteen houses were drawn to scale, 5 of which are shown in Figure 39.4.

Str. 5 (Fig. 39.4a) rests on the northeast corner of the large terrace supporting the main group on the east side of the highway. There was a broken stone metate off the east end of the building.

Str. 3 (Fig. 39.4b) lies southwest of Str. 5 on a higher level of the same terrace and is just south of the west end of Str. 2 (see below). It apparently had two benches 0.20 m high against the north and south walls and extending the full length of the room. This is the only house-type structure at Kabah that had benches.

Str. 11 (Fig. 39.4c) is one of a group of four house-type structures associated with a chultun about 120 m west-southwest of the Portal Vault. A large stone *pila* is near the group.

Str. 8 (Fig. 39.4d), one of a group of three house-type buildings resting on a large platform, is about 65 m southwest of the Portal Vault. Two chultuns are associated with the group, as well as a large stone *pila* and a broken metate.

Str. 2 (Fig. 39.4e) rests on the same terrace as Str. 3 (see above), its west end being about 3 m north of it. The plan speaks for itself.

SAYIL

Near the end of their stay at Uxmal in 1953, Ruppert and Smith spent two days at Sayil. As at Kabah, their work was greatly aided by the splendid map of the site (unpublished) made by Shook in 1935. Examples of buildings came from the vicinity of the Great Palace and the Little Palace, the latter being at the extreme south central part of the site.

Only one structure was associated with a ceremonial building. The rest, except for two, were on raised areas. Singly, or in groups of two, they usually have a chultun nearby. In eight instances large *pilas*, or their broken remains, were found in the near vicinity. All the houses investigated at Sayil were of the same type as those found at Kabah. Quite a few of them were in poor condition and their walls difficult to trace. The masonry, one course high, was of poorly cut stone. No benches were seen in any of these structures.

Fourteen house-type structures were drawn to scale, of which 6 are shown in Figure 39.5.

Str. 7 (Fig. 39.5a) rests on the southeast corner of the large terrace supporting the Great Palace. It is supported by a platform 0.20 m high. Except for size, Str. 7 is similar to Strs. T-68b, AA-146c, and EE-6 at Mayapán. This type of single-room building with one side open is not uncommon at Mayapán, although there it often has a bench extending the full length of the back wall.

Str. 12 (Fig. 39.5b) is one of five house-type structures on a natural rise about 60 m southwest of the Little Palace. It is supported by a platform that also supports Str. 11.

Strs. 9 and 10 (Fig. 39.5c and d), on the same natural rise as Str. 12, are supported by a single large platform. Str. 9 lies on the east side of the platform, Str. 10 on the north edge. There is a chultun about 2 m east of the northeast corner of Str. 9 and 3 m south of the east doorway in Str. 10.

Str. 3 (Fig. 39.5e), with Str. 4, a two-room structure, is on a large platform about 150 m southwest of the main stairway of the Great Palace. A large stone pila lies near its northeast corner, and a chultun is located about 3 m east of its center doorway.

Str. 13 (Fig. 39.5f) is situated on the east side of a large platform supporting another house-type structure and several ceremonial buildings. The platform lies about 230 m northwest of the Little Palace. The central room of Str. 13 is unusual in that it has only a doorway leading to the east room, and no exterior doorway. This situation of one of several rooms in a row having no exterior doorway also occurs at Uxmal in Str. 29 (Fig. 39.3c) and at Chichen Itza in Strs. 5B28 (Fig. 39.6h) and 5B29. There is a chultun 0.50 m east of Str. 13.

CHICHEN ITZA

Chichen Itza was visited by Ruppert and Smith during the 1954 field season from April 5 to 14 for the purpose of locating and making plans of house mounds. The published map of Chichen Itza (Ruppert 1952, Fig. 39.15l) was not only a great help in finding the house mounds but made it possible to locate them fairly accurately. All but 5 of the 43 buildings drawn to scale could be placed on the map and be numbered according to the system used for other buildings. The five not on the map were east and north of the Casa Redonda (Pollock 1936:131, Footnote 4). Other areas in which house mounds were found are west of the Casa Colorada, east and south of the Main Southwest Group, west of the Initial Series Group, in the southwest corner of grid 6B, southwest of the Temple of the Three Lintels, in

the southeast corner of grid 4E, and in the southwest corner of grid 5D.

The majority of these structures lie on either side of Sacbe No. 7. Only a few were associated with ceremonial buildings. Some were on low land, but most of them rested on large raised platforms. They occur singly and in groups. In many structures the masonry walls, which were only one course high, had well-cut re-used stones. Several metates and one pila were found near dwellings, but no chultuns were close to any houses investigated.

The most common house type is the same as at Uxmal, Kabah, and Sayil: single-room buildings, each with a doorway in one wall, or a series of adjoining single rooms each with its separate doorway. At Chichen Itza, however, the majority of rooms had benches. Another type of structure, which may not be a dwelling, is a rectangular platform with a wall along one of its long sides; this type occurs at Mayapán. Of all the buildings examined, only one (Fig. 39.6n) can truly be said to resemble the typical house of Mayapán with a front and back room. Wauchope (1938:164, Fig. 51.3) also found one at Chichen Itza.

Eleven lots of pottery (G-35 to 45) were recovered from the various structures, 4 from the surface, 5 from pits in structures from surface to bedrock and well below floor level, and 2 from below floors. All sherds recovered from below floors were of early post-Classic types or earlier, except for a late post-Classic pottery vessel that was probably put through the floor of Str. 5C22 (see below) and 2 late post-Classic sherds from below the floor of Str. 5C25 (see below), which may have come from above the floor and got mixed in accidentally. The late post-Classic pottery from Chichen Itza is as late as Mayapán period pottery.

Of the 43 structures drawn to scale, 15 are shown in Figure 39.6, in which the various types of house plans encountered may be seen. Str. 5C18 (Fig. 39.6a) lies 150 m east and 340 m south of the northwest corner of grid 5C on a platform built on a natural rise. It consists of a long 0.35 m high platform supporting a wall along the whole length of its west side. This type of structure is quite common at Mayapán, two examples being Strs. M-67b and R-148.

Str. 5C25 (Fig. 39.6b), 192 m east and 384 m south of the northwest corner of grid 5C, is on the southwest corner of the large terrace supporting the Initial Series Group. It is a 0.40 m high platform supporting a wall 0.20 m high along its west side.

Two lots of pottery were recovered from Str. 5C25: Lot G-42, from above floor, contained 169 sherds, 95 early post-Classic or earlier, 31 late post-Classic, and 43 unidentifiable; Lot G-43, from below

floor, contained 25 sherds, 17 early post-Classic or earlier, 2 late post-Classic, and 6 unidentifiable. The 2 late post-Classic sherds may have come from above floor with Lot G-42 and have been mixed with Lot G43.

Str. 5C31 (Fig. 39.6c), 245 m east and 103 m south of the northwest corner of grid 5C, rests, with two other possible house-type structures, on a large platform on a natural rise. For other examples of this type of construction see under Str. 7, Sayil.

Str. 6B9 (Fig. 39.6d) lies 8 m east and 142 m south of the northwest corner of grid 6B. It is a single-room building with a doorway in its east side.

The structure in Figure 39.6e does not have a number as it is off the map. It rests, with two other house-type buildings, on a large terrace north of the Casa Redonda. It is a single room structure with a bench 0.10 m high across its east end.

Like the preceding building, the structure in Figure 39.6f lies off the map and has no number. It rests on the same terrace, just south of the structure in Figure 39.6e. At the east end a bench 0.20 m high extends the whole breadth of the room.

Str. 5C22 (Fig. 39.6g), about 145 m east and 394 m south of the northwest corner of grid 5C, is one of a group of five house-type structures resting on a large platform on a natural rise. It is a single-room building with a bench 0.25 m high extending the length of the north wall.

From a pit in the room, 319 sherds were recovered (Lot G-41). Of these, 163 were late post-Classic, 126 early post-Classic or earlier, and 30 unidentifiable. All the late post-Classic sherds were from a single jar which was probably intrusive.

Str. 5B28 (Fig. 39.6h), 362 m east and 398 m south of the northwest corner of grid 5B, is a two-room building. The only entrance is in the north side of the east room, the larger of the two. This room has a bench 0.15 m high extending across the room against its east wall, and a small altar, 0.15 m high, against its south wall. The west room is entered from the east room. An L-shaped bench extends the full length of the west and north walls. For other structures with one of two or more rooms in a row having no exterior doorway, see Str. 13, Sayil.

Str. 7B9 (Fig. 39.6i), 7 m east and 140 m south of the northwest corner of grid 7B, is one of a group of three house-type structures off the southwest corner of the large platform supporting the Temple of the Three Lintels. The north room has a bench across its north end; the south room, a bench across its south end.

A pit dug in the center room produced 100 sherds (Lot G-37), 96 of which were early post-Classic or earlier, and were unidentifiable.

Str. 6B8 (Fig. 39.6j), 145 m west and 27 m south of the northeast corner of grid 6B, is one of a group of two house-type structures. The probability is that it originally was a building similar in plan to Str. 6B7 (Fig. 39.6o) and that its southeast corner has been completely removed. In this case it faced south and had a doorway in its south side, as reconstructed. The small inner room has a bench 0.15 m high against the north wall. In the large room there is an L-shaped bench along the north wall and about half the east wall.

Str. 5C26 (Fig. 39.6k), 134 m east and 418 m south of the northwest corner of grid 5C, is one of a group of five house-type structures supported by a large platform on a natural rise. The southeast room is not as wide as the other two and has a bench 0.20 m high across its northeast end. There is an exterior bench or terrace 0.15 m high against the northeast wall of the northwest room. Although somewhat different in plan, this building might be put in the class of those having one or more rooms in a row with one room lacking an exterior doorway (see Str. 13, Sayil).

Str. 3C20 (Fig. 39.6l), 142 m east and 308 m south of the northwest corner of grid 3C, is one of a group of several house types in a flat area about 140 m west of the Casa Colorada. The west room has a bench across its north end. Outside the building there is a raised area, probably a bench or a terrace, at either end of the back wall.

From a pit in the center room 133 sherds were recovered (Lot G-45), 99 early post-Classic or earlier, 34 unidentifiable.

Str. 3C21 (Fig. 39.6m) lies about 20 m southwest of Str. 3C20. Room 1, mostly destroyed, probably had an exterior doorway in its east wall. There is an exterior bench with a wall along its west edge against the north side of Room 4.

Str. 4E1 (Fig. 39.6n), 174 m east and 348 m south of the northwest corner of grid 4E, rests on a small rectangular platform 0.15 m high. The plan speaks for itself.

Str. 6B7 (Fig. 39.6o) lies about 2 m south of Str. 6B8 (see above). It is very similar to Str. 6B8 (Fig. 39.6j) in plan. Its main and possibly only entrance was a large opening on the east side divided into three doorways by two stone columns. There may have been a very narrow doorway in the back wall. A stone metate was found just east of the building.

Two lots of pottery were recovered from Str. 6B7. One, Lot G-35, from above the floor of the small room, had 173 sherds: 146 early post-Classic or earlier, 27 unidentifiable. The other, Lot G-36, from below the floor of the small room, had 138 sherds: 133 early post-Classic or earlier, 5 unidentifiable.

39.8. Chacchob, Dzantun Ch'en, and Ukum.

a. Looking south at Str. 2, Chacchob. b. Circular structure on same platform and north of Str. 2, Chacchob. c. Carved stone, 48 cm across, Chacchob. d. Fragment of stone ring, diam of opening 17 cm length of tenon 30 cm, Chacchob. e. Carved stone, greatest dimension 37 cm, Chacchob. f. Four carved pottery spindle whorls, diam 2.6 cm, Cat. no. 55-529, Lot E-507, Chacchob. g. Fragments of 2 flint knives with tenons, Chacchob. Upper, 7.4 by 4.4 by 1 cm from surface of Str. 1b, Cat. no. 55-539, Lot E-502. Lower, 5.7 by 3.1 by 1.3 cm from below floor of Str. 2, Cat. no. 55-533, Lot E505. h. Obsidian blade from Str. 2, Lot E-506, Chacchob. i. Copper bell found on surface of two-bench house 2 km south of Mayapán at Dzantun Ch'en. Diam 4.2 cm, ht 2 cm, ht with handle 2.9 cm, Cat. no. 55-99, Lot E-184. j. Hieroglyphic panel, Hacienda Ukum. Length of stone 1.10 m, width 0.60 m.

CHACCHOB

Ruppert and Smith visited the ruins of Chacchob from April 3 to 8 during the 1955 field season in order to study the house types there and to get pottery samples. In 1952 Pollock and Strömsvik (1953) spent 5 days at this walled city. All structures they saw seemed to be of the Puuc period.

During their stay, Ruppert and Smith explored most of the area within the wall of this small site, a great deal of which consists of *cancab* (red earth) and outcroppings of bedrock.

They were able to find only about 20 dwellings, most of which were on large platforms. It is their opinion that there probably were never more than 50 house structures here at the time of occupation. There was nowhere near as heavy a concentration of dwellings as at Mayapán, where in about the same area there would be from 250 to 300 houses. Most of the buildings were in poor state of preservation, but enough remained to show that they were of the single-room type or a series of adjoining single rooms, each with its separate doorway. The masonry walls, one course high, were, with one exception, made of rough, unfaced stones. The exception was Str. 2, a single-room building with nicely cut re-used Puuc stones in walls and is paving around the edges of the room (see below). This structure and two others were drawn to scale (Fig. 39.7).

During exploration of the site several carved and worked stones were discovered (Fig. 39.8c–e). Four carved spindle whorls (Fig. 39.8f) were recovered in the digging of a trench in a corner formed by the city wall and a platform built against it, just south of where the road to San Diego Max cuts through the wall.

All pottery obtained from house-type buildings was of the Puuc period except that from Str. 2, which had a high percentage of Mayapán types from below floor level. The sherds from this small single-room construction, possibly a shrine, show that the site was inhabited, or at least visited, in Mayapán times.

Str. 2 (Figs. 39.7a, 39.8a) lies about 35 m west of the entrance in the northeast part of the city wall (see Pollock and Strömsvik 1953, Fig. 1). It is a building

supported by a platform 0.15 m high resting on a good-sized terrace 1–2 m high with a stairway on the east side (Pollock and Strömsvik 1953:91; Fig. 5b). Two fallen jamb stones indicate that the doorway of Str. 2 was on the north side. Re-used Puuc stones were found in the walls and paving around the edges of the room.

A small circle of stones (Fig. 39.8b) about 5 m north of Str. 2 probably served as an altar. The stones were re-used Puuc-type, with their flat, dressed surfaces facing out. The circle was about 0.90 m in diameter and 0.15 m high, and undoubtedly was once filled with rubble and covered with a plaster floor. A similar circle, 0.85 m in diameter, made of faced stones was found at the site resting on a large platform supporting several buildings.

Two samples of pottery and other artifacts were recovered from Str. 2. One, from paving stone level inside the room to 0.30 m below (Lot E-505), contained a flint blade with tenon (Fig. 39.8g, bottom), a small green-gray stone tubular bead, and 146 sherds, 24 of Puuc type, 52 of Mayapán type, and 70 unidentifiable. The other, from 0.30 m below paving stone level to bedrock (Lot E-506), contained an obsidian blade (Fig. 39.8h), a fragment of an obsidian blade, and 83 sherds, 27 of Puuc type, 33 of Mayapán type, and 23 unidentifiable.

Str. 1b (Fig. 39.7b) is one of a group of three house-type structures on the south, west, and north sides of a small court about 120 m east of the break in the wall at the west end of the site, where the road to San Diego Max goes through. This group is mentioned by Pollock and Strömsvik (1953:90; Figs. 1, 5a). Str. 1b is the building on the west side of the court.

Two pottery samples were recovered from inside Str. 1b. One, from the surface (Lot E-502), contained a fragment of a flint blade with tenon (Fig. 39.8k, top), and 62 sherds, 54 of Puuc type, 8 unidentifiable. The other, from below the level of the base of the stones forming the walls of the construction (Lot E-503), contained 97 sherds, 89 of Puuc type, 8 unidentifiable.

Str. 1a (Fig. 39.7c) lies south of Str. 1b on the south side of the court. The east room had fill in the



a



b



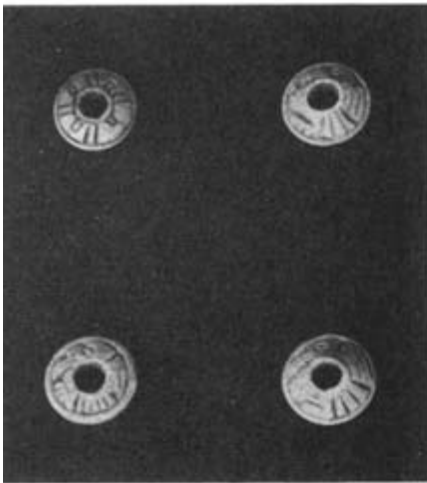
c



d



e



f



g



j



h



i

northwest and southeast corners which may represent benches. As the ground drops off to the south, a platform or terrace 0.95 m high had been built to support the back of Str. 1a. This platform extended out 1.6 m from the back wall to form a broad terrace. Against the face of the terrace a rectangular enclosure was constructed of large, rough stones averaging 1 m to 1.5 m high. The only entrance to the enclosure was an opening in its south wall.

Two lots of pottery were recovered from inside Str. 1a. Lot E-501, surface material, contained 140 sherds, 122 of Puuc type, 2 of Mayapán type, 16 unidentifiable. Lot E-504, from below the floor of the central room, contained 22 sherds, 21 of Puuc type, 1 unidentifiable.

In the description of the structures above, all the lots from Chacchob except two, Lots E-500 and E-507, have been listed.

Lot E-500, from a cenote 400 m southeast of Chacchob, contained 55 sherds, 46 of Puuc type, 9 unidentifiable.

Lot E-507 is from a trench in the corner formed by the city wall and the south side of a platform

just south of where the road to San Diego Max cuts through the wall (Pollock and Strömsvik 1953, Fig. 1). This lot contained 4 carved pottery spindle whorls (Fig. 39.8f) and 33 sherds, 21 of Puuc type, 1 of Mayapán type, 11 unidentifiable.

HACIENDA UKUM

On their return trip to Mayapán from the ruins of Chacchob, Ruppert and Smith stopped at Hacienda Ukum to look at a carved stone, possibly a door doorjamb, reported by Pollock and Strömsvik (1953:83; Fig. 6h). Alongside this stone, which was set in the floor of an abandoned machine house, they discovered two pieces of another carved stone with glyph blocks. When placed one on top of the other, as shown in Figure 8l, these stones measure 0.60 m wide and 1.10 m high. They may well have been a doorjamb, as was suggested for the stone found in 1952; they could not have been from the same doorway, however, as the one found by Pollock and Strömsvik was only 0.54 m wide. The hieroglyphs on these stones have not been deciphered.

DEITIES PORTRAYED ON CENSERS AT MAYAPÁN

J. ERIC S. THOMPSON

DESCRIPTION OF VESSELS

An excellent description of the effigy incense burners of Mayapán has been published by R. M. Adams, Jr. (1953:146–168), and supplementary information by H. D. Winters (1955:385–388). Accordingly, it is sufficient here to give an outline of their material and to refer readers to those sources. Full technical information will appear in R. E. Smith's forthcoming study of the pottery of Mayapán.

Effigy censers are made of coarse, unslipped pottery. The effigy is attached to the front of a thick-walled vase which stands on a high pedestal base, both slightly flaring. The headdress of the effigy usually rises 10 to 15 cm above the rim of the vase. The tallest censer found at Mayapán is 68 cm high, but the more usual height seems to have been some 10 cm less. Some censers, although none of this class is complete, are of medium size, perhaps about 40 cm high, and an occasional specimen is diminutive;

Ruppert and Smith (1954, Fig. 7k) illustrate one only 13 cm high. Vase diameters are about 18 cm.

There may be a lime wash on the exterior of the vessel; interiors, particularly the bases, of many are fire blackened. Small vent holes in the pedestals and in the bases of bowls are further evidence that burning took place in these vessels.

The effigy figure is attached to the front of the vessel, in an upright position. Winters (1955:385) mentions rare examples of seated effigies. I have not noted any of that class at Mayapán, although elsewhere seated personages and diving gods are common on effigy censers. Legs are freestanding, apart, with feet parallel, and attached to the bowl immediately below the buttocks. The sandal normally has an ankle guard to which is attached a cord with a flap over the arch of the foot. A number of the feet show a cord between the first and second and the third and fourth toes. Toenails are carefully indicated.

40.1. Heads of Incense Burners.

a–d. God B, Chac (A-189, A-190, A-190, A-181). e–h. Merchant god (A-180, C-72, A-416, A-570). Complete vessel (g) is not incense burner but cache receptacle. i–j. Whiskered god (A-114, C-72). Part of headdress of was available only in photograph which gave no sure information on colors. Scale is 1:4. See Fig. 40.2 for color symbols.

In most figures the arms are bent at an angle of 90 degrees, palms up, and the hands may support offerings; in a few the hands are brought together in front of the stomach to hold an offering. Rarely a shield is on the left arm; in one effigy a hand grasps a spear thrower.

Usually a wide loincloth end hangs between the legs, partly covering them, and reaching almost to the ankles. In width this loincloth is neither in the classic Maya tradition nor in that of Mexican representational art at Chichén Itzá. A half-skirt over buttocks and sides of thighs is reminiscent of the jaguar-skin drawers worn by personages on stelae of the Central Maya area. A sort of short-sleeved jacket and a breast ornament are usually part of the costume; cuffs and bands below the knees may be shown.

Winters notes three main types of headdress: a close-fitting cap or, in his words, cylindrical bonnet; a helmet in the shape of the jaws or beak of some animal or bird; and, very rarely, a kind of rectangular box. All headdresses appear to be topped by a flaring funnel and to have on each side a flap reaching to the shoulders.

A pair of flanges, which project from the vase on either side of the effigy, serve as the two piece frame, usually of feather work, which was placed behind gods or their impersonators, and which is shown being placed in position on the murals of Bonampak (Ruppert, Thompson, and Proskouriakoff 1955, Fig. 27).

Some parts of the effigies, notably faces, hands, and feet, were commonly made in molds.

Molds for these faces have only occasionally been found at Mayapán; their rarity is not surprising, for potteries might not have been located within the city. Many details of dress and ornament were made separately and attached to the effigy before firing; often these details in appliqué become detached.

Painting was done after firing. Colors observed are red, yellow, blue, green, gray, purple, brown, black, white, and, less commonly, gray, purple, and brown; both brown and gray may at times have been accidental. Sometimes there is an apparently intentional mixture of blue and green resulting in a variable shade here called turquoise. Density of paint produces different tones, and sometimes (Fig. 40.2a) a dark blue design is painted on a light blue or a dark red on pink. The colors may have ritual significance, as, for example, that for the flayed skin, cor-

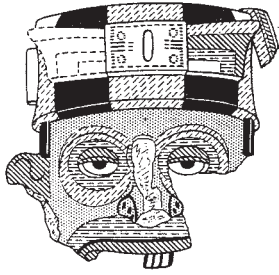
rectly shown as white to a very pale yellow, which *Xipe* wears (Fig. 40.2a, b), or the black-and-white facial painting of *Tlazolteotl* (Fig. 40.2c), or the variable colors of God B (Fig. 40.1a–d); at times the artist appears to have used whatever paint took his fancy or was in good supply.

FUNCTION OF EFFIGY CENSERS

R. E. Smith informs me that, in examining sherds, he has found burned copal incense in the bases of some effigy censers, in verification of the inference from the presence of vent holes and smoke stains on the interiors of many sherds that these vessels were, indeed, used as incense burners, although there is no reason to suppose that they were swung like the censer of the Old World. Quite apart from such direct testimony, the normal occurrence of large quantities of fragments in or around structures designated as shrines is indirect evidence that the vessels were used for burning copal; but it must be remembered that one, though not the only, reason for classifying such structures as shrines is precisely that huge quantities of sherds of incense burners are often found in their vicinity. Nevertheless, these vessels frequently stood on or at the foot of what presumably were altars.

Some confusion in early Spanish accounts between pottery idols and effigy incense burners probably reflects a lack of clear-cut differentiation among the Maya informants, but it would seem that the effigy incense burners of Yucatán, like those of the present-day Lacandon, had the dual purpose of serving as receptacles of the burning copal and as idols of the gods they portray, for in the *Relación de Valladolid* (*Relaciones de Yucatán* 1900:13:19, 27–28) we read: “They worshipped some idols made of clay, like small jars or the flower pots used for sweet basil, with different faces on the outsides. Inside, they burnt a strong-smelling resin called copal. This they offered to those idols,” and, with reference to the temple on top of the pyramid, “They had their idols in the building on top, made of pottery in the shape of basil pots but with very irregular outline (*muy bocadeadas*) with their feet, and on them faces, ill-featured and deformed with evil grimaces. They put into this idol a resin-like incense which they call copal.”

Support for the view that the Maya of Yucatán regarded these effigy censers as gods is found in



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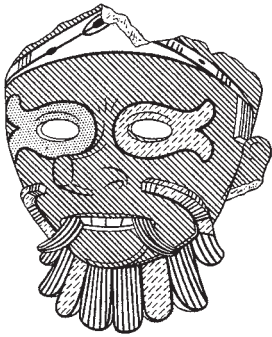
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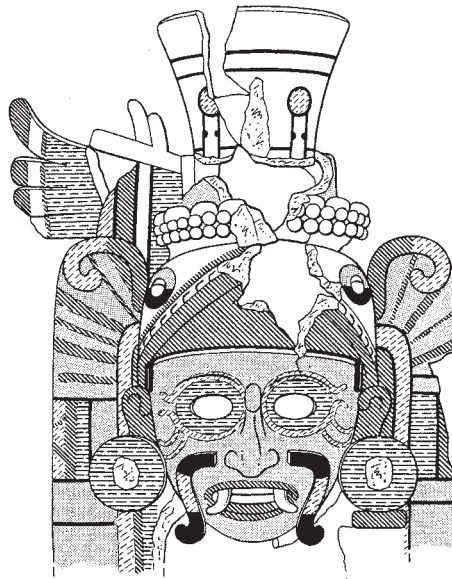
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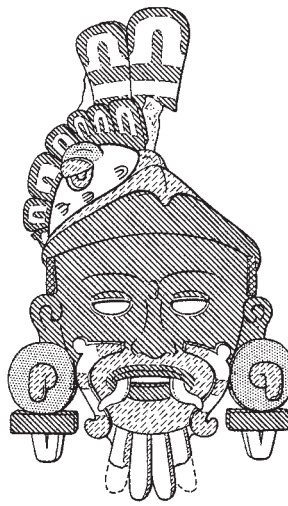
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40.2. Heads and Fragments of Incense Burners.

a. Arm of Xipe figure with armlet decorated with head (A-110). Note human skin worn by god. b. Leg and loincloth of Xipe figure showing elaborate decoration of end of loincloth and human skin of sacrificial victim (A-110). c. The goddess Tlazolteotl (A-182, A-188). d. The maize god (C-72). e. Venus god (C-8). f. Various unidentified heads (D-29, A-177, C-93, C-11). Scale is 1:4.

the belief, common among the present-day Maya, that the pottery censers come to life at night and are extremely dangerous. They are called *Ah Lux* or *Ah Lux Kat*, and should be destroyed, but their destruction entails some danger. An ingenious method was explained to me by a Maya informant: a heavy stone is suspended above the effigy vessel by means of a strip of *mahau* (tie) bark. In time the bark strap will rot, allowing the rock to crash on the incense burner, which is destroyed without endangering the person who has contrived its end.

Sixty-five heads from censers were sufficiently well preserved or retained sufficient characterization to be suitable for study, and perhaps 20 more were rejected, but these numbers give an inadequate idea of the total quantities unearthed, for in very many cases faces were too badly smashed to be counted.

The number of sherds of effigy incense burners in late deposits is truly enormous. For instance, Burial Cist 2 of Str. R-86 yielded 18,433 sherds, of which 16,795 (91 percent) were from effigy incense burners (Proskouriakoff and Temple 1955:327), yet in this huge number there were only 25 faces. Above child burials of Str. Q-208 there were more than 1,800 sherds of censers, some of which were fairly large and many of which were covered with bright paint. Only 6 faces were recognizable, but these had been broken into some 30 sherds. Counts of 9 feet and 10 arms agree fairly closely with the tally of 6 faces (J.E.S. Thompson 1954:78). Even though breakage would be inevitable because of the nature of the pottery and the many projecting and appliqué elements, it was clear that these effigy censers had not been complete when they had been strewn over the children's graves, and the same appears to be true of many large deposits of these sherds. Again, Lot C-32 from Str. Q-82 produced 8,300 sherds, 80 percent of which were from censers, and 96 per cent of all sherds above the latest floors were of censers (Shook 1954:267).

It has been suggested that these deposits of large numbers of sherds of effigy censers might be connected with the renewal of the idols of clay and the braziers which Landa (Tozzer 1941:161) says fell in either the month *Ch'en* or *Yax*. It appears highly probable, however, that the renovation ceremony was connected with the start of the 260-day almanac on 1 Imix, which chanced to fall on 18 Yax in Landa's

specimen year. The interval between renovations of the vessels is irrelevant, but the fact that a renewal rite of the effigy censers has survived to the present day among the Lacandon (Tozzer 1907:105-147) is significant.

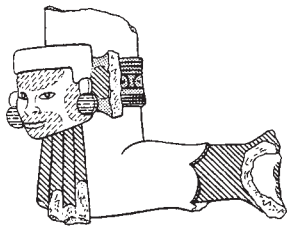
CHRONOLOGICAL AND GEOGRAPHICAL PLACEMENT

The highly standardized type of effigy incense burner discussed in this paper made its appearance late in the occupation of Mayapán and seems to have attained great popularity in a short time. Indeed, the presence or absence of its sherds is an important factor in dating a deposit.

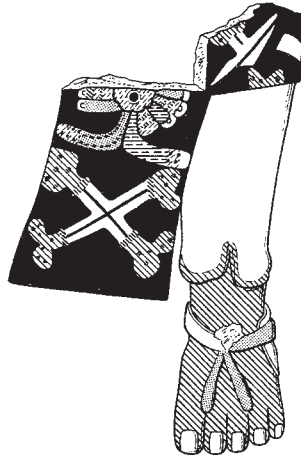
Effigy incense burners of very similar type occur with considerable frequency on the east coast of the peninsula (Gann 1918, Pl. 2), apparently from near the northeast tip southward as far as the north end of New River Lagoon in British Honduras, this southern boundary perhaps corresponding approximately with that of the ancient province of Chetumal. Everywhere the vessels are surface finds, and usually appear on the summits of pyramids.

Incense burners of this same type are reported to occur on the surface at Chichén Itzá, particularly in the area of the Caracol, the Monjas, and the Red House, and to represent a reoccupation of the site in late times. Specimens of this type, painted the same bright colors, were with burials in the pyramid of the High Priest's Grave, and fragments of others were scattered on the floor of the sanctuary (E. H. Thompson 1938:43; Figs. 4b, 20, 21, 27; Fig. 16i, probably shows a piece broken off the headdress of an effigy figure). As the pottery associated with these burials includes Mayapán Redware, the late appearance of this effigy incense burner at Chichén Itzá is amply confirmed. Strangely enough, fragments of these vessels do not seem to have been dredged from the cenote, although numerous vessels of Mayapán ware holding copal were brought up.

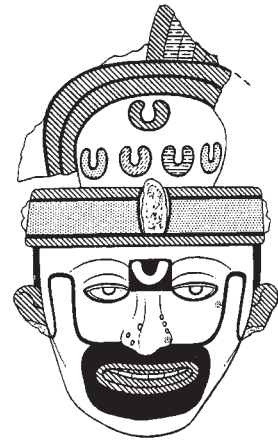
Effigy incense burners of the same general type, though not so close stylistically, appear also along the west coast of the peninsula, but their distribution is not well known. In Campeche and as far as Los Tuxtlas are found effigy censers of types resembling to a lesser degree those of Mayapán; there is for the most part no information on their chronological



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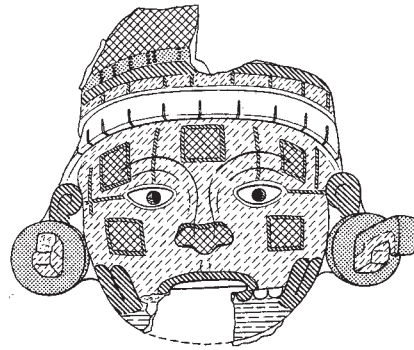
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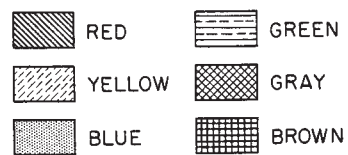
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placement, although in Tabasco, where alone intensive digging has been fully recorded, they occur on late time levels, as would be expected (Berlin 1956).

IDENTIFICATION OF DEITIES

Inasmuch as certain personages on the censers are readily recognizable as specific deities, their identification encourages the assumption that the figure on each of these effigy censers represents a definite member of the Mayapán pantheon. It is known that similarly each Lacandon effigy brazier represents a definite god (Tozzer 1907:89). If, then, we can identify deities whose features are modeled on these censers, we may be able to increase our knowledge of the effects of Mexican influences and the life of a militaristic center on Maya religion.

ITZAMNA, THE OLD GOD

Several portraits of gods on incense burners clearly represent the deity to whom Schellhas (1904:22–23) assigned the letter D, and whom Seler (1887) and subsequently Fewkes (1895) identify as *Itzamna*. I believe most modern authors accept that identification, although Gates (1931) considered God B to correspond to *Itzamna*. The nature of the god is complex. Both in the codices and in the literature where he is referred to at times as *Kinich Ahau Itzamna*, he is merged with the sun god, but he also has nonsolar aspects.

The representations of this god on incense burners (Figs. 40.3d,e; 40.4a,b) show the following characteristics: (1) The mouth is toothless except for a single worn molar in each corner. (2) An oval area around the mouth which includes the upper lip and chin is painted gold (red in one specimen) and outlined in black. As is usual with all effigies on censers, the lips are red. (3) Cheekbones are very prominent, presumably to add emphasis to the appearance of old age conveyed by sunken eyes. (4) Sometimes a groove curves from the nostrils around the eyes to accentuate the portraiture of advanced age. (5) The nose is markedly Hebraic, and there is a round projection over the bridge. (6) Eyebrows and eyelids are prominent, presumably to give a sunken appearance to the eyes. The upper orbital area is usually golden. (7) A white scroll with two pendent circles under each eye appears to be characteristic; but the white paint is fugitive, and the scroll, which may carry simple outlining in black, is not easily seen in all examples.

All the physical characteristics noted above are recognizable in examples of God D in the Maya codices, although the line marking the change of

color around the mouth (not to be confused with the time furrows on each side of the mouth) is not always distinguishable. Nevertheless, in the portrait of God D on page 7b and c of Codex Dresden, the areas of yellow paint around the chin are clearly visible. God D is usually shown as toothless in Codex Dresden, but in Codex Madrid and very occasionally in Codex Dresden (e.g., p. 9a) there is one tooth in the corner of the mouth. The presence or absence of a single molar is of little consequence, however, as any dentist would agree.

On the murals of Santa Rita, British Honduras (Gann 1900, Pl. 30), God D, as lord of Tun 11 Ahau, conforms to the type already described. His mouth is toothless, but the area around it is yellow, although with a small red design imprinted on it. He appears also on murals at Tulum (Lothrop 1924, Pl. 6) with the same features, but again the mouth is toothless.

God D is represented by one complete incense burner (Fig. 40.3d,e), now in the Museo Nacional de Antropología, Mexico, and eight complete or incomplete heads from incense burners (Fig. 40.4a,b).

The complete figure was found with others in the shrine room of the colonnaded structure Q-81 (Lot C-72; Winters 1955). This, as well as the eight heads, retains facial painting. It has a blue face with yellow around the mouth and on the chin. Three (A-188, two of A-190) of the eight faces are red with yellow oral circles, and another (C-60) probably belongs in the same group; the face is painted red, but the mouth and chin are lacking. Two faces (A-188, A-190) are blue with a yellow area around the mouth and on the chin; another (C-72) is white with the same yellow oral area. Finally, one (A-190) has gray facial painting with red around the chin and mouth and three curved lines apparently representing furrows of age on each lower cheek.

These color variations surely conform to the system of world directional coloring that we find in the Maya codices, in the books of Chilam Balam, and in the Ritual of the Bacabs. Indeed, in the last work there is mention of the *Red Itzamna*, the *White Itzamna*, and the *Yellow Itzamna* (information of R. L. Roys). The God D on the murals of Santa Rita has blue features with golden chin. God D appears painted black several times in Codex Dresden, and glyphs of God D with red and green affixes are found, although rarely, in the codices. The four heads in Lot A-190 are colored, respectively, red (two), blue, gray, and, therefore, do not directly indicate a world directional and color ritual, but there may have been others in the lot to complete the color series.

The headdress of the complete example consists of a closefitting round skull cap tied with a large,



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40.3. Effigy Incense Burners.

a,b. Perhaps Quetzalcoatl (C-72). Height 68 cm. c. God E, the maize god (C-72). Height 68 cm. d. God D, Itzamna (C-72). Height 62 cm. e. Painting of d. f. God B, Chac, the rain god (C-72). Height 55.5 cm.



a



b



c



d



e



f



g



h



i



j



k

40.4. Heads from Incense Burners.

a,b. God D, Itzamna (A-190). c,d. God A, the death god (A-413, C-32). e,f. Old god with cleft chin (C-93b). g. Xipe (A-110). h,i. Merchant god (A-570, A-180). j. Tlazolteotl (A-182, A-188). k. Unidentified deity. Red stripes on white (D-45).

decorative band, from which rises the funnel that seems to occur with all effigy figures from incensarios (Fig. 40.3d,e). Incomplete headdresses attached to five of the heads are all of this close-fitting cap type. In two, the cap was held in position by a band decoratively tied in front; one has a design of appliqué circles; another has a pattern in appliqué of small circles attached to the perimeter of a larger one (Fig. 40.4a,b).

The painting of God D at Santa Rita shows the same funnel element, but it rises from a bird, not from a cap. The closefitting cap held in place by a band appears to be rare in Maya art. Among the sculptures of the Temple of the Warriors at Chichén Itzá are one or two examples of a sort of kerchief held by a band, and similar caps appear frequently in Codices Laud and Fejervary-Mayer, but no significance could be attached to them without an exhaustive investigation of types of headgear and their distribution in Middle America.

The complete effigy figure (Fig. 40.3d,e) has a pouch dangling from its left arm, and the two hands support a cone-shaped object which may represent a loaf of copal but which also resembles an architectural device, the significance of which is not certain.

CHAC, THE LONG-NOSED GOD

The long-nosed gods, to whom Schellhas assigned the letter B, and who are so frequently portrayed in Maya art, are generally identified as the *Chacs*, the rain gods of Yucatán, the Maya equivalents of the *Tlalocs* of Central Mexico and the *Cocijos* of Oaxaca. This identification is not open to serious question.

Among the effigy incensarios from Mayapán are one complete vessel of *Chac* (C-72) now in the Museo Nacional de Antropología, Mexico, and six heads, some of which are extremely fragmentary (A-109, A-181, A-189, A-190 [two], and C-51). They show (Figs. 40.1a–d, 40.3f) the following characteristics: (1) A long pendulous “trunk” extending downward from the nose over the upper lip. Although it is missing from all the heads but that of the complete effigy, its former presence is indicated by breaks on the surface of the nose, except for one head that completely lacks the nose. (2) A white scroll with pendent circlelets beneath the eyes, similar to that of God D, is usually but not invariably present. (3) A fang at each corner of the mouth is almost certainly a characteristic, but as the fangs were appliquéed they easily broke or dropped off. The complete effigy has both fangs, and the head from Lot A-51 retains one. Cache pots with heads of God B commonly have both fangs, but they may be painted, not appliquéed. (4) Normal teeth, usually four, are between the fangs. (5)

Oval areas around the eyes are usually painted a different color, green predominates, than the face, producing the effect of goggles. One half of the face may be of a different color from the other, the line of demarcation passing vertically down the nose and “trunk.” The colors blue and green, which throughout Middle America are associated with water, predominate.

The left side of the face of the complete effigy is painted blue; the right side, red. The same color division appears on one head of Lot A-190, but is complicated by other coloring around eyes and mouth (Fig. 40.1b). Two heads (A-109, A-189; Fig. 40.1a) are blue with green around the eyes and mouth. Another from Lot A-190 is blue with gold around the mouth (Fig. 40.1c). A fragmentary head from Lot A-181 (Fig. 40.1d) seems to have had the left side of its face painted red and blue; the right side is black with a red-white-and-black diagonal extending from temple to upper lip.

The complete effigy has a snake or alligator head for its headdress. The same arrangement is found on an effigy censer of *Chac* from Chetumal (G. E. Smith 1927). One fragmentary head (Fig. 40.1a) has a close-fitting cap with a band around it and a bow tie in front, as already noted in the discussion of the *Itzamna* effigies; a second incomplete head may have a headdress of the same type (Fig. 40.1c); the remainder lack headgear.

The complete effigy has a small vessel in its right hand and what is probably a ball of flaming copal in its left. One is reminded that the *Chacs* carried water in jars or gourds, and caused rain by pouring it on the earth. The *Tlalocs* frequently appear with small vessels in their hands, from which they are often pictured as pouring water (e.g., Codex Borgia, p. 28). On Dresden page 37c, God B is depicted squatting in the rain with his jar on his back; on Madrid page 9 he holds the mouth of the vessel downward, allowing the water to flow out.

The long-nosed god appears on a number of vessels other than effigy censers. A fine one (C-72) carries a figure of God B in diving position (Winters 1955, Fig. 30,p). The typical features are clearly depicted. The face is orange except for a green oval around the mouth and green eyelids. The hands are red.

Three or four small cache pots carry faces of God B in relief. One face (A-580; A. L. Smith and Ruppert 1956, Fig. 80,p) was painted green after firing except for the white scrolls under the eyes. The accentuated upper orbital areas produce an effect reminiscent of portraits of *Tlalocs*. Another (C-96b) is turquoise. These faces have the typical proboscis of God B, and display tusks or fangs in the corners of the mouth.

Masks of God B painted on the walls of the Temple of the Warriors at Chichén Itzá (Morris, Charlot, and Morris 1931, Pls. 133, 157b) combine green and blue with a yellow area around mouth and chin. God B is not among the gods whose portraits have survived on the Santa Rita murals.

GODS OF MERCHANTS

Four heads from censers are reviewed together under this heading, and a figure from a cache pot is brought into the discussion. All four heads have peculiar decorative areas around the eyes.

Three of the faces (A-570, two; A-180; Figs. 40.1e,h; 40.4h,i) and the one from the cache vessel (A-416; Fig. 40.1g) have the area around the left eye gold, and that around the right eye turquoise color. One face from Lot A-570 is black; the others are red. Both eyes of C-72 are green with outlining in yellow. This change in color in the circumorbital area may have resulted from the switch in color of the face to blue.

Two of the faces (A-570, A-180) have straight long noses which project horizontally, a type that I term the Pinocchio nose (Fig. 40.4h,i). The nose of the cache pot is missing, but the break strongly suggests that it was of the same unusual form. Jaguar “whiskers,” tusks, beard, and bird headdress are also of importance in this group. The distribution of these traits is best expressed in tabular form (see Table 40.1).

A-180 and C-72 have tusks in the corners of their mouths; A-570 (black) has two stumps which may represent molars or perhaps broken tusks; A-416, A-570 (red), and A-180 have projecting lower lips of inordinate size (Figs. 40.1g; 40.4h,i).

In reviewing the identity of this group of heads one is instantly reminded of Schellhas’ God M, who often has the same peculiarly shaped marking around the eyes and who typically has the Pinocchio nose and the projecting lower lip. In the codices, however, God M is almost invariably painted black except for the red area around the mouth. Markings around the eyes, if they are present, are white. There is a single exception, for on Madrid page 15b God M is white with the area around the mouth red and that around the visible eye blue.

God M is generally recognized to be *Ekchuah*, a god of merchants and travelers. In a previous paper (J.E.S. Thompson 1950:76) I stated my belief that God M was primarily a god of hunting, comparable in functions to *Mixcoatl*, the hunting god of Central Mexico. Perhaps the two concepts are reconcilable. From Sahagun (1938 and 1950, Bk. 1, Ch. 19) we gather that there were six deities of travelers in Mexico: *Yacapecutli*, also called *Hacacoliuhqui*, who was the chief; *Nacxitl*, who was *Quetzalcoatl*; *Yacapitzauac*, “he with the pointed nose”; *Acxomocuil*, whom Seler believed to be merely *Tezcatlipoca* under another name; *Cochimetl*; and *Chalmecaciuatl*, “the Chalmeca woman,” who appears to be a manifestation of the goddess *Tlazolteotl*.

One of the merchant gods then was called “he with the pointed nose.” Torquemada (1723, Bk. 6, Ch. 28) says the name means “he with the aquiline nose,” a term, he adds, for a sharp or clever person. Groups of traveling gods, usually with pack and staff, appear in various codices. On Codex Fejervary-Mayer pages 36 and 37, an aged god with Pinocchio nose and a fringe beard is among the travelers. In one picture he strides forward beneath the burden of his pack; in the other he carries with him the crossroads symbol. His body is half red, half blue, but his chin and the area around his mouth are white.

This same deity, again with his body painted half red, half blue, and again with Pinocchio nose and a fringe beard, is depicted on the murals of Santa Rita, British Honduras (Gann 1900, Pl. 31). The area around his mouth is painted yellow with red markings, not white as in Codex Fejervary-Mayer, and although, like the figures in that codex, he lacks the drooping lower lip, he does resemble the examples of God M in the Maya codices in wearing on his head a plaited tumpline. The area around his eye is painted blue, but in a step pattern, not the horseshoe shape of God M. With one hand he beats a drum; with the other he shakes a rattle. Opposite him another deity holds two trophy heads, one of which is that of this same deity. The face is red and blue, the nose is of the Pinocchio type, and there is a possible, but dubious, tumpline headdress. However, the extreme prominence of the projecting lower lip links the various heads just discussed, representations of God M

Table 40.1.

Lot	Face	Orbits	Nose	Whiskers	Beard	Bird Headdress
A-180	Red	Blue/Gold	Pinocchio	Yes	Yes	Yes (damaged)
A-570	Red	Blue/Gold	Pinocchio	Yes	Yes?	Gone
A-570	Black	Blue/Gold	Normal	No	No	No
C-72	Green	Green	Normal	Yes	Yes?	Yes
A-416	Red	Blue/Gold	Pinocchio	No	No	No

in the codices, and the group of figures from incense burners under discussion.

Although the evidence is not sufficient for a categorical assertion, the assumption seems reasonable that the four incense burners portray three of a group of perhaps six gods of merchants and travelers who are associated with world colors and directions, namely the red, black, and blue gods of merchants.

Interestingly enough, this same group of deities is surely represented in stone and pottery in the highlands of Guatemala. A. L. Smith and Kidder (1951:44, Figs. 53a, 89, 90), who have assembled material on the subject, note that the datable examples are post-Classic. One of the pottery heads and all the stone heads have a vertical groove at the back. It is known that the Nahuatl merchants regarded their staves as images of the merchant god *Yacatecutli*, and that at the end of a day's journey they offered blood and incense to the bundle of their staves which they set up in their camp (Sahagun 1938, Bk. 1, Ch. 19). This vertical groove at the back may have served to secure the heads to staves. Other heads are at the ends of pottery handles of the kind attached to brazier pans; it may reasonably be supposed that such braziers were used in the worship of the god with the pointed nose.

This deity or group of deities was worshipped over a large area, and the cult was presumably spread by merchants, perhaps in post-Classic times. From archaeological evidence alone, Mayapán would hardly be regarded as an important trading center, but trade is known to have been brisk in Yucatán at the time of the arrival of the Spaniards, when conditions were far less stable than they had been when Mayapán dominated a large area. Accordingly, it may be supposed that there was an active cult of the gods of merchants in Mayapán, that the cult was probably of Mexican origin, and that the portraits on incense burners are of *Yacatecutli* and his fellow patrons of trading. What connections there may be with cacao, the god of which was also a patron of merchants among the Maya, is not clear. The reason for the association of cacao and merchants is, of course, that cacao beans were the common currency of Middle America.

Unfortunately, the proveniences of these pieces do not point to any possible residence or temple of the merchant class.

WHISKERED GODS

Several heads resemble the figures of the supposed gods of merchants in their possession of cat whiskers and beard. One (A-114; Fig. 40.1i), painted red with yellow whiskers and beard, has a tusk at each

corner of the mouth; another (C-12) is also red, but the whiskers have lost their color and the beard is missing. A trace of color on the chin seems to have been yellow, but there are also traces of black, perhaps fire marks. Fangs, if once present, have become detached. A third face (C-72; Fig. 40.1j) is yellow with a black area around the eyes. The whiskers seem also to have been yellow. The beard is missing, but the place where it broke off can be seen plainly, and a break in the corner of the mouth is almost certain evidence that tusks were originally present. A fourth, somewhat fragmentary head, also from Lot C-72, belongs to this group. The face is green save for a horizontal yellow band across the eyes, which are represented by holes. The start of the cat whiskers is visible, but mouth and chin are missing. Except for the hollow eye sockets, the features are those of a normal person not passed maturity.

All four of these heads, like those of the supposed gods of merchants, wear handsome bird helmets. A deity with cat whiskers and beard, wearing a bird headdress, and with a second bird mask at his waist appears on the murals of Santa Rita as patron of Tun 6 Ahau (Gann 1900, Pl. 30). Presumably he represents the same deity as these Mayapán heads, although the facial markings are somewhat different.

Five other heads from incense burners appear to belong to this group, but all are fragmentary or lack color. One small complete head (A-539) has golden whiskers and beard, but the facial color has gone. There are two buttons in the center of the forehead. The mouth is devoid of tusks. The headdress is a close-fitting cap with a sort of comb on top.

Two fragmentary faces, painted red (C-8, C-51), had whiskers which were golden on one but no paint remains on the other. The beard is missing from both. The head from Lot C-8 retains a fang in each corner of the mouth, and there are slight traces of turquoise paint on the chin. Incomplete heads from Lots C-39 and C-51 have whiskers, and the former shows where the beard broke off. None of these last four retains any headdress.

The presence of whiskers and beard usually denotes a connection with the jaguar. With the addition of a line under the eyes and twisted over the bridge of the nose, this bewhiskered face becomes that of the god of the number seven, an aspect of the jaguar god of the interior of the earth; with solar features, it becomes that of the night sun.

XIPE TOTEC

Xipe Totec, a Mexican god of vegetation characterized by the rite in his honor in which his impersonators wore the skins of the victims who during his

festival were killed in gladiatorial fights, had not previously been reported in Yucatán. Landa (Tozzer 1941:119–120) noted the wearing of flayed human skins in Maya ceremonies, but as this was an element in the worship of other Mexican deities, it was not certain that such practices referred to a *Xipe* cult. Among the incensario effigy heads, however, are several that clearly represent *Xipe Totec*. Five of the six whole or fragmentary heads of *Xipe* found at Mayapán were with Lot A-110 (Fig. 40.4g), and have previously been identified as representing *Xipe* (J.E.S. Thompson 1954:78). Re-examination of the material brought to light a small fragment showing part of the very distinctive eye of *Xipe Totec*. A sixth *Xipe* head was with Lot A-209 (Proskouriakoff and Temple 1955, Fig. 221).

The characteristics of the *Xipe Totec* heads at Mayapán are: (1) The face is a light yellow or cream color, which represents the mask of human skin covering the god's face. (2) The eyes, with eyelids almost closed, appear as crescentic slits. The edges of the lids are painted red, and in one example the surface of each eyelid carries half a dozen light vertical strokes of black paint. (3) The red underlip of the god is visible inside the mouth of the mask. This should not be confused with the line inside the upper jaw of most effigy faces, which normally is painted white and represents the teeth of the upper jaw. Except on *Xipe* heads there is no such line inside the lower lip. (4) The nose tends to have a squashed appearance. The A-209 head has a broken tubular (?) insertion, painted green, in the left nostril. Flecks of green paint around the right nostril make it evident that both nostrils were thus decorated. It appears likely that a jade rod was depicted, but a jade bead in each nostril is also a possibility. This is the only nose of well over a hundred examined that shows definite evidence of decoration, although two fragmentary noses may have been so decorated.

With the heads of Lot A-110 were seven arms and six legs sufficiently complete to be identified as belonging to figures of *Xipe*. The wrists and ankles are painted red, the color normally employed to portray the skin of men; they extrude from the sleeves or leggings of the dress of human skin, which are painted white or cream, evidently the way of representing the flayed skin, for it is the color of the skin worn over the face. In Mexican codices this donned skin is shown in varying tones of yellow in contrast to the brownish red of the natural skin. Some of the *Xipe* arms and legs from Mayapán mark the change at wrists and ankles from donned to natural skin merely by the change in color from white to red; others show the skin garment in relief (Fig. 40.2a,b).

Two fragments (A-110) of *Xipe* legs show at about knee level bells painted yellow, presumably to represent gold or burnished copper. One *Xipe* arm has a small head tied to the arm with a turquoise-colored band. The little head is yellow with a white band across the eyes and a curved line, also white, from temple to rear of chin on each side of the face (Fig. 40.2a). This is, of course, one of the diagnostics of *Xipe* on the Mexican plateau and of probably representations of *Xipe* in the Mayan codices (J.E.S. Thompson, 1950:131). The little face, however, does not show other *Xipe* characteristics except perhaps for the presence of red cords dangling from the head, which almost certainly terminated in bells. The facial decoration is close to that of the maize god (Fig. 40.2d), as is understandable, for *Xipe* is also a god of the ripe maize in Central Mexico.

One loincloth, attached to a *Xipe* leg (Fig. 40.2b), carries on a black background two crossed bones below a design reminiscent of the swallowtail emblem so typical of *Xipe Totec* in the art of Anahuac.

One *Xipe* head is joined to the top of the censer receptacle, to which the "wings" or backdrop of the effigy are attached. Red, the color of *Xipe*, predominates in this with wide or narrow red bands on a white or gold background, but there are also areas of blue, each of which carries an up-ended double fret (Fig. 40.4g).

TLAZOLTEOTL

The Mexican goddess called *Tlazolteotl*, *Toci*, or *Teteoinnan* is one of the most important deities of the Mexican pantheon in her role of patroness of the soil and its crops, of weaving, medicine, procreation, and childbirth. There is little reason to doubt that she was once the moon goddess, and she corresponds very closely in her function to *Ixchel*, the Yucatec moon goddess and wife of the sun god (J.E.S. Thompson 1939). In Mexican codices she is commonly shown with a yellow or white face, and with black marking of melted rubber, Sahagun (1938, Bk. 1, Ch. 18) tells us, around her lips and on her chin, and sometimes on her cheeks. Her most prominent insignia is a crescent or u-shaped symbol supposed to have been a nose ornament, but more probably the symbol for cotton, with which, as a goddess of weaving, she was closely associated. This symbol often decorates her skirt (e.g., Codex Borgia, pp. 12, 16, 23, 55, 57, 63), and occasionally appears on her standard (Codex Telleriano-Remensis, p. 13; Codex Bourbon, pp. 34, 36) or on her headdress (Codex Bourbon, p. 13; Borgia, p. 57).

Among the incensario effigy fragments at Mayapán one head definitely represents *Tlazolteotl*, a sec-

ond probably portrays her, and a third may also do so. The first of these (Figs. 40.2c, 40.4j) was with Lots A-182 and A-188. The face is painted white with black around the chin and the mouth; there are black markings around the eyes and a black curvilinear design from ear to ear. In the space between the brow ridges is a small white crescentic area surrounded with black. As far as I know, this position above the bridge of the nose is unusual for the crescentic insignia so characteristic of *Tlazolteotl*. Nevertheless in the goddess' headdress (a position which is not uncommon) are five of these insignia: one is painted red, another yellow, two blue, one green. A splash of green on the cheek shows that the earplug was of that color. The presence of these crescents in conjunction with the white face and black chin makes it certain that this effigy represents the goddess *Tlazolteotl*. The loop at each side of the face is not found on other representations of this goddess.

A second head (A-110) may represent the same goddess. The face, of a youthful type, with straight un-Maya nose, is entirely white except for a gray band around the mouth and bands of the same color under each eye. There is a weathered black patch on the bridge of the nose, but it is not possible to say whether it outlined the crescentic form found there on the other head.

The base of the headdress is painted gray with a single encircling black line, and at the sides, above and behind the ears, the hair is shown by vertical black lines on gray, as on the head of *Tlazolteotl* and on the least one of the *Xipe* heads.

Although the identification of this second head as *Tlazolteotl* is not positive, it is at least a good possibility, perhaps strengthened by the fact that the head was found in the same lot (A-110) as the principal group of heads of *Xipe Totec*, for the two deities share the religious rite of the donning of human skins.

A third head, with Lot C-115, possibly may portray this same goddess (D. E. Thompson, 1955, Fig. 2p). The face is white, with black rings around the mouth and the eyes. There may be black markings elsewhere, but the surface is rubbed. A bird headdress gives the impression that the goddess' face peers forth from the open beak.

The head in Lots A-182 and A-188 is the first definite evidence of an extension of the cult of the goddess *Tlazolteotl* to Yucatán. It would seem that her worshippers must have been Mexican by birth or descent, or wished to ape Mexican ways, for the functions and fields of activity of *Tlazolteotl* and those of the Maya goddess *Ixchel* are so closely related that there would seem to be little reason for establishing the cult of the former were it not for active Mexican influence. It is perhaps worth noting that *Tlazolteotl*

was one of the six deities worshipped by merchants and travelers among the peoples who used Codices Laud, Fejervary-Mayer, and Borgia, and perhaps under the name *Chalmecaciuatl* among the Aztec and related peoples of the Valley of Mexico.

The worship of the goddess may therefore have been introduced to Yucatán as part of a cult of merchants and travelers, rather than as an attempt to bring in a new mother goddess to replace *Ixchel* of the native Maya. It may also be of significance that the cult of *Tlazolteotl* in all probability originated in Veracruz, and so, although the cult spread to the Mexican plateau, it may have been carried directly from Veracruz to Yucatán and not have traveled indirectly via Tula.

THE MAIZE GOD

One full-figure incense burner from Lot C-72 (Winters 1955, Fig. 3c,d) conceivably represents the maize god (Figs. 40.2d, 40.3c). The youthful face is yellow with red areas that curve across each side of the face and include the eyes. The pattern resembles, but is not quite the same as, the facial painting of God E, the maize god, which normally shows, as here, a vertical stripe of the same color from forehead to tip of nose, where it expands into a circle around the mouth (cf. Codex Dresden, p. 50). In some of the pictures of God E in the codices, areas between cheek bone and ear seem to correspond to those on the face under discussion. In Mexican codices the maize god is commonly painted yellow. The god on the censer holds in his right hand a ball from which rises an element resembling the conventionalized representations both of flames and of leaves of a maize plant. The ball could represent either copal or maize dough, according to the identification of the element rising from it. Naturally, if the deity is, indeed, the maize god, it is more logical to see in this element a ball of maize dough with its identifying maize sign.

POSSIBLE VENUS GOD

One head (C-8, Fig. 40.2e; Adams 1953, Fig. 10a) may represent one of the gods of the planet Venus. The face of this youthful deity is golden, and on the upper part are six gray rectangles outlined with red. On the lower part of the face are painted two jawbones, pale green with red rami and white teeth. Green seems to be the color associated with death in the representational art of Mayapán.

In the Mexican Codex Bologna, *Tlauizcalpantecutli*, the Venus god as morning star, is represented with fleshless lower jaw, surely to denote that as lord of the dawn he has just emerged from the under-

world, and the same seems to be true of the representations of Venus in Codex Borgia.

In Codex Vatican B, *Tlauizcalpantecutli* is presented with gray skin, and on the dark gray surface of the face are painted a number of white disks. In profile, half a dozen of them are visible; full face there might be more, or the design may be distorted to show in profile the number normally visible in full face. In Codex Fejervary-Mayer (p. 25) the Venus god has a striped brown and white profile with five white disks, whereas in Codex Borgia (p. 16) a dark gray profile of the god carries only four white disks. In Codex Magliabecchi (p. 53) there is a god who is surely *Tlauizcalpantecutli*, although he is labeled *Mictlantecutli*, the death god. His face is painted red with seven yellow spots (five are visible): one on each temple and each side of the jaw, one on the chin, the point of the nose, and the forehead. The connection between Venus as morning star and the death god is well known (J.E.S. Thompson 1950:299).

The portrait on the Mayapán incense burner has hook-shaped rods projecting from the circular earplugs. Except that they project horizontally instead of hanging vertically, these rods closely resemble the hooked shell ear pendants which are among the insignia of *Quetzalcoatl*, whose connection with the planet Venus is well known. Representations of *Tlauizcalpantecutli* do not carry the insignia of *Quetzalcoatl*, however. Maya representations of the god of the planet Venus do not have disks on their faces, as this face has, nor are they commonly decked with the bared jawbone, the most prominent symbol of death. If, then, this face is that of the Venus god, it is a Mexican, not a Maya, manifestation of the god, but the identification must be regarded as open to question.

QUETZALCOATL-KUKULCAN?

A complete incense burner (C-72) from the shrine of Str. Q-81 may represent *Kukulcan*, for he wears the section of conch shell, "the spiral wind jewel" to translate its Nahuatl name, which is one of the attributes of *Quetzalcoatl* (Fig. 40.3a,b). This ornament is colored turquoise and outlined in gold. The youthful face appears originally to have been red all over, but there may have been yellow areas, though neither is the usual face painting for *Quetzalcoatl*. Winters (1955:387) points out that the well modeled face is so like those of two other deities in the same deposit that all three might have come from the same mold. It is enclosed in the jaws of an animal that Winters identified as a puma, whereas *Quetzalcoatl* most frequently wears the high peaked "Huastec" cap, shaped like the old fashioned dunce's cap, of jaguar skin. From

circular turquoise-colored earplugs project L-shaped rods painted turquoise and red. They are horizontal, with the lower arm of the L pointing downward. The resemblance to the hook-shaped ear pendants of shell generally worn by *Quetzalcoatl* is not marked. Moreover, this type of pendant is worn by several deities at Mayapán. The god wears a straight-ended loincloth, white with simple red design, and he holds in each hand a ball painted yellow.

Of the six most characteristic insignia of *Quetzalcoatl*, the peaked cap, the loincloth with rounded ends, the yellow-and-black or red-and-black face painting, the penitential bone dagger, the hook-shaped shell ear pendants, and the "spiral wind jewel," only the last is represented on this figure. Moreover, there is some evidence that this conch-shell ornament is worn also by other deities. The identification of this figure as *Quetzalcoatl-Kukulcan* must therefore be accepted with great reserve.

A second head, a duplicate of the one just discussed except for a knoblike element above the bridge of the nose, was with Lot C-III. It also is set in the open mouth of a puma or a related animal. The puma jaws are red, but the snout and the surviving ear of the puma headdress are golden.

THE DEATH GOD

One complete head (A-413) and three fragmentary heads of medium size (C-32) represent the death god (Fig. 40.4c,d). The characteristics are: (1) The lips or the upper lip only are omitted so as to reveal the teeth, or the teeth are modeled on the lips. One of the four death's-heads lacks this feature; it has normal lips. (2) The nose is shown without flesh. Usually this feature has been conventionalized as a bold relief in the form of an inverted V. This treatment seems to be Mexican rather than Maya. (3) The eyes are replaced by fleshless sockets made by cutting away the clay to leave round or rectangular openings. In one head the orbits are only hollowed.

Three of the faces are painted green, although the areas that still retain color are not sufficiently large to establish beyond question that the whole face was green; the fourth face no longer has any color. The nasal area is painted red on the three faces that show green; the one face without prominent teeth has the gums painted red.

The only headdress attached to a death's-head (Fig. 40.4c) has two small skulls set in its band. They are so conventionalized that they show only an inverted V and slightly hollowed orbital depressions. Above the band the funnel-shaped top carries vertical bands of green and narrower bands of red separated by black lines.

Rarely, fragments of heads show one side treated naturalistically whereas the other half displays the features of a skull. Thus, one half of the mouth has normal lips; the other half has the teeth set in the fleshless bones of the jaw. Such life-and-death representations are not uncommon in the art of Middle America (e.g., the figures with one half of the body that of *Eecatl* and the other half that of the death god in Codices Vatican B and Borgia). Gods of mixed features are discussed by Seler (1902–1923:3:450–455). The motive and, presumably, the religious conception that inspired it appear to be Mexican rather than Maya, and so these fragments may also represent another foreign cult brought to Mayapán.

OLD DEITY WITH CLEFT CHIN

Three heads, two small (C-93b, C-107) and one fragmentary, have in common a deep vertical cleft in the center of the chin (Fig. 40.4e,f). The features are those of an old man, with prominent cheek bones, Hebraic nose, some prominent eyelids, and a mouth drooping at the corners or with a furrow on each side, but it is not possible to identify the deity the potter wished to depict. The heads may portray God D, or, perhaps, *Mam*.

VARIOUS UNIDENTIFIED GODS

One head from Lot A-177 (Fig. 40.2g) has unusual markings. The features, those of a youthful person with a naturalistic nose of “European” type, are painted brown except for an irregular area on the cheek and around the eye that is a greenish blue on the left side and yellow on the right. I have not been able to find any deity in Maya or Mexican sources with these facial markings.

A youthful head, smaller than most heads from effigy censers, was with Lot C-93 (Fig. 40.2h). There are blue squares on nose and chin, and red circles on each cheek. The eyelids are prominent. This deity also I have failed to identify.

Yet another unidentified portrait was with Lot D-29 (Fig. 40.2f). This youthful face is white, but has narrow red stripes on forehead, cheeks, nose and chin; the lips have their normal color, and the mouth is circled with red.

A small fragmentary face (only the right half survives) from Lot A-181 is unusual. The color is red. From the inner corner of the eye is suspended a grecque, turquoise with black outlining, which occupies most of the cheek, and terminates below the outer corner of the eye. A square of the same color is on the temple.

Three faces (C-60, A-114, A-178 [fragmentary]) are white except for red lips. The fragmentary piece has a touch of red on the temple, but that may have got there when the ears were painted their normal red color. One (A-114) is in the jaws of an alligator, which are painted white and trimmed with red and gold (Ruppert and Smith 1954, Fig. 40.7c,d).

Another youthful face (C-8) has lost much of the color, but has patches of green above and below each eye and on each side of the tip of the nose, and a touch of black in front of the right ear.

A youthful face from Lot C-11 has seven areas painted blue, outlined in red (Fig. 40.2i). Undecorated parts of the face appear to have been white. The head is set in the open jaws of a leaf-nosed bat, identifiable by the upturned snout, with canines in upper and lower jaws. The eyes are represented as small buttons.

A GODDESS

A damaged incense burner with Lot C-68 appears to represent a goddess, for the figure wears a skirt and the body is yellow. Both skirt and yellow body color are characteristic of priests as well as of women (Morris, Charlot, and Morris 1931:1:274), and in Mexican codices goddesses are commonly painted yellow; but as it is to be supposed that these figures portray gods and not priests or god impersonators, the conclusion that this figure represents a goddess is difficult to gainsay. Unfortunately, half the face is missing. What remains is, like the body, yellow, but there is a rectangular turquoise patch on the chin. The round earplugs are green, and from them long rods depended (one is missing).

The goddess wears a blue skirt with red, gold, and white bands at the bottom. A piece of twisted blue cord hangs down in front; it is probably attached to the plain blue belt that holds up the skirt. The goddess wears a sort of collar or breast ornament painted white, a yellowish brown, red, and green. Cuffs are banded red, green, and white.

Little is known about the attributes of Maya goddesses. Various Mexican goddesses of rain and of the soil wear blue skirts. *Chalchihuitlicue*, whose name means jade skirt, is more often dressed in blue than in green, and the name of her Tlaxcalan counterpart, *Matlalcue*, means blue skirt.

Whether these mountain and rain goddesses were worshipped in Yucatán is not certain, but in view of the cults of *Xipe* and *Tlazolteotl* at Mayapán and of *Ixtlilton* at Santa Rita, it is reasonable that *Chalchihuitlicue* should be worshipped at Mayapán. Whether this figure represents the goddess is another matter.

INFERENCES

Of the faces from effigy censers, 65 were reasonably well preserved and possessed sufficiently distinctive traits to warrant closer study. Frequencies of the principal identified gods are: God D, *Itzamna*, 9; the long-nosed god, *Chac*, 7; *Xipe*, 7; merchant gods, 4; other whiskered gods 9; death god, 4; *Tlazolteotl*, 3; and god with cleft chin, 3.

Of the total, 32 come from deposits in structures classified temporarily as ceremonial; 31 are from structures similarly classified as residential; 2 are from deposits in cenotes. It should not be forgotten that this distinction between ceremonial and domestic structures is largely vitiated by the fact that many residences have a shrine in which effigy censers were housed, either in one of the rooms of the building itself or in a detached structure, conforming to a pattern that still persists in much of the Maya area (D. E. Thompson and J.E.S. Thompson 1955:237–242). Many fragments of effigy censers were also scattered over burials and burial cysts below the floors of residences. As a further complication, it should be remembered that ceremonial buildings include such diverse structures as temple and colonnaded hall which probably served distinct purposes, and that in the category of residential buildings are included those that sheltered noble and commoner, whose religious cults may have varied considerably. Accordingly, it is dangerous to place much reliance on the distribution of the limited material at our disposal; any attempt to match a particular god with a certain type of structure would be meaningless if not highly misleading.

Of the deities identified with certainty or tentatively, five are believed to be of non-Maya origin: *Xipe*, *Tlazolteotl*, *Quetzalcoatl*, a Venus god, and a god or group of gods of merchants. To these should perhaps be added the deity whose face is divided vertically so that one half is naturalistic and the other half shows the features of a skull.

Bearing in mind the need for caution in matching deity with residence, we may note that all examples of *Xipe* come from two residences believed to be of the nobility, Strs. Q-208 and R-86, and that the one certain figure of *Tlazolteotl* and one of the two possible representations of the goddess come from the same two important residences. This may be significant, for in Mexican religious ceremony the cults of the two deities, both of whom are associated with the flaying ceremony, are related. The other possible representation of *Tlazolteotl* (C-115) comes from Str. H-17a at *Itzmal Ch'en*. The limited material, as far as it goes, does suggest that the cults of *Xipe* and *Tlazolteotl* may have been primarily the interest of

leading families who presumably wished to preserve their Mexican connections.

Chac (God B) is the most important deity in the Maya pantheon, and appears more frequently in the Maya codices than any other deity. Schellhas (1904:46) counts 218 appearances of God B in the codices, with God D, portrayed 103 times, as the runner-up. Yet at Mayapán only 7 faces of *Chac* were found. This is only a little more than 10 per cent of the total, a marked contrast to the percentage in Codex Dresden, in the pages of which God B appears 141 times, approximately 53 per cent of the total number of pictures of male deities.

Of 84 noses of incense effigies, 50 of which were from structures classified as ceremonial, only 4 (approximately 5 percent) showed the trunk-like appendage of *Chac* or indicated by a break of the surface that it had once been there. All 4 of these noses of *Chac* probably come from residential groups. (My recollection is that they definitely came from structures classified as residential, but my note on the count made in Merida is self-contradictory on that point. Hence the use of the word "probably.") On the other hand, some dedicatory cache pots, small receptacles for offerings placed in altars or under the floors of buildings, are decorated with the features of God B, but it is hard to believe that here the features of God B are anything more than decorative.

The scarcity of representations of *Chac* on effigy incensarios, perhaps more marked because one would expect effigy censers for his cult to be used in sets of four since there were four *Chacs* corresponding to each of the four world quarters and its color, may reflect the position of Mayapán as a political capital and urban center. The *Chacs*, as gods of the rain, are still worshipped by the Maya farmers of nearby Telchaquillo, but their favors must have been of less interest to the ruling class in urban Mayapán who had long before beaten their plowshares into swords, and who gained their daily bread by the sweat of others. Naturally, a good maize crop was of importance to the economy of the area Mayapán ruled, but perhaps a citizen of Mayapán might trust largely to the fervor of peasants to achieve this while he gave his attention to placating deities of war and sacrifice or of trade who controlled affairs of direct interest to him. God B seems to have had a higher status in Mexican Chichén Itzá, at least in the earlier part of that period when the Temple of the Chac Mool was decorated.

The second most important Maya deity, *Itzamna* or God D, is represented by nine complete or incomplete figures from effigy censers. The inclusion of two or three portraits of old men which might represent aberrant forms of *Itzamna* would increase the

percentage. Itzamna, as an all-powerful god, looms large in Spanish accounts of Maya religion, but he is of far less importance than God B in the Maya divinatory almanacs, and, to judge from the fact that his name is unknown to the present-day Maya of the peninsula of Yucatán, his cult was probably popular among the nobility but not among the peasants. It is, therefore, not surprising that there should be a relatively large number of effigies of this god at Mayapán, where lived not only a Mexican Maya ruling group but also representatives of the ruling groups of all the provinces, some of whom, one supposes, had kept to the old ways.

With due caution in view of the scarcity of the comparative material, we may note that of the surviving effigy figures from southeastern Quintana Roo collected by Gann, one now in the Liverpool Free Museums (G. E. Smith 1927, Fig. 7), represents God B, a second from Mound 22 in the Chetumal Bay area represents *Itzamna*, and a third from the nearby Mound 24 is a portrait of the Whiskered God. It is also of interest to note ears of maize set in the headdress of one of the effigy heads, a feature absent in urban Mayapán (Gann 1918:116–20). Naturally, no firm deductions can be drawn from such scant material, but there is perhaps an indication that in Chetumal Province, where the economy was agricultural, the cult of the Maya gods of the soil was stronger than in urban Mayapán with its Mexican features.

It is somewhat surprising that, apart from the representations of *Tlazolteotl*, only one figure from an effigy censer seems to represent a goddess. *Ixchel-Acna*, “our mother,” the moon goddess, patroness of weaving, childbirth, and the soil, is an important member of the Maya pantheon, but she has not been identified at Mayapán. It is apparent that there were flourishing cults of one or more goddesses in fifteenth and sixteenth-century Yucatán: a goddess appears on the murals of Tulum; there was a shrine of *Ixchel-Acna* on Cozumel Island; and the name *Isla de Mujeres* still witnesses to the idols of goddesses the Spaniards encountered there.

An interesting problem is presented by the situation in Str. Q-208, a residence of the nobility which almost certainly was looted and burned at the fall of Mayapán. In front of the bench of what was undoubtedly the shrine were two painted vessels with figures in relief of the diving god (J.E.S. Thompson 1954, Fig. 2e,g). Heavy smoke stains on the interiors made it evident that both had served as incense burners, yet in size, shape, decoration, and deity they were completely different from the type of effigy censer reviewed in this paper, which certainly was in favor until the fall of Mayapán. Such pieces, the ves-

sel with a representation of *Chac* in diving position previously mentioned (Winters 1955, Fig. 3o,p) may also have been a censer and therefore belong in this category, suggest the possibility that we are dealing with a foreign element, perhaps the cult of some of the provincial rulers forced by the Cocombs to reside in Mayapán, or of some group of foreign traders. In that connection it is of interest to note that the diving god, although he was apparently worshipped throughout the peninsula, was particularly popular on the east coast of Yucatán. In the Genin collection in the Palais du Musée Cinquantenaire in Brussels is a vessel that almost exactly duplicates the diving god censer on the puma (?) base from Str. Q-208 (J.E.S. Thompson 1954, Fig. 2e,g) except that the Brussels vessel is slightly larger and thicker-walled. Unfortunately, it lacks provenience.

An effigy censer of Mayapán type of the diving god and smaller pottery vessels with figures of the same deity have been found in the general region of Chetumal (Gann 1918:133; 1926, frontispiece [original in Merida Museum, but no known provenience]; CIW negative 38-8-89 from Aguada Carolina, Campeche).

In treating of the religious implication of the effigy incense burner, it is essential to bear in mind the importance of the rise of the family oratory as a rival to the communal center of worship (D. E. Thompson and J.E.S. Thompson 1955:238–242). This change in religious habits, with its wide social implications, doubtless led to a great increase in the use of the effigy censer and to a marked development of the portraiture of individual gods.

In summary, this study of effigy censers confirms sixteenth-century accounts of the strong Mexican influences at Mayapán, and increases the number of Mexican deities now known to have been worshipped in Yucatán. There are hints, however, that these alien cults reflect the outlook of a small governing class, urban and somewhat foreign in outlook, who exalted these non-Maya elements at the expense of the local religion, particularly the dominant worship of the Chacs, the gods of the great mass of agriculturalists. Indeed, resentment against the preferment of such foreign cults at the expense of the well-loved local gods of the soil may have been a factor in the revolt that led to the fall of Mayapán. At least, it could have been a good rallying cry.

The occurrence of such huge quantities of censers in family oratories, and their assembly-line production, surely are indicative of the rise of secular forces at the expense of sacerdotal control, a vulgarization of the spiritual aspects of religion. One wonders whether such a shift may not have given rise to the statement that there was no idolatry in Yucatán until Kukulcan came.

NOTES ON VERTEBRATE ANIMAL REMAINS FROM MAYAPÁN

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The collections of animal bones discussed in this paper come from four seasons (1952–1955) or archaeological excavations at the ancient Maya city of Mayapán in Yucatán, Mexico. Short accounts of this work have appeared in Carnegie Institution *Year Books* nos. 51–54 (1952–1955), under the sections dealing with the Department of Archaeology, and in previous *Current Reports*. Final results of this program of archaeological researches will be brought out in monograph form over the next few years.

The pre-Columbian ruins of Mayapán are located in northern Yucatán, approximately 75 km from the north coast and 100 km from the west coast of the peninsula. For the most part the ruins presumably date from the thirteenth to fifteenth centuries of the Christian era, and the skeletal remains may consequently be expected to represent the present-day fauna of the region. It should be noted that remains of man are excluded from consideration in this paper.

Although several people have contributed to the identification of the skeletal remains, final responsibility rests with C. E. Ray. Not only has Ray made the original identification of by far the greater part of the material, but also he has re-examined all previously identified specimens, making a few changes. These changes, which are not important to the present paper, will be noted in a check list to be published by him.

More than 2,600 identifications were made on mammals, more than 1,100 on birds, over 2,200 on reptiles, 28 on amphibians, and 155 on fish; a total well above 6,000. A detailed listing of these identifications will remain in the files of this Department and in the archives of the library of the Museum of Comparative Zoology of Harvard University. A considerable portion of the collections, moreover, will be preserved in that museum. The disposition of the material, museum numbers, and further comments will appear in the forthcoming check list.

Identifiable bones, excluding artifacts, come from 145 lots of material, well distributed over Mayapán. The inclusion of artifacts of identifiable bone raises the total to 172. Remains from civic and religious buildings, from elaborate and simple dwellings, and from natural sinks are present. The bones are chiefly from maddens, construction fill of buildings, tombs, casts, simple burials, and deposits of mixed origin; a few, we assume, accumulated from natural causes. Whereas the great majority of the specimens presumably date from the thirteenth, fourteenth, and fifteenth centuries, there is undoubtedly some admixture of earlier and later remains.

In spite of the seemingly widespread and representative nature of our sample, analysis shows that 90 percent of our specimens come from in or around the ceremonial center of the city. This concentration is due to the intensive excavation in that area and to the fact that our 4 largest lots or groups of lots from single locations, which account for nearly 84 percent of all material, come from there. Conversely, it is due to the paucity of material from our widely scattered excavations in dwelling-type structures throughout the rest of the city. All this simply means, we think, that our sample is heavily weighted on the side of animals used or consumed by the aristocracy and priesthood as against those consumed by the plebeian population.

As was just noted, four lots or groups of lots from single locations together yielded by far the mayor part of our sample. Constituting the most informative collections we have, as far as the food habits of the ancient inhabitants of Mayapán are concerned, they are tabulated below as to the total number of bones and minimum number of individuals. Incidentally, the check list to be published by Ray will include minimum numbers of individuals as determined from our entire body of material from Mayapán. In the present paper minimum numbers, where given, are determined on the basis of single lots or groups of lots from a single location. The minimum number of individuals of any animal represented in a collection is determined by the count of some recognizably distinctive bone that is found most frequently in the collection; obviously, the particular bone of this sort that appears with maximum frequency in all collections may not be the same bone that appears with maximum frequency in any one lot or group of lots from a single location. Consequently, the results of the two procedures are not directly comparable.

In the table, only the common name of each animal, with the exception of one of the turtles, is given. The scientific name can be found in succeeding sections of this paper. The numbers in each column rep-

resent: total number of bones/minimum number of individuals. Bone that has clearly been worked or for other reasons has been set apart as an artifact is not included in the table. Considerable amounts of highly fragmentary remains, mainly from white-tailed deer, ocellated turkey, and iguana, and a few fragments of turtle and fish, not further identifiable, are omitted.

Lots A-213, 216, and 217 are from a madden deposit beside a large and important group of residential buildings, Strs. R-85 to R-90, that may properly be termed a palace (see Proskouriakoff and Temple 1955). Lying just outside a room identified as a kitchen, this deposit yielded what is probably our best example of a kitchen midden. The sample comes from a trench with an area of approximately 15 square meters, the depth of midden deposit varying from about 0.20 to 0.75 meters. Our excavation by no means included the entire deposit.

Lots C-90 and 107 are from a deposit of madden material and building debris between the rear wall of a colonnaded hall, Str. Q-151, and the substructural platform of a temple, Str. Q-152 (see Shook and Irving 1955). One suspects, but cannot be certain, that the madden remains are largely from the colonnaded hall. A relatively small part of the deposit is represented by our sample.

Lots D-26 to 29, 33-34, 36-47, 50-51, 53-55, 57-67, 69-71, 73-74, and 76 are from extensive trenching in the debris and refuse on the floor of Cenote Ch'en Mul (R. E. Smith 1954). They presumably represent a mixed deposit, in that the location is open to natural deposition as well as to deposition by the hand of man. Other than noting that the cenote is in the heart of the ceremonial center of the city and is surrounded by civic and religious buildings, nothing can be said of the source of the faunal remains found here. The occurrence of cow and of horse will be commented upon later, under the section dealing with mammals from Mayapán.

Lot C-30 is from a sealed, natural chamber in the bedrock directly below a vertical shaft that penetrates the substructural platform of a temple, Str. Q-95 (Shook 1954). On the floor of the chamber were two human burials covered by what appeared to be midden refuse, included in which were the skeletal remains of two children. This lot is perhaps our most interesting one, for it contained a greater range of faunal remains than any other single lot, and as great a range, omitting horse and cow, as the many lots grouped under D-26, etc. We cannot be certain, of course, what part of the animal remains represents strictly midden material, what part represents offerings with the dead. Indeed, in all the material listed in the table we cannot be sure what proportion

resulted from the offering or sacrifice of animals in contrast to that from food.

Although the table needs no further explanation, the distortion in the proportion of the number of bones of any animal to the total bones that is caused by a particularly large number of remains of some one animal should be mentioned. It is most noticeable in the Lot C-30 column, where the amount of iguana bones is overwhelming. If iguana bones are excluded, the relation of other remains to the total number of bones in the lot is quite different. A somewhat similar situation is seen in the preponderance of ocellated turkey remains in the second column.

VERTEBRATE ANIMALS FROM MAYAPÁN

In the following notes on faunal remains from Mayapán the animals represented are grouped under mammals, birds, reptiles, amphibians, and fish. At the end of each such section, artifacts of bone belonging to the particular group are listed. Only those bones that can be identified with reasonable certainty (about one-third of all artifacts of bone) are included. Ray was able to examine and identify only a small part of the artifact material; the remaining identifications are by archaeologists.

Not all the bones listed here as artifacts have been altered by man. For one reason or another, however, such specimens appear to have served as tools or ornaments, or in some way to be set apart from the majority of animal remains. A definitive study of the artifacts of Mayapán is now in preparation.

MAMMALS

The present native (pre-Colombian, post-Pleistocene) mammalian fauna of the Yucatán Peninsula includes 42 genera, including manatee, but exclusive of the bats and of man (Hatt *et al.* 1953; Miller and Kellogg 1955). Of these 42 genera, 20 are recognized in the collections, exclusive of armadillo (see below). Of the 26 genera of bats occurring on the Yucatán peninsula, 2 are identified in the collections. The qualitative sample of the fauna is even better than these figures suggest, since the 42 genera include a number of rain-forest forms not found near Mayapán. Quantitatively, an overwhelming majority of the bones are distributed among the 2 deer, dog, and the 2 peccaries.

Remains of horses were noted in 4 lots, A-130, D-13, D-50, and D-73. Lots A-130 (Proskouriakoff and Temple 1955) and D-13 (R. E. Smith 1953) are surface material. Lots D-50 and D-73, which include fragmentary horse teeth, are from the bottom stratum of black earth in Cenote Ch'en Mul (R. E. Smith

1950). The teeth are heavily mineralized, unlike any other material in the collections. They are thought to be of pre-Colombian horse (Ray 1957).

Cow remains are found in Lots A-13, D-13, D-81, D-83, and D-89. Ruppert and Smith (1952) describe Lot A-13 as partly sealed but open to the surface. Lot D-13, as explained above, is from near-surface, and the occurrence of cow causes no serious difficulty. Lot D-81 includes a poorly preserved fragment tentatively identified as cow. Lot D-81 does come from considerable depth (R. E. Smith 1950), but we consider the identification to be too uncertain for the establishment of a record of *Bos*. A fragmentary cow tooth was found in Lot D-83, a near-surface deposit (R. E. Smith 1950). Lot D-89, an unsealed, surface lot, includes a considerable number of bones and teeth of *Bos*. In summary, owing to shallow stratigraphic position, uncertain identification, and/or absence of mineralization, all the cow remains can be attributed to intrusion.

The remains of one mammal present at Mayapán, a few plates of the armor of an armadillo, were not included in the collections seen by Ray. The specimens were unfortunately lost, and their precise provenience is unknown. That there were not more remains of an animal so common in Yucatán is remarkable.

In the paragraphs that follow, the more plentiful animals (deer, dog, peccary) are presented first, in the order of greatest frequency. Less plentiful remains are grouped according to order and family.

WHITE-TAILED AND BROCKET DEER (*Odocoileus virginianus* and *Mazama gouazoubira*)

By far the most common remains of any mammal at Mayapán are those of deer. No less than 118 of our 145 lots, exclusive of those containing only artifacts, with identifiable animal bones contained the remains of one or both species of deer, the white-tailed being three times as frequent as the brocket. The frequency of deer remains is even more impressive when it is noted that only 3 of the 27 lots in which deer was not represented had over three bones. In other words, remains of deer occurred, almost without exception, wherever our sample was at all adequate.

Although it is well known that deer were used for sacrifice and offerings to the gods, there can be little doubt that this animal played the largest part of any in the food supply of the inhabitants of Mayapán (see Tozzer 1941:247–249, and footnotes 993) for sources dealing with the use of animals by the ancient Maya).

Other remains of deer are noted below under Artifacts.

Table 41.1. Collections From Residential Palace (A-213, etc.), Ceremonial Structures (C-90, 107), Natural Sink (D-26, etc.), and Burial Chamber (C-30).

MAMMALS	A-213, 216, 217	C-90, 107	D-26, etc.	C-30	Total
White-Tailed Deer (<i>Odocoileus virginianus</i>)	337/30	215/19	352/26	35/2	939/77
Brocket Deer (<i>Mazama gouazoubita</i>)	37/5	28/3	26/5	36/2	127/15
Dog (<i>Canis familiaris</i>)	6/1	107/5	414/37	1/1	528/44
Peccary (2 species) (<i>Pecari tajacu</i> ; <i>Tayassu pecari</i>)	34/5	13/2	42/4	37/3	126/14
Cottontail Rabbit (<i>Sylvilagus floridianus</i>)	5/2	15/3	4/1	22/2	46/8
Opossum (<i>Didelphis marsupialis</i>)	1/1	1/1	2/1	1/1	5/4
Spider Monkey (<i>Ateles geoffroyi</i>)	1/1				1/1
Puma (<i>Felis concolor</i>)			3/1	2/1	5/2
Weasel (<i>Mustela frenata</i>)				23/2	23/2
Little Spotted Skunk (<i>Spilogale angustifrons</i>)			1/1		1/1
Agouti (<i>Dasyprocta punctata</i>)			1/1		1/1
Squirrel (<i>Sciurus</i> spp.)			1/1		1/1
Rice Rat (<i>Oryzomys rostratus</i>)				7/2	7/2
White-Footed Mouse (<i>Peromyscus ?leucopus</i>)				2/1	2/1
Shrew (<i>Cryptotis mayensis</i>)				2/2	2/2
American Leaf-Nosed Bat (<i>Mormoops megalophylla</i>)			2/1		2/1
Pre-Columbian Horse (<i>Equus "?caballus</i>)			2/1		2/1
Domestic Cow (<i>Bos</i> pp.)			4/1		4/1
Total					
BIRDS	A-213, 216, 217	C-90, 107	D-26, ETC.	C-30	TOTAL
Ocellated Turkey (<i>Meleagris</i> spp.)	735/143	315/32	117/12	101/9	1,268/196
Pigeon and Dove (<i>Columbidae</i> spp.)		1/1	1/1	6/2	8/4
Chalchalca (<i>Ortalis vetula</i>)			5/3		5/3
Great Curassow (<i>Crax rubra</i>)	3/2				3/2
Olive Throated Parakeet (<i>?Aratinga astec</i>)				8/2	8/2
Total	738/145	316/33	123/16	115/13	1,292/207
REPTILES	A-213, 216, 217	C-90, 107	D-26, ETC.	C-30	TOTAL
Iguana (<i>Ctenosaura similis</i>)	45/12	318/55	100/16	1,698/140	2,161/223
Terrapin (<i>Pseudemys scripta</i>)			9/2	4/1	13/3
Box Turtle (<i>Terrapene mexicana</i>)		1/1	3/1		4/2
Mud Turtle (<i>Kinosternon</i> spp.)				9/1	9/1
River Turtle (<i>Dermatemys mawii</i>)	4/1				4/1
Total	49/13	319/56	112/19	1,711/142	2,191/230
AMPHIBIANS	A-213, 216, 217	C-90, 107	D-26, ETC.	C-30	TOTAL
Giant Toad (<i>Bufo marinus</i>)				13/1	13/1
Nebulous Toad (<i>Bufo valliceps</i>)				13/1	13/1
Total				26/2	26/2
FISH	A-213, 216, 217	C-90, 107	D-26, ETC.	C-30	TOTAL
Sea Drum (<i>Pogonias</i> spp.)	2/1	11/2		63/13	76/16
Sea Cat (<i>Galeichthys felis</i>)		14/5	4/1	8/4	26/10
Mullet (<i>Mugil</i> spp.)				7/2	7/2
Sergeantfish, Snook (<i>Centropomus undecimalis</i>)		2/1			2/1
Sheepshead (<i>Archosargus ?aries</i>)		1/1			1/1
Grouper (<i>Epinephelus</i> spp.)			1/1		1/1
Cichlid (<i>Cichlasoma</i> spp.)		1/1		27/18	28/19
Total	2/1	29/10	5/2	105/37	142/50
Total	1,210/204	1,043/132	1,094/118	2,125/213	5,472/667

DOG (*Canis familiaris*).

Next to deer the most common mammal remains at Mayapán are those of dog. Bones of dog appear in 57 of our 145 lots. They come from all kinds of locations, simple houses, dwellings of the aristocracy, colonnaded halls, temples, and natural sinks. Many of the lots are represented by a single bone of dog, teeth and jaws being the most common. By far the greatest amount of dog remains comes from Lots C-90, 107, and D-26, etc., listed in the table. Only two other locations, one a midden, the other a surface deposit in a cenote, provided more than a handful of bones. Possibly worthy of note is a single tooth from a tomb containing the skeletons of three children (Ruppert and Smith 1954:32, Lot A-125). Oddly enough, the large collections of midden material in Lots A-213, 216, 217, and Lot C-30, shown in the table, contained very few remains of dog.

The dog was, of course, domesticated, and was used for sacrifice and was eaten. Why its remains should be so prominent in cenote deposits at Mayapán and in midden material adjacent to a colonnaded hall and temple, but all but absent in our large palace midden, is difficult to explain. One wonders if the eating of this animal, at least at Mayapán, was more a matter of ceremony than of taste.

Two specimens of dog are noted under Artifacts.

COLLARED AND WHITE-LIPPED PECCARY (*Pecari tajacu* AND *Tayassu pecari*).

Remains of the two peccaries are the third most common of the mammals. Bones of this animal are present in 40 lots, which come from the same variety of locations as noted for the dog. Peccary remains seem particularly frequent in association with dwellings of the aristocracy.

Like deer and dog, the peccary was used for sacrifice and religious offering as well as for food. There is nothing in the literature to indicate that this animal was domesticated, although it is occasionally made a pet of today. It is the writers' impression that at present the peccary is not at all common in the Mayapán area. If this impression is correct, the possibility must be considered that the environment was less intensively cultivated in ancient times, or that the carcass, or parts of it, were transported considerable distances. The well known passage from Landa (Tozzer 1941:26) describing an elaborate system of food supply for the "lords" of Mayapán by the "toxins" over which they ruled may be recalled.

Several specimens of peccary are listed under Artifacts.

COTTONTAIL RABBIT (*Sylvilagus floridanus*)

Of the less abundant remains of mammals at Mayapán those of rabbit are the most common. They appear in 17 lots with the same wide range of location as noted for the more plentiful mammals but with a high proportion coming from midden, or what seems to be midden, deposits. Remains from cenote deposits are surprisingly few.

OPOSSUM (*Didelphis marsupialis*)

Bones of opossum are in 8 lots from a simple dwelling, a palace, ceremonial structures, and deposits in natural sinks. By far the most interesting find was the remains of at least 3 individuals in a vaulted tomb beneath a dwelling. The tomb contained 3 human burials, 2 adults and 1 infant (Ruppert and Smith 1952:46, Lot A-1). As the tomb was not sealed, we cannot be certain that the animals were not intrusive.

SPIDER MONKEY (*Ateles geoffroyi*)

A single bone, a femur, of the spider monkey comes from the palace midden (Lot A-213) listed in our table. Mayapán is well outside the present range of this monkey.

PUMA (*Felis concolor*)

There are 7 bones of puma, 5 of them phalanges and all of them from the feet, that are found in Lot C-30 (see table) and in 2 lots from deposits in cenotes. Phalanges of puma and jaguar have previously been found in tombs and caches (A. L. Smith 1950, Table 6; Thompson 1931:274). More specimens of puma are listed under Artifacts.

JAGUAR (*Felis onca*).

Two bones, a jaw and a vertebra, of jaguar are in a lot from a wall of the basal platform supporting a group of structures that presumably formed the residence of a member of the aristocracy. Other remains of jaguar are noted under Artifacts.

WEASEL (*Mustela frenata*).

Twenty-three bones of at least 2 weasels come from Lot C-30 and are listed in our table.

LITTLE SPOTTED SKUNK (*Spilogale angustifrons*).

A single skull of this skunk comes from the cenote deposit listed under Lots D-26, etc., in the table.

AGOUTI (*Dasyprocta punctata*).

A total of 6 bones of agouti come from 4 lots. The lots are from a simple dwelling, a large mansion, a house by a colonnaded hall, and the debris in a cenote. Agouti is reported to have been an important food (Roys 1931:333), but there is nothing in our findings to indicate this.

SPOTTED CAVY (*Cuniculus paca*).

A single bone, a vertebra, of this relative of the agouti comes from the surface of an accumulation of debris in a terrace corner near ceremonial buildings.

POCKET GOPHER (*Heterogeomys hispidus*).

Only two bones of gopher are present in the collections. One, a tooth, comes from the tomb mentioned above in connection with opossum. The other, a jaw, comes from a tomb in an oratory, which held the burials of two old adults (A. L. Smith and Ruppert 1956:481, Lot A-587).

SQUIRREL (*Sciurus* sp.).

A femur of a squirrel is included in the remains from the cenote deposit listed under Lots D-26, etc., in our table.

RICE RAT (*Oryzomys rostratus*).

Seven bones of at least 2 rice rats appear in Lot C-30. It may be suspected that these animals were present as scavengers. Although Lot C30 was a sealed deposit, the midden refuse presumably included many bones before the debris was placed in the burial chamber.

WHITE-FOOTED MOUSE (*Peromyscus ?leucopus*).

A skull and a femur of the white-footed mouse are in Lot C-30. This animal also is a scavenger.

SHREW (*Cryptotis mayensis*).

Two skulls of shrew are in Lot C-30 (see table). Although the shrew may act as a scavenger, the extraordinary parallel of two skulls of this animal in an infant burial at Uaxactun (A. L. Smith 1950, Table 6, Burial A21) suggests some ceremonial significance (also see A. L. Smith 1950:45).

AMERICAN LEAF-NOSED BAT (*Mormoops megalophylla*), AND *Molossidae* (GENUS AND SPECIES INDETERMINATE).

Two bones of the leaf-nosed bat come from the cenote deposit (Lot D26, etc.) listed in the table. A single bone of the other bat was in Lot C-20 from an open shaft in a temple (Shook 1954:273). Both locations are such as to attract bats, and there is no particular reason to think that these remains were deposited by man. It should be noted, however, that the bat had a place in the Maya pantheon, and that representations of this animal, particularly the leaf-nosed bat, occur frequently among Maya remains.

TAPIR (*Tapirus bairdii*).

Tapir remains consist of two teeth, one from a cast in a simple bench like construction in a house group (Ruppert and Smith 1952:49, Lot A-5), the other from midden like deposits near a colonnaded hall and its associated dwelling-type structure (Bullard 1953:261-262). Mayapán is, of course, well outside the range of tapir, and these teeth must have been imported. A tapir tooth with a hole drilled in it is noted below under Artifacts.

HORSE (*Equus ?caballus*)

See above.

DOMESTIC COW (*Bos* sp.)

See above.

ARMADILLO

See above.

MANATEE (*Trichechus manatus*)

See below.

ARTIFACTS

Artifacts of mammal bone come from 33 lots, 19 of which were not included in the general lots of bone referred to above.

DEER

As might be expected, owing to the relatively large size of the bones, the usefulness of the antler, and the apparent abundance of the animal, there are more artifacts of deer bone and antler than of the bone of any other animal. Thirty specimens from 20

lots are clearly identifiable as coming from deer. A good number of other artifacts probably are of deer bone, though identification is not certain. Fourteen of the 30 identifiable specimens are of bone, 16 are of antler. Interestingly, only 8 of the 118 lots with remains of deer, exclusive of artifacts, had any antler, there being but 1 piece of antler in each of 7 lots and 2 pieces in the eighth. Obviously, antler was prized and saved, presumably for implements.

DOG

There are 2 perforated canine teeth of dog, each from a separate lot.

PECCARY

Five perforated or otherwise worked canine teeth of peccary comes from 5 different lots. That only 3 peccary incisors are found among the general lots of bone is noteworthy; these teeth were apparently valued and saved as ornaments.

PUMA AND JAGUAR

The head of a femur, cut from the shaft, and a perforated canine of puma, come from separate lots. The perforated canine of a jaguar comes from another lot. Besides these teeth there are 6 other canines of puma or jaguar, each from a separate lot: 4 perforated, 1 notched near the base of the root, 1 seemingly unworked. We know from Maya sculpture and mural painting that large canine teeth, such as those of puma, jaguar, and peccary, were worn as ornaments, frequently in the form of necklaces.

TAPIR

There is a single perforated tooth of tapir. It will be remembered that the only remains of this animal are teeth.

MANATEE

The carved rib of a manatee represents the only bone of this animal in our collections.

BIRDS

At least 8 birds are represented in the collections. As is shown below, ocellated turkeys are present in great abundance. We have used the generic name *Meleagris* rather than *Agriocharis*, following Paynter (1955:84–85). The distinction is of no importance in regard to identification.

Other large edible birds are peculiarly lacking. The crested guan (*Penelope purpurescens*) is entirely absent, the great curassow (*Crax rubra*) is represented by only 2 fragmentary coracoids, and the chachalaca (*Ortalis vetula*) by some 9 bones indicative of 3 individuals.

The occurrence of the heron (*Ardea herodias*), the hawk (*Accipitridae*), the parakeet (?*Aratinga astec*), and the motmot (*Eumomota superciliosa*) would seem to be fortuitous, since none of these could have been important articles of diet.

The small collection of bird skeletons in the Museum of Comparative Zoology limited the number of identifications that could be made. Lots C107, D-20, and D-38 contain bones that should readily be identifiable given adequate comparative material.

Several artifacts almost surely are of bird bone, but none has been identified as to species. They probably are from turkey.

OCCELLATED TURKEY (*Meleagris ocellata*).

Far and away the most common bird remains at Mayapán are those of the ocellated turkey. Such remains are represented in 54 of our 145 lots with identifiable animal bones. Although these 54 lots come from the same wide range of locations and kinds of deposits as were noted in connection with the most plentiful remains of mammals, by far the heaviest concentrations come from deposits that seem to be associated with activities of the aristocracy and priesthood; in the palace midden listed in our table (Lots A-213, 216, 217), the proportion of turkey remains is overwhelming. It has been mentioned earlier, however, that our sample is heavily weighted in favor of animals consumed by the nobility and priesthood, and perhaps we should not lay too much stress on the relatively small number of turkey remains from simple dwellings.

The turkey was used for sacrifice and as an article of tribute, in which connection the reader will recall the statement by Landa (1941:640) previously cited. The quantity of the remains and their location in middens (e.g., Lots A-213, 216, 217) leave little doubt that this bird was one of the primary food animals in Mayapán. Of particular interest is the question of the domestication of the turkey. The present-day domestic turkey in Yucatán is derived from the northern wild turkey (*Meleagris gallopavo*), the native ocellated turkey occurring only in the wild state. Moreover, the pre-Columbian domesticated turkey is generally thought to have been the northern form and not the ocellated turkey. The amount of turkey remains at Mayapán, all presumably of the ocellated variety, raises the question, unanswerable from our

evidence, whether the ocellated turkey may not have been domesticated in pre-Columbian times.

CHACHALACA (*Ortalis vetula*).

Nine bones of chachalaca, all but 1 from cenote deposits, are included in our collections. This bird is often tamed and kept around houses today, and there is good reason to believe that the same was true in ancient times (Noyes 1932:308, 325). It is surprising that more remains were not found at Mayapán.

GREAT CURASSOW (*Crax rubra*).

Two bones of the great curassow, representing 2 individuals, come from the palace midden (Lots A-213, 216 217) listed in our table. The Motul Dictionary (1929:495 states that the Indians domesticated this bird (*kanbul*), but there is nothing in our material to confirm that statement.

**PIGEON AND DOVE, *Columbidae*
(GENUS AND SPECIES INDETERMINATE)**

Eight bones of pigeon and dove, 6 from Lot C-30y are included in the table. Doves were presumably domesticated by the ancient Maya, but again there is nothing to indicate this in the Mayapán remains.

**OLIVE-THROATED PARAKEET
(? *Aratinga* [*Conurus*] *astec*)**

Eight bones of at least 2 individuals of the olive-throated parakeet are in Lot C-30.

GREAT BLUE HERON (*Ardea herodias*)

A single bone of great blue heron comes from a midden-like deposit near a colonnaded hall and its associated dwelling-type structure (Bullard 1953: 261–262).

TURQUOISE-BROWED MOTMOT (*Eumomota superciliosa*).

The mandible of a turquoise-browed motmot is from one of the cenote deposits. This bird frequents cenotes, and the presence of the mandible would appear to be fortuitous.

**HAWK, *Accipitridae*
(GENUS AND SPECIES INDETERMINATE)**

A single bone of a hawk comes from a midden deposit (Strömsvik 1953:139–140, Lot C-50).

REPTILES

Represented in the collections are one lizard and five, possibly six turtles. Identification of the lizard (*Ctenosaura similis*) is based on an extensive study of many museum skeletons. That all, or virtually all, the bones belong to this single species is certain. The turtles are identified to genus on the basis of morphology, but to species on geographical evidence only, skeletons of most of the relevant species not being present in the collection of the Museum of Comparative Zoology.

Of the 16 genera of lizards recorded from Yucatán, only *Ctenosaura similis* is recognized in the Mayapán collections. It is the largest lizard, and hence most suitable for food, in Yucatán. Small individuals are, nevertheless, well represented in the material. No snakes were identified from the collections. All 5 genera of land and fresh-water turtles reported from Yucatán are represented. It is not possible to determine which species, possibly both, of *Kinosternon* is present.

LIZARDS

Surprisingly, the remains of only 1 species of lizard occur in our collections. A good number of lizards, other than iguanas, frequent the ruins today and must have been present in past times. The fortuitous occurrence of their remains would be expected. Bones of the smaller lizards are minute and fragile, and so their absence may be due to their being overlooked in collecting.

IGUANA (*Ctenosaura similis*).

Iguana remains occur in 45 of our 145 lots with identifiable animal bones. They thus follow only deer, dog, and turkey in their ubiquity. An overwhelming proportion of the remains comes from the lots listed in our table; indeed, only about 50 bones scattered among 20 lots are from elsewhere. The tendency of the iguana to burrow between the loose stones of the ruins and to inhabit cenotes raises the question of what proportion of the remains may have been deposited through natural causes rather than by man. A large number of the bones from Lots D-26, etc., in our table certainly are to be suspected as occurring fortuitously. Those from the other lots in the table, on the other hand, seem to have been deposited largely by man.

Iguanas were used by the ancient Maya for sacrifice, as offerings to the gods, and for food. The remains from Lots A-213, 216, and 217 (see table) suggest food refuse. Some of those from Lots C-90

and 107 might be from food, others a product of ceremonialism. We do not know how to interpret the extraordinary concentration of remains in Lot C-30, largely because the deposit appears to be partly primary, partly secondary, in origin.

TURTLES

Remains of turtles come from 31 lots, 3 of which contain turtle bones not identifiable as to species. In contrast to the iguana, turtle remains are not concentrated in the lots listed in our table, but are much more evenly spread throughout the lots represented. The majority of the remains come from dwellings. There is a good representation from cenotes, but relatively few remains are associated strictly with ceremonial buildings. All the remains, with the exception of a single humerus, are from the shell.

Remains of turtles at Mayapán are of particular interest on account of the numerous effigies of these animals, carved in stone or modeled in clay, found throughout the ruins. There seems little doubt that the turtle played an important part in the ceremonial life of Mayapán, though its precise significance is obscure. We are told that it was sacrificed by the ancient Maya, and that it was associated with the constellation of Gemini and certain other stars. We also know that the carapace was used as a musical instrument. As for the remains of the animal at Mayapán, they may best be thought of as primarily food refuse.

Two specimens of turtles are noted below under Artifacts.

TERRAPIN (*Pseudemys scripta*).

These are much the most plentiful of the turtle remains. They come from 19 lots: 7 from dwellings, 7 from cenotes, 2 from ceremonial structures, the remainder from locations of ambiguous association.

BOX TURTLE (*Terrapene mexicana*).

Remains of this turtle come from 5 lots: 3 from dwellings, 1 from a ceremonial structure, 1 from a cenote.

Geomyda areolata.

There is a single fragment of this turtle from a cenote deposit.

MUD OR MUSK TURTLE (*Kinosternon* sp.).

These remains come from 4 lots: 1 from a dwelling, 1 from a burial chamber beneath a temple (see Table, Lot C-30), 2 from a cenote.

DERMATEMYD MAWII.

There are 3 lots with remains of this turtle; all are from dwellings.

ARTIFACTS

There are 2 artifacts, each from a separate lot, made of bone of reptiles. Both are of turtle shell.

TERRAPIN.

The anterior part of the plastron of a terrapin is cut along one edge.

BOX TURTLE.

There is the almost complete shell of a box turtle with holes drilled at the front ends of the carapace and of the plastron.

AMPHIBIANS

Of 11 genera of frogs reported from Yucatán, 2 are identified from Mayapán. They include the giant toad, the nebulous toad, and the leopard frog. The identification of the frog bones is well established. Skeletons of the relevant species were prepared from museum materials.

GIANT TOAD (*Bufo marinus*)

The skull and skeleton of a single giant toad come from Lot C-30, listed in our table. It is impossible to say whether their presence in that lot is fortuitous or whether they were purposely placed there.

NEBULOUS TOAD (*Bufo valliceps*)

The bones of at least 2 nebulous toads also occur in Lot C-30. Their presence can be accounted for no better than those of the giant toad.

LEOPARD FROG (*Rana ?pipiens*)

Two bones of this frog come from Lot C-20, taken from the open shaft in the substructure of a temple (Shook, 1954:273). It is probable, but not certain, that their presence is fortuitous.

FISH

Ten fish are identified in the collections, exclusive of sting ray. Two are sharks, and 8 are bony fish. Only 1 of the 10 is a cenote fish, *Cichlasoma*, which is also

present in the brackish cienaga. This fish, a cichlid or mojarra, probably belongs to the species *Cichlasoma urophthalmus*, reported as a common food fish among the Indians. The identification of the cichlids is based on comparison with skeletons of *Heros*, which is in part synonymous with *Cichlasoma*. The range in size of preserved specimens of *Cichlasoma urophthalmus* overlaps that of the Mayapán remains.

The most striking feature of the fish remains is the preponderance of salt-water forms in deposits no less than 70 km from the nearest salt water. The shark teeth were quite likely trinkets or implements, but the other remains must represent food fish. *Galeichthys felis*, the sea cat, is not strictly marine, having been collected from the Rio Champoton. *Rhamdia guatemalensis*, the common cenote catfish, is conspicuous by its absence. To our knowledge the following fish are here reported from Yucatán for the first time: *Chaetodipterus*, *Centropomus*, *Pogonias*, *Galeocerdo*, and *Carcharodon*. All these, however, frequent the Gulf of Mexico and may well be expected from the coasts of Yucatán. Much of the fish material from Mayapán remains unidentified. Most of it is highly fragmentary or postcranial and therefore not readily or accurately identifiable. We feel sure that additional identifications could be made, given time and a comprehensive museum collection of skeletonized modern fish.

The remains of one fish present at Mayapán were not among the collections seen by Ray, namely, spines of sting rays. They are included below under Artifacts.

Remains of fish come from 40 lots, 13 of which contain bones not identifiable as to species, and 10 contain only specimens listed as artifacts. The heaviest concentrations and greatest variety of remains are in Lot C-30 and Lots C-90, 107, listed in our table.

There is good evidence that fishing was an important industry its aboriginal Yucatán. The catch was reportedly salted, sun dried, or roasted [smoked?], depending on the kind of fish, and traded over considerable distances, particularly when roasted (Tozzer 1941:190). The quantity of salt-water fish bones at Mayapán is thus not altogether surprising. We also are told that fish were used for sacrifice, as food offerings to the gods, and as tribute.

SEA CAT (*Galeichthys felis*)

Remains of the sea cat are in 10 lots from residences, ceremonial buildings, and a cenote deposit. Along with the sea drum and the cichlid (see below) this is one of the most common fishes in our collections.

SEA DRUM (*Pogonias* sp.)

Bones of the sea drum come from 8 lots from a palace and from ceremonial structures. In total number of bones and in minimum number of individuals this is the most common fish in our collections from Mayapán. It should be mentioned, however, that the highly characteristic and nearly indestructible pharyngeal teeth of the sea drum favor its identification.

CICHLID OR MOJARRA (*Cichlasoma* sp.)

Remains of the cichlid are found in 2 lots (see table). Owing to the number of individuals represented in Lot C-30, this fish is second only to the sea drum in minimum number of individuals. It will be remembered that this is the only freshwater fish in our collections.

SERGEANTFISH, SNOOK, OR ROBALO (*Centropomus undecimais*)

Bones of the sergeantfish come from 2 lots from a single location (see table).

GROUPEL (*Epinephelus* sp.)

MULLET (*Mugil* sp.)

SHEEPSHEAD (*Archosargus ?aries*)

SPADEFISH (*Chaetodipterus* sp.)

Remains of each of these fish come from a single lot and, with the exception of the mullet, each is represented by a single bone. The first and last are from a cenote deposit and a house, respectively; the other two are listed in our table.

LEOPARD OR TIGER SHARK (*Galeocerdo cuvier*)

See Artifacts below.

WHITE SHARK OR MANEATER (*Carcharodon corollaries*)

See Artifacts below.

STING RAY

See Artifacts below.

ARTIFACTS

Artifacts of fish bone come from 13 lots, 6 of which were not included in the general lots of bone with which we have been dealing.

Five barbules of fish, unidentified as to species but almost certainly catfish, that may have been used as pins or small awls come from 3 lots.

SHARK

Two teeth of shark, unidentified as to species, are from separate lots. We are told by Landa that "very sharp teeth of fishes" (Tozzer, 1941:121) were used for arrowheads. The teeth of certain sharks might serve this purpose.

LEOPARD SHARK

Two teeth of the leopard shark come from a single lot.

WHITE SHARK

A single tooth of the white shark occurs in our collections.

STING RAY

Spines of sting ray come from 7 lots, a questionable example occurring in an eighth. The majority of the specimens are cut or shaped in one way or another, and all of them, with a single exception that comes from the floor of an oratory, are associated with burials or caches. Stingray spines were used by the ancient Maya for ceremonial blood-letting (Tozzer, 1941:191), and they have previously been found in graves, usually near the pelvis of the skeleton, and in caches (Tozzer 1941, Footnote 1003; A. L. Smith 1950, Tables 6 and 8).

SUMMARY

Although our collections are sufficiently large and are from locations sufficiently well distributed over the site to suggest that we have a good sample of pre-Colombian vertebrate animal remains in Mayapán, analysis shows that 90 percent of our material comes from in or around the ceremonial center of the city. This fact suggests that our sample is heavily weighted on the side of animals consumed or used by the aristocracy and priesthood as against those used by the plebeian population.

By far the most common animals in Mayapán, judging from the skeletal remains, were the two

deer, the dog, the ocellated turkey, and the iguana. Comparatively common were the two peccaries, the cottontail rabbit, the sea drum, the sea cat, and the cichlid. The relative frequency of these animals can be seen in our table, which includes nearly 84 percent of all animal bones recovered from Mayapán.

Reviewing the mammalian remains, which represent 24 native species (excluding pre-Columbian horse), it appears that the white-tailed deer was probably the most important single animal in the food supply of the ancient inhabitants of Mayapán. Deer also supplied more artifacts of bone and antler than any other animal. The provenience of the remains of dog, the second most common mammal, suggests that its use was more a matter of ceremony, either eaten or sacrificed, than as a strictly dietary item. The relative frequency of the remains of peccary raises the question of a less cultivated environment near Mayapán in ancient times or the possibility of the importation of the animal, presumably the carcass, from other regions. Peccary teeth seem to have been valued as ornaments.

Of the less frequent mammals, the remains of at least three opossums in a tomb are worthy of note, but we cannot be certain that the animals are not intrusive. As might be expected, bones of puma and jaguar are scarce. They are mostly bones from the feet, which may have been of ceremonial importance, and teeth, which were prized as ornaments. The finding of two skulls of shrew with infant burials parallels a similar find at the ruins of Uaxactun. Three teeth of tapir, a single bone of spider monkey, and a single rib of manatee are obvious imports to Mayapán. Horse and cow remains can all be attributed to intrusion with the exception of two heavily mineralized teeth from the lower layers of a cenote deposit that are thought to be from pre-Columbian horse.

Remains of birds, of which there are at least eight species, are numerically completely dominated by the remains of ocellated turkey, all other bird bones occurring in trifling amounts in spite of there being several other large edible birds native to Yucatán. The ocellated turkey seems clearly to have been one of the primary food animals in Mayapán. The provenience of turkey remains suggests that this bird was especially available to the aristocracy, but our sample is not good enough to draw distinctions between the diet of a member of the upper class and that of the commoner. The quantity of bones of ocellated turkey and the apparent absence of remains of the northern turkey raise the question of the pre-Columbian domestication of the former. In spite of references in early sources to the domestication by the ancient Maya of the great curassow

and of doves, and to the taming of the chachalaca, there is nothing in our collections to suggest this at Mayapán.

Reptiles are represented by the remains of one species of lizard and five or six species of turtle. No remains of snakes or of the many small lizards that frequent Mayapán today were identified in the collections. The one lizard present, an iguana, is the largest, and the most suitable for food, in Yucatán. Its remains are found in great numbers, but a good proportion is suspect of occurring fortuitously rather than by the agency of man. Remains of turtle are of particular interest because of the apparent importance of this animal in the religion and ceremonialism of Mayapán. Unfortunately our material throws no light on this matter.

Amphibians are represented by the remains of three species of frog. Nothing of interest can at present be said about the occurrence of these bones.

Remains of at least eleven species of fish are present in our collections. The most interesting thing about this material, which is found in considerable quantity, is that all but one of the fish are salt-water forms. Remains of the common cenote catfish, moreover, are completely lacking. These findings bear out Landa's statement concerning the widespread trade in fish, and may have bearing on the system of tribute he describes for Mayapán. Of some interest is the finding of shark teeth, some of which may have been used as arrowheads, and the association of sting-ray spines with burials and caches, a custom that has been reported from elsewhere in the Maya area.

December 1957

EDITOR'S NOTE

H.E.D. POLLOCK

The revised edition of the *Topographic Map of the Ruins of Mayapán, Yucatán, Mexico*, terminates this series of publications. A few words are needed about the map.

The preliminary edition of this map was first issued in 1951 and reissued, without change, to accompany *Current Report* 1 in 1952. The text of that report describes the mapping procedures and indicates the relative reliability of the map. The present revised edition incorporates no changes in the basic survey, such alterations as appear being limited to individual structures and isolated natural features, and being the result of excavation and the detailed archaeological examination that have been carried on since the original topographic survey was completed. Other changes involve additions and deletions designed to make the map more uniform in the information it provides and more useful to the archaeologist.

Certain changes in the revised edition of the map are obvious. The scale has been reduced to half that of the earlier edition; all structures have been num-

bered; gates in the city wall have been labeled. Less obvious is the inclusion of names for three more cenotes. In the matter of numbering, it should be noted that structures are numbered consecutively within each square. Any building is thus identified by the letter of the square in which it lies plus the number of the building, often followed by a lower-case letter (e.g., Str. A-1, or Str. A-2a). Generally speaking, a structure that is one of a group of dwellings carries a number with a terminal letter, the number without this letter designating the group (e.g., Group A-2 with Strs. A-2a, A-2b, and A-2c). Civic and religious buildings normally carry numbers without a terminal letter (e.g., Str. Q-162). There are exceptions to this general rule, however, as a few groups of dwellings are shown with structures numbered separately (e.g., Group R-85 to R-90), and some civic and religious buildings carry numbers with terminal letters. This inconsistency in our system was brought about by the discovery of additional buildings after num-

bers had been assigned, and by changes in our ideas about the functions of structures, a natural development following excavation and intensive study.

Far and away the most frequent change in the revised edition of the map has been the inclusion of small, inconspicuous structures that were missed by the original survey. These total well over a hundred. Much less frequent are the correction in orientation of a mound, minor changes in plan, the combining of two or more structures to form a single one, and the separation of one mound into two or more structures. The relatively detailed plans of a large number of buildings outside the ceremonial groups represent an inconsistency in the map. Our information would allow detailed plans for a much larger number of house mounds. It was decided, however, that the value of such plans, in the light of the minute scale at which they would appear, would in no way compensate for the great amount of labor involved. Many plans of dwellings, shown at an adequate scale, have appeared in this series of *Current Reports*, and still others will appear in a monograph now in preparation. Ideally, it might have been better to change all house mounds to a conventionalized mound symbol, for consistency, but here again the value of the result did not seem to be commensurate with the effort required.

With one or two rare exceptions, plans of ceremonial structures and of the larger residential

complexes have not been corrected. The scale of the map made it impracticable to attempt to do so. For that reason a certain number of structures that were found by excavation do not appear. Plans of the ceremonial groups, including those buildings not shown on the map, will appear at an adequate scale in the forthcoming monograph. Plans of residential complexes that were excavated have already appeared in earlier *Current Reports*.

Boundary walls, believed to be pre-Conquest in origin, a number of which are shown on the preliminary edition of the map, have been deleted from the revised edition, and their symbol has been removed from the legend; such walls are found in great numbers all over the site, and the few that were shown gave a false impression of their relative frequency. Our data, on the other hand, did not allow the plotting of all, or even a substantial proportion, of these walls. The general pattern and numerous examples of boundary walls have been illustrated in earlier *Current Reports*. For similar reasons field walls (post-Conquest) have been deleted from the new edition of the map with the exception of those enclosing Rancho San Joaquin and the wall surrounding the principal ceremonial group, only the corners of which are shown on the earlier edition of the map. These walls have been left, as they are of considerable value in orienting anyone visiting the ruins.

H.E.D. POLLOCK

APPENDIX

MARILYN A. MASSON

Inventory and Lot Descriptions from Carnegie Institution
Current Reports on Mayapán (compiled by Marilyn A.
Masson). See notes at the end of the appendix regarding
descriptive terms.

<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
J-131a	dwelling	A-1	tomb, vaulted in south bench	3
J-131a	dwelling	A-2	tomb in north bench	2
J-131a	dwelling	A-3	test unit in north bench	
J-131a	dwelling	A-4	test unit in north bench	
J-49a	dwelling	A-13		
J-49a	single bench	A-8	cist	
J-49a	single bench	A-22	test unit	
J-49a	single bench	A-10	test unit	
J-49a	single bench	A-12	test unit	
J-49b	double bench	A-6	bench (above cist)	
J-49b	double bench	A-7	cist	
J-49b	double bench	A-11	cist	
J-49b	double bench	A-9	test unit	
J-50	dwelling	A-13	test unit east bench, midden beneath it and back room of structure	
J-50	dwelling	A-14	test unit middle bench	
J-50	dwelling	A-15	tomb west bench	1
J-50b	domestic bldg	A-16	test unit south section of bench	
J-50b	domestic bldg	A-17	test unit north section of bench	
J-50b	domestic bldg	A-21	test unit terrace	
J-122c	small bench str	A-5	cist	
I-94	dwelling	A-34	test unit east bench	
I-94	dwelling	A-29	test unit middle bench	
I-94	dwelling	A-27	cist middle bench	
I-94	dwelling	A-30	test unit middle bench, below floor of cist	
I-94	dwelling	A-28	test unit west bench, top 60 cm under bench	
I-94	dwelling	A-31	test unit west bench	
I-94	dwelling	A-32	test unit terrace	
I-94	dwelling	A-33	test unit terrace	
I-94	dwelling	A-35	test unit terrace	
I-94	dwelling	A-36	cist terrace	
I-94	dwelling	A-37	test unit terrace	
I-94	dwelling	A-38	test unit terrace, contents of pit below A-35	
Q-127a	temple	C-50	northeast edge of Q-127, northwest base of Q-127a–midden	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
2 adults, 1 infant under drum-shaped stone	drum-shaped stone, pottery whistle (seated monkey?), 1 obsidian piece, 1 bivalve (Spondylus?) double-perforated pendant, 1 oval biface, no sherds listed	CR #4
skulls, facing down, secondary burial	male and female figurines, deer antler tine, filed human tooth, 2 hexagonal shell ornaments (3 drill holes), 1 drilled marine gastropod pendant, no sherds listed	CR #4
	sherds not classified	CR #4
	sherds not classified	CR #4
	Puuc pottery "predominated"	CR #4
	6 obsidian pieces, 1 polished gray stone, 1 lithic tool fragment, sherds not classified	CR #4
	4 obsidian pieces, 1 obsidian core, spindle whorl, worked limestone. 1 shell fragment, sherds not classified	CR #4
	5 obsidian pieces	CR #4
	1 obsidian piece, 1 ceramic figurine head	CR #4
	1 obsidian piece, sherds not classified	CR #4
	1 obsidian piece, 1 lithic "hatchet," 2 flakes (one used, 4.4 cm), 1 shell bead, 1 shell fragment, sherds not classified	CR #4
	4 obsidian pieces, 2 fossil shell fragments, sherds not classified	CR #4
	sherds not classified	CR #4
2 fragments human bone	30 obsidian pieces, 2 wedge-shaped bifaces, 2 pointed bifaces, 45 flakes, 13 worked and 1 unworked shell pieces, 9 bone awls, 2 bone needles, 1 perforated animal tooth, 30 perforated human teeth, 4 pieces worked deer antler, 12 pottery pellets, 3 pieces of coral, 1 bone disk (engraved), pottery figurine head, whistle, spindle whorl, greenstone celt, pottery turtle or lizard head, metate fragment, limestone smoother, sherds not classified	CR #4
	1 obsidian piece, 1 lithic tool, 39 flakes, 2 shell fragments, sherds not classified	CR #4
jaw and leg bone	2 "points" (or pointed bifaces), limestone mano, sherds not classified	CR #4
	1 pointed biface, worked limestone pieces, some shell fragments, sherds not classified	CR #4
	1 limestone hammerstone, sherds not classified	CR #4
	sherds not classified	CR #4
fragment of human bone	11 obsidian pieces, 1 "flint blade," 1 carved shell ornament (perforated shell tinkler), 3 shell fragments, animal pottery whistle, perforated animal tooth, sherds not classified	CR #4
fragment of human bone	8 obsidian pieces, 4 shell fragments, sherds not classified	CR #4
	1 obsidian piece, 1 shell fragment, worked bone, sherds not classified	CR #4
	1 obsidian piece, 1 shell fragment, sherds not classified	CR #4
	1 flake, 1 shell bead, sherds not classified	CR #4
	1 small oval biface, sherds not classified	CR #4
	14 obsidian pieces, 1 lithic perforator/drill, 1 shell tinkler, 3 shell fragments, 2 limestone smoothers, engraved limestone "nose plug," greenstone axe fragment, perforated animal tooth, perforated bone, fish spine (perforator?), sherds not classified	CR #4
	5 obsidian pieces, sherds not classified	CR #4
	3 obsidian pieces, sherds not classified	CR #4
	1 obsidian piece, sherds not classified	CR #4
	sherds not classified	CR #4
	sherds not classified	CR #4
	8 obsidian pieces, 2 shell fragments, 1 worked antler, sherds not classified	CR #4
	7,524 sherds, 329 animal/bird bones, 9 obsidian blades, 3 flakes, 1 point, 1 carved and 3 unworked shells; Lot C-50 had only 4.5% censers (and 56.8% unslipped vessels), other lots around temple had 50% censers; this lot lumped with C-51-52 in description	CR #8

continued on next page

<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Q-127	portal vault	C-50	northeast edge of Q-127, northwest base of Q-127a–midden	
Q-127	portal vault	C-51	vault and east court of portal Q-127, southeast base of Q-127a	
Q-127a	temple	C-51	vault and east court of portal Q-127, southeast base of Q-127a	
Q-127a	temple	C-52	above terrace and room floors of Q-127a	
Q-127a	temple	C-53	core rubble under floor	
Q-164	colonnaded hall	C-1	cache in central altar (described only in Figure 22.7m caption)	
Q-79 north trench	shrine next to Hall Q-81	C-6	preliminary pit near burials to north of plaza, top 30 cm	
Q-79 north trench	shrine next to Hall Q-81	C-7	preliminary pit near burials to north of plaza, lower 30 cm	
Q-79 north trench	shrine next to Hall Q-81	C-8	surface debris above Floor 3 burials north of plaza	6
Q-79 north trench	shrine next to Hall Q-81	C-9	upper half of fill below Floor 3 burials north of plaza	7
Q-79 north trench	shrine next to Hall Q-81	C-9a	upper half of fill below Floor 3	see Lot C-9
Q-79 north trench	shrine next to Hall Q-81	C-10	lower half of fill below Floor 3 in trench	
Q-79 north trench	shrine next to Hall Q-81	C-11	surface debris north of Floor 3 and east of Floors 1 and 2, down to Floor 3 level	1
Q-79 north trench	shrine next to Hall Q-81	C-12	surface debris including fall from Q-79, south of Floor 3 area to same depth as Floor 3	
Q-79 north trench extension	shrine next to Hall Q-81	C-13	surface to Floor 2 in north extension	1
Q-79	shrine next to Hall Q-81	C-14	pit near wall from Floor 3 to bedrock	
Q-71	shrine	C-22	ossuary cist	7
Q-71	shrine	C-23	surface debris	
Q-71	shrine	C-24	area below intact floors near structure	
Q-71	shrine	no lot	general area	
Q-69	shrine	C-25	surface debris	
Q-69	shrine	C-26	depression in bedrock southeast of structure	
Q-69	shrine	C-27	fill from terrace/platform	
Q-69	shrine	C-28	ossuary cist	7

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	see Lot C-50 above	CR #8
	see Lot C-50 above	CR #8
	see Lot C-50 above	CR #8
	see Lot C-50 above	CR #8
	Mayapán period sherds	CR #8
	effigy face cup vessel, with two covers, 1 redware with lug handle, other unslipped pot fits inside orifice	CR #22
	none	CR #9
	1 obsidian piece, sherds not classified	CR #9
6 adult skeletons	1 obsidian piece, 1 shell bead, 1 small perforated snail shell, 1 bivalve shell with slit perforation, 1 worked shell, 3 flint knives (2 in ribs, 1 in pelvis), 1 flake, fragment of carved stone, stucco fragments, 3 animal bones, effigy censers including heads, sherds not classified	CR #9
1 child, 6 scattered adults	1 double-perforated bivalve pendant, 1 bivalve with cut edge, 8 obsidian blades, 1 obsidian core (small), 14 animal bones, 1 unworked tinkler, 3 unworked shells, sherds not classified	CR #9
the child burial mentioned for Lot C-9		CR #9
14 human bones	1 animal bone, sherds not classified	CR #9
human skull and femur	1 broken bone awl, sherds not classified	CR #9
5 human bones, 1 human tooth	1 broken mano fragment, 2 broken bone awls, 1 spindle whorl (baked clay), 1 obsidian notched blade, 1 utilized flake, 1 flake, 1 metate, 1 unworked shell, 31 animal bones including 1 antler, effigy censers including heads, sherds not classified	CR #9
cut human femur	1 cut human femur, 1 tinkler shell fragment, 1 shell fragment, 2 animal bones, sherds not classified	CR #9
		CR #9
		CR #9
6 adults, 1 adolescent	3 obsidian pieces, 3 "chipped points," 1 tool fragment, 1 greenstone celt fragment, 1 rubbing stone, 1 perforated bone needle, 3 round shell beads, 2 rectangular white shell beads, 2 tubular jade beads, 3 bone needles, painted stucco fragments, 8 unworked univalves, 1 fragment of unworked bivalve, 2 tripod Huhi Impressed vessels from cist, sherds not classified	CR #9
	9 obsidian blades, 3 obsidian chips, 1 wedge-shaped biface, 4 flakes, 1 perforated human canine, 1 double-perforated bivalve shell pendant, 1 shell fragment, 1 tubular jade bead, fragments of stucco, 130 fragments of human, animal, and bird bone, 1 frog effigy vessel (complete), sherds not classified	CR #9
	230 fragments of human, animal, and bird bone, midden fill, sherds not classified	CR #9
	speleothem supports for modeled figs in terrace floor, nearby feline head and paws	CR #9
	5 obsidian pieces, 3 flakes, 3 shell fragments, 2 fragments broken awl, fragments modeled stucco, sherds not classified	CR #9
	1 obsidian piece, 3 animal bones, abundant Puuc period pottery sherds not classified	CR #9
	1 greenstone celt fragment, painted/modeled stucco, cylindrical tripod vessel with Red-slip, sherds not classified	CR #9
6 adults, 1 adolescent	fragments of painted and modeled stucco, sherds not classified	CR #9

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Q-69	shrine	no lot	general area	
Q-90	shrine	C-36	surface	
Q-90	shrine	C-37	ossuary cist	5
Q-90	shrine	C-38	fill between floor that predates structure and bedrock	
Q-90	shrine	no lot		
Q-77	platform	C-39	surface debris	
Q-77	platform	C-40	fill between floors top to fourth in court adjacent to structure	
Q-77	platform	C-41	fill from fourth to eighth from top floor in court	
Q-77	platform	C-42	fill from eighth/ninth to lowest floor in court	
Q-77	platform	C-43	fill from lowest floor to bedrock in court	2
Q-84	platform	C-44	surface debris, upper 20 cm platform (C-44–48 probably in trench in plaza toward Q-162)	1
Q-84	platform	C-45	fill sealed by floors, 30–60 cm	
Q-84	platform	C-46	fill floors, 60–90 cm	
Q-84	platform	C-47	fill, 90–120 cm	
Q-84	platform	C-48	fill, lowest floor and bedrock	
Q-84	platform	C-49	fill of Structure Q-84	2
Q-84	platform	no lot	the monument platform	
Cenote X-Coton	cenote			
Cenote X-Coton	platform in cenote	D-13		
Cenote X-Coton	cenote	D-4/5/6	Pit 1 between floor and binding level with locks of rocks	
Cenote X-Coton	cenote	D-18	Pit 1 extension including three strata together	
Cenote X-Coton	cenote	D-8/11	Pit 1 strata 2, one below binding level to bedrock	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	3 standing human figures around this area, torso with parts of hands and feet holding a vessel with corn/copal, another torso, a stucco head	CR #9
	none	CR #9
3 adults, 2 adolescents	1 obsidian piece, 1 "flint point" 7 cm long (pointed biface), 1 painted/modeled stucco, charcoal	CR #9
	1 obsidian piece, sherds not classified	CR #9
		CR #9
	3 obsidian pieces, 3 "point" fragments (pointed bifaces), 1 lithic scraper, 1 copper bell, 1 unworked olive shell, 1 stalactite, painted and modeled stucco/wall plaster, sherds not classified	CR #9
	sherds not classified	CR #9
	sherds not classified	CR #9
	charcoal, sherds not classified	CR #9
2 nine- to ten-year-old children in niche in bedrock before the earliest floor laid contemporarily or predate platform		CR #9
scattered adult remains	1 flint "point" or pointed biface (8.2 cm long), 11 shell fragments, 1 copper pellet bell clapper, 1 shell-burnishing tool, 1 spherical jade bead, 6 unworked bivalves, 5 unworked univalves, 1 censer cup noneffigy (Thul applique), sherds not classified	CR #9
	1 obsidian piece, 1 shell fragment, 1 small cut stone, sherds not classified	CR #9
	sherds not classified	CR #9
	2 obsidian pieces, sherds not classified	CR #9
	sherds not classified	CR #9
at least 2 adults in cist, partly burned	cluster of 98 obsidian blade fragments and chips, 7 obsidian blades, 1 obsidian core, 1 tubular shell nose plug with broadened end, 1 sculptured human head stone, 1 stone disk in cache, 1 obsidian knife in 4 pieces (cache), 1 chert knife in 3 pieces (cache), 1 chert knife in 2 pieces (cache), 1 chipped "point" (biface 11.4 cm long), 1 chipped flint biface with elongated tang, 2 broken chipped flint bifaces, 3 chipped flint biface fragments, 1 stalactite, painted/modeled stucco, charcoal, 8 unworked bivalve shells, 4 univalve shells, 44 fragments of human and animal bone, two basal break bowls from cache with cylindrical round bottom feet and no vents, sherds not classified	CR #9
		CR #9
	sherds	CR #5
	1,392 sherds, 24.6% of these were unidentified, 16.9% were Puuc, and 56.8% were Mayapán period pottery which included 10% censers (unclear if effigy or noneffigy) and 3 Fine Orange sherds, "a few" Classic sherds were noted including some polychrome, mano fragment, 1 obsidian piece, 1 shell fragment	CR #5
	lots of Mayapán period pottery, some earlier (see notes), a few obsidian blades, human and animal scattered bone, a cut animal long bone, and sherd spindle whorl **	CR #5
	mainly Mayapán period, with fewer Puuc or Classic period polychrome sherds	CR #5
	a few sherds	CR #5

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Cenote X-Coton	cenote	D-15	Pit 1 extension stratum 2, upper level	
Cenote X-Coton	cenote	D-17	Pit 1 extension stratum 1	
Cenote X-Coton	cenote	D-16	Pit 1 extension stratum 2, lower level	
Cenote X-Coton	cenote	D-10	Pit 2 taken to a depth of 152 cm without reaching bedrock	
Cenote X-Coton	cenote	D-9	Niche 1	
Cenote X-Coton	cenote	D-20	Niche 2	
Cenote X-Coton	cenote	D-7	Cave 1, rock pile sealing cave	12
Cenote X-Coton	cenote	D-14	Cave 2	1
Q-119a	dwelling	A-41	north central bench	
Q-119a	dwelling	A-42	north central bench, fill under floor below bench	
Q-119a	dwelling	A-43	south bench, fill below floor below bench	
Q-119a	dwelling	A-44	back room trenches, pits below floor level	
Q-119a	dwelling	general	two linked subfloor looted chambers, one with a stairway and the other with a bench, four columns	
Q-119a	dwelling	A-45	bench in rear subfloor chamber	
Q-119a	dwelling	A-46	terrace to northeast of structure, trench, midden fill	
R-100	dwelling	A-47	bench in rear shrine room	
R-100	dwelling	A-51	floor in front of bench in rear shrine room	
R-100	dwelling	A-49	center of back room	
R-100	dwelling	A-48	in front of passage between central front benches and rear room	
R-100	dwelling	A-50	in front of passage between central front benches and rear room (toward outside, adjacent to A-48)	5
K-52a	dwelling	A-72	stairway to structure	
K-52a	dwelling	A-75	trench in south passageway, above floor	
K-52a	dwelling	A-78	trench in south passageway, below floor	
K-52a	dwelling	A-80-1	under stones of south-central bench	
K-52a	dwelling	A-53	central passageway between Floors a and b	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
		CR #5
		CR #5
		CR #5
	pottery mixed by level, stratum 4 had 59 sherds from mostly Mayapán period, stratum 3 had no sherds, stratum 2 had 24 sherds of Mayapán period and Puuc, and stratum 1 had 15 sherds of both periods; stratum 4 included a censer head, some animal bones, and a flint chip	CR #5
	478 censer fragments and other sherds including a few Puuc, 1 stone human effigy wearing animal skin and holding offering	CR #5
	only 1 censer fragment and a dog head effigy, 29 bird and animal bones	CR #5
at least 12 individuals, including adults and a child of six or seven years	Puuc vessel in chamber beyond rock pile, maybe some Mayapán period sherds in there too, 1,293 sherds, great majority pre-Mayapán period, 90% were jars, lots of Puuc here (81%), 12.8% Classic, 3.8% Mayapán period	CR #5
adult burial covered with rocks	147 sherds, mainly Mayapán period	CR #5
	21 Mayapán period, 1 unidentified, 1 Puuc (23 total sherds)	CR #10
	animal bones, human tooth, polishing stone, and 7 sherds of Mayapán period	CR #10
	120 sherds, all Mayapán period (including 1 unidentified, 1 Fine Orange, 10 censer fragments), 3 shell fragments	CR #10
	48 sherds, 43 Mayapán period (including 4 censers), 5 unidentified	CR #10
		CR #10
	10 Mayapán period sherds	CR #10
	6 obsidian pieces, 5 flakes, 23 shell fragments, 5 animal bones, 2 bone awls, one tubular clay ornament, 1 square iron nail, and 1,283 sherds, 946 are Mayapán period, (including 106 censers, 14 Fine Orange, 1 Puuc, 6 Peten polychrome, 337 unidentified)	CR #10
	1 lithic flake, 82 sherds 1 Fine Orange, 11 censers, sherds: 16 unidentified, remainder Mayapán period	CR #10
	stone disk, 7 sherds, all Mayapán period	CR #10
	3 obsidian pieces, 1 lithic biface, 1 flake, 2 shell fragments, 1 animal bone, 83 sherds, 4 censers sherds, 14 unidentified, remainder Mayapán period	CR #10
2 fragments of human long bones	131 sherds, 7 censers, sherds: 42 unidentified, remainder Mayapán period	CR #10
skulls, 3 with long bones near crania	1 obsidian piece, 1 flake, 1 pottery figurine of woman, 89 sherds including 3 censer sherds, 20 unidentified	CR #10
	small tripod vessel	CR #10
	1 obsidian piece, 43 sherds, 12 unidentified, remainder Mayapán period including 4 censers	CR #10
	1 obsidian piece, 1 lithic flake, animal bones, 101 sherds (20 unidentified, remainder Mayapán period)	CR #10
	1 obsidian piece, "nest" of pottery vessels, 580 sherds of crushed jars of Mayapán period	CR #10
	1 obsidian piece, 76 sherds (9 unidentified, remainder unspecified)	CR #10

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
K-52a	dwelling	A-54	below Floor b to bedrock	1
K-52a	dwelling	A-76	trench of north passageway and extension to back room, top to floor	
K-52a	dwelling	A-79	trench of north passageway and extension to back room, floor to bedrock	
K-52a	dwelling	A-60	south bench, top to 50 cm	
K-52a	dwelling	A-63	south bench, 50cm to bedrock	
K-52a	dwelling	A-82	south central bench, from Floor a to bedrock	
K-52a	dwelling	A-81	north-central bench, from top to Floor b	
K-52a	dwelling	A-83	north central bench, from Floor b to bedrock	
K-52a	dwelling	A-70	north bench	
K-52a	dwelling	A-59	back room in line with central passageway, above Floor a	
K-52a	dwelling	A-62	back room in line with central passageway, Floor a to bedrock	3
K-52a	dwelling	A-74	north end of inner room, late partition in back room, next to A-59/62, surface to Floor a	
K-52a	dwelling	A-77	north end of inner room, late partition in back room, next to A-59/62, Floor a to bedrock	
K-52a	dwelling	A-52	shrine room, surface to Floor a	1
K-52a	dwelling	A-55	shrine room, Floor a to Floor b	
K-52a	dwelling	A-58-1	shrine room, Floor b to bedrock	7–9
K-52a	dwelling	A-71	bench in shrine room	
K-52b	two-bench dwelling	no lots given		
K-52c	altar shrine	A-64	bench	
K-52c	altar shrine	A-65	area between two floors	
K-52c	altar shrine	A-67	within the shrine beneath Floor b	
K-52c	altar shrine	A-68	burial vault	1
K-52c	altar shrine	A-66	bench in addition to shrine	
K-52c	altar shrine	A-69	bench in addition to shrine, below the bench to bedrock	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
child	1 bone spindle whorl, nearly whole pottery ladle, incense burner with olla at end of ladle, nearly whole human or animal effigy jar, pedestal base, restricted orifice vessel, 42 sherds (8 unidentified, remainder Mayapán period including 9 censers)	CR #10
	half of Mama Red tripod bowl with solid supports, pounding stone, 1 small piece slate, 2 flint polished stones, 154 sherds (23 unidentified, remainder Mayapán period including 24 censers)	CR #10
	1 shell fragment, 4 animal bones, 89 sherds (13 unidentified, remainder Mayapán period including 2 Fine Orange)	CR #10
	36 sherds (11 unidentified, 25 Mayapán period)	CR #10
	1 obsidian piece, 2 animal bones, 66 sherds (6 unidentified, remainder Mayapán period)	CR #10
	1 shell fragment, 2 pounding stones, 1 shark vertebra, 128 sherds of Mayapán period	CR #10
	1 obsidian piece, 1 worked shell, 1 animal bone, 54 sherds (7 unidentified, remainder Mayapán period)	CR #10
	1 conch shell cup, animal bone, 12 sherds (all Mayapán period)	CR #10
	1 whole conch shell, 165 sherds (14 unidentified sherds, remainder Mayapán period including 4 censers and 1 Fine Orange)	CR #10
	1 obsidian piece, 31 sherds (all Mayapán period including 14 censer sherds)	CR #10
adult skull with long bones, adult skeleton, elderly adult mandible	17 obsidian pieces, 1 rubbing stone, 1 carved tinkler shell, 89 sherds (6 unidentified, 1 Puuc, remainder Mayapán period including 1 Fine Orange and 4 censers)	CR #10
	53 sherds (1 recent, 4 unidentified, remainder Mayapán period including 10 censer sherds)	CR #10
	1 obsidian piece, 1 rubbing stone, 1 small stone disk, 1 shell fragment, 2 animal bones, 56 sherds (6 censers, others all Mayapán period)	CR #10
adult	1 obsidian piece, 2 rubbing stones, 1 fragment of stone ring with tenon, mano fragment, lava-footed metate fragment, 279 sherds (30 unidentified, 1 recent, remainder Mayapán period including 151 censers)	CR #10
	1 lava-footed metate fragment, 540 sherds (20 unidentified, 3 recent, remainder Mayapán period including 346 censers)	CR #10
1 adult skull with long bones, 1 adult skeleton with side-lying skull with long bones, 1 adult skull and vertebrae, 1 adult skull, 1 adult mandible, 1 partial child skull, 1 young adult skull	1 obsidian piece, 1 pottery jar neck (set into Floor B, a makeshift pedestal), 1 shell pendant, 161 sherds (5 unidentified, 1 Puuc, remainder are Mayapán period including 94 censers)	CR #10
	119 sherds (8 unidentified, remainder Mayapán period including 94 censers)	CR #10
		CR #10
	12 sherds (2 unidentified, remainder Mayapán period including 5 censers)	CR #10
	12 sherds (2 unidentified, remainder Mayapán period including 2 censers)	CR #10
	1 Olmec stone face (6.5 × 7 cm nonlocal greenstone), 8 sherds (3 unidentified, remainder Mayapán period including 1 censer)	CR #10
adult skeleton	1 pottery vessel fragment, 14 sherds (all Mayapán period)	CR #10
	21 sherds (7 unidentified, remainder Mayapán period including 3 censers)	CR #10
	15 sherds (3 unidentified, remainder Mayapán period)	CR #10

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
K-52c-K52a	trench between K-52a and K-52c	A-72	inter-structure trench, fill/midden fill over bedrock	
K-52d	two-bench structure	A-57	platform directly west of terrace supporting north bench	
K-52d	two-bench structure	A-73	trench at east edge of platform, in line with passageway between benches	
T-72	temple	C-2	shaft/ossuary	no. not given
T-70	temple	C-3	surface of temple	
T-70	temple	C-3	surface of temple	
T-70	temple	C-4	sealed fill	
T-70	temple	C-4	sealed fill	
T-70	temple	C-4a	trench through substructure fill	
T-70	temple	C-4a	trench through substructure fill	
T-70	temple	altar		
Cenote chen mul	cenote	D-29	section B of trench	
Cenote chen mul	cenote	D-30	section C of trench	
Cenote chen mul	cenote	D-69	not shown in excavation profiles published for cenote	
Q-58	temple	C-21	fill of late pyramid	
Q-58	temple	C-18	fill under floor below pyramid thought to have made level space for its construction, earliest construction	
Q-58	temple	C-20	shaft/ossuary	4+
Q-58	temple	C-17a	temple floor, shrine room	
Q-58	temple			
Q-58/59/60	plaza floor	C-17	surface and unsealed construction fill at east base of Q-58 and from Structures Q-59/60	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	1 shell fragment, 1 mini tripod cup, 90 sherds (33 unidentified, 1 Fine Orange, 1 fine gray, remainder Mayapán period including 15 censers)	CR #10
	60 sherds (4 unidentified, remainder Mayapán period including 9 censers)	CR #10
	265 sherds (159 unidentified, 1 Fine Orange, remainder Mayapán period including 33 censers)	CR #10
charred and fragmentary adult and children, plus animal bones	2 obsidian pieces, 17 flakes, 1,264 total sherds of which 710 were unidentified (including 140 red-slipped and 570 unslipped sherds), and 554 were identified, consisting of 97.1% Mayapán period (19.3% unslipped jars, 19.8% effigy censers, 4.8% ladle censers, 41.3% red-slipped, 2.9% Puuc, 11.9% other)	CR #11
	11 obsidian pieces, 1 obsidian projectile point (side-notched concave base), 18 flakes, 2 worked shells, 1 polished pebble, 1 greenstone celt, 5 jade beads/pendants (1 jade pendant looks like a Late Classic heirloom), 2 shell beads, 1 stucco fragment, 1 miniature Navula Unslipped vessel tecomate, 1 plumbate sherd (of the only 2 plumbate sherds found at Mayapán out of the total of 100,000 sherds)	CR #11
	4,901 sherds (3,536 unidentified), 1,365 are 87.2% Mayapán period (20.6% unslipped, 52.4% effigy censer, 13.8% red slipped, 0.4% Fine Orange), 6.4% Puuc, 6.4% miscellaneous unidentified slipped (including 1 Early Classic polychrome, 1 Tohil plumbate)	CR #11
	2 worked shells, 1 small sculpture (possibly a fish head), 1 dark brown stone bead, 5 jade beads, 1 jade ornament, 2 shell beads, 2 redware vessels, 1 Fine Orange tripod vessel fragment, Mama Red collared bowl and Fine Orange vessel fragment, incised redware bowl	CR #11
	319 sherds, 75% Mayapán period (13.7% unslipped jars, 2.2% noneffigy censer, 39.2% redware, 5.6% Black-on-Cream or coarse paste slate, 6.2% miscellaneous), 25% Puuc	CR #11
	3 obsidian pieces, 1 fragment of stone turtle	CR #11
	355 sherds: 20.5% Puuc, 79.5% Mayapán period (10.4% unslipped jars, 32.4% effigy censers, 28.2% redware, 2.5% Black-on-Cream or coarse paste slate, 6% unidentified)	CR #11
	human modeled stucco seated figure	CR #11
	sculptured human tenon head	CR #12
	sculptured animal-like head, animal femur with jaguar head on femoral ball	CR #12
	projectile point (side-notched square-based)	CR #12
	174 sherds: 23% unidentified; of identified, 10.3% Puuc, 89.7% Mayapán period (6.3% unslipped jars, 16.1% effigy censers, 34% Mayapán red-slipped ware, 8.6% Black-on-Cream, 1.7% Fine Orange)	CR #14
	2 obsidian pieces, 16 animal bones, 1 perforated stone, 226 sherds: 7.1% unidentified; of identified, 4.4% Puuc, 95.6% Mayapán period (23.9% unslipped jars, 3.1% ladle censers, 55.7% Mayapán red-slipped ware, 4.9% Black-on-Cream, 0.9% Fine Orange)	CR #14
more than 4 children and adults, plus animal and bird bones	12 obsidian pieces, 2 shell fragments, 1 jade bead, 466 sherds: 9% unidentified; of identified, 3% Puuc, 97% Mayapán period (15.5% unslipped jars, 24.7% effigy censers, 0.4% ladles, 46.6% Mayapán red-slipped, 0.4% Black-on-Cream, 0.4% Fine Orange)	CR #14
	1 obsidian piece, lots of censers at surface, 2,057 total sherds: 16% unidentified; of identified, 0.4% Puuc, 99.6% Mayapán period (1.8% unslipped jars, 71.9% effigy censers, 1.1% ladle censers, 7.7% Mayapán red-slipped, 0.6% Red-on-Cream, 0.4% Black-on-Cream, 0.1% Fine Orange)	CR #14
	rattle tail, serpent heads	CR #14
44 fragments of human and animal bones	6 obsidian pieces, 1 small obsidian core, 2 projectile points (side notch, round base), 1 stone object, 15 sculpture fragments, 2 cache vessels	CR #14

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Q-58/59/60	plaza floor	C-17	surface and unsealed construction fill at east base of Q-58 and from Structures Q-59/60	
Q-58	temple	unclear	plaza floor at base of stair	1
Q-58	temple	unclear	debris at foot of stairway	
Q-58	plaza floor	C-16	below second plaza floor, above bedrock or primary floor	
Q-59	altar/shrine, rectangular with shrine room	unclear	first shrine to the east from Q-58 stair	
Q-59	mini altar	C-17	off mound to west, only 36 cm across, with cache	
Q-59a	altar/shrine, circular shaft on top	C-15	second shrine to the east from Q-58 stair	3
Q-59a	altar/shrine, circular shaft on top	C-15		
Q-59b	altar/shrine, earlier round platform inside Q-59	C-19	burial cist, first shrine to the east from Q-58 stair, circular platform earlier with circular burial cist	1
Q-60	altar/shrine		third shrine to the east from Q-58 stair, altar is square-shaped with north and south staircases	1
Q-82	temple	C-34	debris midden/midden fill under plaza floor beneath building, sealed	
Q-82	temple			
Q-82	temple	C-32	surface debris within temple and over final phase, down to corners of stairway, lots of charcoal and ash	
Q-82	temple	C-32	surface debris within temple and over final phase, down to corners of stairway	
Q-82	temple	C-32?	surface debris within temple in front of altar thought to be from cist (its cist was looted at time of abandonment or just after, under roof debris)	
Q-82	temple	C-33	fill of benches, below floors, and stairway	
Q-82a	shrine	not provided	mini shrine built off southwest corner of temple, late, facing Castillo court	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	3,577 sherds, 28.9% unidentified; of identified, 2.7% Puuc, 97.3% Mayapán period (6.1% unslipped jars, 27.7% effigy censers, 0.7% ladle censers, 33.2% Mayapán red-slipped, 0.4% Fine Orange, 0.2% Black-on-Cream)	CR #14
1 male skeleton missing skull, jaw bone by the elbow; probably slain enemy warrior		CR #14
	several fragments of sculpture, 1 zoomorphic tenon head	CR #14
3 fragments of human bone	1 obsidian piece, 646 sherds: 18% unidentified; of identified, 9.4% Puuc, 90.6% Mayapán period (23.2% unslipped jars, 4.5% effigy censers, 0.3% ladle censers, 43.4% Mayapán red-slipped, 1.2% Black-on-Cream); most effigies from trench along north stair wall of Q-58.	CR #14
	fragments of stucco figure likely from shrine room	CR #14
	Cache, 2 Navula Unslipped vessels (1 olla, 1 miniature tecomate bowl); part of larger plaza Lot C-16	CR #14
3 articulated seated flexed adults, superimposed; second one burned, partial cremation or burning in the cist; other two not burned; three separate burial events	1 obsidian piece, 8 ladle censer vessels, 2 tripod dishes (interior is red-slipped, exterior is unslipped or cream, perhaps Tecoh Red-on-Buff), 1 jade bead, copal, charcoal, stucco from modeled human figure	CR #14
	653 sherds: 10.8% unidentified; of identified, 98.2% Mayapán period, 1.8% Puuc (Mayapán sherds include 11.8% unslipped jars, 20.1% effigy censers, 32.3% ladle censers, 22.1% Mayapán red-slipped ware, and 1.1% red on cream)	CR #14
adolescent, tightly flexed	1 obsidian piece, 1 stone basin, 3 fragments of painted stucco, 193 sherds: unidentified 5.2%; of identified, 2.1% Puuc, 97.9% Mayapán period (6.2% unslipped jars, 43.5% noneffigy censers, 43% Mayapán red-slipped)	CR #14
adult male in rectangular cist	no grave offerings	CR #14
	2 lithic flakes, 72 animal bones, 1 bone implement, sealed early debris, 785 sherds: 14.5% unidentified; of identified, 5% Puuc, 95% Mayapán period (10.5% unslipped jars, 0.4% noneffigy censers, 49% Mayapán red-slipped, 20% Black-on-Cream, 0.6% Fine Orange)	CR #14
	1 perforated stone disk, 3 serpent heads, a stone human torso	CR #14
	16 obsidian pieces, 1 flint point or pointed biface, 1 lithic flake, 9 worked shells (including 3 tubular beads and 4 shell tinklers), 1 small carved stone, 1 stingray spine, 1 bone awl, 20 animal bones, 1 miniature tripod cup (probably from looted altar, see below), 1 pot cover, 3 jade beads (1 unusually large spherical bead from looted altar) thousands of censer sherds (8,300 sherds), 80% censers, but 96% of censers within temple itself	CR #14
	8,364 sherds: 3.2% unidentified; of identified, 0.1% Puuc, 99.9% Mayapán period (1.9% unslipped jars, 80.2% effigy censers, 0.4% ladle censers, 13.5% Mayapán red-slipped, 0.2% red on cream, 0.4% Black-on-Cream, 0.1% Fine Orange)	CR #14
	jade bead and tripod cup	CR #14
	1 obsidian piece, 399 sherds: 1.5% unidentified; of identified, 2% Puuc, 98% Mayapán period (22.6% unslipped jars, 12.3% effigy censers, 1.5% ladle censers, 52.4% Mayapán red-slipped, 7.3% Black-on-Cream, 0.2% Fine Orange)	CR #14
		CR #14

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Q-95	temple	C-29	shaft/ossuary	41+
Q-95	temple	C-29	shaft/ossuary	
Q-95	temple	C-30	subterranean chamber dug into bedrock, predating temple, at center of its base	4
Q-95	temple	C-30		
Q-95	temple	C-31	surface/general excavations of substructure and temple	
Q-95	temple	C-31		
Q-81	colonnade		in front (south of) Q-80 Serpent Mask Temple	
Q-81	colonnade	C-70	fill over early construction, between Floors 1 and 2	
Q-81	colonnade	C-70	fill over early construction, between Floors 1 and 2	
Q-81	colonnade	C-71	fill, between Floors 2 and 3	
Q-81	colonnade	C-71a	cache under altar	
Q-81	colonnade	C-72	general excavation in colonnade and shrine	
Q-81	colonnade	C-72	general excavation in colonnade and shrine	
Q-143	serpent temple, east side of small court to the east of Castillo	C-101		
Q-143	serpent temple, east side of small court to the east of Castillo	C-101	debris inside temple	
Q-143	serpent temple, east side of small court to the east of Castillo	C-101		
Q-146	shrine platform	C-102	debris on surface of platform	
Q-146	shrine platform	C-102		
Q-146a	shrine	not provided	shrine 1 associated with Q-143	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
male and female adults, children, and animals	44 obsidian pieces (including 1 obsidian scraper), 2 pointed bifaces, 8 lithic flakes, 21 worked shells (including 3 perforated and 1 small tinkler, 2 shell pendants, 1 mini shell axe, 14 small shell beads), 3 shell fragments, 2 jade beads, 5 bone beads, 1 fragment gold, 1 copper disk, 50% censers in upper levels (effigy), absent in lower levels	CR #14
	2,211 sherds: 19.1% unidentified; of identified, 0.1% Puuc, 99.9% Mayapán period (10.5% unslipped jars, 41.7% effigy censers, 2.3% ladle censers, Mayapán red-slipped 24.2%, hard redware 0.8%, Red-on-Cream 0.5%, Black-on-Cream 0.4%, Fine Orange 0.4%)	CR #14
2 elderly adults (skeletons), 2 children disarticulated with deformed skulls, female, and children with cranial deformation (male uncertain)	12 obsidian pieces, 1 spherical hammerstone, 2 worked shells (including probable Spondylus pendant), 5 shell fragments, 2 oven footed tripod grater bowls, abundant animal bone, charcoal, ash, 1 jade bead, 3 limestone manos, 1 perforated animal tooth	CR #14
	657 sherds: 1.1% unidentified; of identified, 0.3% Puuc, 99.7% Mayapán period (50% unslipped jars, 45.7% Mayapán red-slipped, 1.1% hard redware, 0.5% Black-on-Cream, 1.3% Fine Orange)	CR #14
	charcoal, copal, 1 jade object, 1 bark beater, 1 polishing tool of fine hard limestone, 5 shell ornaments (including 1 bivalve), 2 shell fragments, 1 cut deer bone, fragments of painted wall plaster polychrome	CR #14
	2,072 sherds: 4.7% unidentified; of identified, 0.3% Puuc, 99.7% Mayapán period (5.3% unslipped jars, 66.2% effigy censers, 0.5% ladle censers, 21.7% Mayapán red-slipped, 0.2% Red-on-Cream, 0.5% Black-on-Cream, 0.5% Fine Orange)	CR #14
		CR #31
	5 obsidian pieces, 2 flakes, 2 shell fragments, 1 pestle of fine-grained limestone, 66 animal bones	CR #31
	765 sherds: 76 Puuc sherds, 689 Mayapán period sherds (300 unslipped Mayapán, 290 red-slipped, 2 hard redware, 4 Fine Orange, 93 Black-on-Cream)	CR #31
	2 obsidian pieces, 9 animal bones, 47 sherds, 7 Puuc sherds, 40 Mayapán period (13 unslipped, 4 human effigy censers, 21 Mayapán red-slipped, 2 Black-on-Cream)	CR #31
	1 bluish stone subspherical bead (under turtle effigy bowl), 2 cache vessels (1 red-slipped olla missing neck and loop handles), 1 ceramic human figure atop an anthropomorphic turtle, no sherds listed	CR #31
	6 obsidian pieces, 1 lithic flake, 7 animal bones, 1 limestone pot lid, 1 disk-shaped pink shell bead (Spondylus?), limestone turtle with Itzamna face, 1 red-slipped grater bowl, 4 speleothems, 7 effigy censers, 1 lidded jar with diving god figure	CR #31
	3,993 sherds: 22 Puuc sherds, 3,971 Mayapán period sherds (265 unslipped, 3,472 effigy human, 221 Mayapán red-slipped, 2 Red-on-Cream, 4 Fine Orange, 7 Black-on-Cream)	CR #31
	serpent sculpture elements	CR #32
	1 obsidian piece, 1 greenstone bead (subspherical)	CR #32
	3 Puuc sherds, 1,336 Mayapán period sherds (11 unslipped, 16 noneffigy, 1,285 effigy, 21 Mayapán red-slipped, 1 Fine Orange, 2 Black-on-Cream)	CR #32
	1 obsidian piece, 2 animal bones, 1 stucco face (Itzamna), 16 speleothems, 8 fragments of modeled stucco	CR #32
	641 Mayapán period sherds (284 unslipped, 241 human effigy, 114 Mayapán red-slipped, 1 Fine Orange, 1 Black-on-Cream)	CR #32
	base of limestone sculpture, feet, stone ring	CR #32

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Q-146a	central room associated with Q-146a	not provided		
Q-218/217	serpent temple	C-99	junction (alley?) between structures; small test	
Q-218/217	serpent temple	C-99	junction (alley?) between structures; small test	
Q-218	serpent temple	C-98		
Q-218	serpent temple	C-95		
Q-218b	shrine associated with Q-218	not provided		
Q-159	serpent temple	C-66	debris in front of altar	
Q-159	serpent temple	C-66	debris in front of altar	
Q-159	serpent temple	not provided		
Q-159	serpent temple	not provided		
Q-159	serpent temple	C-66		
Q-218	serpent temple	C-95	fill over buried structure	
Q-218	serpent temple	C-96	debris on summit of pyramid	
Q-218	serpent temple	C-96	debris on summit of pyramid	
Q-218	serpent temple	C-96a	fill in buried temple room	
Q-218	serpent temple	C-96b	contents of cache vessel	
Q-218	serpent temple	C-97	surface material north terraces	
Q-218	serpent temple	C-97	surface material north terraces	
Q-218	serpent temple	C-98	surface from base of stairs, plaza, platform on west of structure	
Q-218	serpent temple	C-98	surface from base of stairs, plaza, platform on west of structure	
Q-218	serpent temple	C-98a	surface to bedrock at base of stairway, mainly below plaza floor	
Q-218/217	serpent temple	C-99	northwest corner of substructure at junction with southeast corner of Q-217, mostly ashy midden	
Q-168	dwelling	A-250	surface	
Q-168	dwelling	A-250	surface	
Q-168	dwelling	A-252	sealed lot below floors of second structure, to below floors of first structure in north passage	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	4 stucco figure platforms with speleothems, Itzamna face	CR #32
large quantity of human and animal bone in ash deposit		CR #32
	92 human and animal bones and shell fragments, 1 bone awl fragment, 831 Mayapán period sherds (including 265 unslipped, 76 noneffigy, 93 miscellaneous censers, 104 effigy censers, 282 Mayapán red-slipped, 1 hard redware, 2 Red-on-Cream, 2 Black-on-Cream, 3 Fine Orange, 3 Cream ware)	CR #32
	serpent sculpture elements with hands projecting from them, truncated sacrificial stone at base of stair, spade-shaped element in front of altar, 2 interlocking scroll-sculpted fragments	CR #32
	concentration of obsidian chips, blades, scraper in front of temple	CR #32
	speleothems on surface of sculpture platform and possibly sculpted legs, 2 frog pottery effigies in cache	CR #32
	1 limestone turtle, 1 jade bead, 2 limestone hammerstones, modeled stucco	CR #32
	653 Mayapán period sherds (1 unslipped, 631 human effigy censers, 21 Mayapán red-slipped)	CR #32
	serpent sculptures, 2 stucco earth monster crouching figures thought to have ridden serpents, limestone turtle with a human head and hole in back, columned stone with holes at either end, columnar altar with itz/star motifs	CR #32
	large female stucco figure, animal "banner holder" (published by Proskouriakoff in later 1962 volume)	CR #32
	jade bead, small tripod cup, abundant censers in temple debris	CR #32
	43 obsidian pieces, 1 flint blade tip (pointed biface?), 3 shell fragments, 15 animal bones, 6 Puuc sherds, 805 Mayapán period (308 unslipped, 8 noneffigy, 40 human effigy, 420 Mayapán red-slipped, 1 hard redware, 2 Fine Orange, 20 Black-on-Cream, 6 unclassified)	CR #32
	24 obsidian pieces, 1 lithic flake, 1 obsidian scraper, spade-shaped limestone object	CR #32
	205 Mayapán period sherds (11 unslipped, 14 noneffigy censers, 163 effigy censers, 17 Mayapán red-slipped)	CR #32
	15 Puuc sherds, 9 Mayapán period sherds (5 unslipped, Mayapán red-slipped 4)	CR #32
	vessel in altar (Itzamna), 2 disk-shaped shell beads, one rectangular shell bead	CR #32
	4 obsidian pieces, 4 speleothems	CR #32
	288 sherds: 1 Puuc sherd, 287 Mayapán period sherds (90 unslipped, 1 noneffigy censers, 79 human effigy censers, 109 Mayapán red-slipped, 8 Black-on-Cream)	CR #32
	6 obsidian pieces (including one green), 4 stalactites	CR #32
	685 sherds: 10 Puuc sherds, 675 Mayapán period sherds (including 168 unslipped, 1 noneffigy censer, 325 effigy censers, 174 Mayapán red-slipped, 3 Fine Orange, 4 Black-on-Cream)	CR #32
	106 sherds: 5 Puuc, 101 Mayapán period (including 37 unslipped, 2 effigy censers, 56 Mayapán red-slipped, 6 Black-on-Cream)	CR #32
	831 sherds, all Mayapán period (265 unslipped, 76 noneffigy censers, 93 miscellaneous censers, 104 human effigy censers, 282 Mayapán red-slipped, 1 hard redware, 2 Red-on-Cream, 2 Black-on-Cream, 3 Fine Orange, 3 cream ware)	CR #32
	17 obsidian pieces, 2 hammerstones, 10 lithic flakes, 3 shell fragments, 14 animal bones, 1 piece of coral, 3 broken manos	CR #33
	1,068 sherds: 8 Puuc, remainder Mayapán period (including 39 effigy censers, 23 Fine Orange, 1 Red-on-Buff, 354 unidentified)	CR #33
1 human skull fragment	2 obsidian pieces, 2 shell ornaments (including 1 white disk bead), 9 animal bones	CR #33

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Q-168	dwelling	A-252	sealed lot below floors of second structure, to below floors of first structure in north passage	
Q-168	dwelling	A-254	north passage above second set of floors and below upper floor level	
Q-168	dwelling	A-255	trench in transverse room, from latest to lowest floor	
Q-168	dwelling	A-256	central bench in front room, above floor under bench	
Q-168	dwelling	A-257	south passage upper level, above second set of floors below top floor level	
Q-168	dwelling	A-258	south passage below Lot 257, between lowest and second sets of floors	
Q-168	dwelling	A-259	inside exterior construction (bench?) at rear of building	
Q-168	dwelling	A-260	in northeast bench, transverse room	
Q-168	dwelling	A-261	fill in front of south bench in front room, down to lowest floor	
Q-168	dwelling	A-262	in central bench, back room	
Q-168	dwelling	A-263	combined with Lot 265, inside southwest bench, transverse room and area around burial	
Q-168	dwelling	A-264	in south bench, front room	
Q-168	dwelling	A-265	combined with Lot 263, inside southwest bench, transverse room and area around burial	1
Q-168	dwelling	A-265	combined with Lot 263, inside southwest bench, transverse room and area around burial	
Q-168	dwelling	A-266	trench parallel to front of north bench in front room, down to lowest floor	
Q-168	dwelling	A-267	trench in front of central bench, front room	
Q-168	dwelling	A-268	trench in transverse room, parallel to e bench	
Q-168	dwelling	A-269	trench in front of north bench in front room	
Q-166/167	outbuilding/kitchen	A-251	surface	
Q-166/167	outbuilding/kitchen	A-253	below floor level in upper part of structure	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	333 sherds: 2 Puuc, 48 unidentified, remainder Mayapán period including 1 Black-on-Cream	CR #33
	2 obsidian pieces, 3 lithic flakes, 1 shell fragment, 5 animal bones, 257 sherds: 5 Puuc, 21 unidentified, remainder Mayapán period (including 1 effigy censer, 11 Black-on-Cream)	CR #33
	2 obsidian pieces, 5 shell fragments, 16 animal bones, 1 mano, 383 sherds: 39 unidentified, 4 Puuc, remainder Mayapán period (including 1 effigy censer, 4 Black-on-Cream, 3 Fine Orange)	CR #33
1 human skull fragment	1 fragment greenstone celt, 1 worked redware smoothing sherd, 120 sherds: 14 unidentified, 1 Puuc, remainder Mayapán period (including 1 Red-on-Buffer)	CR #33
	31 sherds: 4 unidentified, remainder Mayapán period	CR #33
1 bone fragment, might be human	1 shell fragment, 120 sherds: 3 unidentified, remainder Mayapán period (including 2 Fine Orange)	CR #33
	1 obsidian piece, 2 shell fragments, 1 polished burnishing stone, 89 sherds: 7 unidentified, 5 Puuc, remainder Mayapán period (including 2 Black-on-Cream)	CR #33
	3 obsidian pieces, 1 lithic flake, 1 shell fragment, 77 sherds: 17 unidentified, remainder Mayapán period (including 6 effigy censers)	CR #33
	1 broken mano, 31 sherds: 7 unidentified, remainder Mayapán period	CR #33
	1 lithic flake, 131 sherds: 34 unidentified, 1 Puuc, remainder Mayapán period (including 2 Red-on-Buffer, 1 Fine Orange)	CR #33
		CR #33
	1 obsidian piece, 1 hammerstone, 1 lithic flake, 88 sherds: 4 Puuc, remainder Mayapán period (including 1 Fine Orange)	CR #33
incomplete child skeleton, age eleven or twelve, mainly upper body and skull	with burial: 9 perforated cowrie shells, 1 whole cowrie shell, 1 shell tinkler, 1 shell pendant, 1 bone carving of serpent head, 2 bone awls (1 fragment), 1 obsidian projectile point (side notch, concave base), 1 flake; not necessarily with burial: 1 flint point, animal bones, 1 drilled flint chip, obsidian core, other obsidian pieces	CR #33
see burial listing above for Lot A-265	20 obsidian blades, 1 obsidian core, 1 lithic "point," 43 animal bones, 635 sherds: 77 unidentified, 9 Puuc, remainder Mayapán period (including 36 effigy censers, 5 Black-on-Cream, 1 Red-on-Buffer, 3 Fine Orange)	CR #33
	1 obsidian piece, 1 lithic flake, 1 small limestone carving (monkey head?), 339 sherds: 62 unidentified, 8 Puuc, remainder Mayapán period (including 21 effigy censers, 1 Black-on-Cream, 1 Red-on-Buffer, 4 Fine Orange)	CR #33
	1 obsidian piece, 1 flint "point," 1 lithic flake, 1 shell fragment, 87 sherds: 9 unidentified, 2 Puuc, remainder Mayapán period (including 5 effigy censers)	CR #33
	2 shell fragments, 11 animal bones, 467 sherds: 50 unidentified, 4 Puuc, remainder Mayapán period (including 19 effigy censers, 2 Fine Orange)	CR #33
fragments of human bone	1 obsidian piece, 1 lithic flake, 1 jaguar tooth, 2 shell tinklers, 61 sherds: 5 unidentified, 2 Puuc, remainder Mayapán period	CR #33
	29 obsidian blades, 2 cores, 1 lithic "tool," 10 lithic flakes, 6 shell fragments, 72 animal bones, 1 limestone polishing stone, 1 spherical stone, 1 mano, 2 worked pieces of pottery, 3,389 sherds: 806 unidentified, 16 Puuc, remainder Mayapán period (69 effigy censers, 19 Black-on-Cream, 12 Red-on-Buffer, 7 red-and-black-on-buffer, 27 Fine Orange)	CR #33
	699 sherds: 44 unidentified, remainder Mayapán period (including 1 Black-on-Cream, 1 Fine Orange)	CR #33

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Q-165	burial shrine room and a kitchen room	see lots below	between long colonnaded hall Q-164 and residential group Q-166–168, both rooms had burials, one in a cist, one in a bedrock cave and also in floors	
Q-165	burial shrine room and a kitchen room	A-440	exterior surface	
Q-165	burial shrine room and a kitchen room	A-441	interior surface of west room (smaller “kitchen,” one also had burials including some in cave chamber)	
Q-165	burial shrine room and a kitchen room	A-441	interior surface of west room (smaller “kitchen,” one also had burials including some in cave chamber)	
Q-165	burial shrine room and a kitchen room	A-441	same as above floor in southern part of west room	1
Q-165	burial shrine room and a kitchen room	A-442	interior surface of larger shrine room	
Q-165	burial shrine room and a kitchen room	A-443	under poor floor in west room	
Q-165	burial shrine room and a kitchen room	A-444	level in west room deeper than A-441 surface but not sealed	
Q-165	burial shrine room and a kitchen room	A-444	level in west room deeper than A-441 surface but not sealed	
Q-165	burial shrine room and a kitchen room	A-445	ossuary cist in front of dais in shrine room	5
Q-165	burial shrine room and a kitchen room	A-445	ossuary cist in front of dais in shrine room	
Q-165	burial shrine room and a kitchen room	A-446	below floor level of shrine room	
Q-165	burial shrine room and a kitchen room	A-447	small depression in bedrock in west room	2
Q-165	burial shrine room and a kitchen room	A-448	deep cave in west room	3+
Q-165	burial shrine room and a kitchen room	A-448	deep cave in west room	
Q-165	burial shrine room and a kitchen room	A-449	surface by rear terrace wall	
Q-165	burial shrine room and a kitchen room	A-450	under dais behind ossuary cist in shrine room	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
		CR #33
	14 obsidian pieces, 1 lithic hammetone, 10 lithic flakes, 4 shell fragments, 68 animal bones, 1 spindle whorl (with incised geometric design), 1,984 sherds: 412 unidentified, 12 Puuc, remainder Mayapán period (100 effigy censers, 33 Black-on-Cream, 36 Red-on-Buff and red-and-black-on-buff, 14 Fine Orange)	CR #33
	8 obsidian blades, 1 obsidian core, 4 lithic hammerstones, 2 lithic flakes, 4 shell ornaments (including 1 tinkler, 1 conch trumpet, 2 fragments of conch trumpets), 5 shell fragments, 1 metate, torso of pottery figurine, 1 figurine head, 1 worked long bone, 1 bone awl, 6 mano fragments, 2 bark beaters, 1 stone pendant fragment, 1 polishing stone, 1 stucco pendant, 1 antler fragment	CR #33
	2,177 sherds: 339 unidentified, 11 Puuc, remainder Mayapán period (63 effigy censers, 14 Black-on-Cream, 9 Red-on-Buff, and red-and-black-on-buff, 5 Fine Orange)	CR #33
	no grave goods	CR #33
	1 obsidian piece, 1 hammerstone, 2 animal bones, 1 fragment rocker stamp, 2 mano fragment, 259 sherds: 70 unidentified, remainder Mayapán period (17 effigy censer and 1 Fine Orange)	CR #33
	87 sherds: 3 unidentified, 2 Puuc, remainder Mayapán period (2 Black-on-Cream)	CR #33
	1,371 sherds: 132 unidentified, 21 Puuc, remainder Mayapán period (13 effigy censer, 37 Black-on-Cream, 1 Red-on-Buff, 21 Fine Orange)	CR #33
	45 obsidian pieces, 1 obsidian scraper, 1 lithic side scraper, 4 hammerstones, 1 lithic flake, 4 shell fragments, 36 animal bones, 1 drilled pig tusk, 1 shell pendant, 1 egg-shaped stone, 1 rubbing stone	CR #33
2 fully extended, 3 disturbed individuals	7 obsidian pieces, 4 animal bones, 1 pot, 2 figurines, 1 bone awl and needle found under burials in Lot A-451	CR #33
see burial list above	910 sherds: 111 unidentified, 6 Puuc, remainder Mayapán period (54 effigy censer, 9 Black-on-Cream, 6 Red-on-Buff, 5 Fine Orange)	CR #33
	207 sherds: 30 unidentified, 7 Puuc, remainder Mayapán period (4 effigy censer, 2 Black-on-Cream, 1 Fine Orange)	CR #33
both badly disturbed, presumably adults	possible grave goods: 1 jade bead, 1 shell bead, 2 olive shells, 1 drilled shell; not grave goods: 7 sherds, all Mayapán period	CR #33
cremated human and animal bones in bowl, plus 1 disturbed, 2 flexed, with heads to the north and northwest	Mayapán red-slipped restricted orifice bowl with lid	CR #33
see burial list above	473 sherds: 29 unidentified, 6 Puuc, remainder Mayapán period (6 effigy censers, 6 Black-on-Cream, 2 red-and-black-on-buff, 4 Fine Orange)	CR #33
	2 obsidian pieces, 3 lithic flakes, 65 animal bones, 1 tinkler fragment, 2 stone balls, 1,769 sherds: 398 unidentified, 1 Puuc, remainder Mayapán period (70 effigy censers, 2 Black-on-Cream, 3 Red-on-Buff, 17 Fine Orange)	CR #33
	1 obsidian piece, 1 lithic flake, 52 sherds: 6 unidentified, remainder Mayapán period (including 7 effigy censers)	CR #33

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Q-165	burial shrine room and a kitchen room	A-451	lowest 10–20 cm of cave in east room, presumably refers to the cist and not the cave (cave is in the west room)	
H-18	Itzmal Chen shrine	surface	crude three-sided crypt facing west associated with earlier (second) shrine	
H-18	Itzmal Chen shrine	C-126	crypt associated with second structure	4
H-18	Itzmal Chen shrine	C-126	crypt associated with second structure	11
H-18	Itzmal Chen shrine		latest, circular shrine	
H-18	Itzmal Chen shrine	C-131	substructure debris	
H-18	Itzmal Chen shrine	C-131	substructure debris	
H-18	Itzmal Chen shrine	C-132	sealed Lot inside substructure, between inner floor and plaza floor, below Lot C-124	
H-18	Itzmal Chen shrine	C-131	fill of outer substructure	
H-18	Itzmal Chen shrine	C-124	fill between floor of round temple under altar and floor inside substructure	
H-18	Itzmal Chen shrine	C-126	burial crypt	
H-18	Itzmal Chen shrine	C-116	surface of temple and substructure	
H-18/17 plaza	trench	C-134	between Structures H-18 and H-17 (main temple), below plaza floors	
H-18/17 plaza	trench	C-129	between Structures H-18 and H-17 (main temple), above plaza floors	
H-18/16 plaza	trench	C-136	between Structures H-18 and H-16 (east colonnaded hall), below plaza floors	
H-18/16 plaza	trench	C-135	between Structures H-18 and H-16 (east colonnaded hall), above plaza floors	
H-18a	sculptured shrine		south of south stairway of H-18	
H-18a	sculptured shrine	C-137	under sculptured slab in shrine	
H-18a	sculptured shrine	C-122	surface of shrine	
H-18a/15	trench	C-125	between Structures H-18a and H-15 (south colonnaded hall), above plaza floors	
H-18a/15	trench	C-130	between Structures H-18a and H-15 (south colonnaded hall), below plaza floor	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	1 bone awl, 1 bone needle, 89 sherds: 1 unidentified, 1 Puuc, remainder Mayapán period (including 43 Black-on-Cream)	CR #33
	8 obsidian pieces	CR #34
4 associated with first layer, complete but for 2 skulls and 3 mandibles, lower 2 vertebrae associated with skulls	conch shell trumpet in layer 1, sherds of Mayapán period (including incomplete grater bowl)	CR #34
11 (10 adults and 1 adolescent boy, loosely flexed) associated with second layer, complete but skulls not in place, only 1 mandible associated w a skull	animal bones, painted plastered speleothem fragment, broken stone sculpture fragment, 5 modeled plaster fragments (not clearly grave goods)	CR #34
	noneffigy censer and monkey carving, round banner altar, polished jade bead; probably looted prior to investigations	CR #34
	3 obsidian pieces, 2 stone rings, stone turtle with glyphs on back	CR #34
	345 sherds: 1 unidentified, 8 Puuc, remainder Mayapán period (including 86 human effigy censers, 2 Black-on-Cream)	CR #34
	1 obsidian piece, 1 lithic tool, 43 sherds: 4 Puuc, remainder Mayapán period (including 6 Black-on-Cream)	CR #34
	2 obsidian pieces, 118 sherds: 16 Puuc, remainder Mayapán period (including 4 Black-on-Cream)	CR #34
	27 obsidian pieces, 2 shell fragments, 2 bird bones, 1 jade bead, 1 mano, 234 sherds: 9 unidentified, 15 Puuc, remainder Mayapán period (52 human effigy censers, 13 Black-on-Cream)	CR #34
see burials described above	human, fish, and bird bones, 132 sherds: 3 Puuc, remainder Mayapán period (2 Tulum incised redware, 1 Black-on-Cream)	CR #34
	1 stone turtle, 2 stone ring fragments, 1 stone monkey, 345 sherds: 1 unidentified, 8 Puuc, remainder Mayapán period (86 human effigy censers, 2 Black-on-Cream)	CR #34
	52 sherds: 11 Puuc, remainder Mayapán period (including 16 effigy censers)	CR #34
	46 sherds: 1 Puuc, remainder Mayapán period (including 22 human effigy censers)	CR #34
	56 sherds: 5 Puuc, remainder Mayapán period (14 human effigy censers, 1 Black-on-Cream)	CR #34
	49 sherds: 1 Puuc, remainder Mayapán period (27 human effigy censers, 1 Red-on-Cream, 3 Black-on-Cream)	CR #34
	jade beads, shell beads, stone sculpture, effigy censers, plastered speleothems, miniature vessels, pottery box	CR #34
	2 jade beads, 1 fragment of copper	CR #34
	2 stone turtles, 2 stone ring fragments, 4 jade beads, 3 shell beads, 1 shell ornament, 660 sherds: 6 Puuc, remainder Mayapán period (341 belong to a small unpainted human effigy censer); effigy censer sherds not collected from foot of stucco figure but were numerous	CR #34
	59 sherds: 2 unidentified, 3 Puuc, remainder Mayapán period (17 human effigy censers)	CR #34
	1 obsidian piece, 55 sherds: 2 unidentified, 4 Puuc, remainder Mayapán period (14 human effigy censers, 1 Black-on-Cream)	CR #34

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
A-1	shrine	A-595		
A-1	shrine	A-595		
J-71a	dwelling? (atypical)	A-545	northeast corner of north room surface; structure destroyed by fire	
J-71a	dwelling? (atypical)	A-542	surface of structure	
J-71a	dwelling? (atypical)	A-549	trench between central room passageway and on either side of it, between floor and bedrock	
J-71b	dwelling	A-547	floor of possible shrine room (rear east room) surface; structure destroyed by fire	
J-71b	dwelling	A-548	front room just to side of central doorway, set into floor	
J-71b	dwelling	A-543	surface of structure	
J-71b	dwelling	A-543	surface of structure	
J-71b	dwelling	A-548	below floor east passageway and front and back rooms down to bedrock	
J-71d	altar	A-546	in center of court, below court floor level under structure	
J-71d	altar	A-546	in center of court, below court floor level under structure	
K-67 group	sascabera	A-541	test unit in sascabera south of K-67a	
K-67a	dwelling	A-539	tomb in doorway	2
K-67a	dwelling	A-539	tomb in doorway	
K-67a	dwelling	A-538	cache in pit in front of doorway, outside structure	
K-67c	dwelling	A-540	under lowest floor in passageway	
K-67 group		A-536	location in group not provided	
K-67c	dwelling	A-537	pits in west bench of K-67c	
P-14a	c-shaped one-room oratory	A-590	altar cache, altar in recess in back wall	
P-14a	c-shaped one-room oratory	A-585	tomb in center of room	5
P-14a	c-shaped one-room oratory	A-584	surface	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	small tripod vessel, from under floor with 6 beads (2 jade and 4 shell)	CR #36
	2 obsidian pieces, 160 sherds: 63 unidentified, 2 Puuc, remainder Mayapán period (including 46 censers)	CR #36
	"several" reconstructed vessels on floor of possibly burned roof structure (only one shown), Mama Red jar with strap handles, 858 sherds: 131 unidentified, remainder Mayapán period (including 1 Fine Orange)	CR #36
	1 flint biface, 1 shell tinkler, 629 sherds: 131 unidentified, remainder Mayapán period (1 Fine Orange, 11 censers)	CR #36
	3 obsidian pieces, 2 lithic flakes, 2 shell fragments, 3 animal bones, 155 sherds: 11 unidentified, remainder Mayapán period	CR #36
	2 whole pots (1 shown is a Mama Red jar), 149 sherds, all Mayapán period	CR #36
	1 obsidian piece, 1 hammerstone, 1 lithic flake, 4 animal bones, 1 olla neck set into floor, 1 greenstone celt fragment, 170 sherds: 7 unidentified, remainder Mayapán period (1 Fine Orange, 4 censers)	CR #36
	1 hammerstone, 1 stone alligator head, worked manatee rib, rubbing stone, figurine head, mano	CR #36
	865 sherds: 203 unidentified, 1 Puuc, remainder Mayapán period (including 1 Fine Orange, 47 censers)	CR #36
	1 obsidian piece, 1 pointed biface, 1 hammerstone, 1 greenstone celt fragment, 170 sherds: 7 unidentified, remainder Mayapán period (including 1 Fine Orange, 4 censers)	CR #36
	1 jade bead, 2 shell beads, 1 segment of cut bone, 4 projectile points (1 has side notch, round base), small pottery turtle with human face	CR #36
	87 sherds: 15 unidentified, remainder Mayapán period	CR #36
	69 sherds: 17 unidentified, remainder Mayapán period (2 Fine Orange, 3 censers)	CR #36
1 male adult, extended, cranial deformation; 1 extra adult mandible only	2 pieces of coral, 1 fragment of bivalve, 2 stone disks, 2 pottery feet standing on animals, pottery serpent figurine head, pottery human figurine heads, 6 animal bones.	CR #36
see burials above	795 sherds: 9 unidentified, remainder Mayapán period (510 censers)	CR #36
	2 ceramic turtles with human heads in mouths, 2 sherds, both Mayapán period	CR #36
	12 sherds, all Mayapán period (1 Fine Orange)	CR #36
	4 obsidian pieces, 1 pointed biface or projectile point, 6 lithic flakes, 1 shell ornament, 1 shell fragment, 6 animal bones, 1 effigy censer face (Itzamna), 1 grooved rubbing stone, 1 rubbing stone, 1 mano fragment, 2,500 sherds: 555 unidentified, 1 plumbate, remainder Mayapán period (11 Fine Orange, 122 censers)	CR #36
	1 shell, 151 sherds: 1 unidentified, remainder Mayapán period (1 Fine Orange)	CR #36
	2 small pottery bowls and lids, 1 conch shell trumpet, 1 pounding stone, 1 shell bead in each bowl, no sherds listed	CR #36
elderly male on right side facing north with flexed legs, adult female bones burned, elderly female lying on left side with legs flexed, a very old female, adult male	4 obsidian pieces, 1 bifacial projectile point (or drill/perforator), 1 lithic "point" fragment, 1 copper tweezer (under skull of old male), carved deer antler, deer antler, 3 stingray spines, 1 shell ornament, 1 shell fragment, pottery disk, 135 sherds: 14 unidentified, remainder Mayapán period (1 Fine Orange)	CR #36
	3 obsidian pieces, 1 pointed biface, 2 lithic flakes, 3 conch shell fragments, 1 bark beater, 1 greenstone celt, 765 sherds: 233 unidentified, remainder Mayapán period (3 Fine Orange, 15 censers)	CR #36

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
P-23c	c-shaped one-room oratory	A-583	surface	
P-23c	c-shaped one-room oratory	A-586	bedrock cavity used for tomb in front of altar	3
P-28b	c-shaped one-room oratory	A-588	surface material of structure	
P-28b	c-shaped one-room oratory	A-594	material in burial cist	1
P-28b	c-shaped one-room oratory	A-593	shaft inside altar	
Q-37a	c-shaped one-room oratory	A-587	burial in front of altar	2
Q-37a	c-shaped one-room oratory	A-587	burial in front of altar	
Q-37a	c-shaped one-room oratory	A-591	altar above lowest floor	
Q-37a	c-shaped one-room oratory	A-592	below lowest floor below altar	
Q-37a	c-shaped one-room oratory	A-582	surface of structure	
Q-244b	dwelling–elite	A-500	floor of rear shrine room, Room 3 above floor	
Q-244b	dwelling–elite	A-500	floor of rear shrine room, Room 3 above floor	
Q-244b	dwelling–elite	A-501	surface	
Q-244b	dwelling–elite	A-501	surface	
Q-244b	dwelling–elite	A-503	below floor of west end of Room 2	
Q-244b	dwelling–elite	A-521	cist broken through floor into fill of Room 1	7
Q-244b	dwelling–elite	A-521	cist broken through floor into fill of Room 1	
Q-244b	dwelling–elite	A-526	southern extension of pit with Lot A-521 cist broken through floor into fill of Room 1, below floor to bedrock	
Q-244b	dwelling–elite	A-523	inside most eastern terrace of structure	
Q-244b	dwelling–elite	A-524	trench center-north side of structure, between top terrace floor in front of Room 1 and floor just above bedrock	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	1 obsidian piece, 1 perforated and notched shell disk, 3 metates, 284 sherds, 69 unidentified, 1 Puuc slate, remainder Mayapán period (4 Fine Orange)	CR #36
maybe 2 males and one female	1 modified deer antler tine	CR #36
	3 lithic flakes, 1 animal bone, 171 sherds, 40 unidentified, remainder Mayapán period (4 Fine Orange, 10 censers)	CR #36
adult male	jar with stone lid, 1 hammerstone, 2 bone/antler earplugs, mini pottery vessel	CR #36
	spiral shell, 237 sherds: 24 unidentified, 1 Puuc, remainder Mayapán period (2 Fine Orange, 14 censers)	CR #36
elderly female, very old male, disturbed	1 drilled turtle plastron and carapace, 1 limestone metate, wetstone of exotic material, 2 hammerstones, 1 notched projectile point, 1 flint biface, 4 lithic flakes, 5-sided rubbing stone, 1 rubbing stone, 2 deer antlers, 1 drilled shell disk, 1 worked shell, 1 small shell, 2 animal (jaguar?) teeth, agouti jaw fragment, 1 bone spindle whorl, 1 stingray spine fragment, bone tube, bone awl	CR #36
see burials above	647 sherds: 42 unidentified, 4 Puuc, remainder Mayapán period (83 censers)	CR #36
	1 perforated shell tinkler, 1 shell fragment, 20 sherds: 8 Puuc, 2 probably Puuc, remainder Mayapán period	CR #36
	8 sherds: 2 Puuc, remainder Mayapán period (1 Fine Orange)	CR #36
	3 obsidian pieces, 109 sherds: 25 unidentified, remainder Mayapán period (1 Fine Orange, 3 censers)	CR #36
	stone turtle with hole in its back and ahau glyphs on outer carapace, stone human face with turban headdress, small stone crouching human, abundant censer sherds	CR #36
	488 sherds: 100 unidentified, remainder Mayapán period (1 Fine Orange, 151 censers)	CR #36
7 human bones	33 obsidian pieces, 1 obsidian core, 1 obsidian arrow point (atypical), 4 pointed bifaces, 1 possible projectile point, 15 lithic flakes, 1 perforated shell tinkler, 1 shell bead, 4 perforated shells, 4 shell fragments, 14 animal bones, limestone metate and 2 manos (Room 2), 4 other mano fragments (1 grooved, 1 volcanic), small crouching stone figure (apart from the one found in Room 3), lava metate fragment, bone with four perforations, drilled sherd (possible spindle whorl), pottery plate with pedestal base (heirloom?), stone diving figure fragment	CR #36
	6,062 sherds: 1,491 unidentified, 7 Puuc, remainder Mayapán period (46 Fine Orange, 648 censers)	CR #36
	1 obsidian projectile point (side notched concave base), 1 pointed biface, 1,059 sherds: 79 unidentified, remainder Mayapán period (5 Fine Orange, 152 censers)	CR #36
2 adult males, 2 adult females, 2 adults, 1 infant	5 obsidian pieces, 2 pointed bifaces, 1 biface, 1 hammerstone, 1 shell fragment, 4 pottery figurines (3 female, 1 male), 1 jade tubular bead, 1 jade bead (not shown)	CR #36
see burials above	231 sherds: 23 unidentified, remainder Mayapán period (3 Fine Orange, 34 censers)	CR #36
see burials above	8 obsidian pieces, 1 hammerstone, 1 lithic flake, lower deposit of copal, pottery vessel, lid, 1 stone bead, 1 small blue greenstone object, 309 sherds, 17 unidentified, 2 Puuc, remainder Mayapán period (4 Fine Orange, 21 censers)	CR #36
	4 obsidian pieces, 1 pointed biface, 1 biface, 3 lithic flakes, 2 shell tinklers, 2 shell fragments, 45 animal bones, 1 obsidian thumbnail scraper, 646 sherds: 35 unidentified, remainder Mayapán period (6 Fine Orange, 11 censers)	CR #36
	2 obsidian pieces, 1 pointed biface "spear point," 8 lithic flakes, 1 pottery mask (perforated pectoral element, crude face), 1 bone ring, 37 sherds: 2 unidentified, remainder Mayapán period (6 censers)	CR #36

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Q-244b	dwelling–elite	A-527	pit through terrace east of Room 6	
Q-244b	dwelling–elite	A-529	bench in Room 3	
Q-244b	dwelling–elite	A-530	pit in center Room 2, top floor to bedrock	
Q-244b	dwelling–elite	A-531	between floor of Room 6 and upper floor	
Q-244b	dwelling–elite	A-532	below floor of Room 3	
Q-244b	dwelling–elite	A-533	below floor of Room 5	
Q-244b	dwelling–elite	A-534	from lowest plaza floor and bedrock off north side of structure	
Q-244 group	dwelling–elite	A-506	pit off west side of Group Q-244 before trench into west wall of platform that supports group, 30 cm below surface soil to bedrock, surface material is in Lot A-501	
Q-244 group	dwelling–elite	A-507	west wall of platform supporting Group Q-244	
Q-244 group	dwelling–elite	A-515	pit off of west side platform supporting Group Q-244	
Q-244 group	dwelling–elite	A-518	pit into west side platform supporting Group Q-244	
between Q-244b elaborate residence and d altar	dwelling–elite	A-535	burial in court	2
Q-244d	altar	A-525	cist and cache just south of altar cut into bedrock	
Q-244c	one-room structure	A-519	south end of structure, surface to bedrock	
Q-244c	one-room structure	A-520	north end of structure, surface to bedrock	
Q-244c	one-room structure	A-522	pit in center	1
Q-244c	one-room structure	A-522	pit in center	
Q-244d	altar	A-528	central area, surface to bedrock	
R-30b	altar		pit in center	
R-30f	c-shaped one-room oratory	A-557	rear altar	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	3 obsidian pieces, 3 lithic flakes, 30 animal bones (including turtle plastron fragment), 919 sherds: 180 unidentified, remainder Mayapán period (2 Fine Orange, 19 censers)	CR #36
	1 obsidian piece, 2 lithic flakes, 1 stone pot lid, 1 perforated bivalve shell, 251 sherds: 15 unidentified, remainder Mayapán period (1 Fine Orange, 19 censers)	CR #36
	1 obsidian piece, 1 bifacial projectile point, 2 lithic flakes, 1 stone disk pot lid, 1 pottery vessel (Thul applique, pedestal base olla/noneffigy censer), 108 sherds: 5 unidentified, remainder Mayapán period (13 censers)	CR #36
	1 lithic flake, 72 sherds: 9 unidentified, remainder Mayapán period (6 censers)	CR #36
	3 lithic flakes, 1 tubular jade bead, 1 bivalve shell bead, 86 sherds: 10 unidentified, remainder Mayapán period (7 censers)	CR #36
	1 hammerstone, 105 sherds: 4 unidentified, remainder Mayapán period (5 censers)	CR #36
	1 obsidian piece, 66 sherds, all Mayapán period (3 censers)	CR #36
	209 sherds: 86 unidentified, remainder Mayapán period (2 Fine Orange, 8 censers)	CR #36
	sherd collection lost	CR #36
	1 obsidian piece, 1 olive shell, 2 animal bones, 389 sherds: 89 unidentified, remainder Mayapán period (2 Fine Orange, 32 censers)	CR #36
	10 obsidian pieces, 1 lithic scraper, 3 lithic flakes, 4 shell fragment (conch and bivalve), 39 animal bones, 1 drilled sherd (spindle whorl?), 3 antler fragments, 1,264 sherds: 92 unidentified, 2 Puuc, remainder Mayapán period (10 Fine Orange, 332 censers)	CR #36
1 adult (female?) and 1 child, four years old	bone awls (deer metapodials) and 1 obsidian in burial, no sherds reported	CR #36
	2 pottery vessels (Navula Unslipped tripod cup inside of a Navula olla), 1 shell and 1 jade bead inside sealed vessel, 24 sherds, all Mayapán period	CR #36
	7 obsidian pieces, 1 wedge-shaped axe, 1 hammerstone, 1 scraper, 17 lithic flakes, 1 conch shell fragment, 49 animal bones, 895 sherds: 53 unidentified, 1 Classic period, remainder Mayapán period (4 Fine Orange, 31 censers)	CR #36
	3 obsidian pieces, 1 pointed biface (parallel sided), 1 lithic flake, 2 shell fragments, 297 sherds: 30 unidentified, remainder Mayapán period (2 Fine Orange, 31 censers)	CR #36
two-year-old child	8 obsidian pieces, 1 obsidian thumbnail scraper, 1 flint thumbnail scraper, 1 round scraper, 1 utilized flake, 8 lithic flakes, 1 large tubular jade bead, 1 bone awl, 1 perforated jaguar tooth, 1 perforated shell tinkler figure, 1 carved bone fragment, drilled sherd (possible spindle whorl), 1 smoothing sherd, 4 conch fragments, 2 coral pieces, miscellaneous animal bones	CR #36
see burials above	1,514 sherds: 57 unidentified, 2 Puuc, remainder Mayapán period (13 Fine Orange, 116 censers)	CR #36
	tripod redware olla (oven-shaped supports, olla with high neck), 108 sherds: 2 unidentified, remainder Mayapán period	CR #36
	no artifacts reported	CR #36
	1 small stone monkey, 75 sherds: 4 unidentified, remainder Mayapán period (3 Fine Orange)	CR #36

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
R-30f	c-shaped one-room oratory	A-555	surface of structure	
R-91	c-shaped one-room oratory	A-571	surface	
R-91	c-shaped one-room oratory	A-580	altar cache	
R-91	c-shaped one-room oratory	surface	altar surface	
R-91	c-shaped one-room oratory	A-579	front of altar on floor	
R-91	c-shaped one-room oratory	A-580	altar cache	
R-91	c-shaped one-room oratory	A-581	below floor inside and in front of structure	
R-126a	c-shaped one-room oratory	A-562	trench under floor	
R-126a	c-shaped one-room oratory	A-562	trench under floor	
R-126a	c-shaped one-room oratory	A-559	surface material of structure	
R-126a	c-shaped one-room oratory	A-559	surface material of structure	
R-126a	c-shaped one-room oratory	A-562	below floor inside structure to bedrock	
R-142c	c-shaped one-room oratory	A-544	surface	
R-142c	c-shaped one-room oratory	A-550	front of altar on floor	3
R-142c	c-shaped one-room oratory	A-550	front of altar on floor	
R-142c	c-shaped one-room oratory	A-552	below floor under altar	
R-142e	altar	A-551	pit in center	
R-171b	c-shaped one-room oratory	A-569	surface of structure	
R-171b	c-shaped one-room oratory	A-572	between Floors 1 and 2	
R-171b	c-shaped one-room oratory	A-573	between Floor 2 and bedrock	
S-133a	dwelling? (atypical)	A-553	surface	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	1 spindle whorl, 887 sherds: 283 unidentified, remainder Mayapán period (3 Fine Orange, 5 censers)	CR #36
	shell axe-shaped pendant, 1 rubbing stone, 1 animal bone, 609 sherds: 70 unidentified, remainder Mayapán period (1 Fine Orange, 403 censers)	CR #36
	tripod pottery dish (12 cm diameter), 1 pottery effigy vessel (large pedestalled face cup); 1 jade bead, 1 small shell bead, and a few animal bones were all found in the cup	CR #36
	2 feet belonging to a seated stucco figure, legs were supported by large speleothems	CR #36
	between pair of feet in front of altar: 1 tripod face cup (mat symbol descends from forehead between eyes and over nose), 1 jade and 2 shell beads in the cup, no sherds listed	CR #36
	15 sherds, all Mayapán period	CR #36
	1 stone bark beater, 30 sherds, all Mayapán period	CR #36
	1 tripod cup (noneffigy?) that is nearly identical to that in Lot A-559, 1 cut antler, 1 bone awl (deer metapodial)	CR #36
	105 sherds: 4 unidentified, remainder Mayapán period	CR #36
	1 obsidian piece, 1 pointed biface, 1 polished biface, 1 hammerstone, 3 lithic flakes, 1 incised shell tinkler, 5 shell fragments (including conch and bivalve), 1 stone cube, 1 pottery mold (not shown), 2 rubbing stones, 1 mano fragment, 1 tripod vessel (small tripod cup, noneffigy), 1 pottery vessel stand (pedestalled with vertical gadrooning or paint and a mat applique oriented vertically)	CR #36
	162 sherds: 32 unidentified, remainder Mayapán period (8 Fine Orange, 10 censers)	CR #36
	1 bone awl, 1 cut antler, 1 small tripod cup (Navula Unslipped like example on surface in Lot A-559), 105 sherds: 4 unidentified, remainder Mayapán period	CR #36
	1 greenstone celt, 116 sherds: 23 unidentified, remainder Mayapán period (Fine Orange, 1 censer)	CR #36
1 male center (extended), 1 female (extended), 1 female (side flex facing north); all adults	2 obsidian pieces, 4 copper rings (one with a human head), 1 jade bead	CR #36
see burials above	262 sherds: 13 Puuc, remainder Mayapán period (1 Fine Orange)	CR #36
	64 sherds: 5 unidentified, 2 Puuc, remainder Mayapán period (1 Fine Orange)	CR #36
	6 lithic flakes, 1 utilized Mayapán red-slipped sherd, 99 sherds: 13 unidentified, remainder Mayapán period (3 Fine Orange, 5 censers)	CR #36
2 fragments of human femur	1 obsidian piece, 1 rubbing stone, 1 stone disk, 3 lithic flakes, 1 shell fragment, 3 animal bones, 163 sherds: 39 unidentified, 1 Puuc, remainder Mayapán period (5 censers)	CR #36
	1 obsidian piece, 2 animal bones, 28 sherds, all Mayapán period (1 Fine Orange, 2 censers)	CR #36
	2 obsidian pieces, 1 obsidian core, 1 biface fragment, 3 lithic flakes, 4 shell fragments, 1 animal bone, 194 sherds: 31 unidentified, remainder Mayapán period (9 censers)	CR #36
	1 pointed biface, 2 lithic flakes, 3 conch fragments, 137 sherds: 60 unidentified, remainder Mayapán period (5 Fine Orange, 5 censers)	CR #36

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
S-133a	dwelling? (atypical)	A-556	burial north of platform supporting structure	1
S-133a	dwelling? (atypical)	A-558	below floor in trench in front room extending into west passageway	
S-133a	dwelling? (atypical)	A-560	below floor in trench in front room between benches at east end	
S-133a	dwelling? (atypical)	A-565	between top of central bench and floor to 40 cm in cist	
S-133a	dwelling? (atypical)	A-566	below floor 40 cm below top of central bench in cist	
S-133a	dwelling? (atypical)	A-567	inside west bench front room	
S-133b	dwelling? (atypical)	A-554	surface	
S-133b	dwelling? (atypical)	A-554	surface	
S-133b	dwelling? (atypical)	A-561	above floor south of altar in Room 2	
S-133b	dwelling? (atypical)	A-564	stone lined cist under south bench in Room 1	
S-133b	dwelling? (atypical)	A-563	tomb under central bench in Room 1	5
S-133b	dwelling? (atypical)	A-568	inside bench at south end of Room 3	
S-133b	dwelling? (atypical)	A-575	pottery neck in floor of Room 2 north of altar	
Y-2d	c-shaped two-room oratory	A-505	tomb under passageway between benches in front room	2
Y-2d	c-shaped two-room oratory	A-502	surface	
Y-2d	c-shaped two-room oratory	A-504	below level of secondary construction and above Floor 1 between benches of front room and leading into back room	
Y-2d	c-shaped two-room oratory	A-508	under Floor 1 in back room and under this level under bench at south end back room down to floor of cist	
Y-2d	c-shaped two-room oratory	A-509	from bench along back wall in back room	
Y-2d	c-shaped two-room oratory	A-510	below top bench at south end back room down to Floor 1	
Y-2d	c-shaped two-room oratory	A-511	inside south bench front room	
Y-2d	c-shaped two-room oratory	A-512	inside north bench front room to bedrock	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
flexed skeleton of adult female	1 stingray spine, 31 sherds: 3 unidentified, remainder Mayapán period (1 censer)	CR #36
	1 obsidian piece, 90 sherds: 10 unidentified, remainder Mayapán period (5 censers)	CR #36
	52 sherds: 2 unidentified, remainder Mayapán period (1 censer)	CR #36
	29 sherds: 5 unidentified, remainder Mayapán period	CR #36
	127 sherds: 14 unidentified, 7 Puuc, remainder Mayapán period (8 censers)	CR #36
	71 sherds: 7 unidentified, remainder Mayapán period (6 censers)	CR #36
	1 biface, 1 shell ornament (<i>Marginella labiata</i>), 1 miniature stone temple, 1 basalt tool or metate leg, 1 basalt mano fragment, 3 other mano fragments (1 of foreign material), 1 stone crouching figure, 1 miniature stone altar (with circular knob), 1 polishing pebble, 4 stone cord holders, 1 pottery mold (not shown), 5 rubbing stones (1 fragment)	CR #36
	1,635 sherds: 426 unidentified, 14 Puuc, remainder Mayapán period (16 Fine Orange, 75 censers)	CR #36
	rubbing stone, 689 sherds: 16 unidentified, remainder Mayapán period (including 344 censers)	CR #36
	1 pointed biface, 77 sherds: 2 unidentified, 2 Puuc, remainder Mayapán period (2 censers)	CR #36
few long bones recovered, 3 adults and 2 children (1 old male skull burned black)	1 complete pottery puppet, 1 copper ring, 1 jade bead, 28 sherds, all Mayapán period (4 censers)	CR #36
	1 metate of foreign stone (with 3 supports), 1 shell bead, no sherds	CR #36
	1 pottery neck in floor of Room 2, 4 sherds, all Mayapán period.	CR #36
1 young adult female, side flexed with head to east, 1 baby skull	1 obsidian piece, 1 projectile point (side notched), 1 bone spindle whorl, 2 copper ring, 1 conch shell fragment, 78 sherds: 4 unidentified, remainder Mayapán period (3 Fine Orange, 37 censers)	CR #36
	1 small conch shell, 3 stone pot lids, 1 obsidian arrow point (triangular, not side notched, concave base), 1 stone ring (with eroded turtle? face and notched flange and possibly painted black stripes down sides), 1 stone cord holder, 1,134 sherds: 43 unidentified, remainder Mayapán period (16 Fine Orange, 889 censers)	CR #36
	386 sherds: 7 unidentified, remainder Mayapán period (1 Fine Orange, 297 censers)	CR #36
	1 biface, 1 limestone vessel fragment (not shown), 2 rubbing stones, 2 stone disks, 1 perforated bivalve, 393 sherds: 37 unidentified, 1 Puuc, remainder Mayapán period (12 Fine Orange, 50 censers)	CR #36
	1 shell bead, 1 perforated shell (bivalve), 34 sherds, all Mayapán period (24 censers)	CR #36
	1 human pottery figurine (atypical, projecting face and mat symbols on limbs), 1 rubbing stone, 33 sherds, all Mayapán period (20 censers)	CR #36
	11 sherds, all Mayapán period (4 censers)	CR #36
	70 sherds: 2 unidentified, remainder Mayapán period (1 Fine Orange, 7 censers)	CR #36

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Y-2d	c-shaped two-room oratory	A-516	below floor of cist under bench at south end back room	
Group Y-2	terrace	A-513	trench rock fill in center of group along outer face east side of early terrace inside larger supporting one, to bedrock	
Y-2a	terrace	A-514	trench cut to about 40 cm below broken floor level, found only on east side of Structure Y-2a	
Y-8b	c-shaped two-room oratory	A-574	surface in main room	
Y-8b	c-shaped two-room oratory	A-570	surface of shrine room	
Y-8b	c-shaped two-room oratory	A-578	below floor in shrine room	
Y-8b	c-shaped two-room oratory	A-577	inside altar	
Y-8b	c-shaped two-room oratory	A-576	burial deposit below floor in main room to east of central doorway	8
Y-8b	c-shaped two-room oratory	A-576	burial deposit below floor in main room to east of central doorway	
Z-50b	oratory or dwelling?	C-139	sealed deposit in fill of altar	
Sacbe-southern terminus		C-140	soil layer above bedrock under sacbe	
Sacbe-southern terminus		C-141	fill of sacbe	
Z-50 group	sacbe hall group	C-142	unsealed debris in niche in basal platform of northern principal staircase	
Z-50 group	sacbe hall group	C-143	surface and general excavations unsealed	
Gate D	gate in city wall	not provided		
Gate EE	gate in city wall	not provided	fill of west platform	
Sacbe-northern terminus		A-131	surface to 50 cm	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	18 sherds, all Mayapán period (1 censer)	CR #36
	3 obsidian pieces, 1 shell spiral, 68 sherds: 4 unidentified, remainder Mayapán period (5 Fine Orange, 1 censer)	CR #36
	3 lithic flakes, 189 sherds: 105 unidentified, remainder Mayapán period (21 censers)	CR #36
	3 obsidian pieces, 1 thumbnail scraper, 2 lithic flakes, 3 conch shell fragments, 1 human molar, 279 sherds: 88 unidentified, remainder Mayapán period (4 Fine Orange, 6 censers)	CR #36
	5 obsidian pieces, 1 lithic flake, 1 tripod vessel (Navula Unslipped olla with rounded vented feet), 2 effigy censer heads (including well-known depiction of merchant god and another merchant god with bulbous nose), 857 sherds: 112 unidentified, remainder Mayapán period (1 Fine Orange, 494 censers)	CR #36
	1 hammerstone, 3 lithic flakes, 313 sherds: 40 unidentified, remainder Mayapán period (1 Fine Orange, 42 censers)	CR #36
	1 shell disk, 40 sherds: 7 unidentified, remainder Mayapán period (21 censers)	CR #36
long bones and skulls scattered through fill, disturbed positions	14 obsidian pieces, 2 projectile points (side notched, square base), 1 pointed biface, 29 lithic flakes, 1 perforated shell, 2 shell fragments, 2 worked stingray spines, 1 perforated stingray spine, 1 curved bone with spines, cylindrical shaped piece of gum of tree/plant, tripod grater bowl, pottery vessel with a pedestal base, ladle censer (missing ladle), 1 jade bead	CR #36
	537 sherds: 77 unidentified, 3 Puuc, remainder Mayapán period (2 Fine Orange, 16 censers)	CR #36
	1 miniature tripod cup (Navula Unslipped), 1 jade bead, 1 animal-head support of Red-on-Cream or Red-on-Buffer dish, no sherds listed	CR #37
	1 projectile point or pointed biface, 1 lithic flake, 104 sherds: 7 unidentified, 2 Puuc, 95 Mayapán period (including 1 effigy censer, 1 Black-on-Cream, 3 Fine Orange)	CR #37
skull fragments, right half of mandible	11 obsidian pieces, 7 lithic flakes, animal bones, 1 pottery spindle whorl or bead, 634 sherds: 32 unidentified, 602 Mayapán period (including 87 effigy censers, 1 Red-on-Cream or Buff, 5 Tulum Red, 3 Fine Orange)	CR #37
	1 biface (pointed?), 5 lithic flakes, 1 olive shell with long groove and perforation, 1 small stone crouching jaguar with creature on its back, 1 small stone turtle with receptacle on back, 474 sherds: 7 unidentified, 467 Mayapán period (90 effigy censers, 19 Red-on-Cream or Buff, 7 Mayapán Red and Black on Orange, 2 Tulum Red)	CR #37
	14 obsidian pieces, 1 flint "hatchet," 3 lithic tool fragments, 1 hammerstone, 18 lithic flakes, animal bones, 4 limestone disks (pot lids or bee-keeping lids), 2 limestone manos, 1 stone turtle, 1 painted bird bone, 2,504 sherds: 56 unidentified, 2,448 Mayapán period (187 effigy censer, 100 Red-on-Cream or Buff, 1 Black-on-Cream, 4 Tulum Red, 17 Fine Orange)	CR #37
	cache vessel with ash outside Gate D (miniature turtle effigy and small flat cover of Navula Unslipped), hollow moldmade figurine head also from Gate D	CR #2
	Navula Unslipped vessel	CR #2
	1 obsidian projectile point and 1 chert projectile point (side notch, round base), lithic flakes, obsidian chips, animal bones, 1 wedge-shaped axe, 1 shell fragment, 8 chipped limestone disks, more than 1,000 sherds: 25% unidentified, 1 Puuc, mostly Mayapán period (75 effigy censers, maybe 30 more effigy-censer large body sherds, 22 Red-on-Buffer, 1 Black-on-Cream, 2 Fine Orange)	CR #15

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Sacbe–northern terminus		A-131	50 cm to bedrock	
Q-214	round temple	C-73b	brown earth and rocks over bedrock beneath structure, soil predating construction	
Q-214	round temple	C-73a	two strata associated with construction of Q-214; homogenous earth, small stones and refuse, laid down prior to construction	
Q-214	round temple	C-75	burned area at floor of rear chamber and surface of interior round temple chamber in general	
Q-214	round temple	C-73	midden sealed below lime floor, accumulated in corner while colonnade Q-213 was in use; ash, charcoal, several hearths	
Q-214	round temple	C-74	later midden over floor that seals C-73 into which graves were placed	2
Q-214	round temple	C-76	surface and general excavation of substructure on east and south sides	
A-3c	dwelling	A-86	material above secondary floor extending to niche in cist under southwest bench in outer room	
A-3c	dwelling	A-87	between floors extending to niche in cist under southwest bench in outer room	
A-3d	dwelling			
A-3e	circular alignment of stones	A-91	trench for pottery samples	
Q-62	dwelling	A-114	trench directly south of structure in line with central passageway (off structure) on platform	3
Q-62	dwelling	A-125	tomb under central bench in front room	3
Q-62	dwelling	A-115	surface material	
Q-62	dwelling	A-118	from pit below floor to bedrock	
Q-62	dwelling	A-119	east bench to floor level	
Q-62	dwelling	A-120	below Lot A-119 to bedrock	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	1 perforated shell tinkler, lithic flakes, animal bones, 600 sherds: 25% unidentified, mostly Mayapán period (20 effigy censers, plus 27 body sherds that might also be effigy censers, 6 Red-on-Buff)	CR #15
	2 obsidian pieces, 10 animal bones, 156 sherds, all Mayapán period (40.4% unslipped, 0.7% noneffigy censers, 53.8% Mayapán red-slipped, 5.1% Black-on-Cream; no effigy censers)	CR #16
	6 obsidian pieces, 1 cut deer bone, 46 animal bones, 537 sherds: 0.6% Puuc, 99.4% Mayapán period (31.6% unslipped, 1.5% noneffigy censers, 59.4% Mayapán red-slipped, 0.9% Fine Orange, 6% Black-on-Cream)	CR #16
	489 sherds: 0.2% Puuc, 99.8% Mayapán period (4.7% unslipped, 1.2% noneffigy censers, 82.4% human effigy censers, 10.3% Mayapán red-slipped, 1% Red-on-Cream, 0.2% Black-on-Cream)	CR #16
	4 obsidian pieces, roughly carved limestone human head, 54 animal bones, 546 sherds: 0.4% Puuc, 99.6% Mayapán period (41.8% unslipped, 9.3% noneffigy censers, 45.9% Mayapán red-slipped, 0.2% Fine Orange, 2.4% Black-on-Cream)	CR #16
adults, flexed, no grave goods, 2 skulls, 18 fragments of human and animal bones	2 obsidian pieces, 1 lithic flake, 1 unworked shell, 3 speleothems from stucco figures, red plaster, animal bones mixed with human bones, 1,647 sherds: 0.3% Puuc, 99.7% Mayapán period (22% unslipped, 2.5% noneffigy censers, 35.7% human effigy censers, 38.1% Mayapán red-slipped, 1% Red-on-Cream, 0.2% Fine Orange, 0.2% Black-on-Cream)	CR #16
	4 lithic flakes, 31 animal bones, 1 cache (effigy censer warrior in corner of south stairwall and platform), cache of tripod effigy censer cup (human face) in shrine floor in front of female statue (which contained 3 jade beads, 1 jade fragment, and 2 shell beads), 2 speleothems, 1,749 sherds: 0.1% Puuc, 99.9% Mayapán period (13.3% unslipped, 2.6% noneffigy censers, 56.1% effigy censers, 27% Mayapán red-slipped, 0.3% Red-on-Cream, 0.3% Fine Orange, 0.3% Black-on-Cream)	CR #16
	40 sherds: 5 unidentified, remainder Mayapán period	CR #17
	6 sherds: 1 unidentified, remainder Mayapán period	CR #17
		CR #17
	311 sherds: 154 unidentified, remainder Mayapán period (3 possibly effigy censers)	CR #17
adults	14 obsidian pieces, 2 obsidian cores, 1 projectile point (side notch, round base), 4 lithic flakes, 1 whetstone, 1 polishing stone, 1 shell tinkler, 1 piece worked shell, 1 shell fragment, 1 mano fragment, 3 effigy censer heads (1 bearded/merchant god, 2 youthful face entities, one with snake headdress and one with turban headdress), 1,876 sherds: 313 unidentified, 4 Puuc, remainder Mayapán period (including 1,059 censers, 1 Fine Orange)	CR #17
children's skeletons	3 obsidian pieces, 1 tinkler shell, 3 small seashells, 22 shell beads, some grave goods that look like toys (pottery whistles include iguana, dove, monkey, bird, owl, 2 jaguars, 1 female, 1 human figure), 3 effigy censers, 2 pottery cups (1 spiked), 16 sherds, all Mayapán period	CR #17
	42 obsidian pieces, 3 obsidian cores, 1 obsidian projectile point (double side notch, concave base), 2 lithic "blades" (pointed biface?), 2 bifaces, 3 hammerstones, 20 lithic flakes, 2 polishing stones, 1 bark beater, 1 metate, 1 stone disk, 1 mano (nonlocal material), 1 shell bead, 7 shell tinklers, 1 speleothem, 9 shell fragments, 1 bone awl, animal bones, 3047 sherds: 684 unidentified, 11 Puuc, remainder Mayapán period (including 228 censers, 23 Fine Orange)	CR #17
	1 obsidian piece, 1 lithic flake, 1 bone awl (deer metapodial), 1 perforated human tooth, 2 perforated shell tinklers, 1 olive shell, 2 polishing stones, 245 sherds: 8 unidentified, 13 Puuc, 224 Mayapán period (5 Fine Orange, 16 censers)	CR #17
	69 sherds: 5 unidentified, remainder Mayapán period (4 censers)	CR #17
	1 lithic flake, 94 sherds: 5 unidentified, 89 Mayapán period (10 censers)	CR #17

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Q-62	dwelling	A-121	pit in east back room, floor level to bedrock	
Q-62	dwelling	A-122	in central bench	
Q-62	dwelling	A-123	below floor of central bench to depth of 1.15 m (bedrock not encountered)	
Q-62	dwelling	A-124	from shrine room bench to 25 cm below floor	
Q-62	dwelling	A-126	west back room to depth of 1.15 m (no bedrock)	
Z-4b	c-shaped two-room oratory	A-148	sub-bench rectangular chamber	
Z-4b	c-shaped two-room oratory	A-149	passageway (doorway) to sub-bench rectangular chamber	
AA-13c	dwelling	A-134	surface above cist	
AA-13c	dwelling	A-135	from cist below Lot A-135 in central bench	
AA-31d	dwelling	A-137	above floor	
AA-31d	dwelling	A-138	floor level to bedrock	
AA-37	dwelling	A-140	tomb under central passageway/bench	2
AA-37	dwelling	A-139	surface	
AA-60a	dwelling	A-144	cist and passageway of sub-bench chamber	
AA-60a	dwelling	A-145	material between floor and bedrock of cist and passageway of sub-bench chamber	
AA-94	dwelling?	A-146	top of bench to depth of 60 cm	
AA-94	dwelling?	A-147	base of Lot A-146 (60 cm) to bedrock	
AA-103a	dwelling	A-127	tomb in platform to south of exterior bench	2
AA-112a	dwelling	A-141	tomb in west part of platform, upper room	1
Q-208	dwelling–elite	A-110?	front room floor	
Q-208	dwelling–elite	A-95	cache in central doorway of central dividing wall leading to rear shrine room	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	103 sherds: 6 unidentified, remainder Mayapán period (22 censers)	CR #17
	1 olive shell, 17 sherds: 2 unidentified, 15 Mayapán period (2 censers)	CR #17
human vertebra	1 olive shell, 278 sherds: 7 unidentified 1 Puuc, remainder Mayapán period (5 censers)	CR #17
	70 sherds: 9 unidentified, remainder Mayapán period (10 censers)	CR #17
	4 obsidian pieces, 1 shell tinkler, 3 shell fragments, animal bones, 185 sherds: 10 unidentified, 2 Puuc, remainder Mayapán period (2 Fine Orange, 20 censers)	CR #17
	3 obsidian pieces, 1 obsidian core, 1 hammerstone, 7 lithic flakes, 2 shell fragments, 1 ceramic puppet, 1 copper bell, 1 basalt metate fragment, 1,022 sherds including 90 unidentified, 1 Puuc striated ware, 1 Black on Red, 1 Polychrome Veracruz type, and 929 Mayapán period (Mayapán period sherds include 41 censers, 2 Fine Orange)	CR #17
	2 lithic flakes, 4 animal bones, 1 greenstone axe, 1 pounding stone, 1 rectangular stone with central hole, 1 speleothem, 1 oval polishing stone, 1 grooved metate fragment, 1 stone disk, 256 sherds: 30 unidentified, 226 Mayapán period (26 censers)	CR #17
	1 obsidian piece, 1 animal bone, 75 sherds: 7 unidentified, remainder Mayapán period (1 Fine Orange effigy foot in form of human head)	CR #17
	animal bones, 125 sherds: 11 unidentified, remainder Mayapán period	CR #17
	1 obsidian piece, 1 obsidian end scraper, 12 sherds: 5 unidentified, 7 Mayapán period	CR #17
	4 obsidian pieces, 1 lithic projectile point or pointed biface, 2 lithic flakes, 1 shell fragment, 1 copper ring, 175 sherds: 13 unidentified, 7 Puuc, remainder Mayapán period (1 Fine Orange, 15 censers)	CR #17
1 adult, 1 adolescent	1 pottery puppet torso, 1 female pottery figurine, 61 sherds: 10 unidentified, 35 Puuc, 16 Mayapán period	CR #17
	1 obsidian piece, 1 projectile point or pointed biface, 3 lithic flakes, 1 basalt metate fragment, 43 sherds: 4 unidentified, 3 Puuc, 36 Mayapán period	CR #17
	133 sherds: 25 unidentified, 108 Mayapán period (3 censers)	CR #17
	3 sherds, Mayapán period	CR #17
	40 sherds: 6 unidentified, 34 Mayapán period (8 censers)	CR #17
	1 lithic flake, 1 metate, 1 bone awl (deer metapodial), 4 manos, 3 rubbing stones, 4 stone pounders, 2 animal bones, 14 sherds, all Mayapán period	CR #17
1 male, 1 female, both young adults; right side and left side, respectively; legs partly flexed, his arms extended, hers flexed, faced west and east, respectively (faced out from each other, not toward each other)	1 obsidian piece, 2 animal bones, 3 copper rings (all on 1 phalange of female burial), 1 copper tweezer and 1 shell bead (each with same burial), 1 basalt footed metate fragment, 235 sherds: 56 of this total were unidentified and 179 were of the Mayapán period (which included 8 censer sherds)	CR #17
no details given; presumably adult, poorly preserved	2 "flints" or "flint fragments" (presumed to be lithic tools), no sherds listed	CR #17
	1 obsidian piece, 2 obsidian projectile points (side notch, square base), 1 greenstone celt, 1 polished stone (chert) celt, 1 pointed biface, oval bark beater (mortar residue on it), 1 shell tinkler, 1 grooved pebble polisher, 1 piece of mother of pearl	CR #19
	2 pottery diving effigies, 1 incomplete ladle censer	CR #19

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Q-208	dwelling–elite	A-95	on step in front of bench in rear shrine room	
Q-208	dwelling–elite	A-95	on bench of rear shrine room	
Q-208	dwelling–elite	A-110	dedication cache in front of central door to front room	
Q-208-sub	dwelling–elite	A-110	burial between benches under floor of central passageway	4
Q-208-sub	dwelling–elite	A-110?	construction fill below floor of Str. Q-208-sub	
Q-162/Q-77 trench	trench in main plaza	C-61	surface debris in area of trench, minor amount of fill from between Floors 13 and 19	
Q-162/Q-77 trench	trench in main plaza	C-61	surface debris in area of trench, minor amount of fill from between Floors 13 and 19	
Q-162/Q-77 trench	trench in main plaza	C-62	sealed fill between Floors 9 and 8	
Q-162/Q-77 trench	trench in main plaza	C-62	sealed fill between Floors 9 and 8	
Q-162/Q-77 trench	trench in main plaza	C-63	sealed fill between Floors 8 and 4	
Q-162/Q-77 trench	trench in main plaza	C-63	sealed fill between Floors 8 and 4	
Q-162/Q-77 trench	trench in main plaza	C-64	sealed fill between Floor 3 and bedrock	
Q-162/Q-77 trench	trench in main plaza	C-64	sealed fill between Floor 3 and bedrock	
Q-162	Castillo	C-65	surface and general excavation of Castillo temple	
Q-162	Castillo	C-65	surface and general excavation of Castillo temple	
Q-162	Castillo	C-65	sides of masonry altar at base of north stair of Castillo, built with eleventh floor	
Q-162	Castillo	C-65	buried in cist and covered by later floors in temple of Castillo	
Q-162	Castillo	C-65	two rear altars (sequential) looted from inner Castillo temple sanctuary	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	1 stone diving effigy, 1 vessel with 5 compartmented cups	CR #19
	2 shark teeth	CR #19
	1 obsidian point (side notch, concave base), 1 projectile point (side notch, broken base), 1 pottery effigy (seated figure), 1 small cowry shell	CR #19
children, 1 ten years old 1 less than six months, others not mentioned	Burial 1 (ten year old): associated with a large hollow pottery figurine (lightly fired, easily crumbled); lower infant skeleton (less than six months old) had cotton bands around each ankle threading 5 copper bells on each leg and one section had intervening shell beads; Burial 3 had moldmade figurines (rumbled), 1 polished antler tip, small pottery whistle (spiker monkey), pedestalled pottery vase with long-nosed god, tripod vase with face of long-nosed god, deposit of 1,800 censer fragments over burials (including 4 faces, 6 feet, and 7 arms belonging to Xipe Totec)	CR #19
	animal bones (miscellaneous species but also 13 iguana skulls), 1 bone awl fragment, half an incised and cut jaguar tooth, 1 musical rasp made of human femur (none shown)	CR #19
	4 obsidian pieces, 3 lithic flakes, more than 100 fragments modeled/painted stucco, speleothems from stucco figures, 2 small sculpture fragments, 1 carved and 1 uncarved olive shell tinklers	CR #20
	982 sherds: 0.2% Puuc, 99.8% Mayapán period (12.2% unslipped, 6.2% noneffigy censers, 68.4% human effigy censers, 11.7% Mayapán red-slipped, 0.2% Red-on-Cream, 0.1% Fine Orange, 1% Black-on-Cream)	CR #20
	1 obsidian core, 1 lithic flake, 23 human and animal bones, 1 perforated human tooth, 1 cache included a miniature tripod cup containing 2 shell beads, 1 unworked shell	CR #20
	413 sherds: 17.15% Puuc, 82.85% Mayapán period (34.4% unslipped, 2.9% noneffigy censers, 3.8% human effigy censers, 39% Mayapán red-slipped, 2.7% Black-on-Cream)	CR #20
3 fragments of human bone	5 obsidian pieces, 1 lithic flake, cache of a Mayapán red-slipped jar that contained an animal tooth, burned shells, coral, and other marine objects (below circular masonry altar in front of Castillo associated with Floor 6)	CR #20
	313 sherds: 3.5% Puuc, 96.5% Mayapán period (26.2% unslipped, 2.3% noneffigy censers, 0.9% human effigy censers, 60.4% Mayapán red-slipped, 0.3% Fine Orange, 6.4% Black-on-Cream)	CR #20
	2 obsidian pieces, 2 projectile points (1 has side notch, broken base), 1 hammerstone, 1 flint "blade" (pointed biface), 4 lithic flakes, 3 shell fragments, a few human bones, charcoal, ash, fragments of a miniature sculpted figure (human face, eyes closed), 1 bone awl, 1 cache of 2 bowls (lower one was cream-slipped and contained ash beneath inverted tripod grater bowl); cache is near Q-77	CR #20
	5,510 sherds: 5.9% Puuc and earlier, 94.1% Mayapán period (26.8% unslipped, 10% noneffigy censers, 40.4% Mayapán red-slipped, 0.3% Fine Orange, 16.6% Black-on-Cream)	CR #20
	13 obsidian pieces, 4 pointed bifaces, 1 eccentric, 8 lithic flakes, fragments of pointed plaster, 6 bird bones, charcoal, ash, copal, 1 limestone mano, 13 univalve worked shells, 3 discoidal beads, 5 shell ornaments, 2 unworked shells	CR #20
	1,907 sherds: 100% Mayapán period (1.8% unslipped, 1.2% noneffigy censers, 63.5% human effigy censers, 31.5% Mayapán red-slipped, 2% Red-on-Cream)	CR #20
	a tapered sacrificial block and a carved columned altar	CR #20
	stone puffed-cheek human figure (broken fragments buried in a cist, covered by later floors)	CR #20
	obsidian blades, flint blades/chips, shell beads, tinklers and ornaments, fragments of pottery figurines and vessels, animal and human effigies (some from censers), and many restorable miniature tripod bowls (of Mayapán red-slipped and Red-on-Cream; appear to have been used to burn copal)	CR #20

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Q-153	Cenote Temple	not provided	surface of temple, cache, altar, rubbish at northwest corner of platform	
Q-149	shrine	not provided	surface of shrine 10 m east of Cenote Temple, facing east	
Q-148	shrine	C-81?	material under stepstone to altar, shrine 12 m from Q-151 hall, facing north	
Q-148	shrine	C-81	altar cache, shrine 12 m from Q-151 hall, facing north	
Q-97	colonnaded hall	C-35	surface and general excavation	
Q-97	colonnaded hall	C-35a	unsealed fill of terrace pertaining to second phase Q-97	
Q-97	colonnaded hall	C-35b	unsealed fill of shrine room floor of Q-97 to early plaza floor	
Q-97	colonnaded hall	C-35c	sealed fill below early plaza floor to bedrock under shrine room	
Q-97	colonnaded hall	C-35d	sealed fill below terrace floor of early phase of colonnaded hall Q-97	
Q-97	colonnaded hall	C-35e	from below plaza floor to bedrock, rear center of Q-97	
Q-97	colonnaded hall	C-35f	from postconstruction midden and building debris above plaza floor east side of Q-97	
Trench between Q-88a and Q-88b		C-58	surface to bedrock in north-south trench, between stairway of Shrine Q-88a and rectangular platform Q-88b	
Q-151/152 passage	colonnaded hall/temple red	C-59	surface excavation in passage behind Q-151 at southeast corner of Caracol platform	
Q-151	colonnaded hall	C-84/84a/85	sealed fill of primary colonnaded hall Q-151, between floor and bedrock in central trench	
Q-151	colonnaded hall	C-85a	unsealed fill in altar of colonnaded hall Q-151	
Q-151	colonnaded hall	C-85b	cache in unsealed fill in altar of colonnaded hall Q-151	
Q-151	colonnaded hall	C-85c	unsealed fill in altar of colonnaded hall Q-151	
Q-151	colonnaded hall	C-85d	unsealed and disturbed fill of front terrace Q-151	
Q-151/152 passage	colonnaded hall/temple red	C-86/87	from base of colonnade wall to bedrock in passage between 151 and 152, Level 6, most predates construction of 151	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	1 anthropomorphic stone turtle (in two separated halves), Cache in Altar 2 included 2 small redware tripod bowls (lip-to-lip) with ball of partly burned copal inside, trash deposit at cenote rim with abundant animal bone, utilitarian vessels and effigy censers, small turtle of green jadelike stone was found	CR #21
	limestone human head with conical headdress, stone hand and leg, Puuc carved stones and mask elements	CR #21
	1 gray shell bead, small iron pyrite flake, 1 lump of copal, several censer and other pottery sherds	CR #21
	altar surface had been destroyed; 1 small square flake of gold with a faint stamped design, 1 small copper bell, 1 shell bead; looters overlooked a small effigy vase (God B) between two altar stones (2 jade beads, 3 shell beads, 1 copper fleck, 1 jade flake from possible mosaic were within the vase); 1 broken pointed biface, 1 obsidian arrowhead (side notch, concave base), 1 limestone hand, 1 mano	CR #21
	2 obsidian pieces, 2 lithic flakes, 1 shell ornament, 15 animal bones, fragments of painted/modeled stucco (1 with textile imprint), 2 speleothems from modeled stucco, stone Ehecatl effigy, 1 alabaster vessel fragment, 1 miniature tripod cup (from floor of shrine room), 1 Fine Orange tripod bowl (supports missing, from surface of bench and floor)	CR #22
	4 obsidian pieces, fragments of modeled/painted stucco, 1 carved stone	CR #22
	252 sherds: 0.8% Puuc, 99.2% Mayapán period (27.4% unslipped, 4% noneffigy censers, 19% human effigy censers, 45.6% Mayapán red-slipped, 3.2% Black-on-Cream)	CR #22
	5 obsidian pieces, 1 lithic flake, 34 animal bones, 4 fragments of bone rasp, cache: sacrificed, burned animal in unslipped pottery olla covered by inverted vessel	CR #22
	2 obsidian pieces, 86 sherds: 3.5% Puuc, 96.5% Mayapán period (13.8% unslipped, 3.4% noneffigy censers, 44.8% Mayapán red-slipped, 1.2% Fine Orange, 33.3% Black-on-Cream)	CR #22
some human skull fragments	3 obsidian pieces, 24 fragments of human skull, animal and bird bones, 3 fragments of painted plaster, 1 speleothem from modeled stucco figure	CR #22
	15 obsidian pieces, 5 lithic flakes, 90 animal bones, 1 perforated animal tooth, 1 peccary tusk, 1 limestone mano, 12 fragments of painted plaster/modeled stucco	CR #22
	1 obsidian piece, 2 lithic flakes, 5 animal bones, 1 shell ornament incised with glyphs	CR #22
	1 obsidian piece, 1 projectile point (side notch, round base), 1 pointed biface, 1 shell ornament, fragments of human and animal bones, burned and unburned copal, charcoal ash, 1 limestone mano fragment, 1 basalt metate fragment	CR #22
	2 obsidian pieces, 17 human and animal bone fragments, 1 speleothem from modeled stucco figure	CR #22
	7 obsidian pieces, 1 obsidian biface, 1 shell tinkler, 7 animal bones	CR #22
	1 obsidian piece, 1 obsidian tool, 2 animal bones, cache in altar with 2 Mayapán red-slipped vessels (1 with long bulbous feet, 1 incurving-rim bowl), 1 stingray spine, 1 non-perforated cylindrical jade ornament	CR #22
	sherds	CR #22
	100 sherds: 5% Puuc, 95% Mayapán period (21% unslipped, 25% effigy censers, 39% Mayapán red-slipped, 1% Fine Orange, 9% Black-on-Cream)	CR #22
	3 obsidian pieces, 1 lithic flake, 1 shell ornament, 9 animal bones, 1 speleothem from modeled figure, sherds include 1 fragment Tohil Plumbate	CR #22

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Q-151/152 passage	colonnaded hall/temple red	C-88	from Level 5 in passage between 151 and 152	
Q-151/152 passage	colonnaded hall/temple red	C-89	from Level 4 in passage between 151 and 152	
Q-151/152 passage	colonnaded hall/temple red	C-90	from Level 3 in passage between 151 and 152	5
Q-151/152 passage	colonnaded hall/temple red	C-91	from Level 2 in passage between 151 and 152	see Lot C-90
Q-151/152 passage	colonnaded hall/temple red	C-92	from Level 1 in passage between 151 and 152	
Q-151	colonnaded hall	C-93/93a/b	from surface debris above floors in interior of Q-151, material heavily concentrated in and around shrine	
Q-151	colonnaded hall	C-94	general surface of terraces, stairway, and substructure of 151	
Q-151	colonnaded hall	C-104	sealed midden/ fill under Floor 2 to bedrock at northwest side of 151	
Q-151	colonnaded hall	C-105	sealed midden fill between Floors 1 and 2 at northwest side of 151	
Q-151	colonnaded hall	C-106	unsealed midden fill of bench at northwest side of 151	
Q-151	colonnaded hall	C-107	general surface above bench at northwest side of 151	1
Q-151	colonnaded hall	C-108	fill in lower half of excavation at west end of 151	
Q-151	colonnaded hall	C-108a	unsealed upper fill of excavation at west end of 151	
Q-97	colonnaded hall	C-35	surface and general excavation	
Q-97	colonnaded hall	C-35a	unsealed fill of terrace pertaining to second phase Q-97; text refers to this as a surface lot along front and within colonnaded hall	
Q-97	colonnaded hall	C-35b	surface lot along front and w/in colonnaded hall	
Q-97	colonnaded hall	C-35c	sealed fill below early plaza floor to bedrock under shrine room	
Q-97	colonnaded hall	C-35d	fill below earliest terrace	
Q-97	colonnaded hall	C-35e	from below plaza floor to bedrock, rear center of Q-97	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	14 obsidian pieces, 2 hammerstones, 1 flint blade (pointed biface?), 4 lithic flakes, 1 shell fragment, 10 human or animal bone fragments, 2 speleothems, 2 fragments of modeled stucco (painted), 1 stone sculpture fragment, 1 pottery mold fragment	CR #22
a few vertebrae, a mandible, some tarsal bones	7 human/animal bone fragments, 404 sherds: 4.75% Puuc, 95.25% Mayapán period (28.7% unslipped, 15.3% noneffigy censer, 1% effigy censer, 42.6% Mayapán red-slipped, 1% Fine Orange, 6.7% Black-on-Cream)	CR #22
beheaded, dismembered individuals in Levels 2 and 3 (including C-91)	15 obsidian pieces, 2 obsidian end scrapers, 1 flint "point," 1 utilized flake, 5 lithic flakes, 118 human/animal bone fragments, 1 shark tooth, 1 bone bead, 3 fragments pointed wall plaster, 1 stucco human head and hand, 2 speleothems from modeled stucco, 1 unworked and 1 perforated shell ornaments, 1 shell disk, 1 pottery spindle whorl, 1 redware jar	CR #22
see Lot C-90	5 speleothems and fragments of modeled/painted stucco, 4 lithic flakes, 14 animal bones	CR #22
	3 obsidian pieces, 1 hammerstone, 1 projectile point, 3 lithic flakes, 2 animal bones, 7 speleothems from modeled stucco figure	CR #22
	2 obsidian pieces, 1 hammerstone, 1 projectile point (side notch, square base), 1 pointed biface, 1 triangular axe, 8 lithic flakes, 2 shell fragments, 21 human/animal bones, 1 charred corncob, 1 speleothem and modeled/painted stucco, 1 stone turtle (containing 2 obsidian blades), stingray spine fragments, 1 limestone mano, 1 polishing stone, 1 miniature tripod (noneffigy) cup (on bench), 1 noneffigy censer, 1 unslipped coarse paste/tan painted plate	CR #22
	15 obsidian pieces, 1 core, 2 obsidian projectile points (distal portions), 10 lithic flakes, 71 human/animal bones, 9 speleothems, modeled/painted stucco, 1 shell tinkler, 1 stone censer fragment, 1 pottery spindle whorl, 1 hollow cylindrical seal	CR #22
	8 obsidian pieces, 19 animal bones	CR #22
	60 obsidian pieces, 100 animal bones, 1 shell bead	CR #22
	5 obsidian pieces, 135 animal bones, 1 fragment modeled/painted stucco, 1 limestone mano	CR #22
child's skull	21 obsidian pieces, 1 wide triangular projectile point (side notch, round base), 11 lithic flakes, 1 shell fragment, 155 animal bones, charcoal, ash, copal, 2 speleothems, modeled/painted stucco fragments, 1 stone head	CR #22
	16 obsidian pieces, 50 animal bones, charcoal	CR #22
	14 obsidian pieces, 20 animal bones, 1 fragment limestone mano	CR #22
	2,505 sherds: 0.7% Puuc, 99.3% Mayapán period (14.6% unslipped, 1.8% noneffigy censers, 56.5% effigy censers, 22.4% Mayapán red-slipped, 0.4% Red-on-Cream, 0.8% Fine Orange, 2.8% Black-on-Cream)	CR #22
	177 sherds: 100% Mayapán period (9.6% unslipped, 1.8% noneffigy censers, 39.4% effigy censers, 39.0% Mayapán red-slipped, 10.2% Black-on-Cream)	CR #22
		CR #22
	605 sherds: 0.8% Puuc, 99.2% Mayapán period (44% unslipped, 1.3% noneffigy censers, 33.2% Mayapán red-slipped, 1.5% Fine Orange, 19.2% Black-on-Cream)	CR #22
		CR #22
	570 sherds: 0.4% Puuc, 99.6% Mayapán period (39.6% unslipped, 1.2% noneffigy censers, 51.1% Mayapán redware, 0.4% Fine Orange, 7.3% Black-on-Cream)	CR #22

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Q-97	colonnaded hall	C-35f	from postconstruction midden and building debris above plaza floor east side of Q-97	
Trench between Q-88a and Q-88b		C-58	surface to bedrock in north-south trench between stairway of Shrine Q-88a and rectangular platform Q-88b	
Q-151/152 passage	colonnaded hall/temple red	C-59	surface excavation in passage behind Q-51 at southeast corner of Caracol platform, described as a pottery dump	
Q-151	colonnaded hall	C-84/84a/85	sealed fill of primary colonnaded hall Q-151, between floor and bedrock in central trench	
Q-151	colonnaded hall	C-85a/b/c	unsealed fill in colonnaded altar Q-151	
Q-151/152 passage	colonnaded hall/temple red	C-86/87	from base of colonnade wall to bedrock in passage between 151 and 152, Level 6, most predates construction of 151	
Q-151/152 passage	colonnaded hall/temple red	C-88	from Level 5 in passage between 151 and 152	
Q-151/152 passage	colonnaded hall/temple red	C-89	from Level 4 in passage between 151 and 152	
Q-151/152 passage	colonnaded hall/temple red	C-90	from Level 3 in passage between 151 and 152	5
Q-151/152 passage	colonnaded hall/temple red	C-91	from Level 2 in passage between 151 and 152	see Lot C-90
Q-151/152 passage	colonnaded hall/temple red	C-92	from Level 1 in passage between 151 and 152	
Q-151	colonnaded hall	C-93/93a/b	from surface debris above floors in interior of Q-151; material heavily concentrated in and around shrine	
Q-151	colonnaded hall	C-94	general surface of terraces, k stairway, and substructure of 151	
Q-151	colonnaded hall	C-104	sealed fill under Floor 2 to bedrock at northwest side of 151	
Q-151	colonnaded hall	C-105	sealed fill between Floors 1 and 2 at northwest side of 151	
Q-151	colonnaded hall	C-106	unsealed fill of bench at northwest side of 151	
Q-151	colonnaded hall	C-107	general surface above bench at northwest side of 151	
Q-151	colonnaded hall	C-108	fill in lower half of excavation at west end of 151	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	1,587 sherds: 0.4% Puuc, 99.6% Mayapán period (35.5% unslipped, 1.2% noneffigy censors, 3.6% effigy censors, 53.9% Mayapán red-slipped, 0.4% Red-on-Cream, 0.8% Fine Orange, 4.2% Black-on-Cream)	CR #22
	957 sherds: 2.4% Puuc, 97.6% Mayapán period (25.2% unslipped, 1.7% noneffigy censors, 29% effigy censors, 34.7% Mayapán red-slipped, 7% Black-on-Cream)	CR #22
	1,839 sherds: 0.2% Puuc, 99.8% Mayapán period (8% unslipped, 1.5% noneffigy censors, 72.8% effigy censors, 16.2% Mayapán red-slipped, 0.9% Red-on-Cream, 0.1% Fine Orange, 0.3% Black-on-Cream)	CR #22
	795 sherds: 17.5% Puuc, 82.5% Mayapán period (28.8% unslipped, 0.3% noneffigy censors, 36.3% Mayapán red-slipped, 0.6% Fine Orange, 16.5% Black-on-Cream)	CR #22
	126 sherds: 3.2% Puuc, 96.8% Mayapán period (23.8% unslipped, 3.2% noneffigy censors, 3.2% effigy censors, 64.2% Mayapán red-slipped, 2.4% Black-on-Cream)	CR #22
	1,393 sherds, 20.6% Puuc, 79.4% Mayapán period (31.9% unslipped, 1.2% noneffigy censors, 38.3% Mayapán red-slipped, 0.3% Fine Orange, 7.7% Black-on-Cream)	CR #22
	1,517 sherds: 2.4% Puuc, 97.6% Mayapán period (27.5% unslipped, 26% noneffigy censors, 1.8% effigy censors, 39.1% Mayapán red-slipped, 0.4% Fine Orange, 2.8% Black-on-Cream)	CR #22
a few vertebrae, a mandible, some tarsal bones	404 sherds: 4.7% Puuc, 95.3% Mayapán period (28.7% unslipped, 15.3% noneffigy censors, 1% effigy censors, 42.6% Mayapán red-slipped, 1% Fine Orange, 6.7% Black-on-Cream)	CR #22
beheaded, dismembered individuals in Levels 2 and 3 (including C-91)	2,968 sherds: 1.5% Puuc, 98.5% Mayapán period (15.9% unslipped, 44% noneffigy censors, 7.8% effigy censors, 29.5% Mayapán red-slipped, 0.1% Red-on-Cream, 0.2% Fine Orange, 1% Black-on-Cream)	CR #22
see Lot C-90	9,102 sherds: 0.1% Puuc, 99.9% Mayapán period (4.7% unslipped, 1.4% noneffigy censors, 80.3% effigy censors, 12.6% Mayapán red-slipped, 0.7% Red-on-Cream, 0.1% Fine Orange, 0.1% Black-on-Cream)	CR #22
	8,231 sherds: 0.1% Puuc, 99.9% Mayapán period (1.5% unslipped, 0.2% noneffigy censors, 93.4% effigy censors, 4.6% Mayapán red-slipped, 0.1% Red-on-Cream, 0.1% Black-on-Cream)	CR #22
	17,915 sherds: 0.2% Puuc, 99.8% Mayapán period (2.9% unslipped, 0.3% noneffigy censors, 90.7% effigy censors, 5.3% Mayapán red-slipped, 0.2% Red-on-Cream, 0.1% Fine Orange, 0.3% Black-on-Cream)	CR #22
	4,441 sherds: 0.3% Puuc, 99.7% Mayapán period (4.9% unslipped, 0.6% noneffigy censors, 77.5% effigy censors, 15.3% Mayapán red-slipped, 0.6% Red-on-Cream, 0.1% Fine Orange, 0.7% Black-on-Cream)	CR #22
	247 sherds: 5.3 Puuc, 94.7 Mayapán period (40.5% unslipped, 0.4% noneffigy censors, 40.1% Mayapán red-slipped, 0.8% Fine Orange, 12.9% Black-on-Cream)	CR #22
	499 sherds: 3.4% Puuc, 96.6% Mayapán period (28.3% unslipped, 5.6% noneffigy censors, 0.8% effigy censors, 57.9% Mayapán red-slipped, 0.8% Fine Orange, 3.2% Black-on-Cream)	CR #22
	422 sherds: 0.5% Puuc, 99.5% Mayapán period (33.8% unslipped, 1.9% noneffigy censors, 17.7% effigy censors, 44.5% Mayapán red-slipped, 0.2% Red-on-Cream, 1.4% Black-on-Cream)	CR #22
	4,628 sherds: 0.2% Puuc, 99.8% Mayapán period (10.5% unslipped, 1.3% noneffigy censors, 55% effigy censors, 31.9% Mayapán red-slipped, 0.3% Red-on-Cream, 0.3% Fine Orange, 0.5% Black-on-Cream)	CR #22
	219 sherds: 5% Puuc, 95% Mayapán period (21.9% unslipped, 2.8% noneffigy censors, 60.7% Mayapán red-slipped, 0.9% Fine Orange, 8.7% Black-on-Cream)	CR #22

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Q-151	colonnaded hall	C-108a	unsealed upper fill of excavation at west end of 151	
Q-169	dwelling–elite		altar in rear room	
Q-169	dwelling–elite	A-417	dedicatory cache in front of the center of main entrance	
Q-169	dwelling–elite	A-418	tomb in front of doorway between front and rear rooms, central axis	1
Q-169	dwelling–elite	A-421	materials below floor of tomb, midden/fill contains no late Mayapán period pottery, no pottery earlier than Mayapán period	
Q-169	dwelling–elite	A-408	surface materials	
Q-172	two-room residence	A-416	dedicatory cache	
Q-172	outbuilding in elite residential group	A-413	cist in Room A	
Q-172	outbuilding in elite residential group		façade of Room A	
Q-172	outbuilding in elite residential group	A-406	above altar of Room A	
Q-172	outbuilding in elite residential group	A-406	in doorway of Room A	
Q-172	outbuilding in elite residential group	A-406	floor of Room A	
Q-172	outbuilding in elite residential group	A-406	in roof fall of Room A	
Q-172	outbuilding in elite residential group	A-415	inside altar of Room A	
Q-172	outbuilding in elite residential group	A-402	surface of Room B	
Q-173	outbuilding in elite residential group	A-430	south bench	
Q-169 group		A-400–437	lot inventory not provided, some are mentioned in text	
Q-126	round temple	C-110ab	sealed fill below oldest plaza Floor 1 to bed-rock in central trench	
Q-126	round temple	C-110c	sealed fill below floor of round temple and front terrace	
Q-126	round temple	C-109	deposit along west base of substructure and from surface and general excavation of temple/substructure	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	62 sherds: 1.6% Puuc, 98.4% Mayapán period (32.3% unslipped, 4.8% noneffigy censers, 9.7% effigy censers, 46.8% Mayapán red-slipped, 3.23% Fine Orange, 1.6% Black-on-Cream)	CR #22
	stucco foot and fragments, probably from an altar figure; altar likely looted before building collapse	CR #25
	2 jaguar effigy figures, seated, one red and white and one yellow	CR #25
supine skeleton, head to the east, left forearm across body	12 tripod bowls, 1 ladle censer, 1 copper bell (in knee area)	CR #25
		CR #25
	8 obsidian pieces, 1 conch shell fragment, pot lid, broken metate	CR #25
	kneeling pottery figure with lip plug (looks like ballplayer)	CR #25
	1 death-god head from effigy censer, 1 copper tweezer with twisted handle, incense burner fragments, 1 small shell bead (disk), 1 worked shell rectangular piece, 1 worked bone fragment	CR #25
	stone carved with 2 glyphs	CR #25
	tripod unslipped jar, noneffigy	CR #25
	limestone ornament (banner stone with hollow hole at top), originally covered in stucco	CR #25
	6 obsidian pieces, 1 core, 2 projectile points (1 is side-notched), 3 stone disks	CR #25
	pottery vessel of turtle with human head, hole in carapace	CR #25
cremation	pottery jar that held cremation, unslipped olla strap handle, pottery tripod dish with human effigy supports, served as lid for olla	CR #25
	3 obsidian pieces, 1 projectile point (side-notched), 4 broken pointed bifaces, 1 copper bell, 1 diving figure stone sculpture, 1 pot lid, 1 broken mano, 1 antler fragment, 1 coral, 1 conch shell fragment, 1 rubbing stone, 6 animal bones	CR #25
	1 obsidian piece, 30 animal bones, sherds not classified	CR #25
	sherds indicate late activity in Mayapán period history	CR #25
	6 obsidian pieces, 134 animal bones, almost all Mayapán period pottery, 218 sherds: 0.4% Puuc, 99.6% Mayapán period (29.4% unslipped, 1.8% noneffigy censers, 61% Mayapán red-slipped, 2.8% Fine Orange, 4.6% Black-on-Cream)	CR #27
	burned copal, fragments of stucco (yellow and red paint), 1 cache of 2 flint blades (pointed bifaces), 1 animal bone, 317 sherds: 0.6% Puuc, 99.4% Mayapán period (2.9% unslipped, 17.3% noneffigy censers, 72.9% effigy censers, 6.3% Mayapán red-slipped)	CR #27
	34 obsidian pieces, 1 flint "point," 1 scraper, 26 lithic flakes, 1 shell tinkler, 1 worked shell, 4 shell fragments, 1 perforated bone ornament, 50 fragments modeled/painted stucco figures/ornaments, 2 small stone sculptures (Puuc mask nose element, tenoned stone ring), 1 limestone mano fragment, 1 greenstone celt fragment, 1 tubular jade bead, 1 spherical pottery bead, 1 copper ring, 148 animal bones; 90% of sherds and artifacts represent materials swept from temple,	CR #27

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Q-126	round temple	C-109	deposit along west base of substructure and from surface and general excavation of temple/substructure	
Q-126	round temple			
H-17a	shrine	C-114	shrine in front of Itzmal Ch'en Temple H-17 area north of platform near L-shaped wall segment	
H-17a	shrine	C-115	shrine in front of Itzmal Ch'en Temple H-17 benches to south of east platform and debris covering this area	
H-17 altar	Itzmal Chen Temple	C-120	surface debris around altar	
H-17 altar	Itzmal Chen Temple	C-123	beneath floor under altar	
Q-80	Temple of Serpent Masks	C-67	general excavation along south, west, and north sides of structure	1
Q-80	Temple of Serpent Masks	C-67	general excavation along south, west, and north sides of structure	
Q-80	Temple of Serpent Masks	C-68	debris in Room 1	
Q-80	Temple of Serpent Masks	C-68	debris in Room 1	
Q-80	Temple of Serpent Masks	C-69	excavated to bedrock in passage between Q-80 and Q-81 colonnade	
Q-80	Temple of Serpent Masks	C-69	excavated to bedrock in passage between Q-80 and Q-81 colonnade	
Group R-85 to R-90	dwelling-elite	general lot	all excavations	
Group R-85 to R-90	dwelling-elite	A-130, 152, 153, 157-159, 165, 166, 171, 201, 203, 206, 209, 211, 220, 221, 234, 238, 241	surface accumulation of debris at various locations in the group	
Group R-85 to R-90	dwelling-elite	A-130, 152, 153, 157-159, 165, 166, 171, 201, 203, 206, 209, 211, 220, 221, 234, 238, 241	surface accumulation of debris at various locations in the group	
Group R-85 to R-90	dwelling-elite	A-133, 151, 154, 205, 222	mixed lots of debris and material on floors of rooms	

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	10,374 sherds: 0.2% Puuc, 99.8% Mayapán period (21.9% unslipped, 0.5% noneffigy censers, 41.3% effigy censers, 34.5% Mayapán red-slipped, 1% Red-on-Cream, 0.5% Fine Orange, 0.1% Black-on-Cream)	CR #27
	stone human head (in mouth of a bird), 6 plain and carved stelae	CR #27
	1 limestone face (old man's face with snake headdress emerging from shell), 1 limestone turtle, 2 limestone snakes, 2 altar stones with balls on top	CR #28
	tenon, 3 snake heads, sacrificial stone, footed stucco figures, at least 2 censers	CR #28
	3 squared stones supporting seated plaster figures with arms and heads holding up table altar, another stone without preserved figure, 4 limestone turtles, crouching figure with snake on back, 1 human face	CR #28
	jade pendant (carved human face)	CR #28
skeleton of adolescent, above fill of passageway to Q-81 colonnade but beneath masonry fall	1 obsidian piece, 1 limestone disk, 1 shell tinkler, 2 shell fragments, 61 animal bones, 4 speleothems	CR #30
	2,900 sherds: 7 Puuc, 2,893 Mayapán period (217 unslipped, 260 noneffigy censers, 1 figurine fragment, 2,030 effigy censers, 358 Mayapán red-slipped, 22 Red-on-Cream, 4 Fine Orange, 1 Black-on-Cream)	CR #30
	5 obsidian pieces, 1 shell bead (Spondylus?), 1 triangular shell pendant, 3 burned stone beads, 3 greenstone beads, copal from censers, turtle bowl pot with human hands	CR #30
	2,077 sherds: 3 Puuc, 2,074 Mayapán period (24 unslipped, 770 noneffigy censers, 1,087 effigy censers, 15 effigy censer bowls, 153 Mayapán red-slipped, 22 Red-on-Cream, 2 Fine Orange, 1 Black-on-Cream) [Totals corrected from original lot description in <i>Current Report</i> 30.]	CR #30
	2 obsidian pieces, 26 animal bones, copal from censers	CR #30
	787 sherds, 11 Puuc, 776 Mayapán period (114 unslipped, 58 noneffigy censers, 328 effigy censers, 264 Mayapán red-slipped, 1 Fine Orange, 11 Black-on-Cream)	CR #30
	42,287 sherds: 2,557 unidentified, 2 Tohil Plumbate, 1 Fine Orange, 59 slateware, 3 other Classic period wares, 95 post conquest, 39,570 Mayapán period (19,340/48.9% effigy censers, 8,848/22.3% unslipped, 10,198/25.8% slipped redwares, 708/1.8% Red-on-Buffer with or without black design, 247/0.6% Fine Orange, 6/0.0002% Black-on-Cream, 223/0.6% miscellaneous wares probably Mayapán period)	CR #29
	7,604 sherds: 1,314 unidentified, 20 miscellaneous, 2 plumbate, 13 slateware, 3 Classic period, 95 post conquest, 6,157 Mayapán period (1,109/18% effigy censers, 1,652/26.7% unslipped, 3,102/50.2% redware, 232/3.8% Red-on-Buffer, 61/1% Fine Orange, 1/0.0002% Black-on-Cream) [Totals corrected from original lot description in <i>Current Report</i> 29.]	CR #29
	13 obsidian pieces, 1 obsidian core, 7 hammerstones, 2 pointed bifaces, 1 bifacial projectile point (side notch, square base), 5 flake scrapers, 3 thumbnail scrapers, 22 flint bifaces (in various stages of reduction), 9 lithic flakes, 4 limestone disks, 1 grooved stone, 3 metates, 4 manos, 3 basalt metates, 3 granite metates, 1 honing stone, 1 greenstone celt fragment, 1 pottery ring, 1 modified olive shell, 2 shell fragments, 1 wrought iron hasp (modern?), 2 copper bells, animal bones	CR #29
	1,788 sherds: 351 unidentified, 3 slateware, 1,434 Mayapán period (721 effigy censers, 196 unslipped, 414 redware, 18 Red-on-Buffer, 9 Fine Orange, 76 miscellaneous) [Totals corrected from original lot description in <i>Current Report</i> 29.]	CR #29

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<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
Group R-85 to R-90	dwelling–elite	A-133, 151, 154, 205, 222	mixed lots of debris and material on floors of rooms	
Group R-85 to R-90	dwelling–elite	A-175, 202, 207, 223, 225, 228, 231	material on floors, sealed by roof debris	
Group R-85 to R-90	dwelling–elite	A-175, 202, 207, 223, 225, 228, 231	material on floors, sealed by roof debris	
Group R-85 to R-90	dwelling–elite	A-160–163, 167, 174, 204, 215, 219, 230, 232, 235, 239, 240, 242	material sealed between floors of Phase III and Phase II	
Group R-85 to R-90	dwelling–elite	A-160–163, 167, 174, 204, 215, 219, 230, 232, 235, 239, 240, 242	material sealed between floors of Phase III and Phase II	
Group R-85 to R-90	dwelling–elite	A-155, 168, 169, 172, 224, 226, 233	material above Phase I floors, sealed by floors of Phase II or Phase III	
Group R-85 to R-90	dwelling–elite	A-155, 168, 169, 172, 224, 226, 233	material above Phase I floors, sealed by floors of Phase II or Phase III	
Group R-85 to R-90	dwelling–elite	A-213, 216, 217	ash midden outside vaulted passage	
Group R-85 to R-90	dwelling–elite	A-213, 216, 217	ash midden outside vaulted passage	
Group R-85 to R-90	dwelling–elite	A-164, 170, 173, 194, 195, 214, 214a, 218, 218a, 227, 227a, 236, 237	material under earliest floors in earth layer on fill of early platforms and under ash midden	
Group R-85 to R-90	dwelling–elite	A-164, 170, 173, 194, 195, 214, 214a, 218, 218a, 227, 227a, 236, 237	material under earliest floors in earth layer on fill of early platforms and under ash midden	
R-86	dwelling–elite	A-193	burial Cist 1, tomb in fill under structure, later reopened and plundered (not sure if at abandonment or earlier)	1 but looted
R-86	dwelling–elite	A-176–191	burial Cist 2, cist in fill of structure	1

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
	1 obsidian piece, 3 hammerstones, 1 limestone disk, 1 olive shell	CR #29
	4,625 sherds: 288 unidentified, 19/0.5% miscellaneous, 4,337 Mayapán period (161/3.7% effigy censers, 2,194/50.6% unslipped, 1,874/3.2% redwares, 69/1.5% Red-on-Buff, 20/0.5% Fine Orange); high proportion of unslipped is due to large water jars left in situ in shrine rooms of R-86/87; low count of censers may be due to their removal to burial Cist 2 in R-86	CR #29
	4 obsidian pieces, 1 hammerstone, 1 pointed biface, 1 projectile point (bifacial, side notch, broken base), 1 lithic flake, 1 mano, 1 pestle, 8 chips of red limestone, 2 fragments of unidentified red limestone implements, 1 obsidian thumbnail scraper, 1 carved shell pendant, 1 shell ornament, fragments of modeled/painted stucco, 2 deer phalanges	CR #29
	2,003 sherds: 4 slateware, 118 unidentified, 1,881 Mayapán period (181/9.6% effigy censers, 560/29.8% unslipped, 1,060/56.4% redwares, 19/1% Red-on-Buff, 44/2.3% Fine Orange, 4/0.2% Black-on-Cream, 13/0.7% miscellaneous)	CR #29
	8 obsidian pieces, 1 pointed biface, 1 wedge-shaped axe, 1 lithic flake, 2 shell fragments, animal bones, 1 pot lid, 1 mano, 10 chips of red limestone, speleothem fragments	CR #29
	1,548 sherds: 75 unidentified, 3 slateware, 1,470 Mayapán period (92/6.2% effigy censers, 660/44.9% unslipped, 632/43% redwares, 21/1.4% Red-on-Buff, 16/1.1% Fine Orange, 49/3.4% miscellaneous)	CR #29
	10 obsidian pieces, 1 obsidian core, 1 hammerstone, 1 pointed biface, 7 lithic flakes, 5 limestone pot lids, 1 copper fragment, 1 perforated rectangular shell fragment, 12 shell fragments, animal bones, shark tooth, 4 perforated human teeth, 1 deer antler	CR #29
	4,507 sherds: 328 unidentified, 3 pre-Mayapán, 4,176 Mayapán period (138 effigy censers, 2,224 unslipped, 1,754 redware, 28 Red-on-Buff, 14 Fine Orange, 18 miscellaneous)	CR #29
	1 mano fragment, 1 hammerstone, 1 pointed biface, 2 lithic flakes, abundant animal bone, 1 pestle, 3 used potsherds	CR #29
	1,255 sherds: 34 pre-Mayapán, 52 unidentified, 1,169 Mayapán period (36 effigy censers, 531 unslipped, 575 redware, 6 Red-on-Buff, 6 Fine Orange, 1 Black-on-Cream, 14 miscellaneous)	CR #29
	2 obsidian pieces, 1 obsidian core, 1 hammerstone, 1 lithic flake, 1 shell fragment, animal bone, 2 manos, 2 worked potsherds	CR #29
skull fragments	jar with modeled death-god face on the side (earth and fiber in jar)	CR #29
disarticulated skeleton bones	5 small tripod bowls (with vented, effigy, conical supports; accompanying figure shows 9 bowls, some put in at a later time), modeled/painted stucco fragments, 90% effigy censers (25 faces, at least 4 God D, 2 God B, 1 mask of Xipe, 1 bearded god, and 1 "eagle knight"), 1 Fine Orange tripod effigy foot bowl, 1 red-and-black-on-buff tripod bowl with hollow animal effigy feet, a Pele Polychrome plate (with painted fish)	CR #29

continued on next page

<i>Structure</i>	<i>Type of structure</i>	<i>Lot</i>	<i>Description</i>	<i>No. of burials</i>
R-86	dwelling–elite	A-176–191	burial Cist 2, cist in fill of structure	
R-86	dwelling–elite	A-192	Cache 1, under central altar, cavity hollowed in plaster layer on which altar was built	
R-87	dwelling–elite	A-212	Cache 2, in altar, probably looted at time buildings were abandoned	
R-87	dwelling–elite	A-208	Cache 3, in dais in front of altar, formerly excavated and refilled with turtle on top	
R-87	dwelling–elite	A-210	Cache 4, southwest corner of central rear room, into latest floor sealed by plaster patch, carefully looted before collapse of building and refilled	
R-87	dwelling–elite	A-229	Cache 5, refilled excavation in bench east of stairway to structure	
R-90	shrine	A-142	Cache 6, probably Phase III, edge of excavation just in front of structure	
R-90	shrine	A-204	Cache 7, under plinth of structure in fill covering north end of original stairway to Terrace A	
R-89	shrine	A-243	Cache 8, in front of structure, looted when areaway of shrine built	
R-86b	shrine	A-156	Cache 9, in hole in floor of chamber at juncture of substructures of R-86 and R-85	
R-86a	kitchen	A-223	west bench of structure	
R-87	dwelling–elite	A-215	central rear room drain	
R-86	dwelling–elite	A-174	rear room	
R-86a	kitchen	A-223		

Notes on descriptive terms: Pottery types provided above are those given in the original reports, with a few exceptions where the author inserted current terminology based on photographic recognition of types. The original types given above correspond rather easily with types now used; Mayapan red-slipped is Mama Red, Mayapán period Unslipped is Navula Unslipped, Black-on-Cream is Peto Cream, Red-on-Cream or Red-on-Buff is Tecoh Red-on-Buff, and effigy and noneffigy censers fall in the Navula Unslipped group with various types according to variation in decorative technique. More liberty was taken with the lithic tool types where descriptions could be improved by looking at the photos; most non-obsidian lithic tools were described as points but are listed here as either projectiles or pointed bifaces (a much larger and common knife form for the site). All obsidian artifacts are labelled as such, and any other lithic tools listed (that are not labelled as “obsidian,” “limestone,” or another specific material) are of chert or chalcedony; both are common at the site.

<i>Burial description</i>	<i>Other artifacts</i>	<i>Current Report number</i>
see burials above	6 obsidian pieces, 1 stemmed triangular pointed biface, 1 narrow bipointed biface, 1 narrow pointed biface, 1 wedge-shaped axe, 1 projectile point (bifacial side notch, round base), 1 narrow small biface/drill, 1 stone carving of zoomorphic figure with human on back, 1 stone temple, 1 anthromorphic stone axe, 3 jade beads, 1 rectangular piece of perforated iron pyrite, 2 copper bells, 2 shell beads, 2 perforated shell disks, 1 perforated human tooth, 1 stingray spine, 1 shark tooth, 18,433 sherds, all Mayapán period (16,795/91.1% effigy, 733/4% unslipped, 624/3.4% redwares, 206/1.2% Red-on-Buff, 75/0.4% Fine Orange)	CR #29
	rabbit effigy vessel with 2 jade beads inside	CR #29
	small unslipped tripod pottery jar, 29 Mayapán period sherds (8 effigy censers, 5 unslipped, 16 redware)	CR #29
	1 pointed biface, 1 stone turtle with hole in its back, 1 redware sherd with painted glyph of God D (Itzamna), 7 fragments of paper-thin gold (some perforated), 196 sherds: 25 unidentified, 171 Mayapán period (43 effigy, 4 ring stand base of unslipped jar, 108 redwares, 2 Red-on-Buff, 2 Fine Orange, 12 reddish brown very thin sherds)	CR #29
	1 obsidian piece, 1 red-on-buff jar (black grecas on rim), 1 limestone pot lid inside jar (too small for cover), 10 fragments of paper-thin gold (some perforated), 173 sherds, all Mayapán period (41 effigy censers, 24 redwares, 107 Red-on-Buff cache bowl, 1 thin black sherd)	CR #29
	animal bones, 31 sherds: 4 unidentified, 27 Mayapán period (6 effigy censers, 6 unslipped, 14 redwares, 1 thin black sherd)	CR #29
	1 obsidian piece, 1 effigy turtle bowl (with cover) containing 1 pointed obsidian blade, 12 sherds (2 unidentified and 10 redware)	CR #29
	1 obsidian piece, 1 turtle effigy bowl (with human face emerging from mouth) containing 2 fragments of burned animal bone and a pointed obsidian blade	CR #29
	82 fragments of effigy bowl (with human face)	CR #29
	1 chipped stone disk	CR #29
	redware jar with oval opening in side-strap handle, redware jar strap handle, and small effigy lug handles	CR #29
	gray unslipped jar used as drain (base missing)	CR #29
	plaster-coated water jar	CR #29
	Red-slipped water jar, Black-and-Red-slipped tripod jar, 2 small vessels (one tripod unslipped, 1 Red-slipped jar), 2 fragments of Tecoh Red-on-Buff pottery, 1 small unslipped tripod jar	CR #29
	1 copper bell	CR #29

GLOSSARY

Acxomocuil: according to Sahagun, a deity honored by Aztec merchants.

Cacique: a tribal chief in Latin America, deriving from the sixteenth century. The term is a Spanish variation of the Taíno word *cacike* or the Arawak word *kassequa*, both meaning “chieftain.”

Cenote: the name given in Central America and southern Mexico to a type of freshwater-filled limestone sinkhole. The name derives from the Mayan word *dz’onot*. Cenotes have long been major sources of water in much of the Yucatán peninsula, most of which lacks other water that is easily accessible year-round.

Chac (also *Chaac* or *Chaak*): an important deity in the pantheon of the pre-Columbian Maya civilization in Mesoamerica. Chac was the god associated with rain and thunder and was also significant in rites and observances associated with fertility and agriculture.

Chalchihuitlicue (also *Chalcihuitlicue* or *Chalchihuitlicue*; “She of the Jade Skirt”): the Aztec deity of lakes and streams in Aztec. She is also a patroness of birth.

Cochimetl (*Cocochimetl*): the Aztec deity of commerce and merchants.

Cowrie: marine snails of the genus *Cypraea* (family *Cypraeidae*), which are found mainly in tropical regions.

Ehecatl (“Wind”): the Aztec deity of wind, an aspect of Quetzalcoatl. He had no known permanent physical form.

Fine Orange: pottery of fine-grained paste and little temper from the western Maya lowlands, probably near Laguna de Terminos, the lower Usumacinta and Grijalva rivers region.

Hacha: a thin-bladed axe thought to have had a ritual or ceremonial function for the Maya, with a possible connection to the ball game.

Incensario: a pottery vessel, or censer, in which incense is burned, especially during religious services.

Itzamna: paramount deity of the colonial Yucatec Maya; in Postclassic Yucatec codices, Itzamna appears as the aged deity known as God D.

Ixtlilton: (“Little Black One”): the Aztec deity of medicine and healing often alluded to as the brother of Macuilxochitl.

Kancab (also *Kankab* or *Chac kancab*): red earth, often found in cenotes, used as a slip for pottery and, with *sascab* (marl) and grass, in house construction.

Kinich Ahau Itzamna: see *Itzamna*.

Mano: a handstone used in conjunction with metates and other grinding slabs to grind grain and other substances.

Metate: a stone artifact used for processing grain and seeds. It consists of a large stone with a smooth depression worn into the upper surface. Plant materials are ground in this depression using a smooth hand-held stone known as a *mano*.

Mictlantecutli: a death god.

Milpa: a crop-growing system in the Yucatán peninsula area of Mexico. The word is borrowed from the Aztec and means “field.” Based on ancient Maya slash-and-burn methods, it produces maize, beans, lima beans, and squash. The milpa cycle calls for a period of cultivation and a period of letting the area lie fallow. Agronomists believe that at current levels of consumption the system is self-sustaining.

Mixcoatl (“Cloud Serpent”): the Aztec deity of the hunt and identified with the Milky Way, the stars, and the heavens in several Mesoamerican cultures. Although Mixcoatl was part of the Aztec pantheon, his role was less important than that of Huitzilopochtli, who was their central deity.

Municipio: Spanish for “municipality,” one of the two types of second-level municipality in Mexico. Each of Mexico’s thirty-one states is divided into a variable number of *municipios*. The Mexican *municipio* can be compared to the U.S. county, although the local municipal government (*ayuntamiento*), headed by a *presidente municipal* (municipal president), can be more usefully compared to that of a U.S. city mayor.

Oliva shells (Olividae): a family of Gastropods found mostly in warm tropical seas. They secrete a mucus similar to that of the Muricidae, from which a purple dye can be made.

Olla: Spanish term for a pottery jar with a flaring neck.

Palma: protective gear worn during ball games; in stone form, it was probably a trophy or ritual object.

Plumbate Ware: a pottery characterized by surface slips of high iron content fired at unusually high temperatures, resulting in a lustrous glaze-like finish; the only Mesoamerican semivitrified ware. Plumbate pottery was widely traded from Mexico to El Salvador, and its manufacture ceased at the beginning of the Late Postclassic period.

Quetzalcoatl (“Feathered or Plumed Serpent”): the Nahuatl term for the Feathered Serpent deity of ancient Mesoamerican culture. Quetzalcoatl is also a mythical culture hero from whom almost all Mesoamerican peoples claim descent. He is often described as the divine ruler of the mythical Toltecs of Tollan. Many different Mesoamerican cultures—including the Maya, K’iche, Pipil, and Zapotec—claim to have been the only true lineage of Quetzalcoatl and thus of the mythical Toltecs.

Sacbe (pl., *sacbeob*, “white ways”): elevated paved roads built by the ancient Maya. Most connect structures or groups of structures within centers or cities, although some longer roads between cities are also known. *Sacbe* is

Yucatec Maya for “white road”; white because they were originally coated with limestone stucco, which was put over stone and rubble fill.

Sascab: a naturally occurring mineral material defined variously as “decomposed limestone,” “marl,” or “brecchia.” It has been used as a building and paving material in Mesoamerica since antiquity. It was used by the ancient Maya in place of, or as a partial replacement for, lime in some applications.

Spondylus shell: a red spiny or rock oyster shell (*Spondylus princeps*) found in Pacific coastal waters.

Tezcatlipoca (“Smoking Mirror”): the Aztec deity of the night, the north, temptation, sorcery, beauty, and war. He was known by several other descriptive names, such as Titlacauan, Ipalnemoani, Necocyaotl, Tloque Nahuaque, and Yohualli Ēcatl. Sometimes the mirror was shown on his chest. In his right hand he carried four arrows, which he used to punish the sins of man. His hair was black and in the style of a warrior, and he carried a shield and weapon. According to the Aztecs, he was the god of discord, deceit, and robbers, but he was also the god of rulers, warriors, and sorcery.

Tlahuizcalpantecuhli (“Lord of the Star of the Dawn”; also spelled *Tlahuizcalpantecutli* and *Tlahuixcalpantecuhli*): the Aztec personification of the morning star, which is the planet Venus as seen in the morning. Tlahuizcalpantecuhli was a manifestation of Quetzalcoatl.

Tlaloc (Nuhualpilli): the deity of rain and fertility. He was greatly feared among the Aztecs, who supposedly drowned children to appease him. They believed that Tlaloc was responsible for both floods and droughts and that he had been created by the other gods.

Tlazolteotl: central Mexican deity of filth; Aztec goddess of purification and curing, particularly of diseases caused by sexual misdeeds or excess.

Toci (“Our Grandmother”): the Aztec patroness of midwives and curers, and closely identified with the sweatbath.

Xipe Totec (“Our Lord the Flayed One”): an Aztec life-death-rebirth deity; god of agriculture, the west, disease, spring, goldsmiths, and the seasons. He flayed himself to give food to humanity, symbolic of maize seed losing the outer layer of the seed before germination.

Yacapecutli (“He Who Goes Before”; alternately, *Yiacatecutli*): the Aztec patron deity of commerce and travelers, especially merchant travelers.

REFERENCES

- Adams, Robert M., Jr. 1953. Some Small Ceremonial Structures of Mayapán. *Carnegie Institution of Washington, Current Reports*, 9. Cambridge, MA.
- Andrews, E. Wyllys. 1942. Yucatán: Architecture. *Carnegie Institution of Washington, Year Book* 41:257–263. Washington, DC.
- Andrews, E. Wyllys. 1943a. The Archaeology of Southwestern Campeche. *Carnegie Institution of Washington, Contributions to American Anthropology and History*, 40. Washington, DC.
- Andrews, E. Wyllys. 1943b. Yucatán: Architecture. *Carnegie Institution of Washington, Year Book* 42:257–263. Washington, DC.
- Anonymous. 1845a. Una ciudad murada. *Registro yucateco* 1:206–208. Merida.
- Anonymous. 1845b. Pozos antiguos. *Registro yucateco* 1:350–352. Merida.
- Arguelles, C. 1951. El secreto de Arenitas. *Mañana*, September 1, no. 418. Mexico.
- Armillas, Pedro. 1948. Fortalezas mexicanas. *Cuadernos americanos* 7:143–163. Mexico.
- Armillas, Pedro. 1951. Mesoamerican Fortifications. *Antiquity* 25:77–86. Newbury, Berks.
- Atlas arqueológico de la república mexicana*. 1939. Instituto Panamericano de Geografía e Historia, Publicación, 41. Mexico.
- Berlin, Heinrich. 1946. Archaeological Excavations in Chiapas. *American Antiquity* 12(1):19–28. Menasha.
- Berlin, Heinrich. 1956. Late Pottery Horizons of Tabasco, Mexico. *Carnegie Institution of Washington, Contributions to American Anthropology and History*, 59. Washington, DC.
- Bernal, Ignacio. 1980. *A History of Mexican Archaeology: The Vanished Civilizations of Middle America*. London, Thames and Hudson.
- Blom, Frans, and Oliver La Farge. 1926–1927. *Tribes and Temples: A Record of the Expedition to Middle America Conducted by the Tulane University of Louisiana in 1925*. New Orleans, Middle American Research Institute, Tulane University. 2 vols.
- Brainerd, George W. 1941. Fine Orange Pottery in Yucatán. *Revista mexicana de estudios antropológicos* 5(2–3):163–183. Mexico.
- Brainerd, George W. 1942. Yucatán: Pottery. *Carnegie Institution of Washington, Year Book* 41:253–257. Washington, DC.
- Brainerd, George W. 1958. *The Archaeological Ceramics of Yucatan*. University of California, Anthropological Records, 19. Los Angeles.
- Brasseur de Bourbourg, Charles E. 1867. Rapport sur les ruines de Mayapán et d'Uxmal au Yucatán (Mexique). *Archives de la Commission Scientifique du Mexique* 2:23–88. Paris.
- Brinton, Daniel G. 1896. The Battle and the Ruins of Cintla. *American Antiquarian* 18:259–267. Worcester, MA.
- Bullard, William R., Jr. 1952. Residential Property Walls at Mayapán. *Carnegie Institution of Washington, Current Reports*, 3. Cambridge, MA.
- Bullard, William R., Jr. 1953. Property Walls at Mayapán. *Carnegie Institution of Washington, Year Book* 52:258–264. Washington, DC.
- Casas, Bartolome de las. 1951. *Historia de las Indias, por Fray Bartolome de las Casas; edición de Agustín Milares Carlo y estudio preliminary de Lewis Hanke*. Mexico, Fondo de Cultura Económica. 3 vols.

- Castillo, Jeronimo del. 1866. *Diccionario historico, biografico y monumental de Yucatán: Desde la conquista hasta el ultimo año de la dominación española en el pais*. Merida, Imprenta de Castillo.
- Chamberlain, Robert S. 1948. *The Conquest and Colonization of Yucatán*. Carnegie Institution of Washington, Publication 582. Washington, DC.
- Charnay, Desire. 1885. *Les anciennes villes du Nouveau monde; voyages d'explorations au Mexique et dans l'Amérique Centrale, par Désiré Charnay, 1857–1882*. Paris, Hachette.
- Coe, William R. 1956. Review of *Current Reports*, numbers 1–24, by H.E.D. Pollock. *American Antiquity* 21(4):437–438. Washington, DC.
- Coffin, J. 1933. Ahualulco, la maravillosa ciudad extinguida en Tabasco. *El Nacional*, September 3. Mexico.
- Cole, Leon J. 1910. The Caverns and People of Northern Yucatán. *Bulletin of the American Geographical Society* 42:321–336. New York.
- Diaz del Castillo, Bernal. 1939. *Historia verdadera de la conquista de la Nueva España*. Mexico, Pedro Robredo. 3 vols.
- Diccionario de Motul. 1929. *Diccionario de Motul, maya-español; atribuido a fray Antonio de Ciudad Real y Arte de lengua maya por fray Juan Coronel; edición hecha por Juan Martínez Hernández*. Mérida, Compañía Tipografía Yucateca. 2 vols.
- Drucker, Philip. 1952. *La Venta, Tabasco: A Study of Olmec Ceramics and Art*. Bureau of American Ethnology, Bulletin 153. Washington, DC.
- Ekholm, Gordon F. 1944. Excavations at Tampico and Panuco in the Huasteca, Mexico. *American Museum of Natural History, Anthropological Papers* 38:320–512. New York.
- Escalona Ramos, Alberto. 1946. Algunas ruinas prehistóricas en Quintana Roo. *Boletín de la Sociedad Mexicana de Geografía y Estadística* 61:513–628. Mexico.
- Fewkes, Jesse W. 1895. The God “D” in the Codex Cortesianus. *American Anthropologist* 8:205–222. Washington, DC.
- Ford, James A. 1949. Cultural Dating of Prehistoric Sites in Viru Valley, Peru. *American Museum of Natural History, Anthropological Papers* 43(1):31–78. New York.
- Gann, Thomas W.F. 1900. Mounds in Northern Honduras. *Bureau of American Ethnology, Annual Report* 19(2):655–692. Washington, DC.
- Gann, Thomas W.F. 1918. *The Maya Indians of Southern Yucatán and Northern British Honduras*. Bureau of American Ethnology, Bulletin 64. Washington, DC.
- Gann, Thomas W.F. 1926. *Ancient Cities and Modern Tribes: Exploration and Adventure in Maya Lands*. New York, C. Scribner's Sons.
- Gann, Thomas W.F., and M. Gann. 1939. *Archaeological Investigations in the Corozal District of British Honduras*. Bureau of American Ethnology, Bulletin 123. Washington, DC.
- Gates, William E. 1931. *Outline Dictionary of Maya Glyphs with a Concordance and Analysis of Their Relationships*. Maya Society Publication 1. Baltimore.
- Gordon, George B. 1898. *Researches in the Uloa Valley*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoirs, 1(4). Cambridge, MA.
- Goubaud Carrera, Antonio. 1935. El Guajajaquip Bats: Ceremonia calendrica indigena. *Anales de la Sociedad de Geografía e Historia de Guatemala* 12:39–52. Guatemala.
- Hamy, Ernest T. 1897. *Galerie Americaine du Musée d'Ethnographie du Trocadero: Choix de pièces archéologiques et ethnographiques*. Paris, E. Leroux.
- Hatt, R. T. 1953. *Faunal and Archaeological Researches in Yucatán Caves*. Cranbrook Institute of Science, Bulletin 33. Bloomfield Hills, MI.
- Holmes, William H. 1895–1897. *Archaeological Studies among the Ancient Cities of Mexico*. Field Columbian Museum, Anthropological Series 1(1). Chicago.
- Hooton, Earnest A. 1940. Skeletons from the Cenote of Sacrifice at Chichén Itzá. In *The Maya and Their Neighbors*, 272–280. New York, D. Appleton-Century.
- Instituto de Antropología. Oficina de Monumentos Prehispanicos. N.d. Bound manuscript surveys of sites in Mexico by political entities; volume titled Quintana Roo. Mexico.
- Jakeman, M. Wells. 1952. *An Archaeological Reconnaissance of the Xicalango Area of Eastern Campeche*. University Archaeological Society, Brigham Young University, Bulletin 3. Provo.
- Jones, Morris R. 1952. Map of the Ruins of Mayapán, Yucatán, Mexico. *Carnegie Institution of Washington, Current Reports*, 1. Cambridge, MA.
- Kelemen, Pal. 1946. *Medieval American Art*. New York, Macmillan. 2 vols.
- Kidder, A. V., J. D. Jennings, and E. M. Shook. 1946. *Excavations at Kaminaljuyu, Guatemala*. Carnegie Institution of Washington, Publication 561. Washington, DC.
- La Farge, Oliver. 1947. *The Religion of a Cuchumatán Indian Town*. Chicago, University of Chicago Press.
- Lizana, Bernardo de. 1893. *Historia de Yucatán; Devocionario de Ntra. Sra. de Izama y conquista espiritual*. Mexico, Impresa del Museo Nacional.
- Lizardi Ramos, Cesar. 1939. Exploraciones arqueológicas en Quintana Roo. *Revista Mexicana de Estudios Antropológicos* 3(1):46–53. Mexico.
- López de Cogolludo, Diego. 1867–1868. *Historia de Yucatán, escrito en el siglo XVII*. Merida, Imprenta de M. Aldana Rivas.
- López de Gomara, Francisco de. 1943. *Historia de la conquista de Mexico*. Mexico, Editorial Pedro Robredo. 2 vols.
- Lothrop, Samuel K. 1924. *Tulum: An Archaeological Study of the East Coast of Yucatán*. Carnegie Institution of Washington, Publication 335. Washington, DC.
- Lothrop, Samuel K. 1952. *Metals from the Cenote of Sacrifice, Chichén Itzá, Yucatán*. Peabody Museum of Archaeology and Ethnology, Harvard University, Memoirs, 10(2). Cambridge, MA.
- Maler, Teobert. 1901. *Researches in the Central Portion of the Usumatsintla Valley*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoirs, 2(1). Cambridge, MA.
- Mason, Gregory. 1927. *Silver Cities of Yucatán*. New York, G. P. Putnam's Sons.

- Mercer, Henry C. 1896. *The Hill-Caves of Yucatán*. Philadelphia, J. B. Lippencott.
- Miller, Gerrit S., and R. Kellogg. 1955. *List of North American Recent Mammals*. United States National Museum, Bulletin 205. Washington, DC.
- Morley, Sylvanus G. 1938a. Chichén Itzá. *Carnegie Institution of Washington, Year Book* 37:1. Washington, DC.
- Morley, Sylvanus G. 1938b. Chichén Itzá. *Carnegie Institution of Washington, Year Book* 37:5–6. Washington, DC.
- Morley, Sylvanus G. 1938c. Chichén Itzá. *Carnegie Institution of Washington, Year Book* 37:141–143. Washington, DC.
- Morley, Sylvanus G. 1946. *The Ancient Maya*. Stanford, CA, Stanford University Press.
- Morris, Earl H., J. Charlot, and Ann A. Morris. 1931. *The Temple of the Warriors at Chichén Itzá, Yucatán*. Carnegie Institution of Washington, Publication 406. Washington, DC.
- Noguera, Eduardo. 1940a. La ceramica de Quintana Roo. *El México antiguo* 5:9–40. Mexico.
- Noguera, Eduardo. 1940b. Excavaciones en Calipan, Estado de Puebla. *El México antiguo* 5:63–124. Mexico.
- Noyes, Ernest. 1932. Fray Alonso Ponce in Yucatán, 1588, trans. and annot. Ernest Noyes. In *Middle American Papers*, 297–372. Department of Middle American Research Tulane University, Publication 4. New Orleans.
- Paynter, Raymond A. 1955. *The Ornithogeography of the Yucatán Peninsula*. Peabody Museum of Natural History, Yale University, Bulletin 9. New Haven, CT.
- Pearse, Arthur S., Edwin P. Creaser, and Frank G. Hall. 1936. *The Cenotes of Yucatán: A Zoological and Hydrographic Survey*. Carnegie Institution of Washington, Publication 457. Washington, DC.
- Pollock, Harry E.D. 1936a. The Casa Redonda at Chichén Itzá, Yucatán. *Carnegie Institution of Washington, Contributions to American Archaeology* 3(17):129–154.
- Pollock, Harry E.D. 1936b. *Round Structures of Aboriginal Middle America*. Carnegie Institution of Washington, Publication 471. Washington, DC.
- Pollock, Harry E.D. 1951. Department of Archaeology. *Carnegie Institution of Washington, Year Book* 50:221–229. Washington, DC.
- Pollock, Harry E.D. 1952. Department of Archaeology. *Carnegie Institution of Washington, Year Book* 51:235–243. Washington, DC.
- Pollock, Harry E.D. 1954a. Department of Archaeology. *Carnegie Institution of Washington, Year Book* 53:263–267. Washington, DC.
- Pollock, Harry E.D. 1954b. Excavations in Mayapán. *Carnegie Institution of Washington, Year Book* 53:277–279. Washington, DC.
- Pollock, Harry E.D. 1954c. The Northern Terminus of the Principal Sacbe at Mayapán. *Carnegie Institution of Washington, Current Reports*, 15. Cambridge, MA.
- Pollock, Harry E.D. 1955. Excavations in Mayapán. *Carnegie Institution of Washington, Year Book* 54:278–280. Washington, DC.
- Pollock, Harry E.D. 1958. Department of Archaeology. *Carnegie Institution of Washington, Year Book* 57:435–449. Washington, DC.
- Pollock, Harry E.D. 1962. Introduction. In *Mayapán, Yucatán, Mexico*, by H.E.D. Pollock et al., 1–24. Carnegie Institution of Washington, Publication 619. Washington, DC.
- Pollock, Harry E.D., Ralph L. Roys, Tatiana Proskouriakoff, and A. Ledyard Smith. 1962. *Mayapán, Yucatán, Mexico*. Carnegie Institution of Washington, Publication 619. Washington, DC.
- Pollock, Harry E.D., and Gustav Strömsvik. 1953. Chachob, Yucatán. *Carnegie Institution of Washington, Current Reports*, 6. Cambridge, MA.
- Proskouriakoff, Tatiana. 1950. *A Study of Classic Maya Sculpture*. Carnegie Institution of Washington, Publication 593. Washington, DC.
- Proskouriakoff, Tatiana. 1953. Plan of the Main Group at Mayapán. *Carnegie Institution of Washington Year Book* 52:264–268. Washington, DC.
- Proskouriakoff, Tatiana. 1954. Mapping and Excavations at Mayapán. *Carnegie Institution of Washington Year Book* 53:268–271. Washington, DC.
- Proskouriakoff, Tatiana, and Charles R. Temple. 1955. A Residential Quadrangle, Structures R-85 to R-90. *Carnegie Institution of Washington, Current Reports*, 29. Cambridge, MA.
- Ray, Clayton E. 1957. Pre-Columbian Horses from Yucatán. *Journal of Mammalogy* 38:278.
- Redfield, Robert, and Alfonso Villa R. 1934. *Chan Kom: A Maya Village*. Carnegie Institution of Washington, Publication 448. Washington, DC.
- Relaciones de Yucatán. 1898–1900. *Relaciones de Yucatán. In Colección de documentos inéditos relativos al descubrimiento, conquista y organización de las antiguas posesiones españolas de Ultramar*, vols. 11 and 13. Madrid.
- Rickards, Constantine G. 1910. *The Ruins of Mexico*. London, H. E. Shrimpton.
- Ritual of the Bacabs*, Translated and Edited by Ralph L. Roys. 1965. Norman, University of Oklahoma Press.
- Roman y Zamora, Jeronimo. 1897. *Repúblicas de Indias; idolatrias y gobierno en México y Perú antes de la conquista, ordenadas por fr. Jerónimo Román y Zamora . . . Fielmente reimpresas, según la edición de 1575, con una Addenda de las noticias que hay en la Crónica, del mismo autor, impresa en 1569*. Colección de libros raros y curiosos que tratan de America, 14, 15. Madrid, V. Suárez. 2 vols.
- Romero, Javier, and Samuel Fastlicht. 1951. El arte de las mutilaciones dentarias. *Enciclopedia Mexicana de Arte*, no. 14. Mexico.
- Romero, P. H. 1926. Expedición a Chiapas y Tabasco realizada por el Capitan Primero de Ingenieros D. Pedro H. Romero el año de 1892. *Anales del Museo Nacional de Arqueología, Historia y Etnografía* 4(4):459–477. Mexico.
- Roys, Lawrence. 1941. Masonry Traits Found at Mayapan. In *Los Mayas antiguos: Monografías de arqueología, etnografía y lingüística mayas, publicadas con motivo del Centenario de la exploración de Yucatan por John L. Stephens y Frederick Catherwood en los años 1841–1842*, 143–153. Mexico, Colegio de Mexico.
- Roys, Ralph L. 1929. *The Ethno-Botany of the Maya*. Tulane University, Middle American Research Series, Publication 2. New Orleans.

- Roys, Ralph L. 1943. *The Indian Background of Colonial Yucatán*. Carnegie Institution of Washington, Publication 548. Washington, DC.
- Roys, Ralph L. 1952. Conquest Sites and the Subsequent Destruction of Maya Architecture in the Interior of Northern Yucatán. *Carnegie Institution of Washington, Contributions to American Anthropology and History*, 54. Washington, DC.
- Ruppert, Karl. 1943. *The Mercado, Chichén Itzá, Yucatán*. Carnegie Institution of Washington, Publication 546, Contribution 43. Washington, DC.
- Ruppert, Karl. 1952. *Chichén Itzá: Architectural Notes and Plans*. Carnegie Institution of Washington, Publication 595. Washington, DC.
- Ruppert, Karl, Edwin M. Shook, and Robert E. Smith. 1954. Chichén Itzá, Dzibiac, and Balam Canche, Yucatán. *Carnegie Institution of Washington, Year Book* 53:286–289. Washington, DC.
- Ruppert, Karl, and A. Ledyard Smith. 1951. Mayapán, Yucatán. *Carnegie Institution of Washington, Year Book* 50:230–232. Washington, DC.
- Ruppert, Karl, and A. Ledyard Smith. 1952. Excavations in House Mounds at Mayapán. *Carnegie Institution of Washington, Current Reports*, 4. Cambridge, MA.
- Ruppert, Karl, and A. Ledyard Smith. 1953. Mayapán, Yucatán. *Carnegie Institution of Washington, Year Book* 52:256–258. Washington, DC.
- Ruppert, Karl, and A. Ledyard Smith. 1954. Excavations in House Mounds at Mayapán III. *Carnegie Institution of Washington, Current Reports*, 17. Cambridge, MA.
- Ruppert, Karl, J.E.S. Thompson, and Tatiana Proskouriakoff. 1955. *Bonampak, Chiapas, Mexico*. Carnegie Institution of Washington, Publication 602. Washington, DC.
- Russell, Bradley W. 2008. Postclassic Maya Settlement on the Rural-Urban Fringe of Mayapán, Yucatán, Mexico. Doctoral dissertation, Department of Anthropology, State University of New York at Albany.
- Ruz Lhuillier, Alberto. 1945. Campeche en la arqueología maya. *Acta antropológica* 1:2–3. Mexico.
- Sahagún, Bernardino de. 1938. *Historia de las cosas de Nueva España*. Mexico. 5 vols.
- Sahagún, Bernardino de. 1950. *Florentine Codex: General History of the Things of New Spain*, trans. A.J.O. Anderson and C. E. Dibble. Santa Fe, School of American Research, and Salt Lake City, University of Utah. 13 vols.
- Salisbury, Stephen. 1879. Terra Cotta Figure from Isla Mujeres, Northeast Coast of Yucatán. *Proceedings of the American Antiquarian Society* 71:71–89. Worcester, MA.
- Sanders, William T. 1955. An Archaeological Reconnaissance of Northern Quintana Roo. *Carnegie Institution of Washington, Current Reports*, 24. Cambridge, MA.
- Satterthwaite, Linton. 1943. *Piedras Negras Archaeology: Architecture, Introduction* 1(1). University Museum, University of Pennsylvania, Philadelphia.
- Schellhas, Paul. 1904. *Representation of Deities of the Maya Manuscripts*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Papers 4(1). Cambridge, MA.
- Scholes, France V., and Eleanor B. Adams. 1938. *Don Diego Quijada, alcalde mayor de Yucatán, 1561–65*. Mexico, Antigua Librería Robredo. 2 vols.
- Scholes, France V., and Ralph L. Roys. 1948. *The Maya Chontal Indians of Acalan-Tixchel*. Carnegie Institution of Washington, Publication 561. Washington, DC.
- Seler, Eduard. 1887. Über die Bedeutung des Zahlzeichens 20 in der Mayaschrift. *Zeitschrift für Ethnologie* 19:237–241. Leiden.
- Seler, Eduard. 1902–1923. *Gesammelte Abhandlungen zur amerikanischen Sprach- und Alterthurnskunde*. Berlin, A. Asher. 5 vols.
- Seler, Eduard. 1915. Archaeologische Reise in Süd- und Mittelamerika 1910/1911. In *Gesammelte Abhandlungen zur Amerikanischen Sprach- und Alterthurnskunde*, 5. Berlin, A. Asher.
- Shook, Edwin M. 1952a. The Great Wall and Other Features of Mayapán. *Carnegie Institution of Washington, Year Book* 51:247–251. Washington, DC.
- Shook, Edwin M. 1952b. The Great Wall of Mayapán. *Carnegie Institution of Washington, Current Reports*, 2. Cambridge, MA.
- Shook, Edwin M. 1953a. Excavations in Mayapán. *Carnegie Institution of Washington, Year Book* 52:268–272. Washington, DC.
- Shook, Edwin M. 1953b. The X-Coton Temples at Mayapán. *Carnegie Institution of Washington, Current Reports*, 11. Cambridge, MA.
- Shook, Edwin M. 1954a. Excavations in Mayapán. *Carnegie Institution of Washington, Year Book* 53:271–273. Washington, DC.
- Shook, Edwin M. 1954b. A Round Temple at Mayapán, Yucatán. *Carnegie Institution of Washington, Current Reports*, 16. Cambridge, MA.
- Shook, Edwin M. 1954c. Three Temples and Their Associated Structures at Mayapán. *Carnegie Institution of Washington, Current Reports*, 14. Cambridge, MA.
- Shook, Edwin M. 1954. The Temple of Kukulcan at Mayapán. *Carnegie Institution of Washington, Current Reports*, 20. Cambridge, MA.
- Shook, Edwin M., and William N. Irving. 1955. Colonaded Buildings at Mayapán. *Carnegie Institution of Washington, Current Reports*, 22. Cambridge, MA.
- Shook, Edwin M., and Tatiana Proskouriakoff. 1951. Yucatán. *Carnegie Institution of Washington, Year Book* 50:236–240. Washington, DC.
- Smith, A. Ledyard. 1950. *Uaxactun, Guatemala: Excavations of 1931–1937*. Carnegie Institution of Washington, Publication 588. Washington, DC.
- Smith, A. Ledyard, and Alfred V. Kidder. 1951. *Excavations at Nebaj, Guatemala*. Carnegie Institution of Washington, Publication 594. Washington, DC.
- Smith, A. Ledyard, and Karl Ruppert. 1953. Excavations in House Mounds at Mayapán II. *Carnegie Institution of Washington, Current Reports*, 10. Cambridge, MA.
- Smith, A. Ledyard, and Karl Ruppert. 1954. Ceremonial or Formal Archway, Uxmal. *Carnegie Institution of Washington, Notes on Middle American Archaeology and Ethnology* 5(116):1–3. Washington, DC.

- Smith, A. Ledyard, and Karl Ruppert. 1956. Excavations in House Mounds at Mayapán IV. *Carnegie Institution of Washington, Current Reports*, 36. Cambridge, MA.
- Smith, G. Elliot. 1927. The Elephant in Maya Art: Proofs of Asian-American Contact. *Illustrated London News*, January 15, p. 87. London.
- Smith, Robert E. 1936a. Ceramics of Uaxactun: A Preliminary Analysis of Decorative Techniques and Design. Manuscript.
- Smith, Robert E. 1936b. Preliminary Shape Analysis of Uaxactun Pottery. Manuscript.
- Smith, Robert E. 1952. Pottery of Mayapán. *Carnegie Institution of Washington, Year Book* 51:251–256. Washington, DC.
- Smith, Robert E. 1953a. Cenote Exploration at Mayapán and Telchaquillo. *Carnegie Institution of Washington, Current Reports*, 12. Cambridge, MA.
- Smith, Robert E. 1953b. Cenote X-Coton at Mayapán. *Carnegie Institution of Washington, Current Reports*, 5. Cambridge, MA.
- Smith, Robert E. 1953c. Pottery of Mayapán and Vicinity. *Carnegie Institution of Washington, Year Book* 52:279–282. Washington, DC.
- Smith, Robert E. 1954a. Cenote Exploration at Mayapán and Telchaquillo. *Carnegie Institution of Washington, Current Reports*, 12. Cambridge, MA.
- Smith, Robert E. 1954b. Exploration on the Outskirts of Mayapán. *Carnegie Institution of Washington, Current Reports*, 18. Cambridge, MA.
- Smith, Robert E. 1955. *Ceramic Sequence at Uaxactun, Guatemala*. Middle American Research Institute, Tulane University, Publication 20. New Orleans. 2 vols.
- Smith, Robert E. 1971. *The Pottery of Mayapán: Including Studies of Ceramic Material from Uxmal, Kabah, and Chichén Itzá*. Peabody Museum of Archaeology and Ethnology, Harvard University, Papers, 66. Cambridge, MA. 2 vols.
- Spinden, Herbert J. 1913. *A Study of Maya Art*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoirs, 6. Cambridge, MA.
- Stephens, John L. 1843. *Incidents of Travel in Yucatán*. New York, Harper Brothers. 2 vols.
- Stewart, T. Dale. 1953. Skeletal Remains from Zaculeu, Guatemala. In *The Ruins of Zaculeu, Guatemala*, by R. B. Woodbury and A. S. Trik, 295–311. New York, United Fruit Company.
- Strömsvik, Gustav. 1953. A Portal Vault and Temple at Mayapán. *Carnegie Institution of Washington, Current Reports*, 8. Cambridge, MA.
- Tax, Sol. 1951. *Panajachel Field Notes*. Microfilm Collection of Manuscripts on Middle American Cultural Anthropology, 29. Chicago.
- Thompson, Donald E. 1955. An Altar and Platform at Mayapán. *Carnegie Institution of Washington, Current Reports*, 28. Cambridge, MA.
- Thompson, Donald E., and J.E.S. Thompson. 1955. A Noble's Residence and Its Dependencies at Mayapán. *Carnegie Institution of Washington, Current Reports*, 25. Cambridge, MA.
- Thompson, Edward H. 1897a. *The Cave of Loltun, Yucatán*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoirs 1(2). Cambridge, MA.
- Thompson, Edward H. 1897b. *The Chultunes of Labna, Yucatán*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoirs, 1(3). Cambridge, MA.
- Thompson, Edward H. 1938. *The High Priest's Grave, Chichén Itzá, Yucatán, Mexico*. Field Museum of Natural History, Anthropological Series, 27(1). Chicago.
- Thompson, J.E.S. 1931. *Archaeological Investigations in the Southern Cayo District, British Honduras*. Field Museum of Natural History, Anthropological Series, 17(3). Chicago.
- Thompson, J.E.S. 1939. The Moon Goddess in Middle America with Notes on Related Deities. *Carnegie Institution of Washington, Contributions to American Anthropology and History*, 29. Washington, DC.
- Thompson, J.E.S. 1948. An Archaeological Reconnaissance in the Cotzumalhuapa Region, Escuintla, Guatemala. *Carnegie Institution of Washington, Contributions to American Anthropology and History*, 44. Washington, DC.
- Thompson, J.E.S. 1950. *Maya Hieroglyphic Writing: Introduction*. Carnegie Institution of Washington, Publication 589. Washington, DC.
- Thompson, J.E.S. 1954. A Presumed Residence of the Nobility at Mayapán. *Carnegie Institution of Washington, Current Reports*, 19. Cambridge, MA.
- Thompson, J.E.S., H.E.D. Pollock, and Jean Charlot. 1932. *A Preliminary Study of the Ruins of Coba, Mexico*. Carnegie Institution of Washington, Publication 424. Washington, DC.
- Torquemada, Juan de. 1723. *Primera [segunda, tercera] parte de los veinte i un libros rituales i monarchia indiana, con el origen y guerras, de los Indios Occidentales, de sus poblaciones descubrimiento, conquista, conuersion, y otras cosas marauillosas de la mesma tierra*. Madrid, N. Rodriguez Franco. 3 vols.
- Torre, Tomas de la. 1945. *Desde Salamanca, España, hasta Ciudad Real, Chiapas; diario de Viaje 1544–1545; prólogo y notas por Franz Blom*. Mexico, Editora Central.
- Tozzer, Alfred M. 1907. *A Comparative Study of the Mayas and the Lacandones*. Archaeological Institute of America, Report of the Fellow in American Archaeology, 1902–1905. New York, Macmillan.
- Tozzer, Alfred M. 1941. *Landa's Relacion de las Cosas de Yucatán; a Translation Edited with Notes*. Peabody Museum of Archaeology and Ethnology, Harvard University, Papers, 18. Cambridge, MA.
- Villagutierre Soto-Mayor, Juan de. 1933. *Historia de la conquista de la provincia de el Itza, reducción, y progresos de la de el Lacandón, y otras naciones de indios bárbaros, de las mediaciones de el reyno de Guatemala, a las provincias de Yucatán, en la América Septentrional*. Biblioteca Goathemala, 9. Guatemala, Tipografía Nacional.
- Villa Rojas, Alfonso. 1945. *The Maya of East Central Quintana Roo*. Carnegie Institution of Washington, Publication 559. Washington, DC.
- Wauchope, Robert. 1934. House Mounds of Uaxactun, Guatemala. *Carnegie Institution of Washington, Contributions to American Archaeology* 7(2). Washington, DC.

- Wauchope, Robert. 1938. *Modern Maya Houses: A Study of Their Archaeological Significance*. Carnegie Institution of Washington, Publication 502. Washington, DC.
- Wauchope, Robert. 1948. *Excavations at Zacualpa, Guatemala*. Middle American Research Institute, Tulane University, Publication 14. New Orleans.
- Wauchope, Robert. 1965. Alfred Vincent Kidder, 1885–1963. *American Antiquity* 31(2):149–171.
- Weeks, John M., and Jane Hill, eds. 2006. *The Carnegie Maya: The Carnegie Institution of Washington Maya Research Program, 1913–1957*. Boulder, University Press of Colorado.
- Willard, T. A. 1941. *Kukulcan: The Bearded Conqueror, New Mayan Discoveries*. Hollywood, CA, Murray and Gale.
- Winters, Howard D. 1955a. Excavation of a Colonnaded Hall at Mayapán. *Carnegie Institution of Washington, Current Reports*, 31. Cambridge, MA.
- Winters, Howard D. 1955. Three Serpent Column Temples and Associated Platforms at Mayapán. *Carnegie Institution of Washington, Current Reports*, 32. Cambridge, MA.
- Wisdom, Charles. 1940b. *The Chorti Indians of Guatemala*. Chicago, University of Chicago Press.

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THE CARNEGIE MAYA III



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CARNEGIE INSTITUTION OF WASHINGTON NOTES ON
MIDDLE AMERICAN ARCHAEOLOGY AND ETHNOLOGY, 1940-1957



COMPILED AND WITH AN INTRODUCTION BY

JOHN M. WEEKS



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Introduction

This is the third in a series of volumes intended to make available the corpus of primary data and interpretative studies produced by archaeologists and anthropologists throughout the Maya region under the umbrella of the Division of Historical Research of the Carnegie Institution of Washington (CIW).

The history and many accomplishments and criticisms of the Carnegie Maya program are presented elsewhere (Weeks and Hill 2006; see also Black 1990; Brunhouse 1971; Castañeda 1996; Givens 1989, 1992; Harris and Sadler 2003; Sullivan 1989; Taylor 1948; Woodbury 1954) and need not be repeated here. Suffice it to say that between 1914 and 1958 the Carnegie Institution of Washington sponsored archaeological and other investigations throughout the Maya region of southern Mexico and northern Central America. During these four decades the CIW was the leader in the field, with monetary and human resources that no university or other research program could match, then or since. The more than 300 publications produced by CIW researchers remain an important, indeed essential, resource for modern scholars. The CIW program is no more; although its framework has been modified, expanded, and replaced by several generations of new scholars. Its legacy stands as a firm foundation upon which an entire discipline has been constructed.

The Carnegie Institution of Washington series *Notes on Middle American Archaeology and Ethnology*, according to the original preface, was begun in 1940 “to give circulation to those random bits of information which all anthropologists accumulate in the

field, the museum, and the library,” which might be considered too unimportant, brief, or restricted to be submitted for publication. However, the papers included in the series have not been limited to a record of facts. Such short notes are often of great interest to the specialists for whose use they are designed and to whom their distribution is restricted. The series was intended primarily as an outlet for the staff of the Carnegie Institution of Washington. The editor, J. Eric S. Thompson, and the head of the division, Alfred V. Kidder, contributed 39 (30 percent) of the 131 articles that compose the series. Approximately 35 percent of the authors had no professional affiliation with the Carnegie Institution of Washington (Table 1).

The majority of the essays are on archaeological subjects (56 percent), followed by epigraphy (17 percent), ethnohistory and ethnography (each 12 percent), and linguistics (1.5 percent), among which those on Mayan are most numerous (80 percent). The subject and regional distribution of essays in *Notes of Middle American Archaeology and Ethnology* are given in Tables 2 and 3.

The *Notes* were first issued on letter-sized paper, and on only one side of the sheet. The page format was modified in the second volume. The paper used was thick and the book bulky and heavy, nearly three pounds in weight and almost 1.5 inches in thickness. At least four different formats were tried, and the second volume is in a fifth, as well as paper of slightly different stock and size. In the last four, comprising the final fifteen articles, insufficient margins were

left, especially at the right and the bottom, probably an ill-advised means of saving paper. However, as J. Alden Mason commented in his review of the first volume, "Middle Americanists, especially those with short contributions writhing for birth, welcome this new series with enthusiasm" (Mason 1944:212).

The 131 essays that make up the *Notes on Middle American Archaeology and Ethnology* series have been digitized and converted into files that could be manipulated. Other than some formatting revisions and obvious typographical errors, no changes were made. In addition, illustrations in the original series followed text. Wherever possible, illustrations have been integrated into the text in the present edition.

The concept of rapid dissemination of research results did not originate with the *Notes of Middle American Archaeology and Ethnology* series. The University of Pennsylvania conducted excavations at Piedras Negras along the Usumacinta River from 1931 to 1939. The initial publication outlet, the *Preliminary Papers*, consisted of five reports issued between 1933 and 1936. This series served as an expedient solution to the problem of publishing of the massive amounts of data being produced by researchers at the site. The series editor, Linton Satterthwaite, recognized the shortcomings of the *Preliminary Papers* but also realized that the dissemination of this work was important and that there was little hope of a more luxurious publication for the results of this research during the height of the Great Depression (Weeks, Hill, and Golden 2005:3). The *Preliminary Papers* series was eventually followed by five more reports in the *Piedras Negras Archaeology: Architecture* series, published between 1943 and 1950.

Two years after the first issuance of *Notes*, a similar series was initiated by the Middle American Research Institute at Tulane University. Titled *Middle American Research Records*, the first volume of the series, edited by Robert Wauchope, represents work published between 1942 and 1950. The sixteen articles considered archaeology (9), ethnography (4), physical anthropology (2), and the chemical analysis of clay from El Salvador. These articles appeared at irregular intervals and were distributed immediately upon being written. In this way the relatively inexpensive method of lithoprinting made it possible for scholars to keep abreast of current research without the usual long wait associated with anthropological publishing. The reviewer, Borhegyi, notes that only the Middle American Research Institute and the Carnegie Institution of Washington used this system of rapid publication of short articles. When an appropriate number of essays are published, they are compiled and edited with a table of contents. However, unlike the *Notes on Middle American Archaeology and*

Ethnology, the *Research Records* are not issued with an index (Borhegyi 1953).

Since that time, especially with the advent of digital media, rapid publication has become commonplace, especially in the subdiscipline of epigraphy. Some recent efforts include:

Copan Notes. Tegucigalpa: Copan Mosaics Project/Instituto Hondureño de Antropología e Historia, nos. 1–103, 1986–1993. In 1986, Linda Schele and David Stuart initiated *Copan Notes*, a series of short informal reports and papers deriving from their collaborative work in deciphering the hieroglyphic inscriptions of Copan, Honduras. Over time the *Copan Notes* expanded in their authorship and in their scope and quickly became a significant outlet for some of the cutting-edge epigraphic research of the time. The series was produced until 1993 under the auspices of the Copan Mosaics Project, directed by William Fash, Harvard University, and the Instituto Hondureño de Antropología e Historia (IHAIH). The digital archive is available at <http://www.utmesoamerica.org/CopanNotes.php>.

Glyph Dwellers. Davis: University of California, Davis, Department of Native American Studies, nos. 1–25, 1997–2008. An occasional publication of the Maya Hieroglyphic Database Project at the University of California, Davis, *Glyph Dwellers* is published by Martha J. Macri and Matthew G. Looper with the purpose of making available recent discoveries about ancient Maya culture, history, iconography, and Mayan historical linguistics deriving from the project. The digital archive is available at <http://nas.ucdavis.edu/NALC/glyphdwellers.html>.

Mesoweb, An Exploration of Mesoamerican Cultures. This site is maintained as a public service by Joel Skidmore and Marc Zender and provides an online presence for the Pre-Columbian Art Research Institute (PARI) and the Boundary End Archaeology Research Center (BEARC). *Mesoweb* is devoted to the ancient cultures of Mexico and adjacent Central America, including the Maya, as seen through archaeology and the written inscriptions left by the Maya themselves.

Research Reports on Ancient Maya Writing. Washington, DC; Barnardville, North Carolina: Center for Maya Research, nos. 1–62, 1985–2007. The Center for Maya Research publishes the *Research Reports on Ancient Maya Writing* (RRAMW), whose subject matter includes "interpretative works dealing with both Maya hieroglyphic writing and iconography, with emphasis on the former; issues of interest and utility

on the history and bibliography of Maya research; and the presentation of new texts and, when deemed desirable, the revision of previously available drawings of hieroglyphic texts.” The digital archive is available at <http://www.precolumbia.com/bearc/cmr/reports.html>.

The Texas Notes. Austin, nos. 1–80, 1990–1997. This series was produced by Linda Schele and other scholars during the early 1990s and offered numerous foundational observations and ideas about Maya hieroglyphic decipherment and iconographic interpretation. The digital archive is available at http://www.utmesoamerica.org/texas_notes.php.

Wayeb Notes. Bonn, nos. 1–28, 2003–2008. The *Wayeb Notes* series is an online series published by the European Association of Mayanists to provide scholars with rapid and seamless dissemination of research results from all subdisciplines of Maya studies. The digital archive is available at <http://www.wayeb.org/wayebnotes/archive.php>.

During the course of assembling this volume I was enthusiastically encouraged by numerous friends and colleagues. Special acknowledgment is

made to Ms. Tina MacDowell and John Strom at the Carnegie Institution of Washington headquarters in Washington, DC, for their support of the project. Dr. Richard Meserve, president of the Carnegie Institution, is aware of the project and has expressed amazement that data collected by the Division of Historical Research still has scholarly significance after nearly fifty years. While a graduate student I met with A. Ledyard Smith in Cambridge and Robert Wauchope in Guatemala City to discuss their archaeological work in the Guatemala highlands. Both men were generous with their knowledge and supportive of a novice. Since that time my interest in the Carnegie Maya Project has been sustained through conversations with Jeremy A. Sabloff and Robert Schuyler, both of whom had worked with Smith at the lowland Maya site of Seibal. Mrs. Mary Ricketson Bullard, whose parents and husband were Carnegie archaeologists whose contributions spanned from Chichen Itza, Baking Pot, and Uaxactun in the 1920s and 1930s to Mayapan in the 1950s, remains a limitless source of Carnegie oral history. Mrs. Bullard also has generously gifted to the library of the University of Pennsylvania Museum the photographic collection of William R. Bullard.

Table 1. Authorship of essays in *Notes on Middle American Archaeology and Ethnology*

<i>Author</i>	<i>Essays</i>	<i>No.</i>	<i>Author</i>	<i>Essays</i>	<i>No.</i>
Anderson, A. Hamilton	40	1	Lothrop, Samuel K.	111	1
Andrews, E. Wyllys	3, 5	2	McDougall, Elsie	30, 62, 81, 123	4
Barlow, Robert H.	23, 44, 64, 65, 70, 72, 73, 76, 80, 84	10	Morley, Sylvanus G.	49, 58	2
Berlin, Heinrich	24, 33, 66, 126, 130	5	Neys, Horace	74	1
Blom, Frans	98	1	Nottebohm, Karl-Heinz	34, 51	2
Boggs, Stanley H.	31, 32, 60, 94, 99	5	Osborne, Lilly de Jongh	48	1
Borhegyi, Stephan F. de	96, 97, 100, 101, 103, 105	6	Proskouriakoff, Tatiana	47, 79, 112	3
Christensen, Bodil	78	1	Rowe, John H.	8	1
Coe, Michael D.	93, 104	2	Roys, Lawrence	50	1
Coe, William R.	93, 104, 108	3	Roys, Ralph L.	41, 75	2
Cook, Herbert J.	40	1	Ruppert, Karl	116, 122	2
Ekholm, Gordon F.	53, 102	2	Satterthwaite, Linton	21, 27, 28	3
Espejo, M. A.	52	1	Shepard, Anna O.	35	1
Fernandez, Miguel A.	119	1	Shook, Edwin M.	57, 67, 69, 107	4
Franco, Jose L.	121	1	Smith, A. L.	116, 122	2
Fulton, Charles C.	85, 90	2	Smith, Robert E.	37, 118, 124, 125, 129, 131	6
García Payon, Jose	55, 59	2	Solier, Wilfrido du	14	1
Halpern, A. M.	13	1	Strömsvik, Gustav	68	1
Jones, Morris R.	106	1	Swadesh, Morris	114	1
Kelly, Isabel T.	26, 42, 43	3	Tejeda, Antonio	77	1
Kidder, Alfred V.	1, 2, 9, 15, 16, 29, 35, 36, 69, 89, 91, 92, 95, 102, 117	15	Thompson, J. Eric S.	4, 6, 7, 12, 17–20, 22, 25, 38, 39, 45, 56, 61, 63, 71, 79, 109, 110, 115, 120, 127, 128	24
La Farge, Oliver	82	1	Toscano, Salvador	54	1
Long, Richard C.E.	10, 11, 46, 87, 88	5	Winning, Hasso von	74, 83, 86, 113	4
Longyear, John M.	68	1			

Table 2. Subject of *Essays in Notes on Middle American Archaeology and Ethnology*

<i>Subject</i>	<i>No.</i>	<i>%</i>
Archaeology	74	56.5
Epigraphy	23	17.6
Ethnography	16	12.2
Ethnohistory	16	12.2
Linguistics	2	1.5
Total	131	

Table 3. Region of essays in *Notes on Middle American Archaeology and Ethnology*

<i>Region</i>	<i>N</i>	<i>%</i>
Mexico	54	42.1
Campeche	3	
Central Mexico	12	
Chiapas	10	
Quintana Roo	1	
Tabasco	1	
Veracruz	11	
West Mexico	3	
Yucatan	13	
Guatemala	45	34.4
Belize	3	1.8
Honduras	3	1.8
El Salvador	4	3.1
Peru	1	0.8
Other	21	16.0
Total	131	

THE CARNEGIE MAYA III

Preface

The present series is designed to give circulation to those random bits of information that all anthropologists accumulate in the field, the museum, and the library but that, if not relevant to a current investigation, are generally stored in the cluttered attics of memory or, at best, are consigned to personal files or the back pages of notebooks. Yet such unconsidered by-products of one person's studies may well be of value to others; and, even if they are not immediately interesting to anyone, they should at least be recorded in permanent and accessible form.

Although the series is primarily an outlet for materials gathered by members of this division, the editor of the notes will be glad to receive such contributions from other workers as can be published with the limited funds available. Correspondence should be addressed to J. Eric S. Thompson, 10 Frisbie Place, Cambridge, Mass.

Insert: When enough papers have accumulated to form a sizable volume, a title page and probably an index will be supplied. A list of papers, such as the attached, will be issued from time to time while the volume is in progress.

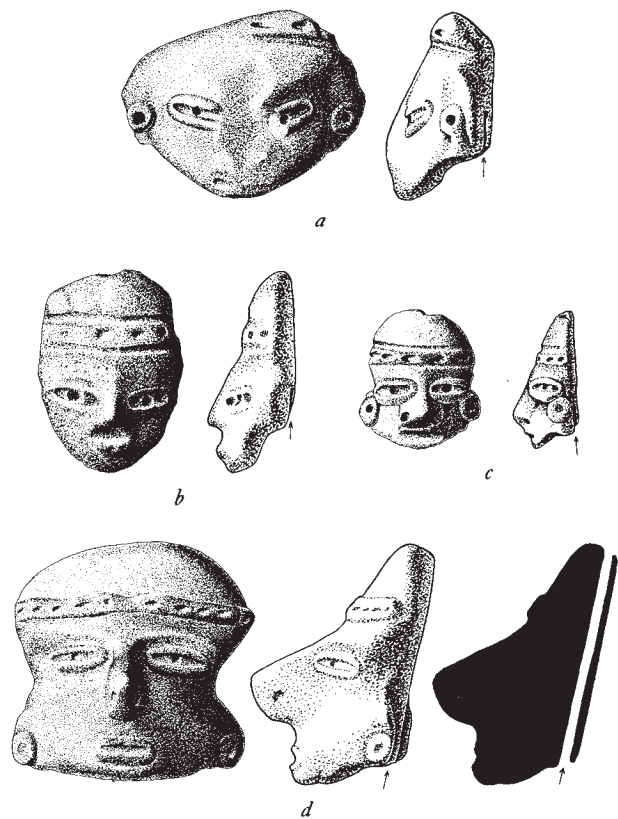
Clay Heads from Chiapas, Mexico

A. V. Kidder

By courtesy of Dr. Norman Hartweg of the University of Michigan it has been possible to examine four specimens (illustrated herewith) collected by him near Escuintla, in the southeastern part of the State of Chiapas, Mexico. They are human heads of unslipped, reddish brown clay, crudely finger-modeled. The noses are pinched up from the general surface of the face; eyes, mouth, earplugs, and the brow-band of the largest head are appliqué lumps or fillets. The brow-bands of the three smaller specimens are indicated by groove-incised lines and punctuations. The eye-lump in each case was indented by two horizontal strokes with the side of the end of a sharp-pointed implement; and, to represent the pupil, a single direct punch was made at the function of the two horizontal marks.

These heads are complete objects, their lower parts being finished in the same way as all other surfaces. Running longitudinally parallel to the flat back of each head, close beneath the middle of its surface, is a round 3 mm hole, seemingly made by modeling the clay around a stiff grass-stem. The hole, which is shown in the section of the largest of the heads and the lower orifice of which in the smaller heads is indicated by an arrow, would appear to have held a stick or string for attachment of the head to a separate body, presumably of perishable material.

The accompanying drawings are natural size.



1.1. Clay heads from Chiapas, Mexico.

Pottery from Champerico, Guatemala

A. V. Kidder

During the winter of 1940 Dr. Erwin P. Dieseldorff visited the Salinas de Istan, some 5 km southwest of Champerico on the Pacific coast of Guatemala, in the Department of Retalhuleu. At about ground level in the center of a low mound then being leveled by its owner, Dr. Dieseldorff found a nest of 12 bowls which, although no bones were observed, had probably accompanied a burial. Through the kindness of Dr. Dieseldorff it has been possible to examine these specimens and about 50 sherds from the fill of the mound. The vessels, it is understood, are to be presented to the National Museum of Guatemala; the sherds, with permission of the Guatemala Government, have been deposited in the Peabody Museum of Harvard University.

In composition the material is remarkably uniform. The paste is red brown, often with a dark central streak. Surfaces of most bowls, and the necks and apparently the upper bodies of jars, bear a thick buff slip supplemented in many, perhaps all, cases by a thin red over-slip. Both vessels and sherds are so severely eroded, seemingly by earth acids, that only traces of the red slip usually remain. Three sherds examined by Miss A. O. Shepard with the binocular microscope were tuff-tempered. Certain pieces show faint traces of wavy parallel lines, apparently is the "Usulután" technique. On some of these a dark gummy substance adheres to the lines, producing an appearance of painted decoration. Close scrutiny, however, shows this to be a fortuitous secondary incrustation.

Classification of the Complete Bowls	
Simple silhouette	5
Thickened rim (Fig. 2.1a-c, e)	4
Unthickened rim (Fig. 2.1h)	1
Double curve	4
Cascabel tripods (Fig. 2.2a, b)	2
Without feet (Fig. 2.2g, i)	2
Flat base (Fig. 2.2h, k, m)	3
Total	12

Other Forms Represented by Sherds

Bowls

Simple silhouette, grooved exterior (Fig. 2.1j, k).
Simple silhouette, thickened flaring rim (Fig. 2.1n).
Simple silhouette, rim flange (Fig. 2.1o)
Double curve, thickened rim (Fig. 2.1p, q, t, u, v)
Straight rim, incised decoration (Fig. 2.1m)
Constricted orifice, standing rim (Fig. 2.2j)

Vase (?) with basal flange (Fig. 2.1s)

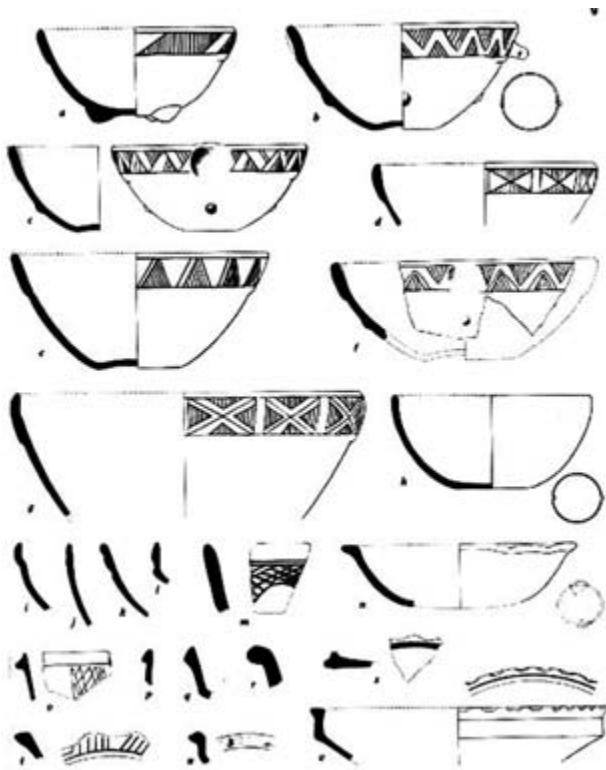
Flowerpot (Fig. 2.1r)

Jars (Fig. 2.2c-f)

Comal (Fig. 2.21)

COMPLETE BOWLS

Simple silhouette bowls, thickened rim (Fig. 2.1a-g, including 3 sherds d, f, g). Apparently the most characteristic form. Diams., 18.5-34 cm; thickness side-wall, 0.6-0.8 cm; thickness base, 0.4-0.5 cm; thick-



2.1. Pottery from Champerico, Guatemala.

ness rim, 1.0–1.2 cm. Lip rounded, rim thickened on exterior, base recurved. Modifications: rim pushed inward, before drying of vessel, at two opposite points (Fig. 2.1b, c, f; each of these has four small, round bosses on lower part of exterior); one bowl (Fig. 2.1b) has curved lug in pushed-in area; one (Fig. 2.1a) has three solid nubbin feet. Decoration, on rim exterior, consists of incised hachured triangles or rectangles in a band framed by single lines. All specimens bore red slip, seemingly both interior and exterior, but this has so nearly disappeared that its distribution is uncertain. In some specimens the lip and the incised zone were certainly covered with a second application of darker red; and in one (Fig. 2.1a) the incised zone perhaps bore no slip. On the interior of two bowls are faint traces of wavy parallel lines possibly in "Usulután" technique.

Simple silhouette bowl, unthickened rim (Fig. 2.1h). Resembles above in possessing pushed-in rim; single boss opposite push-in, but lacks rim thickening and incised band. Red slip interior and exterior.

Double curve, cascabel tripod bowls (Fig. 2.2a, b). The two specimens much alike. Diams., 18.5, 25

cm; thickness side wall, 0.4, 0.6 cm. Rim slightly thickened toward rounded lip. Feet with 3 (Fig. 2.2a) and 4 (Fig. 2.2b) round holes, 0.5–0.6 cm in diameter, made with a hollow tool (reed or bird bone?), which has cut out and pushed in plug-like pieces of the wall; these serve as rattles. Both bowls slipped red all over; now nearly gone. Fig. 2.2b had band of darker red from lip downward 1.5 cm on interior. Fig. 2.2a: incised decoration on interior (see small drawing).

Double curve bowls without feet (Fig. 2.2g, i). Diams., 24.5, 28.0 cm; thickness side-wall, 0.5–0.7 cm. Rim thickened to horizontally flat lip. Base of g flat; of i, recurved. Fig. 2.2i has 8 unequally spaced projections on lip. Both specimens slipped red all over.

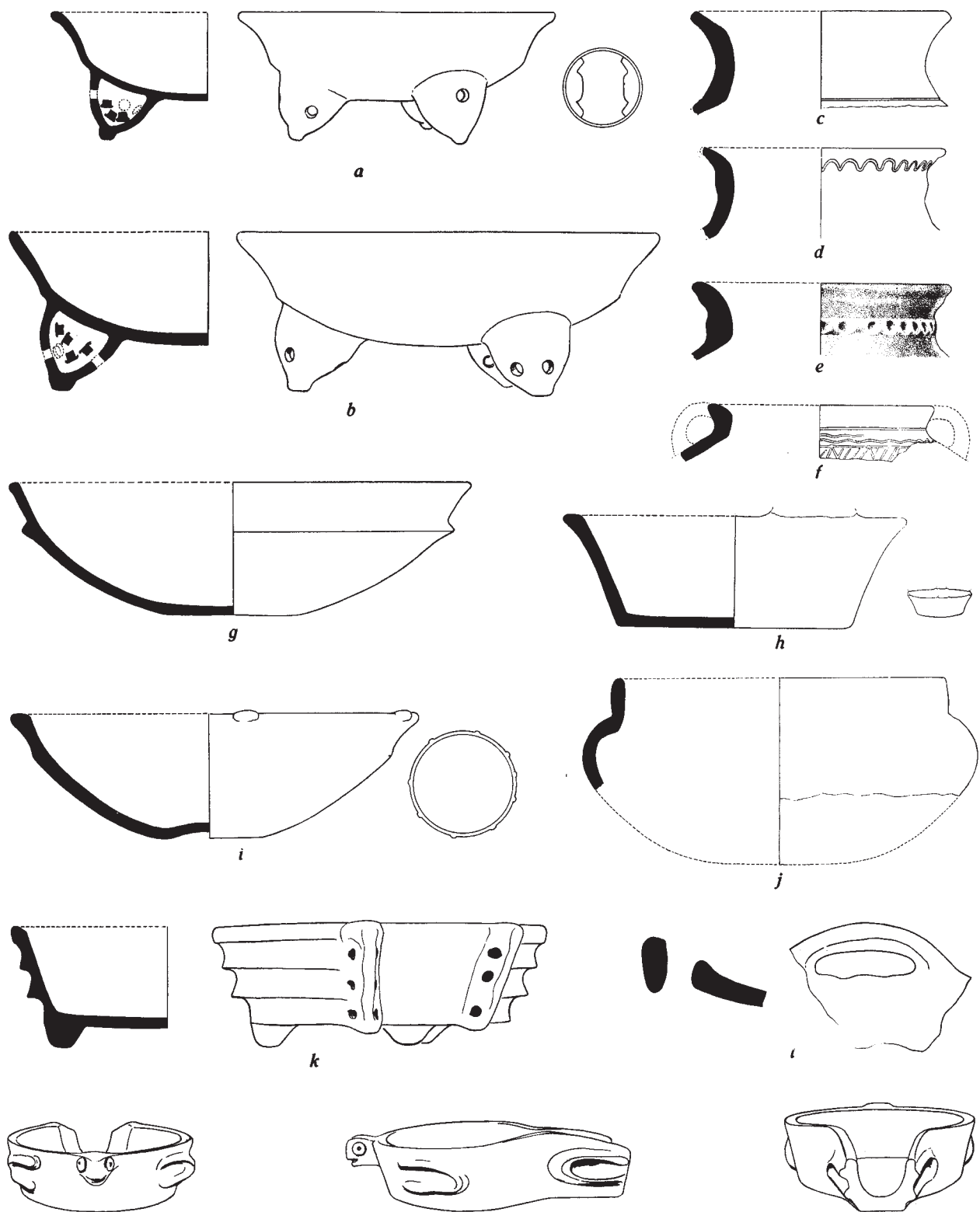
Bowls with flat base (Fig. 2.2h, k, m). Flat base only common feature. Fig. 2.2h: Diam., 20 cm; thickness side-wall, 0.7 cm. Lip horizontally flat; 4 upward extensions from lip broken away and nature unknown. Cream-colored slip all over. Fig. 2.2k: Diam., 20 cm; thickness base, 0.5 cm. Ridges encircling exterior wall interrupted by two vertical flanges each pierced by 3 holes, as if to hold a lacing. Three solid feet. Exterior wall slipped red, exterior base apparently unslipped; interior slipped with lighter, or perhaps more poorly preserved, red. Fig. 2.2m: Length overall, 16.5 cm; thickness side-wall and base, 0.6 cm. Lip flat. Head and legs of (frog?) appliqué. Rear part of vessel elongated and wall at extremity omitted to produce scoop-like form. Apparently slipped red all over.

SHERDS

Simple silhouette bowls, grooved exterior (Fig. 2.1j, k). Diams. (estimated), 35, 26 cm; thickness side-wall, 0.4 cm. Rim thickened toward rounded lip; 2 shallow exterior grooves. Red slip all over; as usual nearly gone.

Simple silhouette bowls, thickened flaring rim (Fig. 2.1n). Diam., 22 cm; thickness side-wall, 0.5 cm. Rim thickened to horizontally flat lip, from whose edge extend rounded protrusions, apparently in pairs (see small drawing, Fig. 2.1n). There are 3 other sherds from similar bowls. All slipped red.

Simple (?) silhouette bowl, rim flange (Fig. 2.1o). Diam., 23 cm; thickness side-wall, 0.4 cm. Differs in shape and finish from run of Istan ware. Slip heavy, well polished, crackled red. Incised decoration.



2.2. Pottery from Champerico, Guatemala.

Double curve bowls, rim thickened or flanged (Fig. 2.1p, q, t, u, v). Diams., p, 45 cm; q, 29 cm; t, 25 cm; u, 21 cm; v, 28 cm. Small fragments, all apparently from double curve bowls; rims tend to thicken to a horizontally flat or outward-sloping lip which, in t, is scalloped and incised; in u bears bosses; in v has an incised line and small cutouts on edge, producing scalloped effect. All with red slip save v, which has cream slip and traces of "Usulután" decoration on interior; and q, which has heavy polished red slip on flat surface of lip.

Straight rimmed bowl, incised decoration (Fig. 2.1m). Diam., 35 cm; thickness side-wall, 1.1 cm. Light brown, red slip apparently never present as none shows in the deep incising.

Constricted orifice bowl, standing rim (Fig. 2.2j). Diam., 19.5 cm; thickness side-wall, 0.7 cm. Pinkish cinnamon slip, heavy, crackled, over exterior and on interior of standing rim; lower part of interior apparently unclipped. Interior of rim shows faint indications of "Usulután" lines.

Vase (?) with basal flange (Fig. 2.1a). Small shard from flat-bottomed vessel, flange continuing lines of base; aide apparently rose vertically. No red slip?

"Flowerpot" (Fig. 2.1r). Diam., about 40 cm; thickness side-wall, 1.2 cm. Probably from vessel similar to large flowerpot-shaped containers of Miraflores phase at Kaminaljuyu, Guatemala. Traces of red slip.

Jars with neck (Fig. 2.2c-f). Orifice diams., 13-15 cm; thickness side wall not ascertainable. Fig. 2.2c, d, e possess strongly thickened necks; f, lower neck, probably with 2 loop-handles; e, punched fillet; others with incised decoration. Remains of slip over whole exterior and interior to base of neck in c, e, f; d, heavy orange slip with no red over-slip. Several jar-body fragments bear punched fillet decoration.

Comal (Fig. 2.21). Diam. (estimated), 40 cm; thickness body, 1.4 cm. Coarse, unslipped, roughly finished brown ware. Probably 2 loop-handles.

DISCUSSION

Both whole vessels and sherds are evidently the product of a single phase, which is equally evidently a part of the general Middle American ceramic complex, but whose relationships, because of our present ignorance of the pottery of southern Mexico and Guatemala, it is as yet impossible to determine. The collection contains none of a very heavy dark pottery found elsewhere on the Pacific coast plain of Guatemala, nor any of that creamy buff ware from the coast which has been attributed to the Pipil (Mason 1938:215). It is hoped shortly to publish in this series certain examples of the two wares just mentioned.). Lack of polychrome and the general crudity of the Istan pottery might be attributed to peripheral backwardness. I am inclined, however, to believe that it is allied to, and probably roughly contemporaneous with, that of the Miraflores phase at Kaminaljuyu. To the latter, which is the earliest group of Guatemalan ceramics so far identified, it bears several resemblances: solid nubbin feet, incised decoration (though much cruder at Istan), scalloped rims, the rim flange, the heavy "flowerpot" form, the shape of the jar necks and the presence of punched fillets on jars, and the apparent use of the "Usulután" technique. From Miraflores there is a scoop-like vessel of white ware with flat bottom closely similar in shape to Fig. 2.2m; and the composite silhouette bowl with cascabel feet is found at Miraflores in Usulután ware. Had figurines been found, they might well have served to indicate the general chronological position of the Istan material. Search for such specimens is planned for the coming field season.

The drawings are approximately one-third.

The Ruins of Culuba, Northeastern Yucatan

E. Wyllys Andrews

In the winter of 1939–1940 I visited Tizimin, Yucatan, with the purpose of examining some ruins reported to be a short distance from this city but which actually are on properties owned by Eduardo Conde of Tizimin, some 28 km. farther east on a trail which ended at the settlement of Hoopel, about 8 km. beyond the ruins.

The entire trip from Sucopo was made in blinding rain, and as I had come with no camping facilities, my stay at the ruins was limited to a few hours. As it was not possible to return later with proper equipment, it seems advisable to present even the inadequate sketch map and what few rain-soaked notes I was able to make.

The ruins, an approximate plan of which appears in the accompanying figure, are a little south of the long-abandoned finca of Culuba, from which they are separated by a broad swamp (*akalche*). The large buildings of the finca seem to have been made almost entirely with stone from the ruins, which accounts in part, at least, for the dearth of standing architecture.

The ruins are arranged on three sides of a 125 m wide plaza, 50 m beyond the southwest corner of which lies a low structure.

Structure 1 is a steep pyramid, approximately 9 m high, with indications of a masonry structure on top. A longer, lower platform stretches out from its south side.

Structure 2 is a badly ruined pyramid, roughly 25 m square, also with signs of masonry walls on top.

Structure 3 is a long, steep-sided platform with at least two terraces and signs of masonry walls on top.

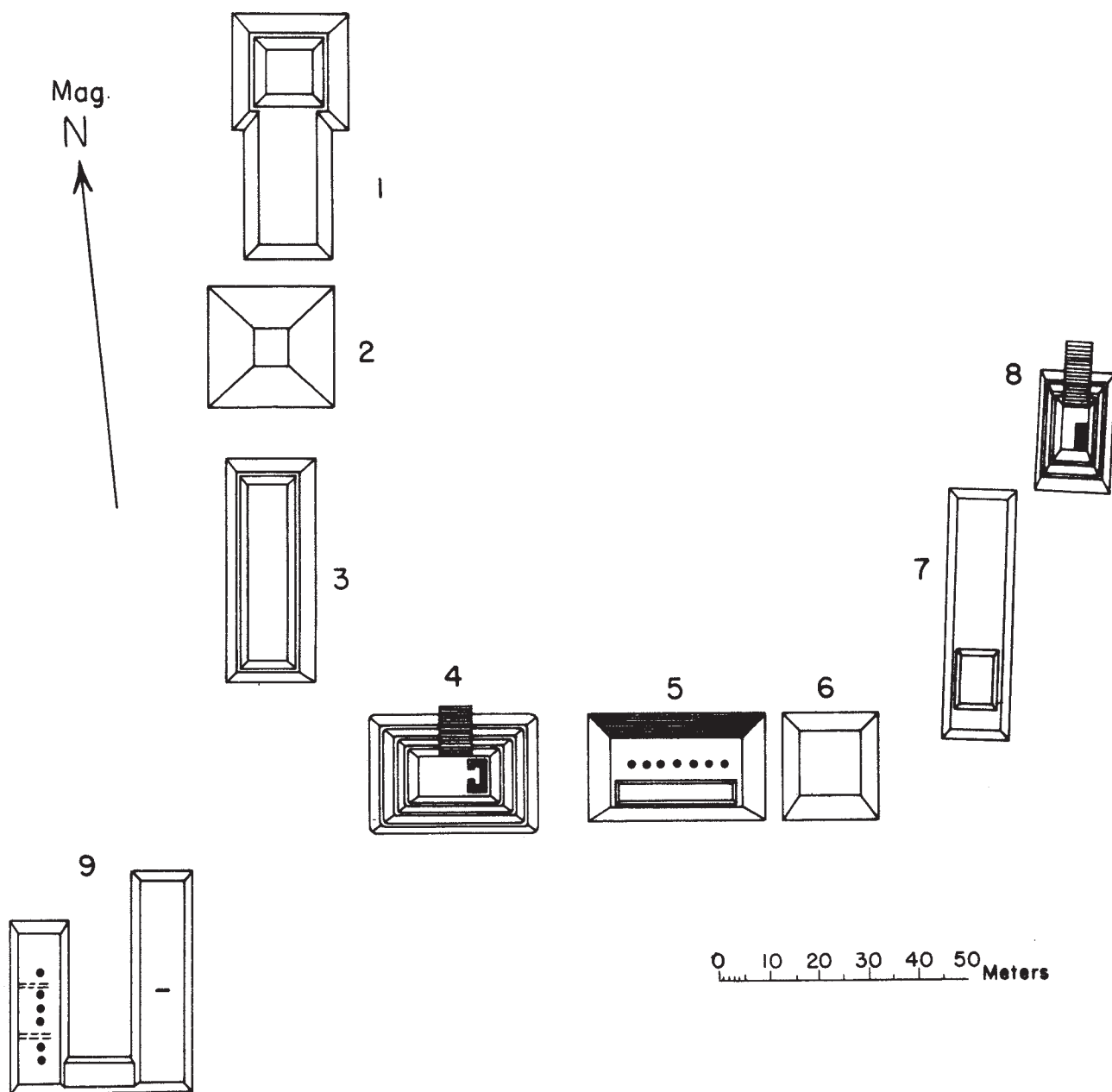
Structure 4, the largest unit of the group, is a very steep pyramid. The floor of the top platform is an even 15 m above plaza level. From this platform, a stairway runs down the north side to the plaza. The single-room structure atop is badly ruined, most of the masonry having fallen down the aides, but it definitely consisted of a single vaulted chamber facing west, entirely out of balance with the stairway. The pyramid, badly ruined by removal of atone for the finca, seems to have risen in four terraces, as seen in the plan. At several places the removal of stone has revealed the outer facing of an interior buried pyramid. The north-south walls of the chamber atop were 1.05 m thick, the east west walls 1.15 m thick. The interior dimensions of the room are 2.2 m by 4.8 m. The top platform is 8.1 m wide and 13.9 m long.

Structure 5 is a platform 1.75 m high, 22 m wide, and 36 m long. A stairway runs the entire length of the front, some 13 m back from which is a raised platform with traces of a narrow masonry wall. In front of this, on the main platform, are a number of 50 cm high sections of columns about 75 cm in diameter.

Structure 6 is a square platform 2 m high. It once had a masonry superstructure, but this has been almost entirely carried away.

Structure 7 is a long, low platform with a slightly raised superimposed platform at the spot shown on the plan. On this raised section are traces of a building.

Structure 8 is curious. It is a mound, the top platform of which is 3 m high, 4.4 m wide, and 8.4 m long. On this is a solid masonry altar occupying one



3.1. Ruins of Culuba, Yucatan.

corner. There are no traces of either walls or roof, which were probably of perishable material. The top platform was reached by a long stairway on the north side, of the same width as the platform and extending 6 m beyond the edge of the mound.

Structure 9, the most interesting of the group, is a U-shaped mound enclosing a court with plaster floor. The east side is the highest. Clear traces of a floor appear at one place 2.6 m above the plaza floor. The entire side shows considerable fallen masonry, and there were probably several vaulted rooms, although no restoration of the ground plan is pos-

sible without excavation. At the spot marked in the center of this side there stands a small fragment of the north side of a vaulted transverse passageway across the mound.

On the south side of the court is a low platform 1.25 m high, with no traces of superstructure.

The west side is a broad platform 2 m above plaza level. Traces of a very narrow back wall run along the west margin of the mound, and two similarly narrow transverse walls are observable on the plan. Down the approximate center of the mound are remains of a line of columns about 8 m apart and

similar to those of Structure 5. From the very scant debris, the roof appears to have been of perishable materials.

A fairly thorough search for sculptures at the old ruins and among the fallen buildings of the finca, revealed none. A brief survey of the plaza area was unsuccessful, but it is possible that some sculptures were overlooked in the extremely dense scrub.

Information in both Tizimin and Sucopo leads me to believe that there are further, units nearby which we could not find during our brief stay. Specific mention was made by previous visitors of well-preserved stone sculpture and of buildings with standing vaulted rooms.

To summarize my brief inspection, several interesting features were observed at the site. (1) Structure 4, a pyramid of considerable size, contains

within it an earlier buried pyramid. The single-room structure atop the outer pyramid is conspicuously out of orientation with the staircase leading to the plaza. (2) Two of the buildings had colonnades with narrow flanking walls, whereas (3) Structure 9 contained both this feature and the remains of a vaulted transverse passageway in connection with other vaulted rooms.

A further examination of Culuba might prove fruitful. No large site in northeastern Yucatan has been studied, and this remains a large but easily accessible area, apparently rich in archaeological material. On brief observation, Culuba shares traits common to the Mexican period at Chichen Itza and the East Coast area, such, for example, as the open colonnade. The relationship of East Coast architecture and that of central Yucatan is as yet very little understood.

The Missing Illustrations of the Pomar Relación

J. Eric S. Thompson

The Relación de Texcoco, written in 1582 as one of the replies to the famous questionnaire of Philip II, contains a great deal of important ethnological information. It was published in 1891 by Joaquín García Icazbalceta as part of the third volume of his *Nueva colección de documentos para la historia de México*. Juan Bautista Pomar, the author, was, as García Icazbalceta points out in the preface, a grandson, on his mother's side, of Nezahualpitzintli, supreme chief of Texcoco. His father was a Spaniard.

In several passages Pomar refers to illustrations accompanying his text, but these were not with the copy which García Icazbalceta found in the former Colegio de San Gregorio, and which, on the evidence of the handwriting, he placed as early seventeenth century. The original is lost.

These references to illustrations are given below, the page numbers referring to the García Icazbalceta edition and the quotations having been Englished by me.

PASSAGE 1: HUITZILOPOCHTLI

"The other [idol] called Huitzilopochtli, was also of wood, as it is painted here, like a young man very well portrayed with rich plumage for clothing and a mantle of the same, with three strings of green stone, of which we have spoken, at the throat, and on the breast a turquoise jewel set in gold and with bells of the same. [He had] on the face two bands of gold and two of turquoise cleverly worked and arranged, a lip-plug of white shell, turquoise ear-

plugs, rich plumage of eagle as a wig, a crown of blue feathers decorated with certain gold plaques, and at the shoulders an arrangement of plumage like the head of a small bird which lives in this land, called huitzitzili [humming bird] . . . In the left hand he had a shield of plumage with gold leaf passing through the center of it. He had gold shin guards with bells, blue sandals and a loincloth with the ends very cleverly worked in diverse colors. His legs [were] striped with blue dye, and in his right with bells, blue sandals and a loincloth with the ends very cleverly worked in diverse colors. His legs [were] striped with blue dye, and in his right hand [was] a long spear with a flint point, an ancient weapon of the Mexicans which was hurled with a small cross-like gadget which he held in his hand" (p. 10).

PASSAGE 2: TLALOC

"The other called Tlaloc, which they say means 'he who makes the land bountiful,' was the idol of the rains and storms and was also made of wood, in the form and stature of a man. All his clothing and vestments signified rains and abundance of produce. The body was blackened and anointed with the sap of a tree called *olli*, with which they make the balls with which they play, and which we call *batey*, which is a word from the islands of Santo Domingo. He had in the right hand a recurving rod of gold which signified lightning; in the left, a feather shield with a net-like overlying decoration of mother-of-pearl. Over the clothing, also of blue plumage, he had



4.1. Painting of Tlaloc, Codex Ixtlilxochitl.

the same decoration, and the edging with a piece woven of hair and rabbit fur in a half-cane design. [The Ixtlilxochitl version says a design of white half moons, which agrees with the picture.] The face was of a most ugly figure which in their pictures and glyphs they employ to represent the rain, with long hair and a crown of green and white plumage which signified the ripe and leafy produce, and from that [hung] a necklace of green stones. [The Ixtlilxochitl version has *al cuello* 'at the throat' instead of *de a aquella* 'from that.'] He had leather [Ixtlilxochitl version says deer skin] shin pieces on the legs and for a dais a length of wood with battlements around it, as it appears painted here" (p. 11).

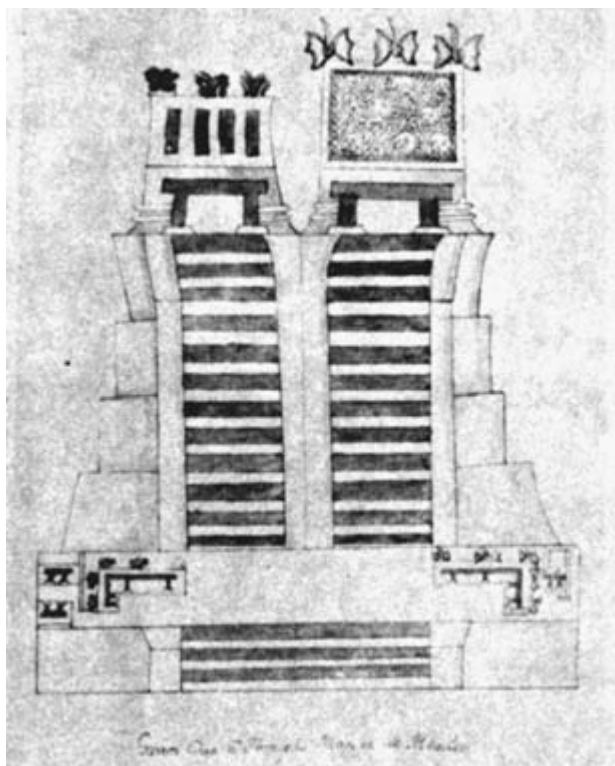
PASSAGE 3: THE GREAT TEMPLE

"The principal temple of these idols, Huitzilopochtli and Tlaloc, was built in the middle of the city, square and massive like a foundation of clay and stone and only the facings of masonry. Each side was 80 fathoms long and it was 27 fathoms high. It had 160 steps on the west side, that on which one ascended to it. Its building started from the foundation in such



4.2. Painting of Tlaloc, Codex Veytia. (Note absence of dais.)

a way that as it rose it diminished and narrowed on all sides in a pyramidal form, and at intervals there was a resting place, like a bench around the whole of it, and a kind of a road of an *estado* in the middle of the steps which ascended from the bottom up to the summit, and served as a sort of division to make two ascents [stairways], both ending in a patio made at the highest point, where there were two large chambers, one larger than the other. In the larger one, on the south side, was the idol Huitzilopochtli; in the other, the smaller one, on the north side, was the idol Tlaloc. They [the idols] and the chambers faced west, arid, in front, the patio, already mentioned, stretched from north to south, very level and shining, and so large that it would hold 500 men without crowding. To one side of it toward the door of the larger chamber of Huitzilopochtli there was a raised atone a yard high with its top shaped like a trunk with rounded top which they named *techcatl* [and] where they sacrificed the Indians . . . In order that the outline and form which this *cu* had may be better understood it is so painted in this relación" (pp. 11–12).



4.3. Painting of double temple, Codex Veytia.

PASSAGE 4: CHIEF'S DRESS

"When the prince succeeded as king to the kingdom, the first thing they did was to cover him with a royal robe of blue cotton of the kind painted in this relation" (p. 33).

PASSAGE 5: WARRIOR'S COIFFURE

"For they [warriors who had taken or killed four enemies] alone were permitted to have their hair shaven in the manner that is painted here" (p. 40).

PASSAGE 6: TEZCATLIPOCA

There is also a full description of the idol of Tezcatlipoca with the statement that an illustration accompanies the description (p. 9).

It is therefore clear that at least six illustrations accompanied the Pomar report. Since this should have been sent to Spain soon after it was written in 1582, the missing illustrations should be there. However, the original Pomar manuscript is not among the replies to the questionnaire in the Archives of the Indies in Seville. The copy found in the Colegio de San Gregorio was originally in the possession of Carlos de Sigüenza y Gongora, according to García Icazbalceta (p. x). Sigüenza y Gongora (1645–1700)

made a large collection of Mexican manuscripts, part of which later passed to Boturini.

Passage 2, which describes Tlaloc, can apply only to the representation of that god shown in the figures on [Figure 4.1]. Note the unusual net-like-arrangement over the dress and shield, the fur ornaments, and the peculiar turreted seat. All these features are unusual in representations of Tlaloc. Furthermore, the serpentine wand in the hand, although not unknown, is rare in representations of that god. Pomar states that the various idols were seated but are pictured standing so that details may be clearer.

Figure 4.1 is a photograph of Plate 70 of Codex Ixtlilxochitl, which has been published in E. Boban's *Documents pour servir à l'histoire du Mexique: Catalogue raisonné de la collection E. Eugene Goupil* (1891; ancienne collection J.M.A. Aubin), and a drawing of which is given in the appendix to D. Duran's *Historia de las Indias de Nueva España* (1867–1880). The pictures of Codex Ixtlilxochitl comprise poor versions of a codex from which Codex Magliabecchi also derives, except for this figure of Tlaloc, a picture of a double temple (similar in every way to that of Figure 4.3), and four beautifully painted portraits of Indian leaders.

Codex Veytia in turn consists of another poor version of the codex from which Magliabecchi derives except for our Figures 4.2–4.4. Figure 4.2 is clearly a version of the Tlaloc in Codex Ixtlilxochitl except that the dais is omitted. Figure 4.3 is practically identical with the double temple of Codex Ixtlilxochitl, and Figure 4.4 is a careless painting of Huitzilopochtli.

Gemelli Carreri (1699–1700) also reproduced a version of this Tlaloc and the four finely executed portraits mentioned above, together with two other figures, in volume 6 of his *Giro del mondo*. Leon y Gama specifically states that Gemelli Carreri copied the Tlaloc from an original in the possession of Sigüenza y Gongora, but it is known that the Codex Ixtlilxochitl and the Pomar relación, both of which had this Tlaloc figure, were also in the possession of Sigüenza y Gongora. The question of origins is complex, and readers are referred to Mrs. Nuttall's (1903) introduction to *The Book of the Life of the Ancient Mexicans*, i.e. Codex Magliabecchi, where the matter is threshed out at some length.

Figure 4.3, the twin temple of Codex Veytia, practically identical with the double temple of Codex Ixtlilxochitl, is almost certainly the missing illustration of the great pyramid of Texcoco, and it fits perfectly Pomar's description in Passage 3. Note how the temple of Huitzilopochtli, to the south, is larger than Tlaloc's temple to the north, in agreement with



4.4. Painting of Huitzilopochtli, Codex Veytia.

the passage, whereas pictures of the double temple of Tlatelolco in Sahagun, Codex Cotzcatzin, and Codex Mendoza show both of equal size, whereas those of the double temple of Tenochtitlan show the Tlaloc temple both smaller and larger in Duran, and on the left (north) aide in Codex Telleriano-Remensis.

Mrs. Nuttall was mistaken in stating that a copy of our Figure 4.3 is to be found on one of the frontispieces of the 1601 edition of Antonio de Herrera. Actually, a temple is depicted on the frontispiece of the *Descripción de las Indias*, which follows the *Historia general*, but this is a round temple and in no way resembles Figure 4.3. The point is of some importance, since, had Herrera reproduced this double temple, it could be evidence that the original was in Europe before the close of the sixteenth century.

That Figures 4.1–4.8 are copies of the original illustrations for the Pomar text is put beyond reasonable doubt by the fact that the text accompanying these two pictures in Codex Ixtlilxochitl is almost identical with that of Pomar. The passages in question are reproduced in E. Boban's *Documents pour servir à l'histoire du Mexique* (1891). In one or two places, as noted in the citations, the Ixtlilxochitl text appears less corrupt than the Pomar, which, it must be remembered, is not the original but a seventeenth-century copy. As the Ixtlilxochitl text is said to be in that writer's own hand, one must conclude that Ixtlilxochitl had in his possession the Pomar manuscript, either the original or a better copy than the San Gregorio version, which he incorporated into his own work. It is also impossible to doubt that he had at hand Pomar's illustrations (or copies of them), which he copied or had copied for the same purpose.

The reason for believing that the Tlaloc figure and the great double temple of Texcoco in the Ixtlilxochitl codex are not the Pomar originals is that the Tlaloc figure is so close in style and in small details (for example, the sandal ties) to the portraits of the four chiefs (Boban 1891, Pls. 66–69) that they obviously were executed by the same artist. These four are labeled by Ixtlilxochitl as Tocuepotzin, Nezahualcoyotl, Quauhtlazacuilotzin, and Nezahualpilli. The first and third do not figure at all in Pomar's relación, whereas Nezahualcoyotl and Nezahualpilli, although mentioned frequently in the relación, as is to be expected in view of their importance as the last two supreme chiefs of Texcoco, are invariably given the termination *tzin* to their names. Moreover, the paintings of the four personages are surely too advanced technically to have illustrated Pomar's sixteenth-century relación written in a provincial town. They must be touched-up copies of the illus-

trations to Pomar's relación, or have a totally different origin.

There remains for discussion the crude painting of Huitzilopochtli (Fig. 4.4), adjacent to the Tlaloc portrait in Codex Veytia but absent from Codex Ixtlilxochitl. This does not check with Pomar's description in minor details, but the reproduction is so European and carelessly executed (e.g. the European spear, and the band left off the face) that it might be an extremely poor copy of the missing Pomar illustration, particularly as it shows the humming bird at the shoulder, an unusual place for it. One has only to compare Codices Magliabecchi, Veytia, and Ixtlilxochitl to realize the liberties same copyists took.

On the other hand, Ixtlilxochitl (p. 110) says of Huitzilopochtli, "This idol is painted in the second part of the portrait of the Indian who represents Tezcatlipoca." Plate 8 of Codex Ixtlilxochitl (corresponding to Magliabecchi 30, 31) shows a figure of Huitzilopochtli at the bottom, below a picture of Mixcouatl. Possibly Ixtlilxochitl had this pair in mind and intended, therefore, to eliminate the Pomar versions of Huitzilopochtli and Tezcatlipoca as redundant, but in referring to it he mistakenly stated that the top figure was Tezcatlipoca instead of Mixcouatl.

In any case it is virtually certain that the original or a copy of Pomar's manuscript and illustrations came into the hands of Ixtlilxochitl, who incorporated complete sections of it in his still unpublished work, and probably had two of the illustrations redrawn, eliminating the others as redundant. Subsequently Codex Ixtlilxochitl passed to Sigüenza y Gongora, and while in his possession the Tlaloc figure and the four portraits were copied by Gemelli Carreri, and the Tlaloc figure, the double temple, and, perhaps, the Huitzilopochtli painting by Boturini. Later these last passed to Veytia, together with much of the Boturini collection, and were incorporated in the Codex Veytia. The Icazbalceta version is the only surviving copy of the Pomar relación, and, as we have seen, is probably not the one used by Ixtlilxochitl.

In conclusion, attention might be drawn to the engraving published by Gemelli Carreri over the caption "Mexican soldier." Although the individual, rendered in neoclassical style, more resembles Perseus with Medusa's head at his waist than a Mexican soldier, it is just conceivable that the original from which this was adapted was the illustration for Passage 5 in Pomar. Similarly, the blue mantles of two of the portraits of personages might be referred to in Passage 4.

An Ethnological Note from Cilvituk, Southern Campeche

E. Wyllys Andrews

In the course of a reconnaissance in southwestern Campeche for Carnegie Institution of Washington in the winter of 1939–1940, the village of Cilvituk, on the east shore of the large lake of that name, was visited. A native guided me to a locality some 7 km south on the opposite shore where there was a single platform mound in the rain forest. It was 3 m square and approximately 40 cm high. On it were two broken clay incensarios, a badly smashed stone statuette 35 cm tall, and a fragment of another piece of sculpture. (These will be illustrated in a report now in preparation and to be published by Carnegie Institution.) When he had last visited the mound a number of years before, the guide informed me, these were unbroken and perfectly preserved.

Later inquiry brought forth a legend and various local beliefs in relation to these remains, which it has been suggested I record in this series. According to my informants, there was a man some years ago in Cilvituk who lived by hunting. Invariably, before leaving on a hunting trip, he would burn an offering before these little clay “idols” and always had fine luck. On one occasion, however, he omitted this offering, and saw not a trace of game. He blamed his ill luck on the images and in anger smashed all three with his machete. A week later he had a violent fever for three days and died.

A number of beliefs are connected with these little idols, known locally as *aluxob* (dwarfs). If propitiated, they act as benevolent spirits, but if damaged they invariably bring on a raging three-day fever and death to the culprit. An *alux* may be disposed

of, however, without risk of reprisal, by securely tying a stone above it on a rope. In time the rope will rot and thereby the stone, not the man, smashes the image. As the spirit is believed actually to be the image, rather than merely to inhabit it, it is thus annihilated.

These stray beliefs are parts of a pattern known in northern Yucatan, Quintana Roo, and British Honduras. Thompson (1930) records a legend among the Socotz Maya of a race of dwarfs who built the ancient ruins, and were subsequently turned to stone. In the name report he records the association of a three-day sickness and death with the Xtabai, vague forest spirits. Gann (1924) reports a belief among the Indians of Santa Cruz del Bravo that the pottery incensarios of the ancients are in reality little people who come to life at night and roam the bush. Thompson (1932) notes that the stelae at Coba were believed to wander about at night; they represented guardians of the forest who, when placated, protect milpas and aid in hunting. As at Cilvituk, however, they can act malevolently if not propitiated. At Tikal, according to Gann (1927) the ancient inhabitants of the ruins were believed by the modern Maya villagers to be reincarnated as howler monkeys condemned forever to roam the bush about the ruins. The stelae there were thought to have been representations of the gods of the ancient inhabitants, and were purposely mutilated to prevent their evil-doing.

Redfield (1932) records more fully the beliefs regarding *aluxes* in Yucatan, where they are again identified with the pottery incensarios of the ancients.

In Yucatan they are definitely regarded as harmful spirits and smashed whenever found by the natives, although offerings are occasionally made to them to prevent evil-doing. Sickness, here, is not risked so much by destruction of the *aluxes* as by leaving them undestroyed to follow their evil bent. Brinton

(1883) records that their touch was believed to produce "sickness, especially chills and fever," but I do not know of any specific stress laid on the three-day fever followed by death as at Cilvituk. (For further discussion see also Redfield and Villa 1934; Mendez 1921.)

The Prototype of the Mexican Codices Telleriano-Remensis and Vaticanus A

J. Eric S. Thompson

The identity of many of the illustrations and much of the text of Codex Telleriano-Remensis and Codex Vaticanus A (known also as Codex Rios or Codex Vaticanus 3738) has been explained by assuming that the latter was copied from the former. Dr. B. Reina (1925) has submitted cogent reasons for believing that Codex Vaticanus A was copied from an earlier, and now lost, codex with Italian text, which, he believed, in turn was a translation or amplification of Codex Telleriano-Remensis.

There is, however, not inconsiderable evidence that Codex Vaticanus A is neither a direct nor an indirect reproduction of Codex Telleriano-Remensis, but that both derive independently from a prototype now missing.

In four places the artist of Codex Telleriano-Remensis only partially rounds or leaves pointed the ends of the fillets of the Quetzalcoatl headdress (pp. 8v, 10r, 13v, 15v), but the artist of Codex Vaticanus A correctly rounds these ends. Since this rounding was one of the chief sartorial attributes of Quetzalcoatl, Xolotl, and associated deities, one can be sure that the original manuscript clearly and correctly brought out this detail.

The artist of Codex Telleriano-Remensis on page 13v depicts Nahui Eecatl with features more like those of Tlaloc than those of the required wind god. On the corresponding page of Codex Vaticanus A the figure, like all others in this codex, is crudely reproduced, but the face appears to carry the required snout of Eecatl.

In Codex Telleriano-Remensis (14v) only one hand of Tlauizcalpantecutli is striped red and white;

the face and the rest of the body, where exposed, is covered with a kind of stippling which at first glance gives the appearance of a solid pinkish red. In the corresponding scene in Codex Vaticanus A face and body are very clearly striped, and portions of the anatomy, concealed in Codex Telleriano-Remensis, are here exposed, and also correctly striped. This is a very important detail for the identification of Tlauizcalpantecutli and the Mixcoatl group of gods.

In Codex Telleriano-Remensis (17v) the unspun cotton appears detached from the spun cotton on the spindle at the back of Ixcuina's headdress, and the band of unspun cotton around the head and the hank pendent from the earplug are not distinguishable. These details, of prime importance in recognizing Ixcuina, are clearly delineated in the corresponding page of Codex Vaticanus A.

The figure of Xolotl in Codex Telleriano-Remensis (19v) is scarcely recognizable as that of a dog. The equivalent deity in Codex Vaticanus A is definitely canine.

Other cases might be cited in which Codex Vaticanus A is more correct in presenting details than its supposed prototype, Codex Telleriano-Remensis. It is hardly credible that the very poor artist who painted the figures of the former codex, and who himself omitted important attributes (e.g. black marking around Ixcuina's mouth, 29v), had the skill or the knowledge to correct in his version errors in the work he was copying. The conclusion is inescapable that Codex Vaticanus A was copied or recopied

from an original free of the errors found in Codex Telleriano-Remensis.

Furthermore, small variations in position between the two codices are discernible. For example, in Codex Telleriano-Remensis (16r) the eagle-warrior carries his banner in one claw, and points it to the rear. The corresponding eagle-warrior of Codex Vaticanus A holds his banner pointing forward with both claws. The artist of Codex Vaticanus A clearly was not sufficiently master of his brush to be able to take liberties with his subject, and one can accordingly, be sure that he was not copying from Codex Telleriano-Remensis.

A comparative study of Codices Telleriano-Remensis and Vaticanus A clearly reveals, as demonstrated above, that the latter is not a copy of the former; but, independent of such results, Codex Telleriano-Remensis bears internal evidence of being a copy. The patron of Week 9 was first labeled as Patecatl (patron of Week 11), but the correct title of Tlauizcalpantecutli was subsequently substituted for this. Week 11 was first stated to be under the patronage of Itzlacolihqui (lord of Week 12), Week 12 under that of Ixcuina (lady of Week 13), and Week 13 was first labeled as under Xolotl (lord of Week 15). The mistake in applying to the deities of four weeks in each case the name of the patron of the following or next following week is best explained by supposing that the lettering was the work of an

ignorant scribe carelessly copying from a now lost prototype.

The evidence is conclusive that Codex Vaticanus A is not a copy or a recopy of Codex Telleriano-Remensis but that both derive from a prototype, now missing, which was perhaps the codex in the Vatican from which leaves were copied for Cardinal Amulio, who died in 1570. These leaves agree in subject matter with pages in the codices under discussion, but the watermarks of the paper, as demonstrated by Father Franz Ehrle in his introduction to the Loubat edition of Codex Vaticanus A, date that codex as not earlier than 1570. Codex Telleriano-Remensis carries the date 1563, and the paper, manufactured in Genoa, is of approximately the same date. Cardinal Amulio's figures could not, therefore, have been copied from Codex Vaticanus A, and, although the history of Codex Telleriano-Remensis prior to 1700 is unknown, it is not listed in the catalogue of the Vatican manuscripts made in 1596–1600, whereas Codex Vaticanus A does figure in that catalogue. All things considered, it is most plausible that the missing prototype was first copied in Mexico, that copy being the one now known as Codex Telleriano-Remensis. Subsequently the prototype found its way to the Vatican library, where in the years 1563–1570 pages were copied and given to Cardinal Amulio. In the decade 1570–80 the present Codex Vaticanus A was copied from it, but before 1600 it had disappeared for ever.

Observations on Glyph G of the Lunar Series

J. Eric S. Thompson

<https://babel.hathitrust.org/cgi/pt?id=inu.30000081679718&view=1up&seq=53>

In recent years associations of Glyph G of the Lunar Series with Calendar Round dates have been utilized to place the latter in their true Long Count positions at Copan (Thompson, Roys, and Long 1935), Palenque (Beyer 1935a), Yaxchilan (Beyer 1935b), Tonina (1939), and Balakbal (Thompson 1940).

Two further examples occur on Monument 7, Tonina, Chiapas, first published as from Ocosingo by E. Seler (1901, Fig. 281). Sides b and c of this monument, apparently the pedestal of a stela, carry a Calendar Round date which is almost surely 1 Ahau 3 Uo, the only doubt being as to whether the month might be 3 Zip. Between the day and month sign is Glyph 09 (Fig. 7.1c). On Side a there is a Secondary Series of 6 uinals 13 kins followed by a clear 11 Manik and a coefficient of 15 attached to a month glyph which is almost certainly Mac, as can be seen by comparing it with the Mac glyph on Stele D, Pusilha. Here the day and month signs are separated by Glyph G2 (Fig. 7.1a). The identification of this rather rare form of the Glyph G series is confirmed by the very similar Glyph G2 on the ball-court marker at Chinkultic (Fig. 7.1b), and by the fact that this form is demanded by the interval of 133 days recorded in the Secondary Series.

Provided the first month glyph is 3 Uo, an almost certainty because, so far as is known, the superfix of Zip is never merged in the body of the glyph, then the only Long Count positions in Cycle 9 which will agree with the readings of the associated forms of Glyph G are:

9.14.17.2.7	11 Manik	15 Mac	Glyph G2
6.13			
9.14.17.9.0	1 Ahau	3 Uo	Glyph G9

<https://catalog.hathitrust.org/Record/000625221>

Blom and La Farge (1926–1927:275) read this inscription as:

9.16.9.11.7	11 Manik	15 Kankin
6.13		
9.16.10.0.0	1 Ahau	3 Zip

This decipherment was due to the identification of the glyph following 3 Uo or 3 Zip as that employed to mark the completion of a half katun. However, this sign resembles no known form of the lahuntun glyph, but is almost certainly a generalized ending sign. Since no half katun ends on 1 Ahau 3 Uo during Cycle 9, the much less preferable reading of 3 Zip had to be used. Also it was necessary to read the other month sign as 15 Kankin despite the fact that the glyph in question has a superfix, and apparently that of Mac, whereas Kankin never has any affix. On the other hand, the associated forms of Glyph G will also agree with the Blom and La Farge readings.

Lintel 3, Yaxchilan, affords another example of Glyph G used with a Calendar Round date. Here the inscription reads “8 Ahau, Glyph 09, Glyph F, 8 Zotz, end of 5 tuns,” and corresponds to 9.16.5.0.0 8 Ahau 8 Zotz (Fig. 7.1d).

An unusual case of Glyph G preceding both the day, and month signs occurs on Stela 1 at Comitan, Chiapas. Here Glyph G9 has been read as the supposed equinoctial glyph, but of its true identity here can be no doubt. The date is almost certainly 10.2.5.0.0 9 Ahau 18 Yax.

A mistake on the part of the Maya calculator is discernible on Lintel 12, Piedras Negras. The Initial Series, 9.3.19.12.12 9 Eb 10 Tzec, requires Glyph G9, but Glyph G8, as recently identified by Beyer, is given, apparently in combination with Glyph F.

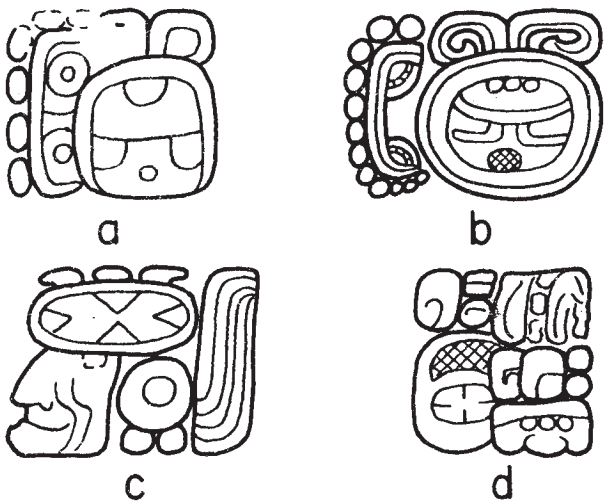
Stela 3, Poco Uinik, Chiapas, appears to have no less than four Glyphs G. Unfortunately the text is a little uncertain, and good photographs are not available, but certain of the dates can be made out. Photographs and a drawing have been published by the discoverer of the Enrique Juan Palacios (1926). There is also a drawing by Blom, who deciphered dates 1, 2, and 5. The inscription appears to record the following:

Books: [En Los Confines - Palacios 1926, page 111](#)

Date 1	9.18.0.0.0 1.4.7.4	11 Ahau	18 Mac	Initial Series	Glyph G9
Date 2	9.16.15.10.16 (9.18.0.0.0 8.7.2	2 Cib 11 Ahau	14 Ceh 18 Mac)		Glyph G9
Date 3	9.17.11.10.18 (9.18.0.0.0 8.3.4	5 Eznab 11 Ahau	16 Mol 18 Mac)		Glyph G2
Date 4	9.17.11.14.16 7.17.0	5 Cib	14 Ceh		Glyph G8
Date 5	9.17.19.13.16 4.4 9.18.0.0.0	5 Cib 11 Ahau	14 Ceh 18 Cac		

Dates 1 and 2 have Glyph G9 as here required. The presence of the second example was recognized by Palacios, but he took it to be a repetition of the occurrence with the Initial Series. It lies between the day and month signs.

Date 3 is open to a certain doubt, since the coefficient of the day sign looks much more like ten than the required five. Blom's drawing shows the tun of the Secondary Series with a coefficient of eight, and Mol with a coefficient that can only be sixteen (three bars and two crescents flanking an eroded spot). The Blom drawing also shows a rather weathered glyph between day and month signs, which from its position and the details still recognizable is almost certainly Glyph G2.



7.1. Examples of Glyph G: (a) Glyph G2, Monument 7, Tonina; (b) Glyph G2, ball-court marker, Chinkultic; (c) Glyph G9, Monument 7, Tonina; (d) Glyphs G9 and F, Lintel 3, Yaxchilan.

Date 4 is firmly anchored by the Secondary Series, although the day sign coefficient again looks better as ten (perhaps very thick bars with interior divisions were used). Glyphs G and F of the Lunar Series lie between the eroded day and the month sign. The latter is particularly clear; the former seems to have the ophidian outline of G8 (Palacios 1926:211), as demanded by this date.

Most of the examples of Glyph G with Calendar Round dates have been reported from Chiapas, suggesting that the practice of inserting them was more prevalent there than elsewhere in the Maya area.

A New Pottery Style from the Department of Piura, Peru

John Howland Rowe

Several examples of a very curious ware have lately found their way into private collections in Peru. The known examples are vessels with double spout and bridge, with surface decoration in Mochica (Early Chimú) style of drawing but in polychrome. They come, moreover, from the Department of Piura, whence nothing earlier than Late Chimú has so far been reported.

One perfect specimen belongs to Dr. V. T. De Vault, of the British American Hospital in Callao, who kindly permitted me to study it on two separate visits to Lima, in August 1939 and September 1941. The appearance of the piece and its peculiar character can be seen in the accompanying tracings and photograph [in Figure 8.1].

It is 15.3 cm high and 19.4 cm in greatest diameter between the tips of the spouts. The body is 8.5 cm high and 12.8 cm in greatest diameter. Thickness can only be approximated from the measurements of the handle (0.9 cm thick) and the spout tips (0.15 cm); these however are tapered, and, are much thicker farther down).

The vessel is of fine redware, smoothed with a small tool, the marks of which can be seen on close examination, and is covered, except for the base, with a red-orange slip. The spouts are joined to the body by small shoulders and to each other by a ribbon handle. The body is perfectly circular, with a flat base which rounds up a little toward the edges, giving the effect of a rounded bottom although standing perfectly steady. The spouts do not whistle.

The lower half of the body is undecorated except for a double black line just under the break in the body outline, which belongs with the decoration of the upper half. The spouts and under side of the handle are also undecorated. The decoration on the upper half runs over onto the little shoulders of the spouts.

The spouts divide the upper surface of the vessel roughly into two areas. In each of these is represented a small three-stepped platform with a human figure lying on it, feet stretched out, with four sticks or tubes in his right hand. The figures are identical, except for their heads and the tails flying from their belts. Around these figures and under the spouts are grouped maroon, yellow, and gray beans and little white spots to fill the space. There are also beans on top of the handle. Six colors are used: maroon, yellow, gray, black, white, and the red-orange slip. The masses of flat color are outlined with a medium-thick black line. The colors have all lasted well except the white, most of which has flaked off, though enough traces remain to permit restoration.

In attempting to interpret the design, one is immediately reminded of Larco Hoyle's suggestion that the Mochicas used different colored beans for messages, i.e. as a substitute for writing (Larco Hoyle 1938-1940:2:85-124, pls. 21 and 23). Ingenious as the suggestion is, however, it faces several serious difficulties; for example, the fact that he has found only one bean with markings on it, and that there is insufficient difference between the beans represented on any one Mochica pot to make it likely that they

carried verbal meaning. The latter objection would certainly obviate the possibility that the beans on the De Vault vessel represented speech. They may, however, convey a different kind of meaning. We know that the Indians of the Sierra were addicted to auguries of all sorts, and the same practices very likely dominated coastal belief also. The men with beans may possibly be engaged in casting beans of three colors for purposes of divination. The suggestion that the four elongated objects that the men hold are the pipes of a syrinx is impossible, as the rods or tubes are of equal length and are separated.

This specimen was dredged from the bottom of the Chira River at Sullana, Department of Piura, during operations for the building of a bridge in 1933 or 1934 (the bridge washed out in the rains of 1939). It was obtained from the workmen by Señora Ana Bell and given by her to Dr. De Vault.

Jose R. Respaldiza, now of the Dirección de Educación Artística y Extensión Cultural, formerly of the Museo Nacional in Lima, told me in 1939 that he had recently visited Piura, where he saw two vessels of this type in the collection of Sr. Seminario. One was broken, the other perfect. They were said to come from a site on the Hacienda Garabato at Sullana. Respaldiza visited this site and saw low mound ruins and a quantity of potsherds. By diligent search he found a single sherd of this painted style, of which he has a water-color drawing, though the sherd is unfortunately lost. The drawing shows a figure of a man remarkably like the ones here illustrated, but holding a cup instead of the four rods. The coloring is much the same also, yellow being used for the thighs, arm, face, and collar.

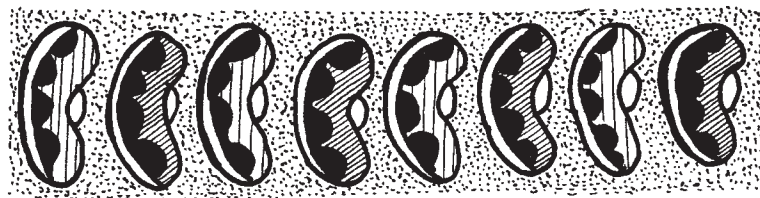
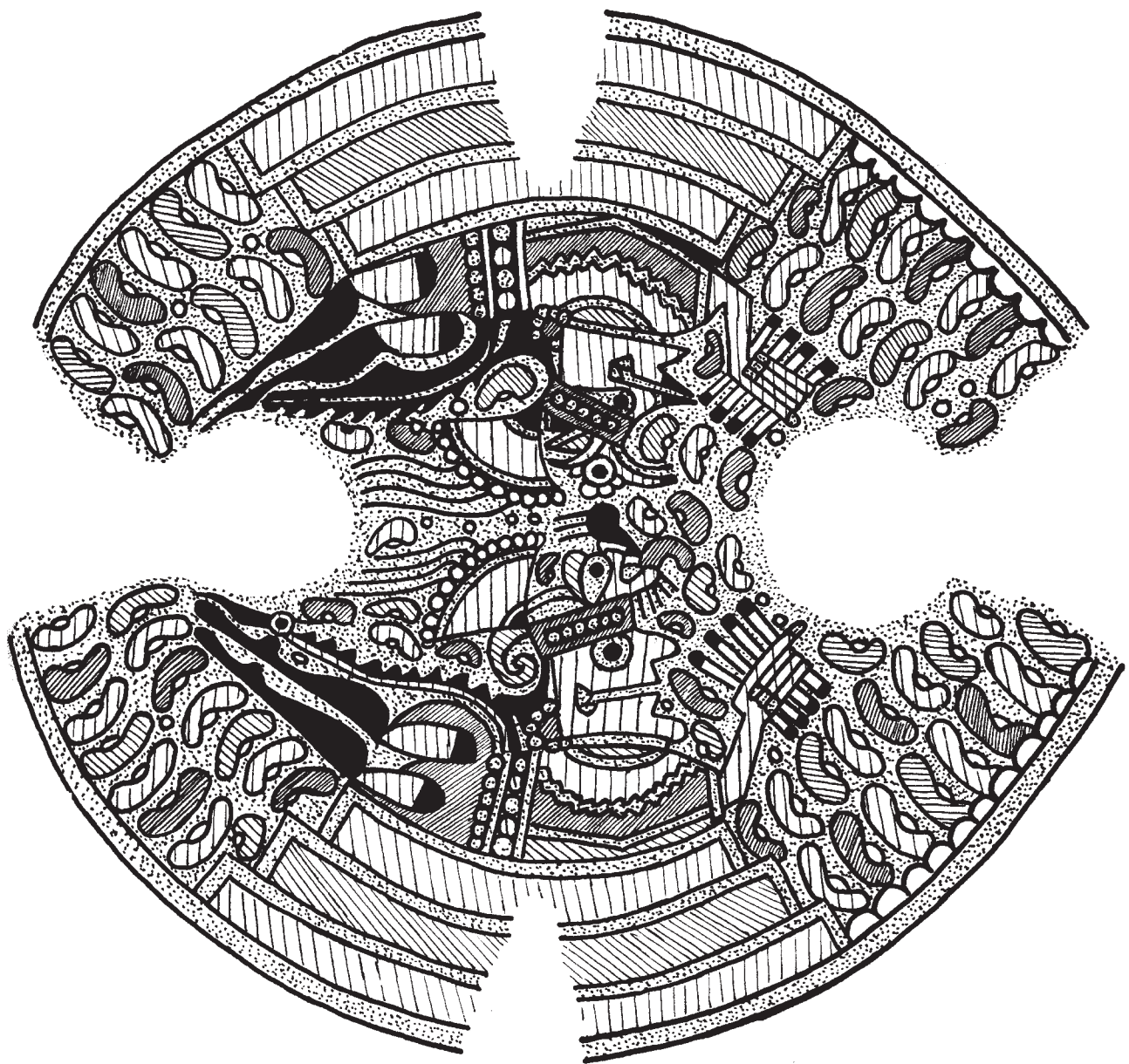
The shape of the De Vault specimen is one that seems to have originated in Coastal Tiahuanaco, and the distribution of the polychrome design on the upper surface is another characteristic of the same style. The chief difference is that the Tiahuanaco examples lack the necking or shoulder on the spouts. (Illustrated examples may be found in Kroeber 1925, pl. 74j,1; A. H. Gayton 1927, pl. 91b; M. Schmidt. 1929: 284–287, all from Pachacamac; Gayton and Kroeber 1927, pl. 19d,e and plate of pots from AMNH. Cf. also W. D. Strong 1925, pl. 47d; Schmidt 1929:270–278, Pachacamac; and two examples from Pisco in Peabody Museum of Harvard University. Most of these illustrate variants of the shape shown in the first 12 citations.) The shape is also common in Late Chimu but without painted decoration. On all these later examples, the double spout and bridge is differently constructed from that of Early Nazca (this

shape of handle and spout does not, of course, occur in Mochica). The later spouts are much longer, more conical, and spread wider apart, leaving room for a long, gracefully sweeping bridge handle. In contrast, Nazca spouts are short, stubby, and close set (Gayton and Kroeber 1927:35). The body shape, made in an upper and a lower half meeting at an angle in the middle of the body, occurs in Mochica (Schmidt 1929:20g, and example in Peabody Museum), but is rarely if ever found in Early Nazca.

The color scheme of the Sullana pots fits best into the Early Nazca range (Kroeber and Strong 1925:106). Coastal Tiahuanaco uses some of the same colors, but I have not seen an example with more than five. The orange slip of the Sullana style is typical of Coastal Tiahuanaco, and perhaps both are related to the common Nazca use of red background (Gayton and Kroeber 1927:10). There is absolutely nothing in the Chimu area that is comparable. The wall paintings at Moche are on a white ground and have incised black outlines, filled with red, pink, yellow, light blue, and occasional small areas of black and brown (Kroeber 1926:71). Examples of Mochica pottery in more than two colors are excessively rare, and I have found none with more than three. There is a pot in the Peabody Museum at Harvard University painted with birds and rosettes in red and orange on white, and one in A. Baessler (1902–1903:3, pl. 116, fig. 345), in brown and red on white. Schmidt (1929:193) shows a pot which appears to be in taro colors on white, from the shading, though his text calls it brown and white.

The drawing of the designs on the Sultana vessels, however, is unquestionably Mochica. Close analogies to the faces, hands, headdresses, and costumes can easily be found by thumbing through any collection of illustrations of Mochica painted ware. So for example, the elongated eye of one of the figures shown here can be matched in Schmidt (1929:193) and in Larco Hoyle (1938–1940:2, pl. 31). The point is not one that needs laboring, however.

With the amount of fieldwork recently undertaken in all parts of Peru, we may expect that in details at any rate, the culture sequences of the area will soon be extensively revised, and any conclusions as to the chronological position of our new style of pottery will hence soon be out of date. The present scant evidence, however, suggests a survival of Mochica influence in Piura until a date when Coastal Tiahuanaco influence had penetrated the north, and that this Sultana style is a mixture of the two traditions.



UPPER SIDE OF HANDLE

Maroon



Orange



Gray



Yellow



COLOR KEY



8.1. Pottery style from the Department of Piura, Peru.

Archaeological Specimens from Yucatan and Guatemala

A. V. Kidder

With the exception of the first three, the provenience of the specimens here presented is not a matter of absolute certainty. This distinction is stressed because specimens that are in private collections or that find their way into museums from private hands are sometimes unequivocally assigned, by the authors of archaeological publications, to definite sites or areas. In most cases the information upon which such allocations are based, is no doubt accurate, but as non-professional collectors often acquire pieces by purchase, gift, or exchange, and as few of them make catalogues of their cabinets, there is always possibility of errors which, perpetuated in print, can result in very serious misinterpretations. All that is to be learned of the history of specimens of this type should therefore be recorded and attempt be made to gauge the relative degree of its reliability.

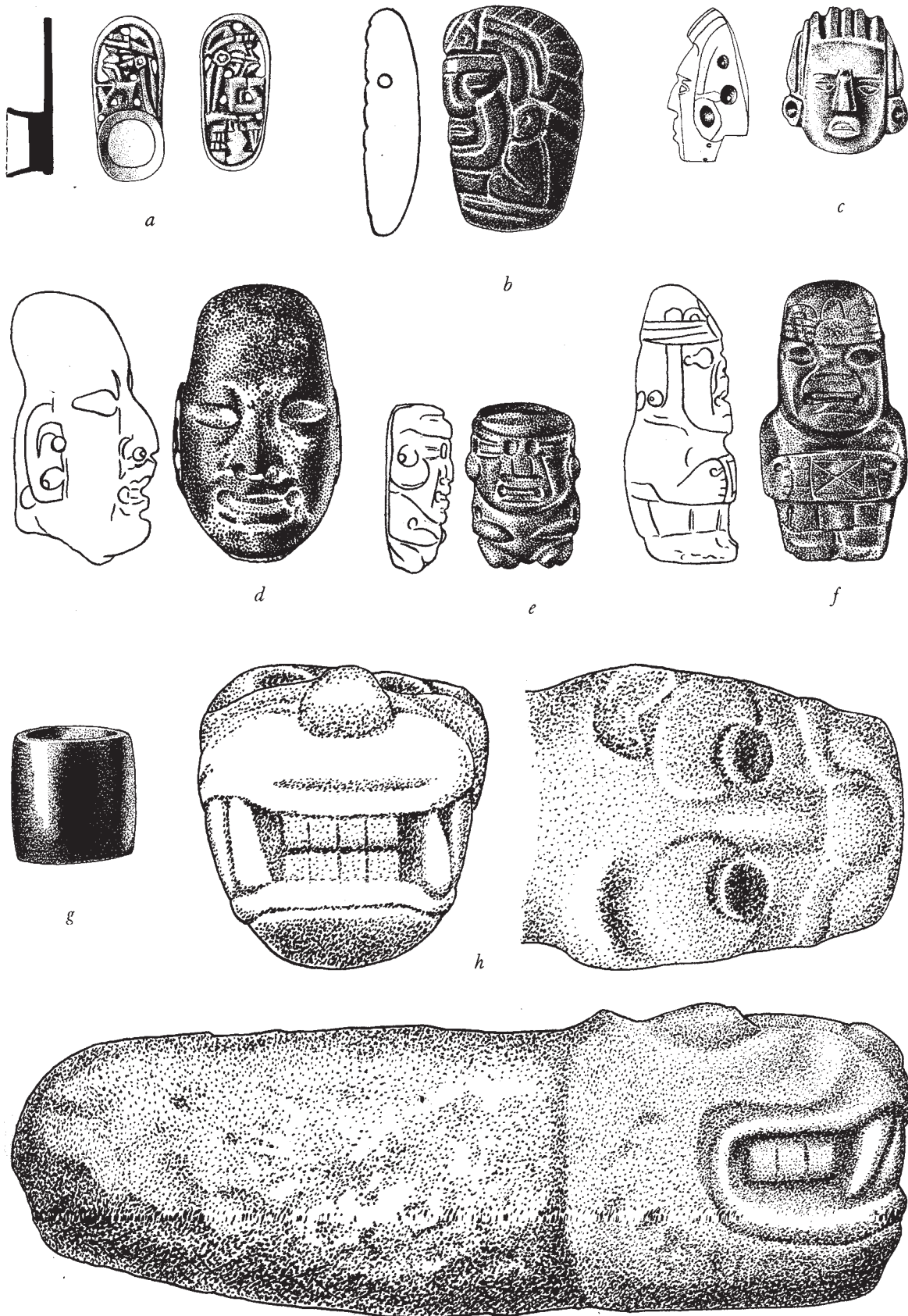
All illustrations are natural size save Figure 9.1h, which is 1/4.

Ornament (Fig. 9.1a). Close-grained white limestone, openwork carving, projecting part undecorated, chronological horizon unknown. Found by R. E. Smith in a great limestone cavern on the plantation of George Koester Esq. at Seamay, Alta Verapaz, Guatemala. In the cavern's chambers and passages many other archaeological remains are said to have been discovered. This specimen now in Guatemala National Museum. There are almost identical ones of wood, also with small human figures in openwork carving, from, the Sacred Cenote at Chichen Itza; and a limestone example of similar shape, but

undecorated, from Uaxactun (Tepeu horizon). Their use is problematical. The length of the projecting part would seem to preclude service as a labret; as would the fact that the outer margin of the projecting part, in some of the Chichen Itza specimens, is ringed with carving, which would of course be hidden if the object were worn in the lip, but visible if it were buttoned through the lobe of the ear.

Tenoned jaguar head (Figure 9.1h) gray lava; length, 71 cm. Found by Madeleine A. Kidder at the ruins of Asuncion Mita, Department of Jutiapa, Guatemala, between two adjacent parallel mounds, possibly a ball court. Guatemala National Museum. Tenoned serpent or parrot heads occur in ball courts at Copan and, in Guatemala, at San Pedro Pinula, San Agustin Acasaguastlan, and Kaminaljuyu.

Jadeite head (Figure 9.1c), clear apple-green, translucent stone, all parts highly polished. Two lateral perforations at back of head, each consisting of two conical drillings which meet at the center of the specimen. Below the earplug on either side are two very tiny cylindrically drilled holes, those of each pair slanting inward to meet, apparently for suspension of a feather or some other added embellishment. Found at Quirigua by E. H. Morris and G. Stromsvik cached with an eccentric flint, a quartz crystal, and an unworked jadeite pebble, beneath Zoomorph O (Stromsvik 1941:83, fig. 32a; a photographic front view of the head). Guatemala National Museum.



9.1. Archaeological specimens from Yucatan and Guatemala.

Jadeite head (Figure 9.2e), fine quality, emerald-green stone, highly polished. Almost cylindrical lateral perforation at back, earplugs biconically perforated. Said by a reliable person to have been found near the village of Acatenango, Department of Chimaltenango, Guatemala. Private collection.

Jadeite (?) head (Figure 9.2a), pale green clouded with brown; the large flat nose is a clearer green than the rest of the head and apparently owes its unusual shape to a desire to retain as much as possible of the best part of a rather inferior piece of raw material. Said, by the person who offered it for sale, to have come from Utatlan. This assignment is dubious, as vendors of antiquities, in Mexico and Guatemala, often seek to enhance the value of their wares by claiming them to have been found at famous sites. It is possible that the specimen is a forgery, for many spurious small stone objects are made in Santa Cruz Quiche for sale to tourists at Utatlan and Chichicastenango. It is not of the usual ancient Quiche type, which is characterized by faces in low relief with T-shaped nose and rectangular mouth (Lothrop 1936, Figs. 59, b, d, e; 60h, x). The sawing technique used to produce the features is, however, seen in specimens from the Quiche region (Lothrop 1936, Fig. 60q, r), but this normally produces a triangular nose. Still, the peculiar form of the present nose is perhaps an argument for authenticity, as jadeite objects from the Guatemala highlands were often shaped to take advantage of the finer parts of a stone. This object has been discussed at length because many spurious antiquities are now appearing in Guatemala, and detailed studies will become increasingly necessary to permit their recognition as such. In a forthcoming Note there will be described a class of particularly clever and dangerous forgeries.

Jadeite head (Figure 9.2b), gray-green, back recessed as shown by dotted line in section (cf. head from Hatzcap Ceel, British Honduras, in Thompson (1931), Southern Cayo District, pl. XXXII, 1, 2); attachment holes at top and below ears open into the recessed back. Note holes made with a small, pointed drill at the corners of the mouth, possibly an Olmec trait. Guatemala, National Museum (Cat. no. 2557); said to come from Joyabaj, El Quiche, Guatemala.

Jadeite figurine (Figure 9.2d), dark green, fine workmanship. This and the three specimens following are, to a greater or less degree, of Olmec style. (The term "Olmec" is here used in preference to "La Venta," as it seems best to confine the latter, for the present at least, to materials surely known to form part of the complex represented by Stirling's finds at the site of that name.) Guatemala National Museum (Cat. no. 2174-1); said to come from Coatepeque, Department of Quezaltenango, Guatemala.

Jadeite figurine (Figure 9.1f), dark stone, high polish. At level of mouth on back are pairs of conical drill holes, the units of each pair running in at an angle to meet. Said to have been found near Peto, Yucatan. The reliability of this assignment is enhanced by the fact that there is no well-known ruin in that vicinity. Private collection.

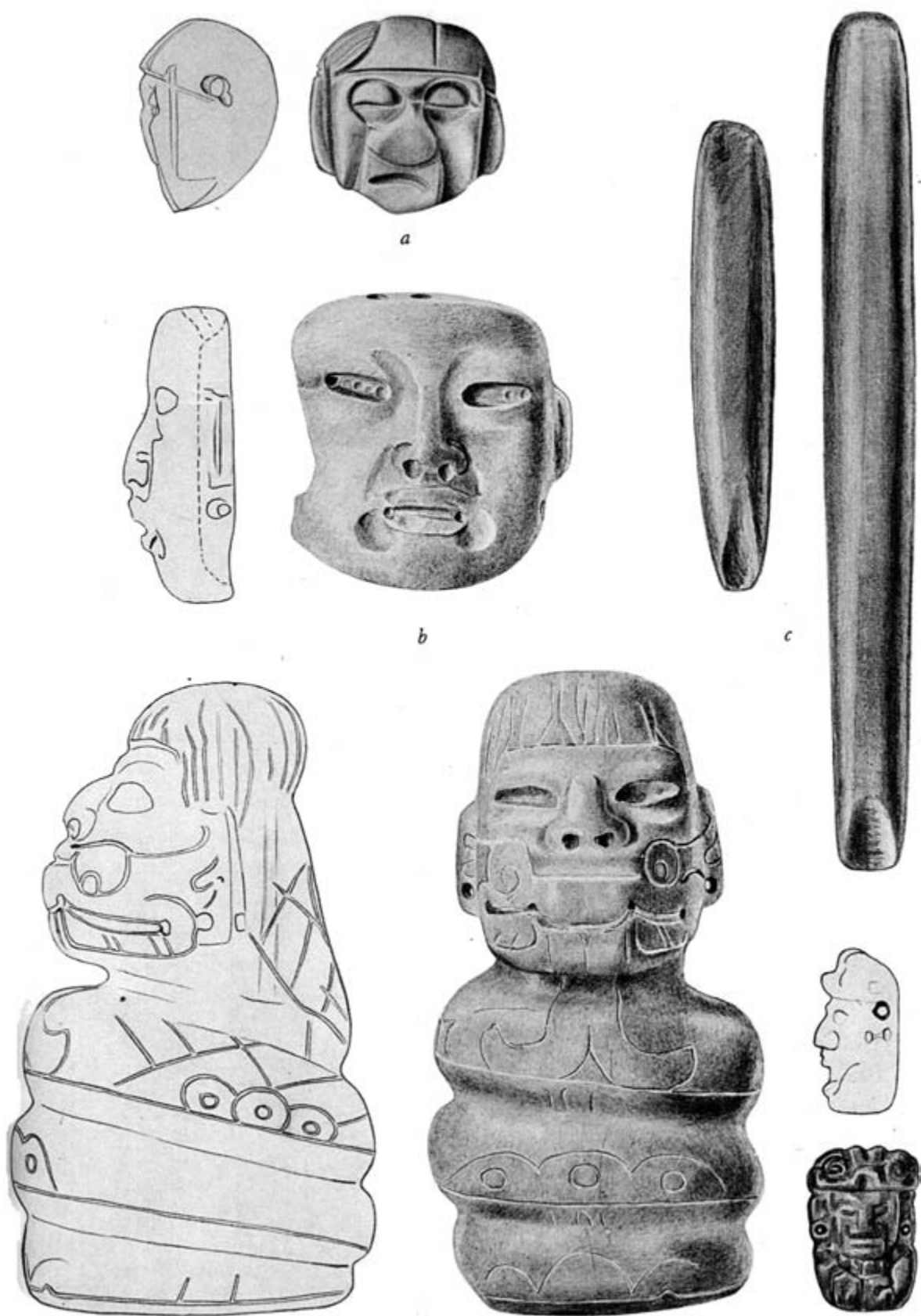
Stone figurine (Figure 9.1e), very dark, fine-grained, green stone, apparently not jadeite. Not highly polished, back cursorily finished. Pairs of holes similar to those of foregoing specimen. Purchased in Merida, Yucatan. Private collection.

Stone head (Figure 9.1d), black, fine-grained stone. Nose pierced and pairs of meeting biconical holes through lobes of ears. Head apparently broken from figurine. Purchased in Merida, Yucatan. Private collection.

Stone head (Figure 9.1b), black, fine-grained stone. Lateral cylindrical perforation. Back well smoothed. Found during government road-work at ruins of Asuncion Mita and presented to Guatemala National Museum by engineer in charge. Assignment certain.

Stone ring (Figure 9.1g), black, fine-grained stone, high polish. Asuncion Mita, same provenience as foregoing. Guatemala National Museum.

Stone gouges (Figure 9.2c), very hard, dark green stone, possibly jadeite. Shafts well smoothed, cutting edges sharp. There seems to be no other record of gouges from Central America. Obtained at Lake Flores, Guatemala, by a reliable person. Private collection.



9.2. Archaeological specimens from Yucatan and Guatemala.

The Payment of Tribute in the Codex Mendoza

R.C.E. Long

In the part of Codex Mendoza containing the tribute roll each pair of pages (the verso and recto of sequent folios) lists the towns and a tally of tribute paid. Apparently each pair relates to a single taxation district, comprising all the towns in it, and the tribute enumerated was paid by the district as a whole. Major James Cooper Clark, in his [1938] edition of the codex, evidently takes this view as he gives a useful summary of the entire yearly tribute, showing how much of each kind of article was contributed.

With the exception of folios 18v[19]–19 and 46v–47r, which will be considered farther on, there is no indication in the picture writing of how often in the year various tributes were payable, which seems a strange omission. The Spanish interpretation, however, states for each item how often it was payable. There were three classes of payment: yearly, half yearly, and quarterly. In the interpretation the quarterly payments are said to be made every eighty days, but Cooper Clark shows that these were paid on four festivals of the Aztec year, which was as near to a quarterly payment as could be made in a year of eighteen months and five days. Now an examination of the lists shows that with the exception noted above, the folios follow a rule from which there were very few deviations.

There are only four pairs of pages that have any quarterly items, namely, folios 31v–32r, 35v–36r, 36v–37r, and 41v–42r. In these, the following commodities are paid only quarterly and do not appear elsewhere as half yearly or yearly payments:

Wood	31v–32r
Baskets of white copal, bowls of unrefined copal	35v–36r
Baskets of white copal, balls of copal for refining	36v–37r
Stout canes (otlatl), canes from which they make spears (tlacochitl), deerskins, smoking canes (acayetl), and crates for carrying burdens (cacaxtla)	41v–42r

The following articles are quarterly in these same folios but half yearly in others:

	Quarterly	Half Yearly
Pots of bees' honey	35v–36r 36v–37r	39v–40r
Gourds (xicaras)	35v–36r 36v–37r	22v–23r 24r–25r
Axe blades	36v–37r	39v–40r
Loads of lime	41v–42r	27v–28r

None of these appear as yearly taxes and they are the only items that are both quarterly and half yearly.

A number of articles are half yearly only and never quarterly or yearly: mantles, huipils, loin-cloths, paper, rush mats (*petates*), rush seats with backs, maguey honey, salt, red cacao, red sea shells, gourds (*tecomates*), earthen pans of yellow powder (*tecozahuitl*), copper bells, cakes of liquidambar.

Bales of cotton constitute the only item which appears as both a half yearly (ff. 37v–38r) and a yearly (ff. 47v–48r, 52v[53]–53, 53v[54]–54) tax.

All the items not included in these lists are yearly and are never quarterly or half yearly.

Having finished what we may call the normal folios, we now come to the two pairs excepted above. The first of these, folios 18v[19]–19, is unusual in another way in that it lists only one tribute-paying town, Tlatelolco. It contains an obligation to repair a temple, which is a yearly item and is not found elsewhere; and it also has, like most of the folios, an item of suits of armor and shields which here are yearly items as in all other folios. But all, the other items in this set of folios are quarterly. Two of them, the baskets of maize flour and cacao and the baskets of maize flour and sage, are not found elsewhere; a third, the mantles, are elsewhere half yearly. It is noteworthy that the Aztec painter marked this difference from the usual practice by repeating the glyph for day (*iluitl*) four times. But *iluitl*, besides meaning simply day, is used with the implication of festival day, i.e. one of the eighteen monthly festivals. It is therefore properly interpreted in the Spanish text as twenty days, and, as there are four glyphs, it means four of the festival days in the year, as stated by Cooper Clark, and not every eighty days.

The other unusual pair of pages is folios 46v–47r. In it all the items are half yearly. Unlike most of the folios, there are no suits of armor or shields (which we saw were yearly even in Tlatelolco) nor does it contain any mantles, an item which occurs in most of the folios and, except for Tlatelolco, is always half yearly. All the items in these folios either are of a kind which would elsewhere be yearly, or are unique. Here again the codex marks the difference of practice, because this is the only place where months are given, Tlacaxipeualiztli and Ochpaniztli, which, as Cooper Clark says, are the dates of payment. He is doubtless also right in saying that the quarterly payments were due on the festivals of Tlacaxipeualiztli, Etzalqualiztli, Ochpaniztli, and Panquetzaliztli. These would be in the proper quarterly places and they are the dates of the quarterly payments in the Humboldt Codex I. He gives no indication as to when the yearly payments were due, but I suggest that they fell on the festival of Etzalqualiztli, which in

the Humboldt Codex I is evidently the most important, in that it alone shows the day sign as well as the month and also that all but one of the new tribute payers began to pay at that festival. I think one may fairly use the Humboldt Codex I to fix these dates while still accepting the view of Dr. Alfonso Caso that it is not an Aztec codex. Bernal Diaz says that the collectors of tribute arrived while Cortes was speaking to the Totonac chief. This occurred some time after the middle of May and before July 26, when Cortes sent a letter to Charles V. But according to Caso, the month Etzalqualiztli began in 1519 on May 25, so that its festival would be on June 17, which corroborates the suggestion that this festival was the day for annual payments, because the Totonac region was not one of those which made quarterly payments. It would have the practical advantage that the collectors could more easily deal with the yearly tribute if it was not payable on one of the days for half yearly payments.

As has been shown above that there are only four kinds of items that are both quarterly and half yearly and only one that is both half yearly and yearly, and that on any particular pair of pages such items are either quarterly or half yearly but never both on the same folio, there can have been no confusion in the minds of the tax collectors, because from the nature of the item they knew which kind it ought to be. It is clear, then, why in the two exceptional cases the method of payment was marked. The suits of armor and shields in folios 18v[19]–19 must have been kept in mind as an exception to the quarterly payments in these folios.

In general, as one might expect, the more valuable payments were yearly, the mantles were half yearly, being doubtless quickly worn out, and the quarterly payments were principally wood and some stall articles. The unusually high payments for Tlatelolco are understandable, as it was the abode of the guild of traders and a great market was held there; so that it was a sort of City of London on account of its remarkable wealth.

In the study of an embryo writing like the Aztec, it is of importance to know how much was directly expressed in writing and how much was supplied from memory. This is of interest for the study of embryo writings in general.

A Note on Aztec Chronology

R.C.E. Long

In the *American Anthropologist* (1938) Dr. Vaillant has a paper "A Correlation of archaeological and historical sequences in the Valley of Mexico." I think his chronological scheme should be amended slightly with regard to the Aztec. He says that the records for the Tenochca run back to 1163, the year One Flint (1 Tecpatl), the date of Huitzilopochtli. Presumably this is a printer's error for 1168, which was a year 1 Tecpatl. This year 1 Tecpatl is the starting point of the count in the Boturini Codex, which has an unbroken sequence of 183 years from there to the year-binding at Chapultepec in 2 Acatl and continued four years beyond that to 6 Acatl when the codex ends. In this last space of four years the codex shows the imprisonment of Huitzilihuitl and the incident in which the Aztec brought back ears instead of captives to their Culhuacan master, Coxcoxtli, whose glyph is given. The Codex de 1576 also starts with 1 Tecpatl and carries on the same count of 183 years to the year-binding at Chapultepec; it is practically a copy of the Boturini up to that point. But it then continues the count to 1576, and by reckoning back from there the date of 1168 for 1 Tecpatl is reached. This codex appears to have two errors. One is that it shows only three yearbindings after the Aztec founded Mexico, thereby shortening the count by 52 years; and the other is that within the Calendar Round it gives the date of the foundation of the city as 1 Acatl instead of the generally accepted date of 2 Calli, 14 years later in the Calendar Round. As a result of these two errors the date of the foundation is put at 1 Acatl (1363) instead of 2 Calli (1325), 38 years earlier.

What is important for our purpose is the error of 52 years, one Calendar Round. If this mistake is corrected, then the last year-binding recorded in the Boturini Codex is to be dated 1299 instead of 1351, as it would be by the Codex de 1576; and consequently 1 Tecpatl, the starting point of both picture writings, would be 1116.

The Codex de 1576 is the sole source giving only three year-bindings after the foundation of the city. Chimalpahin says there were four, and this can also be deduced from the *Anales de Cuauhtitlan*, which show four after the founding of the city. These four were also later than the mention of Coxcoxtli at Culhuacan. Curiously enough, Vaillant also gives four after the founding of the city, namely, 1351, 1403, 1455, and 1507; and he agrees with other sources in also putting four before it, namely, 1143, 1195, 1247, and 1299. The last of these is correctly dated by him as in the time of that Huitzilihuitl who was taken prisoner by Coxcoxtli, according to the Boturini Codex. But his 1143 "1st Mexican Cycle" would, according to his chronology, fall before 1163 (properly 1168), which he gives at the date of 1 Tecpatl, the starting point of the codex. If, however, we make the Aztec chronology 52 years longer, as suggested above, then the starting point of the Boturini Codex is 1116 and the four year-bindings recorded in it are 1143, 1195, 1247, and 1299, and agree with Vaillant's Mexican Cycles I, II, III, and IV.

Chimalpahin gives a list of the chiefs who led the Aztec prior to their settling at Tenochtitlan, with the lengths of their reigns and the places of their

deaths. This agrees exactly with the above dating of the Boturini Codex, because each of them died at the place where, by that chronology, he would have been at the date of his death, Chimalpahin also says that in 1507 the Aztec bound their years for the ninth time since leaving Aztlan. This would mean that, besides the eight recorded year-bindings, there was another in 1091, while they were on the way from Aztlan and before they reached Culhuacan. How in the *Anales de Cuauhtitlan* it is said that in 1 Tochtli (which calculation shows to be 1080) the Aztec moved from Aztlan. This is a good corroboration of both records, Boturini and Cuauhtitlan, as far back as that date. It would confirm the date of 1064 for the destruction of Tula and of 1070 for the death of Huemac given in the *Anales de Cuauhtitlan*, and there seems no justification for altering the last one by 52 years to 1122, as Vaillant does. His table of Toltec rulers contains two errors that are probably misprints, namely, 923 for the accession of Quetzalcoatl instead of 925, and 1074 for that of Huemac instead of 1047. Correcting these errors, we get a list wherein the dates are uniformly 52 years later than those given by the *Anales de Cuauhtitlan*. Spinden (1922) gives a list from 726, the date of the foundation of the Toltec government, to 1070, the date of the suicide of Huemac. All the dates in this agree with the *Anales de Cuauhtitlan*. In a later work Spinden had to cut down these dates by 52 years to make them fit his theory regarding

Quetzalcoatl, a theory that Vaillant rightly finds inconsistent with the archaeological and historical evidence. In order to fit this reduction, Spinden had also to eliminate 52 years from Aztec history, but there is no need to do so if one rejects Spinden's theory. Vaillant has carried this quite unnecessary Spinden reduction into both the Aztec and Toltec chronologies. It is all very well to say that the scribe of the *Anales de Cuauhtitlan* had a trick of repeating his year sequences, but no part of the record is indicated as the place where such a repetition occurred, and as a whole there seems to be a rough correspondence between it and the Boturini Codex in the dates of the Aztec stay at places in their migration. On the whole, therefore, I think we may accept the record in the *Anales de Cuauhtitlan* as an unbroken and true record back to A.D. 726 and beyond that to 687, the date of settlement at Cuauhtitlan.

[Editor's Note: Because of war conditions, Mr. Long, a resident of Ireland, has not seen Vaillant's more recent discussion of Aztec chronology in his *Aztecs of Mexico* (1941). In that book the start of the Tenochca records is corrected from 1163 to 1168. Vaillant now assigns only three year-bindings to the period before the foundation of Tenochtitlan, namely, 1195, 1247, and 1299, thereby bringing the number into agreement with his correlation of 1 Tecpatl with 1168 but disagreeing with the sources that assign four to that historical span.]

Representations of Tezcatlipoca at Chichen Itza

J. Eric S. Thompson

Jean Charlot in *The Temple of the Warriors, Chichen Itza, Yucatan* notes under the heading "Mutilation" (Morris, Charlot, and Morris 1931:275) that there are five carvings of individuals who have one leg amputated above the knee. These are sculptured on columns, two of which (nos. 1 and 15) are in the Temple of the Warriors, two (nos. 31 and 49) in the adjacent Northwest Colonnade, and one (no. 3) in the Temple of the Chac Mool.

After calling attention to the relative frequency in the art of Central Mexico of figures with one leg severed at the ankle, not above the knee, but with similar flowing designs issuing from the stumps, he reaches the tentative conclusion that "such mutilations might perhaps have a historical import; they certainly have some theogonic significance." He also quotes remarks by Mrs. Zelia Nuttall on the one-footed warriors of the stone of Tizoc and those on the Peñon rocks to the effect that either a one-footed conqueror had adopted the insignia of Tezcatlipoca or that it was customary in representing living personifications of the gods to emphasize one of his symbols, the lame foot, even if the mutilation did not exist in reality.

In Central Mexico Tezcatlipoca is usually shown with one foot cut off at the ankle or with both feet intact, and I know of no representation of that god which shows the leg severed well above the knee. Nevertheless, two other highly important attributes of Tezcatlipoca can be recognized in most of these five carvings at Chichen Itza.

The element at the end of the stump, identified by Charlot in one case as a double ring (a possible

example of Maya surgery) and in another as an inverted cup, is without any doubt the smoking mirror which so frequently replaces the missing foot, and which in fact is the glyph for the god's name, for Tezcatlipoca means "smoking mirror." The design attached to the mirror, which Charlot calls a flowing scroll, represents the two tongues of flame or smoke which are almost invariably depicted as billowing from the smoking mirror. In one case there emerges from the stump a symbol which Charlot identifies as a conventionalized flower, and which he suggests may be an example of Maya rebus writing (*nicaan*, a thing which is no more, referring to the missing limb, and *nican*, a thing which is in flower). However, a flower is a recognized symbol for blood in Mexico, and is sometimes used to connect the stump with the mirror, to indicate the blood spurting from the wound (Codex Fejervary-Mayer, p. 3; Codex Laud, p. 1).

Similarly the peculiar flowing scrolls on the headdress, to which Charlot also calls attention and which are visible on three of the five figures, are in fact the same tongues of flame or smoke emerging from the mirror in the headdress. In four cases the mirror is recognizable, although in the fifth case the carving is too weathered to permit of its identification. In Central Mexico the smoking mirror is more often set in the headdress than on the stump, although in many cases, as at Chichen Itza, it is found in both places. None of the five figures shows the horizontal striping of the face which usually characterizes Tezcatlipoca. However, there are many representations

of this god in Central Mexico, particularly in certain specialized manifestations, which entirely lack this feature. The paint has gone from two of the faces, it is yellow on the other three. Yellow is the color of Tezcatlipoca in Central Mexico, although this is often obscured by black or red over painting. He is shown with all yellow coloring in Codex Fejervary-Mayer (p. 42).

The body paint of two of the figures has gone. The example from the Temple of the Chac Mool has a yellow body. Column 1, Temple of the Warriors, has the body painted pink with concentric circles painted yellow and brown, and Column 49 of the Northwest Colonnade shows a body striped vertically red and white. Mexican codices seldom show circular markings on the bodies of gods, but of the five examples of this kind of painting in Codex Borgia two represent Tezcatlipoca (pp. 17, 21). One of the few examples of this type of painting in Codex Fejervary-Mayer represents Tezcatlipoca in the guise of Ixquimilli (p. 33).

Vertical red and white body striping is particularly associated in Mexican codices with Mixcouatl and Tlauizcalpantecutli, never, so far as I know, directly with Tezcatlipoca. Yet in many respects Tezcatlipoca is closely allied to Mixcouatl, and it is possible that at times he may have been endowed with this

vertical striping. Codex Telleriano-Remensis shows as patron of the month Panquetzalitzli a deity who should be Huitzilopochtli, but who has several of the attributes, including the smoking mirror, of Tezcatlipoca. The body of this Huitzilopochtli-Tezcatlipoca hybrid has vertical red and white striping.

Ixquimilli, the blindfold god, who appears to have been merely a manifestation of the all-powerful Tezcatlipoca, is probably shown in Codex Dresden (p. 50).

There can, however, be not the slightest doubt that these five figures at Chichen Itza depict warriors who wore the insignia of Tezcatlipoca, just as Tizoc himself is thus garbed on the stone that bears his name. In the legend of the rise and fall of Tula the lives and adventures of Tezcatlipoca and Quetzalcoatl are so closely interwoven that one would expect to find the cults of the two deities flourishing side by side wherever the impact of Tula influences was strong. That the Quetzalcoatl cult was dominant at Chichen Itza during the Itza period is too well known to need stressing, and the strength of influences from Tula during that period of Chichen Itza history is now generally recognized. These carvings of warriors wearing Tezcatlipoca's insignia are not therefore surprising since they occur in buildings of the same Itza period.

A Theory of Maya tš-Sounds

A. M. Halpern

The account of the interrelationships and historical development of the Maya languages presented here differs in many respects from previous accounts. Though the conclusions are not unconditionally guaranteed, the author feels that he has achieved at least some methodological advances. For this reason, and because his work on Maya has been interrupted, he presents this interim report now.

Data. Materials for this study were taken from the following sources: from the unpublished notes of the late M. J. Andrade, data on Cakchiquel (several dialects), Tzutuhil (several dialects), Quiché, Quekchi, Pokomam, Mam (dialect of San Juan Ostuncalco), Aguacatec, Jacalteco (of Santa Eulalia and Santa Cruz Barillas), Bachahom (a Tzentel dialect), Palencano (a Chontal dialect?), Chuj, and Huastec (dialect of Vera Cruz); from Stoll's comparative lists, data on Yucatec, Uspantec, Chañabal, Tzotzil, Tzentel, Chontal, and Chol; From Wisdom's *Chorti Indians* (1940), a few Chorti forms.

Andrade's orthography is followed here as closely as possible. Forms from other sources have been retranscribed to conform with it. Stoll's Ixil forms have not been used. Ixil appears to be a dialect of what will here be called the Mamoid group, and is probably most closely related to Jacalteco. But Stoll does not distinguish, as Andrade does, between alveolo-palatal tš and retroflex ts, which minimizes the value of Stoll's material on all the languages of the Mamoid group.

Originally some 300 forms were abstracted from Andrade's notes on each language. By elimination of

those which had no bearing on the sound-correspondences which turned out to be interesting, and those which, by reason of gaps in the data or lack of cognate forms in a number of languages, were of little use for comparative purposes, the list was reduced to 56. The final list is appended hereto as documentation.

Methods. The methods used are the conventional methods of Comparative Linguistics. By comparison of related forms in different languages, series of phonetic correspondences are isolated. From these sound-correspondence series is reconstructed the phonemic structure of the primitive (parent) language, then the lexical forms of the primitive language. The procedure is then reversed, as it were, and the developmental processes, the phonetic changes by which the forms of the parent language developed into the forms actually found at present in the daughter languages, are reconstructed.

Reconstructions of linguistic history are typically 'family-tree' hypotheses or 'wave' hypotheses. The former type postulates successive splittings of parent speech-communities into daughter speech-communities, in which linguistic differentiation takes place by internal changes which are not significantly affected by contact between the daughter speech-communities. By means of such an hypothesis, languages can be classified genetically. The latter type of hypothesis postulates that from time to time innovations in speech habits occur which spread in a wave over a certain area, which does not necessarily correspond to the area inhabited by the

speakers of languages of a specified order of genetic relationship. The resulting distribution of linguistic similarities and differences does not necessarily correspond to that arrived at by processes of internal change.

I feel that a 'family-tree' hypothesis is insufficient to account for the sound-correspondences observed in the Maya languages and that a supplementary 'wave' hypothesis must be adopted. A third type of reconstructive hypothesis, that of dialect mixture, which takes account of the history of individual words rather than of processes affecting all the occurrences of a particular phoneme in a given language, is not, used here. I am convinced, however, that when the history of the Maya languages is finally written, it will contain a long chapter on dialect mixture.

Conclusions. My conclusions are based on reconstruction of the primitive phonemes corresponding to those sound-correspondence series of which the sound tš or tš' in some one or more of the languages is a member. The basic hypothesis is: (a) Primitive Maya had plain and palatalized consonants, both unglottalized and glottalized, in the t, ts, and k, positions, i.e., the phonemes t, t', ty, t'y, ts, ts', tsy, ts'y, k, k', ky, and k'y; (b) Primitive Maya had six vowels: two front (e, i), two back (o, u), and two central (a, a); (c) the sound shifts that the consonantal phonemes underwent depended in part on the character of the vowel phonemes by which they were followed in the Primitive Maya forms (not in the present-day forms).

Following is a tabular presentation of the sound-correspondence series and reconstructed primitive phonemes.

<i>Yuc</i>	<i>Qui</i>	<i>M-A</i>	<i>Jac</i>	<i>Chan</i>	<i>Chuj</i>	<i>Tze</i>	<i>Hua</i>	<i>PM</i>	
k	k	k	k	tš	tš	tš	ts	*k	
k	k, ky	ky	k	tš	tš	tš	ts	*ky	-a, -o, -u
tš	k, ky	ky	k	tš	tš	tš	ts	*ky	—
k	ky, k	tš	tš	tš	tš	tš	ts	*ky	-e, -i
t	tš	ts	t, ts	t	t	t, ty	t	*ts	-a, -o, -u, (-)
tš	tš	ts	t	t	t	t	t	*ts	-e, -i
ts'	ts'	ts'	ts'	?	?	ts'	t'	*ts	
?	ts	ts	ts	?	?	?	?	*ts'	
tš'	tš'	ts'	ts'	tš'	tš'	tš'	?	*ts'y	-a, -o, -u
?	tš	ts'	ts'	ts'	ts'	ts'	?	*ts'y	(-e), -i
?	t	tš	tš	?	tš	?	?	*ty	

*k and *ky show the same correspondences as *k and *ky.

The headings in the above table are: Yuc, Yucatec; Qui, Quichoid group (see below); M-A, Mam and Aguacatec; Jac, Jacaltepec; Chan, Chañabal; Chuj, Chuj; Tze, Tzentel group (Tzentel; Bachahom, Tzotzil, Chontal, Palencano, Chol, and Chorti); Hua, Huastec; PM, Primitive Maya.

On the basis of these sound-correspondences (which should be checked with the appendix), I propose a classification of the Maya languages into three main groups:

- I. Huastec. Although the Huastec sound-shifts seem to parallel the Tzentel-group shifts, there are certain special developments in Huastec which make it advisable to keep Huastec separated from the others until more is known about all of them.
- II. Yucatan-Guatemala group, with three subdivisions.
 - A. Yucatec.
 - B. Quichoid (Cakchiquel, Tzutuhil, Quiche, Uspantec, Quekchi, and Pokomam. Of these Quekchi-Pokomam appears to be a further specialized subdivision.)
 - C. Mamoid (Mam, Aguacatec, and Jacaltepec; the last of which is the most specialized).
- III. Chiapas group (perhaps subdivided into Tzentel-Tzotzil, Chontal-Chol-Chorti, Chanabal, and Chuj).

In reconstructing the history of these developments, I postulate first a split of the Primitive Maya speech-community into three speech-communities which can be designated as Proto-Huastec, Proto-Chiapas, and Proto-Yucatan-Guatemala.

Proto-Huastec presumably developed in isolation into modern Huastec.

The development of the Chiapas languages can be characterized briefly as involving a general forward movement of points of articulation, so that *k and *ky became tš, while *ts became t. The development of *tsy and *ty is obscure. It would seem that glottalization had some effect in counteracting the forward movement of the points of articulation, since *ts' becomes ts', *ts'y before front vowels becomes ts' and before central and back vowels becomes tš'. Incidentally, the Chiapas languages also tend to shift primitive *q and *q forward to k and k, while the Yucatan-Guatemala languages maintain the distinction between k and q as well as the primitive points of articulation.

Proto-Yucatan-Guatemala subdivided into three groups.

In Yucatec; primitive *k and *ky became k, except that *ky before * became tš. *ts before front vowels became tš, before central and back vowels became t.

The development of *tsy and *ty is unknown. Glottalized *ts' and *ts'y became ts' and tš' respectively.

In the Quichoid group the distinction between *k and *ky tends to be maintained, except before front vowels and in final position. The distinction between *ts and *tay is maintained, *ts becoming tš and *tsy becoming ts. The distinction between *ts' and *ts'y before front vowels is lost, both becoming ts'; the distinction before other vowels is maintained, but the development is the reverse of the development of *ts and *tsy. *ty is depalatalized to t.

In the Mamoid group, primitive *k remains k throughout. *ky before central and back vowels remains distinct from *k in Mam and Aguacatec, but merges with *k in Jacaltec; and primitive *ky before front vowels and in final position becomes tš throughout. Primitive *ty also becomes tš. Perhaps the most striking feature of the Mamoid development is the consistency with which the distinction between *ts, *ts' and *tsy, *ts'y is maintained; *ts and *ts' remain ts and ts', while *tsy and *ts'y become retroflex ts and ts', except that in Jacaltec it has a special development, possibly as a wave influence from the Chiapas languages.

In summary, the languages of Chiapas are separated from the languages of Yucatan-Guatemala by the general forward shifting of points of articulation in the Chiapas group. The Yucatan-Guatemala languages are further subdivided according to their divergent handling of (1) the distinction between primitive *k and *ky and their glottalized varieties, (2) the distinction between primitive *ts and *tsy and their glottalized varieties, and (3) the distinction between primitive *ty and the others.

The appendix contains further some comparative material documenting the history of four other Primitive Maya phonemes: *x, *xy, *nw, and *y. The developments of *x and *xy require no comment, since they can be integrated with the theory outlined above with no difficulty. But the sound-series deriving from *nw and *y seem to contradict the historical reconstruction presented above.

Yuc	Qui	M	A	Jac	Chan	Chuj	Tze	Hua	PM
n	x	x	x	n	n	n, n	n, ny	w-, -h	*nw
y-	r-	tš-	ts-	y-	y-	y-	y-	y-	*y-
-y	-r	-?	-y	-y	-y	-y	-y	-?	*-y

It must be these series, in which the Quichoid and Mamoid languages are aberrant, which have been largely responsible for the accepted classification of the Maya languages into a Maya-Tzental and a Quiché-Pokom-Mam dual division. Yet these

shifts can easily be reconciled with my proposed classification by a wave hypothesis. One has only to assume that at some time after the various languages attained their present distribution, or something approximating it, two innovations occurred in the Quichoid area, perhaps first in the Cakchiquel-Tzutuhil area. The first, the shift of *nw to x, spread to all the Quichoid languages and to Mam and Aguacatec, but not to Jacaltec. At the same time, x derived from *nw and x derived from *x coalesce in these languages. The other innovation, the shift of *y to r, did not fare so well. I suspect the Cakchiquel-Tzutuhil area as the origin point because it is in this area that primitive *xy has become y. If the developments of *xy to y and *y to r (retroflex r, incidentally) took place at the same time, we would have a pretty case of compensatory or, as some say, therapeutic change, although the example of *nw becoming x in the same group is enough to remind us that not all sound shifts are of this kind. The r-innovation ran into difficulties in Mam and Aguacatec for reasons one can only guess at. It did not, apparently, affect final -y in Aguacatec and in initial position it affects Mam and Aguacatec differently.

Any guesses as to the chronology of all this would at present be thoroughly out of order.

APPENDIX: COMPARATIVE LIST OF MAYA FORMS

Absence of a citation for any language indicates either lack of data or that no cognate form has been found in that language.

PRIMITIVE MAYA *K, *K

1. PM *kap, bee, honey > Yucatec, kab; Cakchiquel, kap; Tzutuhil, kap; Quiché, kab; Uspantec, kab; Kekchi, kab; Pokomam, ka?m; Mam, kap; Aguacatec, kap; Jacaltec, kab; Chañabal, tšab; Bachahom, tša?w; Chorti, tšap; Palencano, tša?; Chonta, kab.
2. PM *ka?, metate, grindstone > Cakchiquel, ka?; Tzutuhil, ka?; Quiché, W; Kekchi, ka?; Pokomam, ka?; Mam, ka (ka?); Aguacatec, ka?; Jacaltec, ka?; Bachahom, tša?; Chuj, tša?; Huastec, tsa?.
3. PM *kay, fish > Yucatec, kay; Cakchiquel, ker, kar; Quiché, ker; Uspantec, kar; Kekchi, kar; Pokomam, kar; Aguacatec, kay; Jacaltec, tsay (!); Chañabal, tšay; Tzotzil, tšoy; Tzeltal, tšay; Bachahom, tšay; Cholti, tšuy (= tšey?); Palencano, tšey; Chontal, tsek (!); Chuj, tšay.
4. PM *ka?, horn > Cakchiquel, ka?; Tzutuhil, ka?; Quiché, ka?; Pokomam, ka?; Mam, uka; Jacaltec, ka?; Chuj, tš'a*k.
5. PM *kox, leon, tigre > Cakchiquel, kox; Tzutuhil, kox; Quiché, kox; Kekchi, kaq-kox; Pokomam,

- kox; Jacaltepec, kox; Bachahom, tšox; Chuj, tšox; Huastec, tsoh.
6. PM *ku?k, squirrel > Yucatec, kuuk; Cakchiquel, kuk; Tzutuhil, kuk; Quiché, kuk; Uspantec, kuk; Kekchi, kuk; Pokomam, kuk; Mam, kuk, ku?k; Aguacatec, ku?k; Jacaltepec, kuk; Chañabal, tšu; Tzotzil, tšutš; Tzeltal, tsuts; Chol, tšutš; Palencano, tšutš; Chontal, tšutš.
 7. PM *ke pe, two > Yucatec, ka; Cakchiquel, ka?i?, kayi?; Tzutuhil, ka?i?; Quiché, kyeb; Uspantec, kib; Kekchi, ka?ib; Pokomam, kyeb; Mam, kabe, ka?be; Aguacatec, hob; Jacaltepec, kab; Chañabal, tšabe; Tzotzil, tšim; Tzeltal, tšeb; Bachahom, tše?b; Chol, tša; Chorti, tša?; Palencano, tša be; Chontal, tšape; Chuj, tšab; Huastec, tsab.
 8. PM *sikin, ear > Yucatec šikin; Cakchiquel, šikin; Tzutuhil, šikin, škin; Quiché, škin; Uspantec, šikin; Kekchi, šik; Pokomam, šikin; Mam, škin, tsikin; Aguacatec, štšin; Jacaltepec, tšikin; Chañabal, tšikin; Tzotzil, tšikin; Tzeltal, tšikin; Bachahom, tšikin; Chol tšikin; Palencano, tšikin; Chontal, tšikin; Chuj, tšikin; Huastec, šutsun.
- Note: This series and the following two appear to be aberrant.
9. PM *ts'ikin, bird > Yucatec, tš'tš; Cakchiquel, ts'ikin; Tzutuhil, ts'ikin; Uspantec, ts'ikon; Kekchi, ts'ik; Pokomam, ts'ikin; Jacaltepec, ts'ikin; Chorti, tšik (!); Huastec, ts'itsin.
 10. PM *ki?š, thorn > Yucatec kiiš; Cakchiquel, kiš; Tzutuhil, kiš; Quiché, kiš; Uspantec, kiš; Kekchi, kiš; Pokomam, kiš; Mam, tš'i?š (!); Aguacatec, tš'i?š (!); Jacaltepec, kiš; Chañabal, kiiš; Tzotzil, tšiiš; Tzeltal, tš'iš; Chontal, tš'iš; Chuj, kiiš; Huastec, kiø.
 11. PM *ts'yehk, knee > Cakchiquel, tš'ek; Tzutuhil, tš'ek; Quiché, tš'ek; Pokomam, tš'ahk; Mam, tš'ek (tš'ek?); Aguacatec, tš'šek (tš'ek?).
 12. PM *sanik, ant > Yucatec, sinik; Cakchiquel, san-ik; Tzutuhil, sanik; Quiché, snik, sinik; Uspantec, senik; Kekchi, sank; Pokomam, senek; Mam, snik; Aguacatec, snik; Jacaltepec, sanik; Chañabal, šanitš; Tzotzil, šinitš, Tzeltal, šanitš; Bachahom, šanitš; Chol, šinitš; Palencano, šinik (!); Chontal, šinitš; Chuj, šanitš; Huastec, øanits.
- See also no. 21.

PRIMITIVE MAYA *KY, *KY.

13. PM *ikyaq, guayaba > Cakchiquel, ikyaq, ikaq, kyaq; Tzutuhil, ikyaq, kyaq; Quiché, kyaq; Pokomam, kaq; Aguacatec, kyaq.
14. PM *kyanw pe, four > Yucatec, kan; Cakchiquel, kaxe?, kaxi? Kyaxi?; Tzutuhil, kaxi?, kyexi?; Quiché, kixeb; Uspantec, kexeb; Kekchi, ka'ib; Pokomam, kyexab; Mam, kyaxe?; Aguacatec, kyah; Jacaltepec, kaneb; Chañabal, tšane; Tzotzil, tšanim; Tzeltal, tšaneb; Bachahom, tšane?b; Chol, tšum; Palencano, tšun be; Chontal, tšom pe; Chuj, tšane?; Huastec, tse?.
15. FM *kya?nw, sky > Yucatec, kaan; Cakchiquel, kax; Tzutuhil, kax, tšikax; Quiché, kax; Uspantec, kax; Mam, kya?x; Aguacatec, ?e-.kya?h; Jacaltepec, kan; Chañabal, kul-tšan; Bachahom, tš'ul-tšan; Chol, pan-tšan; Palencano, pan-tšan.
16. PM #kyeq, red > Yucatec, tšaq; Cakchiquel, kyaq, kaq; Tzutuhil, kyaq, kaq; Quiché, kyaq; Uspantec, kyaq, kyeq; Kekchi, kaq; Pokomam, kaq; Mam, kyeq; Aguacatec, kyaq; Jacaltepec, kaq; Chañabal, tšak, Tzotzil, tsox, Tzeltal, tšatšak, tsax; Bachahom, tsax; Chol, tšatšak; Palencano, tšek; Chontal, tšek; Huastec, tsak-ni.
17. PM *kyaq, flea (pulga) > Yucatec tš'ik; Cakchiquel, kyaq, kaq; Tzutuhil, kyaq, kaq; Quiché, kyeq; Uspantec, kyeq; Kekchi, kaq; Pokomam, kaq; Mam kyaq; Aguacatec, kyaq (!); Jacaltepec, qaq (!); Chañabal, kak (!), Tzotzil, tš'ak; Chol, tš'ek; Chontal, tš'ek; Huastec, ts'ak.
18. PM *iškyeq, fingernail (uña) > Yucatec, itš'aq; Cakchiquel, iškyaq, i.9kaA; Tzutuhil, iškyaq; Quiché, iškyaq; Uspantec, iškeq; Mam, škyaq; Jacaltepec, iskaq, isqaq; Tzotzil, itšak; Tzeltal, etšak; Chol, extšak; Chontal, itš'ok; Huastec, its'ik.
19. PM *ikyex, axe > Cakchiquel, ikyax, ikax; Tzutuhil, ikyax, ikax; Quiché, ikyax, ikyex; Pokomam, ikax, ikyax; Jacaltepec, etšex; Bachahom, etšex.
20. PM *kyex, deer (> horse) > Yucatec, kex; Cakchiquel, kyex; Tzutuhil, kyex; Quiché, kyex; Uspantec, kyex; Kekchi, kex; Pokomam, kyex; Mam, tšex; Aguacatec, tšeh; Jacaltepec, tšex; Chañabal, tšex; Tzotzil, tšix; Tzeltal, tšix; Bachahom, tšix; Chol, tšixmay; Chorti, tšix; Palencano, tših-may; Chontal, tši-ma, Chuj tšex.
21. PM *kyik, blood > Yucatec, kik; Cakchiquel, kik; Tzutuhil, kik, kikel; Quiché, kik; Uspantec, kik; Kekchi, kik; Pokomam, kyeq; Mam tšik; Aguacatec, štš't'el (<šitš?); Jacaltepec, tšik; Chañabal, tšik (!), Tzotzil, tš'itš; Tzeltal, tš'iitš; Bachahom, tš'itš; Chol, tš'itš; Chorti, tš'itš; Chontal, tš'itš; Chuj, tšik; Huastec, šits'.
22. PM *kyineq, beans > Cakchiquel, kinaq; Tzutuhil, kinaq; Quiché, knaq; Uspantec, kinaq; Kekchi, ke-nq; Pokomam, kinaq; Mam, tšinaq; Chañabal, tšenek; Tzotzil, tšenek; Tzeltal, tšenek; Bachahom, tšenek; Huastec, tsanak^{wa}.
23. PM *kyi'?, sweet > Cakchiquel, ki?; Tzutuhil, ki?; Quiché, ki?; Uspantec, ki; Kekchi, kip; Pokomam, ke?, kye?; Mam, tši?; Aguacatec, tši?; Jacaltepec, tši; Chañabal, tši; Tzotzil, tši; Bachahom, tši?; Chuj, tši?; Huastec, tšik, tsik.
24. PM *kyim, straw, thatch (pajon de techo) > Cakchiquel, kim, kin; Tzutuhil, kim; Quiché, kim; Kekchi, kim; Pokomam, kem, kim; Mam, tš'im; Aguacatec, tš'im; Jacaltepec, tš'm.
25. PM *iky, chile > Cakchiquel, ik; Tzutuhil, ik, Quiché, ik; Kekchi, ik; Pokomam, ik; Mam, itš; Aguacatec, itš; Jacaltepec, itš; Chorti, itš; Chuj, itš; Huastec, its.

26. PM *iky, moon, month > Cakchiquel, ik; Tzutuhil, ik; Quiche, ik; Uspantec, ik; (note Ixil, itš'); Huastec, its'.
27. PM *siky, tobacco > Cakchiquel, sik; Tzutuhil, sik; Quiché, sik; Uspantec, sik; Pokomam, sik; Mam, sitš'; Aguacatec, sitš'; Jacaltec, sik (!); Chañabal, sik (!). (Note the aberrant Jacaltec and Chañabal, forms and cf. the next series.)
28. PM *kyiwēš (?), anona > Cakchiquel, keweš; Tzutuhil, keweš, kewel, kawaš; Quiché, kweš; Mam, tš'iwēš; Jacalte, keweš.

PRIMITIVE MAYA *TS, *TS'

29. PM *tsa?nw, ashes > Yucatec, taan; Cakchiquel, tšax; Tzutuhil, tšax; Quiché, tšax; Uspantec, tšax; Kekchi, tša; Pokomam, tšax; Mam, tsax, tsa?x; Aguacatec, tsa?h; Jacaltec, tan; Chañabal, tan; Tzotzil, tanil k'ok; Tzeltal, tan; Chol, tyuni kaxk; Chorti, tan; Chontal, tsi-tan; Chuj, ta?an, taan; Huastec, holtai(?).
30. PM *tsax, pine (ocote) > Yucatec, tax; Cakchiquel, tšax; Tzutuhil, tšax; Quiché, tšex, Uspantec, tšax; Kekchi, tša'x; Pokomam, tšah (tšax); Mam, tsax; Aguacatec, tsah; Jacaltec, tax; Chañabal, tax; Tzotzil, tax-te; Chol, tyax-tye; Chontal, tax-te.
31. PM *tšaqinw, dry > Cakchiquel, tšaqix; Tzutuhil, tšaqix; Kekchi, tšaqi; Pokomam, tšeqix; Mam, tsqix; Bachahom, takin; Palencano, tikiñ'iš; Chuj, takin.
32. PM *tsuhp, saliva > Cakchiquel, tšup; Tzutuhil, tšup; Quiché, tšubax; Kekchi, tšub; Pokomam, tšuhm; Mam, tsub; Jacaltec, tsub; Chuj, tsub.
33. PM *tse'? tree, wood > Yucatec, tše; Cakchiquel, tše; Tzutuhil, tše; Quiché, tše; Uspantec, tše; Kekchi, tše; Pokomam, tše'; Mam, tse, tae; Aguacatec, tse; Jacaltec tee; Chañabal, te, Tzotzil, te; Tzeltal, te; Bachahom, te; Chol, tye, Chorti, te; Palencano, t'e; Chontal, te; Chuj, te; Huastec, te?.
34. PM *tsi, mouth > Yucatec, tši; Cakchiquel, tši; Tzutuhil, tši; Quiché, tši; Uspantec, tši; Pokomam, tši; Mam, tši, tši; Aguacatec, tši; Jacaltec, ti; Chañabal, ti; Tzotzil, ti; Tzeltal, ti; Chol, ti; Chorti, ti; Chontal, ti; Chuj, ti?.
35. PM *ts'in, yucca > Cakchiquel, tš'in; Tzutuhil, ts'in; Quiché, ts'in; Kekchi, ts' in; Pokomam, ts' in; Mam, ts' in; Aguacatec, tš'in; Jacaltec, ts'in; Palencano, ts' ihr^{vi}; Huastec, t'in-tše?
36. PM *so'ts', bat (murcielago) > Yucatec, sots'; Cakchiquel, sots'; Tzutuhil, sots'; Quiché, sots'; Uspantec, sots'; Kekchi, sota'; Pokomam, sots'; Mam, sots'; Aguacatec, so'ts'; Jacaltec, sots'; Tzotzil, sots'; Tzeltal, ts'ots'; Bachahom, so'ts'; Chol, ts'uts'; Palencano, suts'; Chontal, suts'; Chuj, sots'; Huastec, θut'.

37. PM *otsots(?), house > Yucatec, ototš; Tzutuhil, wotšlotš; Uspantec, itšotš; Kekchi, otšotš; Jacaltec, atut; Tzeltal, otot; Chol, otyot, Chorti, otot; Palencano, ot'ot; Chontal, otot; Huastec, ata(?).

PRIMITIVE MAYA *TSY, *TS'Y

38. PM *tsya?m, nose > Cakchiquel, tsam, tsan; Tzutuhil, tsam, tsa?m; Quiché, tsam; Uspantec, ts'am(!); Pokomam, sah?m; Mam tša?n; Jacaltec, tšam; Huastec, θam.
39. PM *ts'yaht, bed > Cakchiquel, tš'at; Tzutuhil, tš'at, tš'aht, Quiché, tš'at; Kekchi, tš'a't; Pokomam, tš'ahte; Jacaltec, tš'at (tg'at?); Chuj, tš'at.
40. PM *ts'o?xy, rat > Yucatec tš'oo; Cakchiquel, tš'oy; Tzutuhil, tš'oy; Quiché, tš'o; Uspantec, tš'o; Kekchi, tš'o; Pokomam, tš'o; Jacaltec, tš'ow; Chañabal, tšitam tšo(?); Tzotzil, tš'oo; Tzeltal, tš'o; Bachahom, tš'oh, Chuj, tš'o'ow.
41. PM *tayun (tsyum?), lime (cal) > Cakchiquel, tšum; Tzutuhil, tšum, tšun; Quiché, tšun; Kekchi, tšun; Pokomam, tšun; Mam, tšun; Aguacatec, tšun.
42. PM *ts'-yi?, dog > Cakchiquel, ts'i?, ts'e'; Tzutuhil, ts'i?, ts'e'; Quiché, ts'i?, ts'e'; Uspantec, ts'i; Kekchi, ts'i; Pokomam, ts'e'; Mam, ts'i-an; Aguacatec, ts'i; Jacaltec, ts'i; Chañabal, ts'i, Tzotzil, ts'i; Tzeltal, ts'i; Bachahom, ts'i?, Chol, ts'i; Palencano, ts'i; Chuj, ts'i?.
43. PM *šots'y, owl (lechuza) > Cakchiquel, šotš'; Tzutuhil, šotš'; Quiché, šotš'; Aguacatec, šitš'; Jacaltec, šotš'; Huastec, ts'oš(?).
See also no: 11.

PRIMITIVE MAYA *TY

44. PM *tyunw, sweatbath (tamascal) > Cakchiquel, tux; Tzutuhil, tux; Kekchi, tu'; Mam, tšux; Aguacatec, tšuh.
45. PM *tyep (?), crawfish (cangrejo) > Cakchiquel, tap, tep; Tzutuhil, tap, tep; Quiché, top; Kekchi, tap; Pokomam, tap (top, tep); Mam, tšop.
46. PM *tye?w, cold > Cakchiquel, tew; Tzutuhil, tew, tep; Quiché, kaš tew; Uspantec, tew; Mam, tše?w; Aguacatec, tšew.
47. PM *tyipex, meat > Cakchiquel, ti?ix, ti?ex; Tzutuhil, ti?ix; Quiché, ti?ix, ti?ex; Kekchi, tib; Pokomam, tiwek; Mam tšipexil, tšibaxal; Aguacatec, tšiba, tšiba?; Jacaltec tšibex; Chuj, tšibex.

PRIMITIVE MAYA *X

48. PM *xol, xolom, head > Yucatec, xool; Cakchiquel, xolom, xolon; Quiché, xulom; Kekchi, xolom; Pokomam, xalom; Jacaltec, xolom; Chañabal, olom; Tzotzil, xol; Tzeltal, xol;

Bachahom, xol; Chol, xol; Chorti, or; Palencano, hol; Chuj, holom.

49. PM *xun, one > Yucatec, xun; Cakchiquel, xun; Tzutuhil, xun; Quiché, xun; Uspantec, xun; Kekchi, xun; Pokomam, xanax (!); Mam, xun; Aguacatec, hun; Jacaltepec, xun; Chañabal, hune; Tzotzil, xun; Tzeltal, xun; Bachahom, xun; Chol, xum; Palencano, hun be; Chontal, xumpe, Chuj, hun; Huastec, hun.

See also nos. 5, 19, 20, 30, and 47.

PRIMITIVE MAYA *XY

50. PM *xya?, water > Yucatec, xaa; Cakchiquel, ya?; Tzutuhil, ya?; Quiché, xa?; Uspantec, xa; Kekchi, xa?; Pokomam, ha?; Mam a?; Aguacatec, a?; Jacaltepec, a?ex; Chañabal, xa; Tzotzil, xoo; Tzeltal, xaa; Bachahom, ha?; Chol, xaa; Chorti, ha?, Palencano, ha?; Chontal, xaa; Chuj, a?; Huastec, ha?.
51. PM *nwaxy, house > Yucatec, na; Cakchiquel, xay; Tzutuhil, xay, xa?y; Quiché, xa; Uspantec, xa; Mam, xa; Chañabal, naits, Tzotzil, na, Tzeltal, na; Bachahom, na.
52. PNT *nwexy, tail (rabo, cola) > Yucatec, ne; Cakchiquel, xey; Tzutuhil, xey; Quiché, xe?; Uspantec, xe; Kekchi, ye; Pokomam, xe; Mam xe; Aguacatec, he?; Jacaltepec, ne; Tzotzil, ne, Tzeltal, ne; Bachahom, ne; Chol, ne; Palencano, n'e; Chontal, nyex; Chuj, ne; Huastec, weu.

See also no.40.

PRIMITIVE MAYA *NW

53. PM *nwal, corn (mazorca) > Yucatec, nal; Cakchiquel, xal, xel; Tzutuhil, xal, xa?l; Quiché, xal; Uspantec, xal; Kekchi, ha'l; Pokomam, xal; Mam, xal; Aguacatec, hal; Jacaltepec, nal; Chañabal, xal; Chol, xal; Chontal, nal; Chuj, nal; Huastec, wai?.
54. PM *šenwehp, sandal > Yucatec, šanab; Cakchiquel, šaxap; Tzutuhil, šaxap, šaxahp; Uspantec, šaxab; Kekchi, ša'b; Pokomam, šaxa?m; Mam šxab; Aguacatec, šahap; Jacaltepec, šanab; Chañabal, šanab, Tzotzil, šonom; Tzeltal, šanab; Chol, šeno; Palencano, šen'e?; Chontal, šeneb; Chuj šanab.
55. PM *ornw, aguacate > Yucatec, on; Cakchiquel, ox; Tzutuhil, ox; Quiché, ox; Uspantec, ox' Kekchi, o; Pokomam, ox; Mam, ox; Aguacatec, oh; Jacaltepec, on; Chañabal, on; Tzotzil, un; Tzeltal, on; Chol, un; Chontal, un; Huastec, uh.
- See also nos. 14, 15, 20, 31, 44, 51, and 52.

PRIMITIVE MAYA *Y

56. PM *ya'ʔš, green > Yucatec, yaš; Cakchiquel, reš, reš; Tzutuhil, reš, reš; Quiché, raš; Uspantec, raš; Kekchi, raš; Pokomam, raš; Mam, tša?š; Aguacatec, tša?š; Jacaltepec, yaš; Chañabal, yaš; Tzotzil, yoš; Tzeltal, yaš, yeš; Bachahom,, yaš; Chol, yaš, yeš; Chorti, yaš; Palencano, yeš; Chontal,tal, yuš; Chuj, ya?aš; Huastec, yaš-ni?.
- See also no. 3.

A Reconnaissance on Isla de Sacrificios, Veracruz, Mexico

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INTRODUCTION

The oval-shaped island known as Isla de Sacrificios lies 5.5 km southeast of the port of Veracruz and has a north-south length of 368 m and a breadth of 192 m. Its greatest elevation is 4 m. The scant vegetation is confined to a few palms, some tallish trees called *chacas*, some *flor de Mayo* and wild plum trees, large quantities of cane (*carrizal*) and a creeping ground plant generally called *frijolillo*. Our excavations proved what we had at first surmised, namely, that the island had been formed by artificially extending and raising the elevation of a sandbank, for much of it is formed of volcanic rocks, presumably brought from the mainland.

Sr. Miguel Angel Fernandez and I visited the island on hearing of certain archaeological discoveries made at the north end of the island by the Department of Forestry, which was engaged in constructing a fish hatchery. We had been sent as members of the Mexican Scientific Expedition by the Departamento de Monumentos (now integrated in the Instituto Nacional de Antropología e Historia). Sr. Fernandez has kindly prepared the diagram and sections.

ARCHAEOLOGY

The largest collection of material from Isla de Sacrificios is the Nepean collection in the British Museum. A number of the pottery pieces have been illustrated by Joyce (1914) and others. Mrs. Zelia Nuttall and Batres (1910) have also made minor excavations on

the island. Strebel (1885–1889) discusses the cultural setting of the finds there.

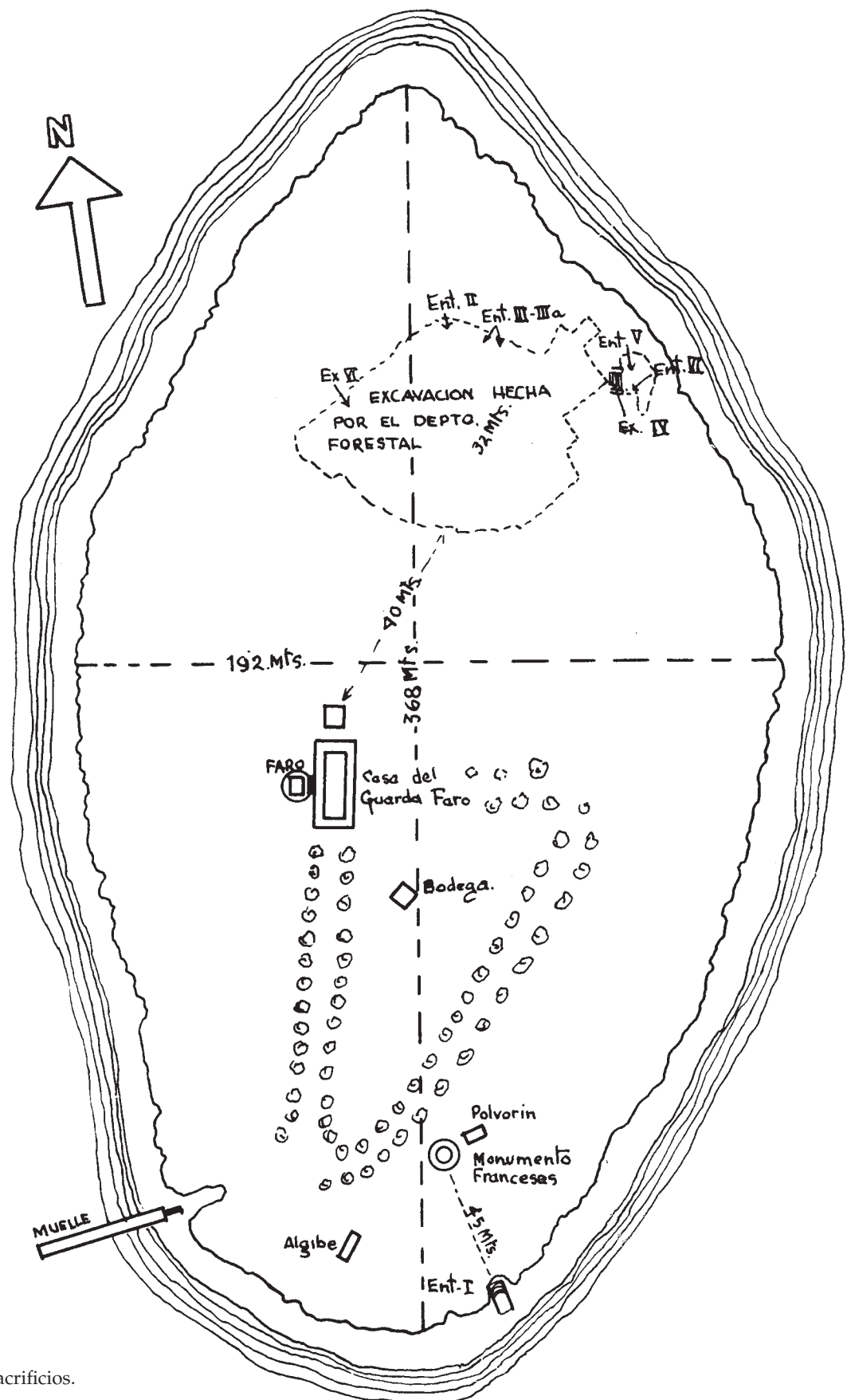
At first glance no sign of pre-Columbian construction was visible, but a more careful search revealed that on the south coast of the island waves had laid bare some stones placed in line on very deteriorated stucco floors. Following this clue, we discovered a burial of considerable importance (no. 1), and, aided by the excavations made by the Forestry Department, we succeeded in discovering six others on the north side of the island (Fig. 14.1).

BURIAL 1

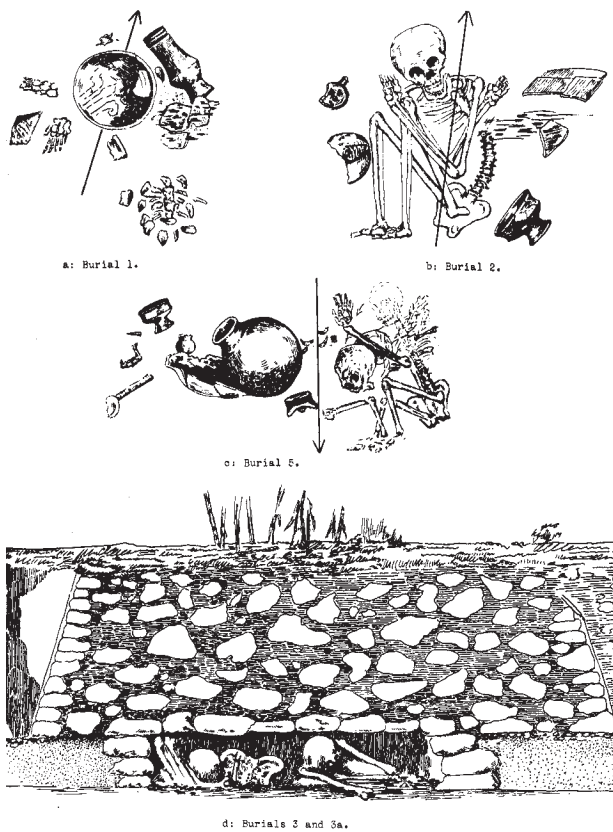
Location. This lay 30 cm below the last of five floors, the topmost of which supported the line of stone already mentioned. Floors 1 and 2 were of stucco firmly bedded in white coralline. One of the remaining three floors was formed of sherds on a bedding of small marine pebbles but was perfectly smooth and level.

Skeletal remains. These consisted only of a hand, a foot, and sternum with the front ends of its attached ribs. They were placed in correct positions (Fig. 14.1a).

Furniture. (1) A circle of small bivalvular shells which surrounded the skeletal remains (2) A pottery dish (diameter 27 cm) with interior decoration of cherry-on-coffee in false negative-painting technique. The paste, of good quality, showed a black



14.1. Map of Isla de Sacrificios.



14.2. (a) Burial 1; (b) Burial 2; (c) Burial 5; (d) Burials 3 and 3a.

core (Fig. 14.6d). (3) An elegant vase of red ware with two bands on the upper part made before firing and standing on an annular base (Fig. 14.6b). This was with Item 2. (4) A great pottery dish of unpolished and unslipped ware badly smashed, but which had clearly held carbon and ash. It lay 20 cm southwest of Item 2. (5) A large marine univalvular shell. With Item 4. (6) A large number of small marine shells also containing carbon and ash. Close to Item 4.

BURIAL 2

Location. Just 2.70 m. beneath the stucco floor of a great platform which had been broken up by the Forestry Department. It lay in damp sand, for salt water is found 30 cm lower (Figure 14.1b).

Skeletal remains. A skeleton in fetal position in excellent preservation, except that the skull had suffered some frontal deformation from the pressure of the soil.

Furniture. (1) A red pottery bowl with flaring annular base of excellent clay, well baked (Fig. 14.6a).

Found near the pelvis. (2) A broken unclipped dish of coarse orange-colored clay containing much sand. Inside was a univalvular shell. Found by the tibiae and fibulae. (3) Remains of a great jar with large quantities of ash and carbon adhering on the insides. To the northwest and almost at shoulder level. (4) A pottery brazier with red and coffee decoration in false negative-painting technique. Found northwest of Item 3 (Fig. 14.6f).

BURIALS 3 AND 3A

Location. In same platform as Burial 2. The two burials were together (Fig. 14.1a).

Skeletal remains. Secondary burials. Bones in very bad condition.

Furniture. (1) Two vases apparently of Fine Orange ware (Fig. 14.5f). (2) Sherds of other vessels, including incised Fine Orange (Fig. 14.5m).

BURIAL 5

Location. Just 1 m from the last step of a stucco stairway in the northeastern part of the island.

Skeletal remains. The whole burial had been ruined by workers of the Forestry Department. Only the pelvis and leg bones were in position when we arrived (Fig. 14.1c).

Furniture. Much had been broken and dispersed before our arrival, but among the pieces we were able to recover were: (1) A cup with circular support similar to that of Burial 2, but of a clear cream color. (2) A jade object. (3) Three shell pendants probably part of a necklace. (4) A large jar of coarse unpolished ware. (5) A broken brazier. (6) A bone awl. (7) A small jar. (8) Remains of another large jar. (9) A tripod dish with conical supports of cherry-on-coffee ware (Fig. 14.6b). (10) Jawbone of some carnivorous animal.

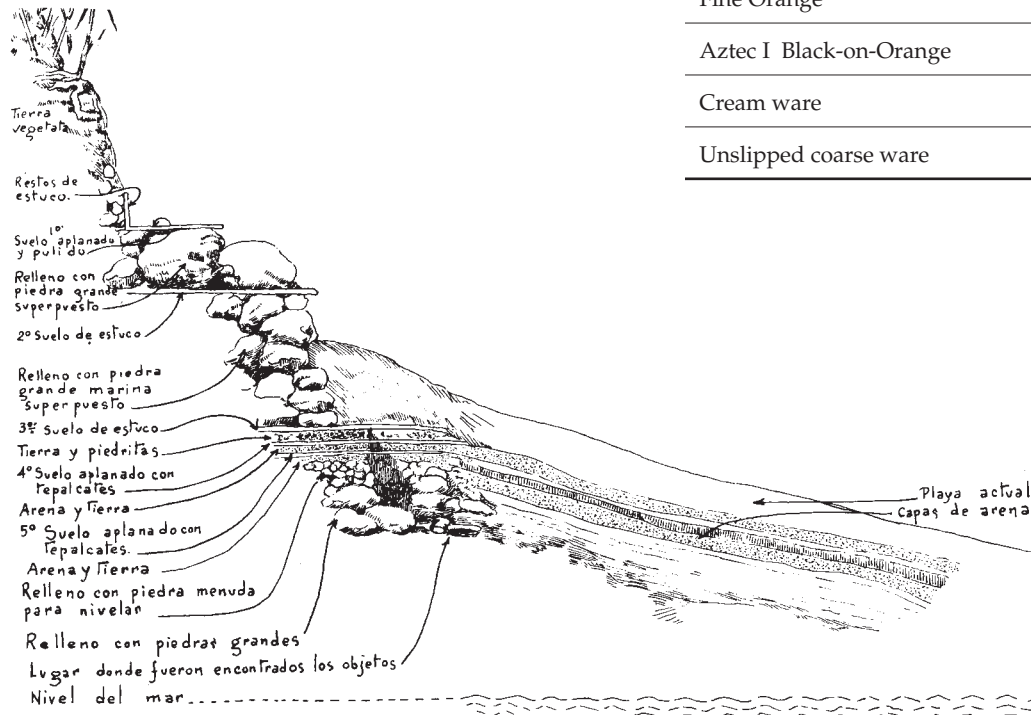
Remarks. If the jawbone is that of a dog, it must represent the dog which led the dead to the underworld. A canine jawbone was found with a burial at Cholula by Sr. Noguera, and there is much literary evidence concerning the custom of burying a dog with the deceased.

BURIAL 6

Location. In front of the south balustrade of the stairway of Burial 5.



14.3. Excavation 4.



14.4. Excavation 6.

Furniture. (1) Large jar of unpolished and unclipped ware. (2) Small jar of same ware. (3) Pieces of a large open vessel containing ash and carbon. (4) Two shell pendants.

EXCAVATION 4

This was made in the interior of the mound behind the stairway of Burials 5 and 6. It yielded only sherds largely with white, red and black decoration (Fig. 14.7a-k).

EXCAVATION 6

This was made across the stucco floor at the south edge of the island. Only above the floor and in the cap of black earth were vessels found (Fig. 14.5a, b, e, g-j; Fig. 14.7l-o), together with two figurines (Fig. 14.8f, g).

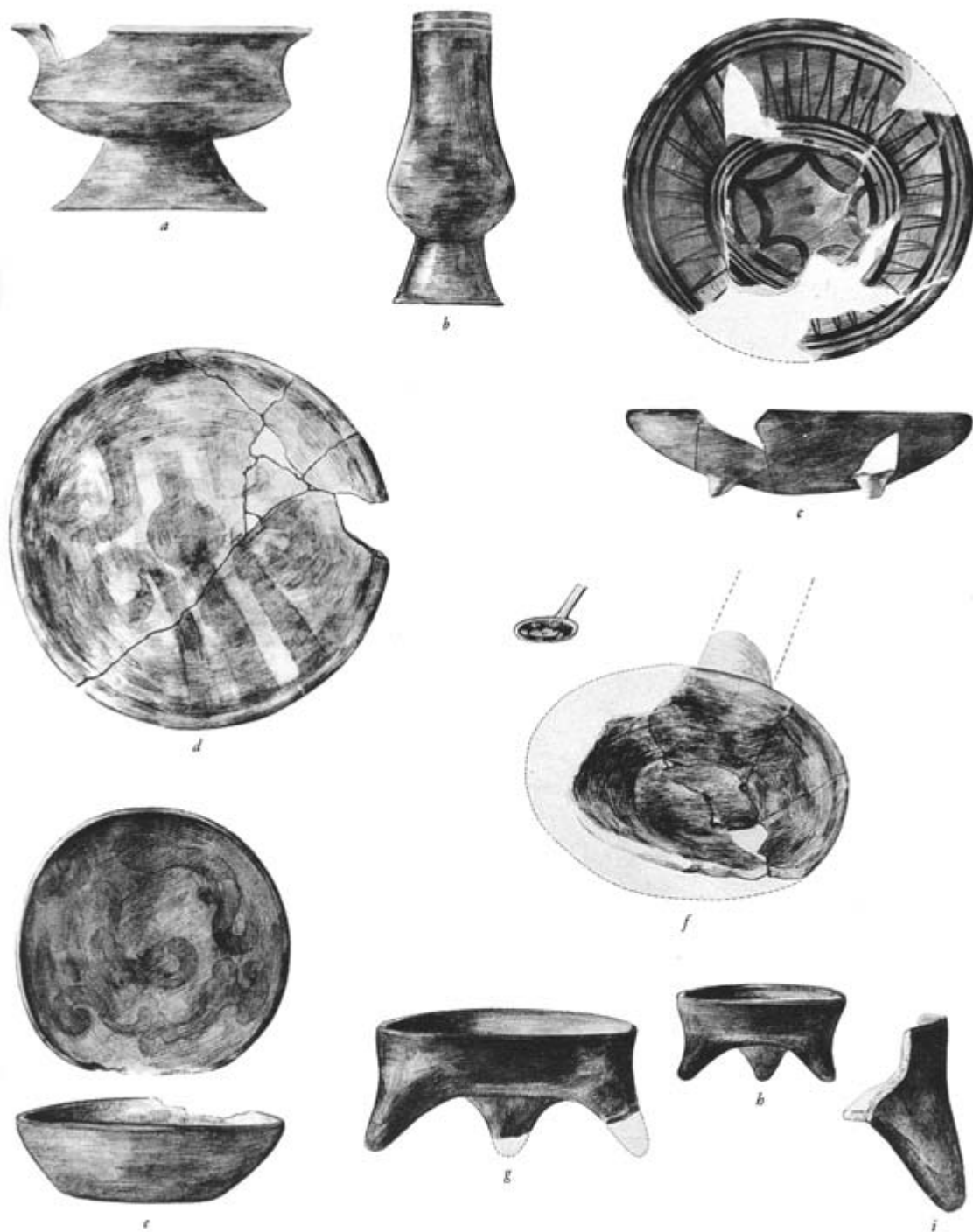
SHERD COUNTS

The sherds from the top layer of Excavation 4 and from the surface digging of Excavation 6 are divided into wares as follows:

Ware	Excavation 4	Excavation 6
Polychrome	183	298
Fine Orange	37	145
Aztec I Black-on-Orange		3
Cream ware		11
Unslipped coarse ware	86	40



14.5. Fine Orange Ware. *Forms*: as illustrated. *Decoration*: incision and cutting away background before firing, sometimes in combination with limited area of black paint; red and white painting of *g* exceptional. *Remarks*: all classified as Fine Orange because of their external appearance; paste has not been examined; surfaces of *g*–*i* are slipped clayish brown; the last appears to be an imitation of a well-known Plumbate form. *Proveniences*: (*a*, *b*, *e*, *g*–*j*) Excavation 6; (*f*, *m*) Burials 3 and 3a. *Heights*: (*a*) 16 cm; (*b*) 10 cm; (*c*) 9 cm; (*d*) 6 cm; (*e*) 18 cm; (*f*) 21 cm; (*g*) 23 cm; (*h*) 11 cm; (*i*) 17.5 cm; (*j*) 6.8 cm; (*k*) (design on *d*); (*l*) 5.3 cm; (*m*) uncertain.



14.6. Red Ware: (a, b) *Forms*: occur only as illustrated. *Proveniences*: (a) Burial 2; (b) Burial 1. *Heights*: (a) 17.5 cm; (b) 25 cm. Black-on-Orange Ware: (c). *Forms*: tripod bowls. *Decoration*: typical of Aztec I. *Height*: 7.2 cm. Cherry-on-Coffee Ware: (d-i) *Forms*: dishes with rounded bases; small braziers with perforated bases and undecorated tubular handles; and dishes with rounded bases and straight but slightly flaring sides, supported by three conical feet. *Decoration*: First form has interior decoration of a strongly curvilinear type; second form has circular motifs. On each of the conical feet of the tripod dish is a patch of cherry-colored paint. Decoration is in false negative-painting technique; that is, the designs resemble those of true negative painting, but the wax or similar process was not used. *Remarks*: the tripod dishes are the same as those found in large quantities by Sr. Jorge Acosta at Tula, Hidalgo, on the Mazapan horizon, except that those from Isla de Sacrificios have darker background, perhaps due to action of the saline water. *Proveniences*: (d) Burial 1; (f) Burial 2; (g-i) Burial 5. *Heights*: (i) 18.3 cm; rest to same scale.



14.7. Polychrome Ware. *Forms*: Commonest are pear-shaped vases and other forms on flaring annular bases, jars of all sizes, small dishes with convex bases, and particularly shallow dishes of wide diameter. *Decoration*: background usually white but sometimes coffee, the decoration being in red, black, light coffee, and dark coffee. *Proveniences*: (a–k) Excavation 4; (l–n) Excavation 6. *Heights*: (a) 4.5 cm (a–k, same scale); (l) 14 cm; (m) 18 cm; (n) 25 cm; (o) scene on vase in n.

CONCLUSIONS

Although the material found by us on Isles de Sacrificios is not very abundant, it is sufficient to allow of comparisons with other areas. As already noted the material fell into two periods: the earlier, the material from below the stucco floors; the later, the surface deposits. The former, being derived from burials, was not mixed. Reasons for considering that these deposits represent two separate periods are:

1. The lower deposits include forma which closely resemble pottery of Mazapan (cherry-on-coffee ware in false negative-painting technique).
2. No examples of true negative painting (wax process) were found by us at Isla de Sacrificios, yet the designs on the bowls of cherry-on-coffee which we recovered may be termed false negative painting since they resemble those of true negative painting in appearance although not in technique. True negative painting has been reported from Teotihuacan I (Noguera 1935), Teotihuacan II (Linné 1934: Fig. 23), Matlatzinca I (verbal information of Sr. J. García Payon), and Tajin I (du Solier 1938). Finally at Tula, Hidalgo, huge quantities of cherry-on-coffee ware, many with designs in negative painting, have been found by Sr. Acosta on the Mazapan horizon. These, however, include precisely the fork particularly that of the tripod dish analogous to those of this ware found at Isla de Sacrificios. On the other hand, negative painting has so far not been reported from any horizon later than that of Mazapan. It is therefore clear that cherry-on-coffee ware at Isla de Sacrificios is coeval with Mazapan.

Red ware at Isla de Sacrificios belongs to the same period as cherry-on-coffee ware. In form it is related with the pear-shaped vessels with annular bases in Fine Orange of Chichen Itza. It should, however, be noted that at Cholula, Sr. Noguera found vessels of analogous forms, although these appear to be more closely related to the later period at Isla de Sacrificios. Vaillant (1927) identifies similar vases from Chimaltenango, Uaxac Canal, and even from Yaxchilan.

The second period on Isla de Sacrificios embraces all vessels of Fine Orange, those of cream clay, those tentatively placed in Aztec I (Fig. 14.6c), and the polychrome and incised wares. In the second period there is a carry-over of form from the earlier period, but clay and decoration are completely different.

Vessels closely corresponding to the pear-shaped vase with design in black (Fig. 14.5j) were found in Cholulteca I by Sr. Noguera. The pear-shaped vase on three rounded feet with background cut away before firing (Fig. 14.5b) also finds a parallel in Cholula, although in black slip.

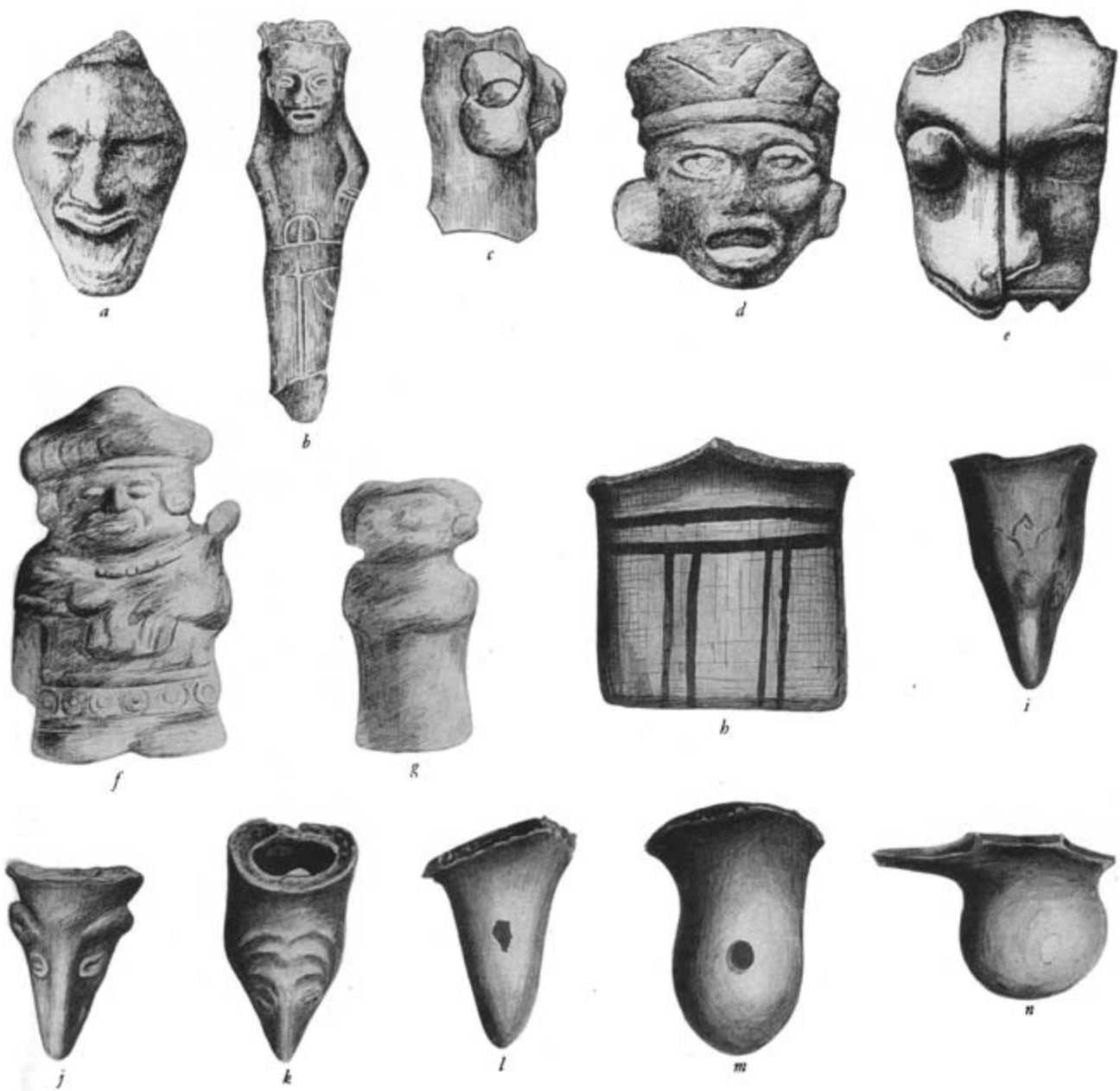
A variant form common to both these sites is a cylindrical vase with flaring annular base which I believe comes from a more recent horizon than the last (Fig. 14.5f). Vaillant (1927, Fig. 307) illustrates a vase of the same form with a striking carved design.

Two other vessels which fail in this group merit a more detailed examination. The first (Fig. 14.7n, o) is of cream clay with a very finely executed design in polychrome of two warriors, whose high rank is indicated by their clothing and ornaments. Each carries a sheaf of darts in the left hand, a copal or tobacco pouch in the other. Furthermore, the headdress is a serpent's head, the body of which circles the vase. Of great importance is the fact that in presentation, clothing, and ornaments, these are true copies of the sculptured and painted figures of the Temple of the Warriors, showing that the final period of Isla de Sacrificios is contemporaneous with that of the Temple of the Warriors at Chichen Itza.

On the annular base of the vase in question there is another personage kneeling on one knee and with a staff in one hand and the *ehēcacozcatl*, or jewel of the wind, on his breast. In addition, he wears a skull-mask, probably symbolizing the death of Quetzalcoatl as a priest, and his transformation into the evening star. This personage appears to be a Tlahuizcalpantecutli, or Venus as evening star. In addition, there can be distinguished on the base combinations of bones and an arm and hand, but the rest of the design is gone.

The second vessel (Fig. 14.5g) has a bell-shaped support and on the cylindrical body of the vessel a personage representing Quetzalcoatl as Ehecacatl, the wind god. The body is painted; the head, with mask of Ehecacatl, is in relief. The interesting point is that the figure has a local touch despite the great area in which this deity was worshipped. This suggests not a mere commercial relationship but a spread of this god and his cult to the coast of the Gulf of Mexico.

So far as the polychrome is concerned, it is difficult to say if it passed from the coast of the Gulf of Mexico to central Mexico, or whether the current flowed in the opposite direction, but it is worth remarking that so far no types from which this developed red, white, and black ware could have evolved have been found on the golf coast. On the other hand, in Noguera's Cholulteca I occur very simple dishes and vessels with decoration only in white paint. These might be the prototypes of the beautiful polychrome of Isla de Sacrificios. Besides, the percentages of shards of both this ware and polychrome in the levels in which they were found are sufficiently high to show that they were definite types of the horizon in question. However, this derivation must be considered merely as a hypothesis.



14.8. Figurines and Supports. Figurines: *a-g*. Human figurines are quite scarce in comparison with the large quantities of pottery vessels. All are moldmade. They have marked local characteristics in both ware and features, although no definite type is distinguishable. **(a)** Of good but imperfectly fired clay covered with beautiful and highly polished cherry-colored slip, like that of earliest Aztec period. **(b)** Perhaps a support (cf. Nuttall 1910: fig. 5, pl. 20); is of sandy ware with highly polished cherry slip, body being represented with incising. This technique and slip occur together on sherds at Cholula (Noguera 1935). **(c)** Badly weathered but probably head of parakeet in profile. Clay sandy but very red. **(d)** Of poor material but noteworthy because of resemblances to figurines from Ranchito de Las Animas, Medellin, etc. **(e)** Originally a perfectly modeled human head with polychrome slip. Late a headdress in the form of a coyote, also in polychrome, was added. **(f)** Hollow, moldmade; of yellow paste, from which much of slip has disappeared. The act of carrying a child is characteristic of Maya art, and in this case the presentation finds a close parallel in figurines from Jaina Island, Campeche. From Excavation 6. **(g)** Hollow, moldmade, of same ware. Badly weathered. From Excavation 6. *Heights: (b)* 11 cm (*a-e*, same scale); *(f)* 19 cm; *(g)* 14 cm. *Supports: (h-n)* Although no true stratification was found, we noted that flat and stepped supports and even those of zoomorphic types occurred on surface and on top of stucco floors, whereas conical and globular supports and those with paint occurred in lower levels or beneath stucco floors. *Height: (h)* 7 cm; others same scale.

Of the figurines one can say only that the fact that they were moldmade indicates that they belong to a relatively recent horizon. They are not directly connected with figurines of central Mexico but do resemble some from southeastern Mexico.

The flat supports of vessels are definitely tied to late Aztec horizons. Animal-shaped feet in polychrome are common to Isla de Sacrificios (lower stratum) and Cholula (middle and lowest strata). Modeled feet in animal shapes and cylindrical feet, although with varying decoration, are also common to the two horizons. Other forms of feet are too general to have chronological value.

Finally, one might call attention to the matting design on the little piece of jade (Fig. 14.9j). The game motif occurs on one of the murals of the ball court at Chichen Itza.

To summarize these findings.

1. Isla de Sacrificios had two great periods, the earlier corresponding to the Tula-Mazapan complex; the later to the so-called Aztec I, Chichen Itza, and even extending into Aztec II.
2. Isla de Sacrificios was in constant commercial touch with central Mexico, and was influenced particularly by Cholula and Tlaxcala.
3. The island was never permanently inhabited. This is demonstrated by its small size and the types of constructions but principally by its pottery. There are no rubbish heaps; all the sherds or vessels come from caches or burials.

I am indebted to Mr. J. Eric S. Thompson for the translation into English of this paper.



14.9. Spindle whorls: (a-h). Both geometric and zoomorphic designs occur but under conditions that threw no light on the view held by Sr. Noguera and Sr. Weitlaner that the former are more ancient. *Diameter: (a)* 3 cm; others same scale. Jade, Shell, and Stone: (i-m). (i, k) shell pendants (all others found are of the same type); (j) jade, probably handle of fan; (l) probably part of earplug; (m) metate and mano of stone. *Lengths: (i)* 7.1 cm; (m) approximately 40 cm.

Pottery from the Pacific Slope of Guatemala

A. V. Kidder

It seems worth while to make record of two small collections from the above area, even though precise data as to the provenience of individual specimens are lacking, for although very little is known of the antiquities of the Guatemala highlands, we are in even worse case as regards the south coast. Yet that narrow strip of land, between the ocean and the chain of volcanoes that closely parallels the Pacific, is at least as rich in prehistoric remains as any other part of the republic; and these are obviously of great archaeological importance because the flat coastal plain and the lower slopes of the cordillera must always have offered a most attractive route for migration and commerce. In the 16th century most of this area was occupied by Maya-speaking tribes, but it is known that in relatively recent times repeated waves of Nahuatl peoples passed southward along it, leaving islands of settlers. And the presence of certain other non-Maya groups suggests movements at still earlier periods. Thus the region offers a peculiarly favorable field, as I have elsewhere pointed out (Kidder 1940), for studies of the fundamentally important problem of the relationship between language and culture.

RIO COYOLATE

Some 25 vessels and a few other objects of clay came from the finca of Sr. Fernando Pullin at Texcuaco on the Rio Coyolate, Department of Escuintla. Most of the specimens, according to Sra. de Pullin, who kindly placed the collection at the disposal of

Carnegie Institution, were found along the banks of the Coyolate after freshets and many of them are severely waterworn. Two principal wares are represented.

A class of pottery, tentatively called Tiquisate ware (Figure 15.1b-d, g, i-l, r, s), is commonly found on the Pacific coast of Guatemala. As Mason (1938:215) states, it has generally been ascribed to the Nahuatl Pipil, but for the present it is safer to give it a name which does not link it with any linguistic group. It bears a buff to yellow slip, parts of which often flush to bright orange. It is apparently always monochrome, decoration consisting of encircling raised bands (Fig. 15.1d, i, j, s) and figures of monkeys in low relief, the head and forelegs on one side of the vessel, the tail curling up on the other (Fig. 15.1i, j). Pre-slip incising appears on the otherwise apparently typical Tiquisate cylinder shown on Fig. 15.1s; but whether or not the vase with pedestal base (Fig. 15.1w) should be classed as Tiquisate is uncertain. Its incised design cuts through a soft and rather badly preserved slip into reddish paste. Another questionably Tiquisate specimen is the "Siamese twin" vessel whose two cylinders are joined by a hollow element (Fig. 15.1n). It is for the most part slipped red over an apparently Tiquisate primary slip. The status of these three pieces may be clarified by J.E.S. Thompson's forthcoming study of the large collection of Tiquisate ware made by him in 1942 at El Baul, also in the drainage of the Rio Coyolate.

The second principal group in the Pullin collection consists of pottery which, if it proves to be a dis-



15.1. Vessels from Texcuaco, Rio Coyolate: (b–d, g, i–l, r, s) Tiquisate ware; (n) Red-on-yellow ware (Tiquisate?); (w) incised yellow ware (Tiquisate?); (a, e, f, o, q, t–v) heavy black ware; (h, m, p) Brown ware. Heights: (w) 18.5 cm; others to same scale except v, which is 21.5 cm in total height.

tinctive ware, might be called Coyolate (Fig. 15.1a, e, f, o, q, t–v; Fig. 15.2l, m, o, p, v). It is deep black, apparently unclipped, but most of the pieces are so severely waterworn that it is possible that some of them might once have carried slip. The most striking characteristic of the vessels is their great weight, which seems partly, at least, to be due to the nature of the paste rather than to its bulk, although the pieces are relatively thick-walled.

The specimen shown on Fig. 15.1v, is the only whole example of a form represented by a number of fragments. The three hollow heads rising from the rim have openings at both front and back. Between two of the heads is a rounded depression in the wall, much like that which accommodated the neck of the client in the old-fashioned European barber’s basin. The heads on Fig. 15.2m, o, p, and that from Trapiche Grande (Fig. 15.2h) are from pieces of this sort.

Fragments of vessels with three hollow heads placed, like those of the present specimens, partly upon and partly within the rim, and with similar, but slightly differently located, double openings are commonly found in the Valley of Mexico on the classic Teotihuacan horizon (Gamio 1913; Linné 1934; Seler 1915b; Tozzer 1921). Seler reports other heads of this general type from San Andres Tuxtla in Veracruz. One of Linné’s pieces from Xolalpan is sufficiently complete to show that the wall is cut away in the same manner as is that of the Rio Coyolate vessel; and a cylindrical vessel from Teotihuacan, evidently an incense burner, is similarly notched (Seler 1915b, Pl. LI). All the Mexican examples appear to have been flat-bottomed bowls with straight sides rising at an angle of about 65° from the horizontal, whereas the one from Rio Coyolate is of squat hour-glass shape, the bowl proper being a shallow basin. A third variant of the type is found at Kaminaljuyu. It will be described by E. M. Shook in a forthcoming number of this series.

In the Pullin collection are three identical two-hole “candeleros” of the sort so commonly found at Teotihuacan (Fig. 15.21). Only two others are recorded from Guatemala (Saville 1930), probably from Kaminaljuyu; the other from a tomb of the Esperanza phase at Kaminaljuyu.

Also of the heavy black ware are the following: a rectangular boxlike container (Fig. 15.1o) with four solid feet, the sides and ends decorated with what appear to be cacao pods (similar objects are on the cover of Fig. 15.1g); a seated female figure (Fig. 15.2v), hollow, apparently mould-made with added elements, the arms are two rounded stubs, the right one being the mouthpiece of this unusually large whistle.

Of lighter weight than the other black specimens, and evidently of a different ware, are a large hollow

foot (Fig. 15.3a) with mould-made Tlaloc face; and a vase (Fig. 15.3k) from which a ring-stand or pedestal base has been broken. It bears two rectangular panels, impressed by the same stamp and each outlined, after stamping, with an incised line. Near the base are three small heads, made in the same mould and luted to the wall. The original high polish of this vessel has been largely dulled by the action of water.

The remaining specimens in the Pullin collection (Fig. 15.1h, m, p, q; Fig. 15.2k, n, q–u, w) are of brown pottery, apparently unslipped, although erosion of the surface makes this, in some cases, uncertain. The ladle handles ending in human heads (Fig. 15.2k, q) are hollow and contain rattles. The large effigy (Fig. 15.2w, slightly waterworn but certainly unslipped) is probably part of the cover of an incense burner; the eyes, which open into the hollow interior, would have served as vents for smoke.

TRAPICHE GRANDE

The second collection is from the Finca Trapiche Grande, in the municipality of Cuyotenango, Department of Suchitepequez. It consists, for the most part, of sherds and fragments of figurines, even more severely waterworn than the materials from the Rio Coyolate. There is no information regarding the circumstances of their finding.

Sherds identifiable for form are, with the exception of a piece of a small carved far and another of what seems to have been a carved cylinder, all from composite silhouette tripod bowls with cascabel or, less commonly, solid feet. All are of vary heavy chocolate-brown to black ware. Slip, if such had ever been present, has been entirely worn away. Only three fragments are sufficiently large to permit accurate restoration of their parent vessels (Fig. 15.3a–c), but there are 12 detached feet as follows (Fig. 15.2, read left to right and from top downward):

1–3	Solid conical.
4	Hollow, single large opening in back, no rattle.
5	Hollow, crudely anthropomorphic, bottom worn through (or possibly left open).
6,7	Hollow, no vent, single pellet.
8	Hollow, two side slash-vents, single pellet.
9	Hollow, 11 small round vents (broken open at top: pellets, if any, lost).
10	Hollow, two round aide vents, no pellet.
11	Hollow, basal disc, two round side vents, single pellet.
12	Hollow, two round side vents, single pellet.



15.2. Pottery from Texcuaco and Trapiche Grande: (a-j) Trapiche Grande; (k-w) Texcuaco; (a-c, e-g, i, j, l, m, o, p, v) heavy black ware; (d, h, k, n, q-u, w) Brown ware. Lengths: (f) 6.3 cm; (a-e) same scale; (q) 20 cm; (k-u) same scale. Heights: (g) lower left, 8.5 cm; other feet same scale; (i) 12 cm; (h, j) same scale; (v) 22 cm; (w) 29 cm.

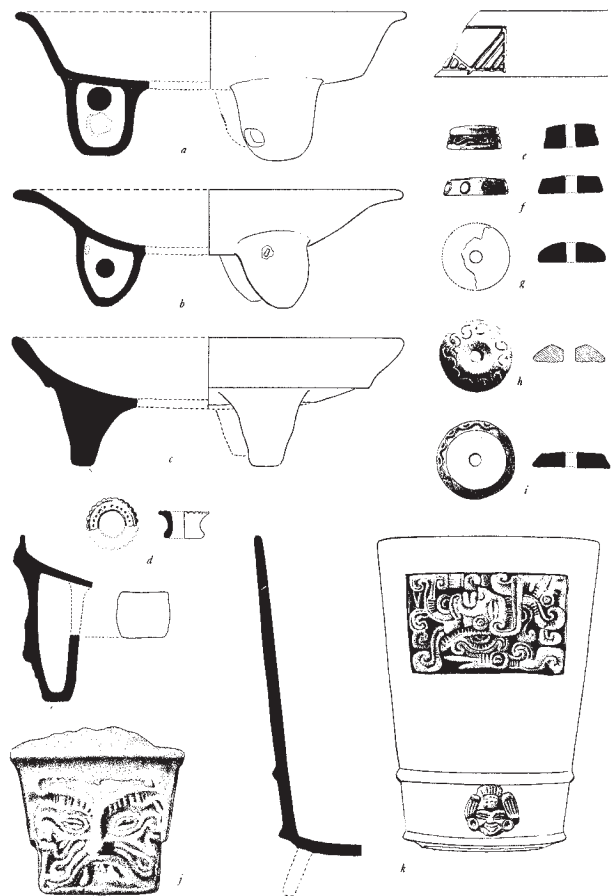
After they had been drawn and photographed the hollow feet were sawed open and the pellets examined. They proved to be clay spheres 0.6–1.2 cm in diameter.

The two restorable cascabel tripod bowls are in general form not unlike specimens from Salinas de Istan, near Champerico, Department of Retalhuleu, figured in this series (Note 2, page 10a, b); the dense black paste of the Trapiche Grande bowls is, however, entirely different from the reddish paste of Istan; and Trapiche Grande cascabel feet contain a single unusually large pellet, rather than the multiple Istan rattles, which are plugs cut from the foot's wall with a hollow cylindrical implement and pushed inward when making the vents (cf. Fig. 2.2a, b). None of the fine line incising seen on certain Istan bowls (Fig. 2.1) appears on any Trapiche Grande sherd.

There are three extremely crude figurine heads of black ware (Fig. 15.2a, i, j) apparently the same as that of the bowls; a heavy-hipped female torso (Fig. 15.2c; heavy black); a crudely modeled whistle (Fig. 15.2b; heavy black); two fragments of effigy vessels (Fig. 15.21; 2; d, brown, appears mould-made, but this may be due to softening of relief by wear; e, heavy black); a brown ware head (Fig. 15.2h; from the rim of a three-headed bowl like the one from Rio Coyolate, cf. Fig. 15.1v); a double heavy black pottery ring, the two elements at right-angles to each other (Fig. 15.2f; an identically shaped specimen of brown ware from an unspecified locality in Guatemala is in the University of Pennsylvania Museum); five spindle whorls (Fig. 15.3e–i; unslipped brown ware, only h is waterworn); fragment of a clay earplug of a type common during the Esperanza phase at Kaminaljuyu, Guatemala (Fig. 15.3d).

DISCUSSION

The buff to yellow specimens referred to above as Tiquisate are probably all roughly of the same period. They belong to a type found commonly on the Pacific coast of Guatemala (several examples in Guatemala National Museum from unspecified sites; vessels and sherds from Tiquisate and San Jose). I have record of only two pieces of Tiquisate from non-coastal sites: one (Guatemala National Museum no. 718–3) purchased by Don Carlos Villacorta in Huehuetenango; the other found by myself in a deposit of uncertain period at San Agustin Acasaguastlan (Smith and Kidder 1943, Fig. 47a). More traded pieces of this striking and easily identifiable pottery should eventually be found in the highlands; they will provide useful data for establishing chronological relationships. J. E. S. Thompson's forthcoming report upon his recent excavations at El Baul, where much



15.3. Specimens from Texcuaco and Trapiche Grande. (a–i) Trapiche Grande; (j, k) Texcuaco. (Scale = ½.)

Tiquisate pottery came to light, will contain much-needed descriptive data regarding this ware and upon other pottery types associated with it.

Whether or not the heavy black and the Tiquisate vessels from Texcuaco were contemporaneous is at present problematical. Most of the former appear to be much cruder, but this may be due to the severe water rolling which they have undergone. That the two groups did not emanate from the same deposit is, however, obvious, as the Tiquisate pieces, though of lighter construction, have been far less worn.

Another problem concerns the relationship of the heavy black ware of Texcuaco with that of Trapiche Grande. In weight and apparent crudity both lots are superficially similar, but I am inclined to guess that they were rather widely separated in time. The extremely primitive figurines from Trapiche Grande (Fig. 15.2a–c, i, j) could hardly be the product of the same culture that produced the sophisticated figurine whistle from Texcuaco (Fig. 15.2v). The Texcuaco heavy black bowls (Fig. 15.1e, f) are provided with ringstands, a feature which, so far as I know,

does not appear in Guatemala or British Honduras earlier than Tzakol-San Jose II-Esperanza times, but is present in the Valley of Mexico on the considerably older Middle Zacatenco horizon (Vaillant 1931). The composite silhouette cascabel tripod bowls of Trapiche Grande (Fig. 15.3a, b) have, as was pointed out above, certain resemblances to those of Istan, which I believe to be early (cf. this series, Note 2, page 8); and such bowls occur in the Valley of Mexico "Archaic" (Vaillant 1931). Another possible indication that the Istan material is of considerable antiquity is the fact that Vaillant discovered, in a grave not later than Gualupita II, a flat-bottomed white ware bowl with spout opening at the level of the base (Vaillant and Vaillant 1935, Fig. 23, no. 4). A piece of this general form occurred at Istan (Fig. 2.2m); and a third was found in an early (Miraflores) deposit at Kaminaljuyu. On the other hand there are specimens in the Trapiche Grande collection that seem to be more recent: the apparently mould-made brown ware face (Fig. 15.2d); and the spindle whorls (Fig. 15.3e-i). Specially prepared spindle whorls, as distinguished from those made from potsherds, were seemingly not produced in Middle America until relatively late times. However, as most of the Texcuaco and Tra-

piche Grande specimens were found in the alluvial deposits, the association of materials of different periods is to be expected.

ADDENDUM

Since the above was written, a further reference has been found to vessels with three hollow heads on the rim. In her *Archaeology of the North Coast of Honduras*, Mrs. Stone illustrates (1941, Figs. 93, 94o) two heads from similar pieces, from San Pedro Sula and Travesia respectively. She states that the type is "common in Salvador, on the Guatemalan west coast (at Tiquisate) and has been found in quantity by Stirling at Tres Zapotes, Vera Cruz, Mexico." J.E.S. Thompson has, expressed to me doubt that all examples of this general form are as early as classic Teotihuacan. In view of this and of the fact that Mr. Shook and I believe that probably analogous specimens from Kaminaljuyu represent a horizon even earlier than classic Teotihuacan, it seems possible that the three-headed vessels were made over a long period of time. If so, and if they prove to be relatively abundant, close study of all variants should result in definition of subtypes useful for chronological and cultural determinations.

Spindle Whorls from Chichen Itza, Yucatan

A. V. Kidder

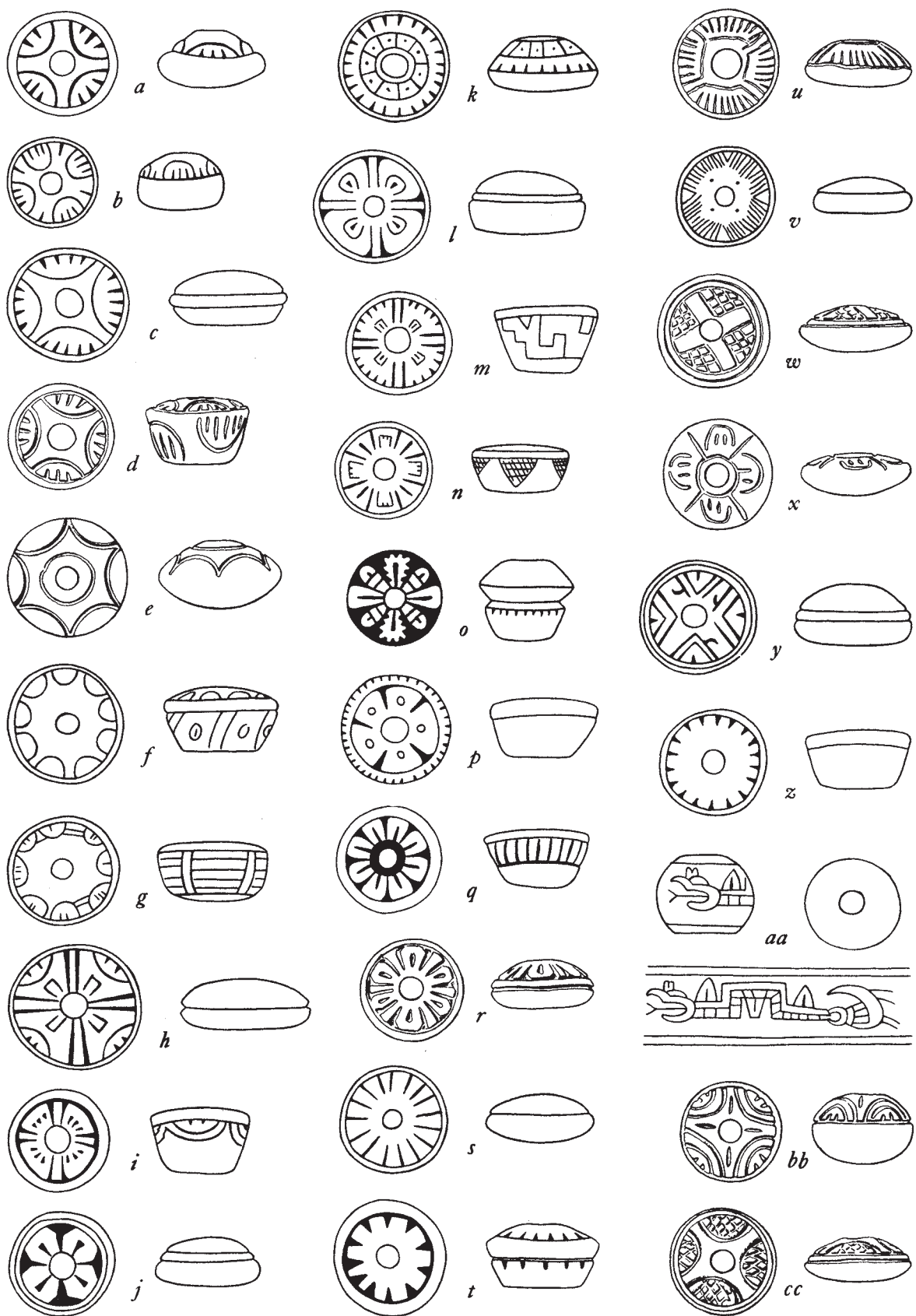
Spindle whorls are found, often abundantly, in many parts of Middle America. Certain types, marked by peculiarities of shape and decoration and by variations in size, appear to be characteristic of certain areas and periods. Thus, spindle whorls should be very useful to the archaeologist as indicators of cultural, commercial, and chronological relationships. For example, J.E.S. Thompson found in superficial deposits at San Jose, British Honduras, specimens ornamented with asphaltum, which suggested trade, toward the close of San Jose's occupancy, with the Huastec region of Veracruz (Thompson 1939:153). However, little attempt has to date been made to classify spindle whorls or to determine their distribution in space and in time. For this reason no conclusions can at present be drawn from the occurrence at Chichen Itza of the examples here illustrated; but most of them are of types so strongly marked that if representatives were found elsewhere they could easily be recognized.

About a hundred spindle whorls came to light during the excavations by Carnegie Institution in various parts of Chichen Itza. They are of gray to reddish brown, unslipped pottery. There are two standard forms. The commoner is more or less oval in section, the decorated surface being usually somewhat fuller than the other.

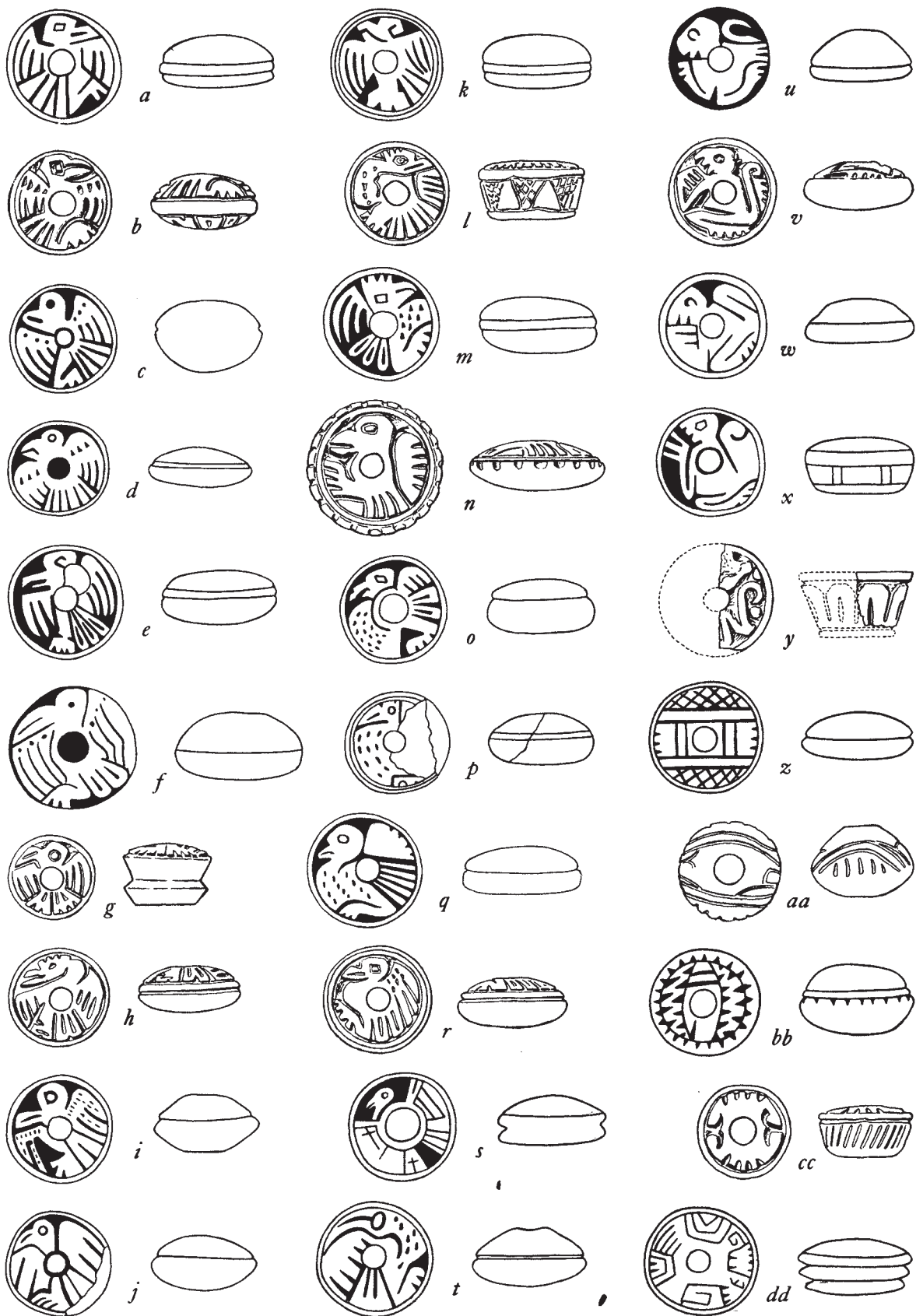
The undecorated surface, however, is never flat, as it is in specimens from some other regions (e.g., spindle whorls from the Department of Suchitepequez, on the Pacific coast of Guatemala; cf. this series, Fig. 15.3f-i). The average diameter is 2.9 cm;

thickness, 1.3 cm; extreme diameters, in the 30 "run of the mill" examples measured, 2.4 cm, and 3.3 cm; extreme thicknesses, 0.9 cm and 1.5 cm. The second type, which is about half as common as the foregoing, is a rather steep-sided truncated cone, in section resembling a cupcake. The smaller end is flat, the larger (which bears the principal decoration) is slightly convex. The average diameter is 2.6 cm; thickness, 1.5 cm; extreme diameters, in the 15 measured, 1.6 cm and 3 cm; extreme thicknesses, 1.2 cm and 1.7 cm. The central hole in both types is uniformly cylindrical and so smooth-walled as to suggest that it was produced by packing the clay about a round stick. The holes average 0.7 cm in diameter, 20 of the 45 examples measured having exactly that dimension; only one is less than 0.6 cm (0.55, Fig. 16.1s) and none over 0.8 cm. There is little difference in either average or extreme weights between the two types: six "cupcake" specimens weigh 8, 9, 9, 9, 12, 14 grams, average 10.1 gm; six with oval section, 7, 8, 10, 10, 12, 17 gm, average 10.6 gm.

Variations from the above two types are rare. Two "cupcake" whorls (Fig. 16.1o; Fig. 16.2s) have median constrictions; and there is one trilobed whorl (Fig. 16.2dd). The almost spherical specimen (Fig. 16.1aa) is unique in form, in its polished black finish, and in its lightly incised feathered-serpent decoration. It might be considered a bead were it not for the fact that it is pierced by the relatively large cylindrical hole typical of spindle whorls; rather than the small perforation seen in most Middle American clay beads.



16.1. Spindle whorls from Chichen Itza.



16.2. Spindle whorls from Chichen Itza.

Discussion of decoration must be prefaced by a word as to the illustrations. Eighteen of the 59 drawings are by Isaac Esquiliano, the rest from my field-sketches. Mr. Esquiliano's much more realistic reproductions differ from mine, as may be seen by comparing Fig. 16.2b (Esquiliano) with Fig. 16.2a (Kidder), in that he represents incision by double rather than single line. He also shows decoration in both side and top views, whereas I have usually done so only in the case of "cupcake" specimens. In my drawings areas cut away are indicated by solid black.

Decoration is by deep, heavy incising and by the removal of parts of the original surface. The work appears to have been done after the objects had become thoroughly dry. Some of them give the impression of having received their ornamentation from a mould or stamp. I believe, however, that this is due to softening of outlines by wear and that few, if any, were so treated. This is also the opinion of Dr. S. G. Morley, who at my request re-examined the specimens.

Spindle whorls with oval section are decorated only on one surface (one exception; Fig. 16.2b). The design surrounds the perforation and ends at a single or double deeply incised line usually set a little above the point of greatest diameter. "Cupcake" specimens bear a main design on the slightly convex upper surface and minor ornamentation on the side; the flat-bottom is always plain.

The designs are of two general types: geometric (about two thirds of all examples), and realistic (about one-third).

Most of the geometric designs are of two sorts; (1) Segments of circles, usually four, often containing small wedge-like indentations running inward from the outer encircling line (Fig. 16.1a-g, cc). (2) Rosette-like designs which ray out from the perforation, the component elements being for the most part straight lines and small wedge-shaped indentations. These are approximately twice as common as No. 1 (Fig. 16.1i-z; h and bb are combinations of 1 and 2). The specimens which do not fall into either of the above categories are shown in Fig. 16.2z-dd; the elements used to produce them, lines, small wedges, crosshatching, are the same.

The realistic designs depict birds (Fig. 16.2a-t) and monkeys (Fig. 16.2u-y), the figures cleverly adapted to the circular field and thrown into relief by cutting away considerable parts of the surface. Details are produced by incised lines and the ubiquitous little wedge-shaped marks. The birds, which greatly outnumber the monkeys, are normally shown facing to the left. Of the majority, both wings are represented. Only, but not all, single-winged birds have

spotted breasts. In no case is more than one foot of a bird shown.

There is no correlation between form and decoration. Both sorts of geometric designs are found on both oval section and "cup cake" spindle whorls; and although most of the birds and monkeys occur on specimens with oval section, there are examples of each on "cupcakes." For this reason and because each considerable find of spindle whorls contained representatives of all designs and forms, it seems probable that the entire collection emanates from a single cultural horizon.

Of the 106 spindle whorls recovered (most of which are now in the Regional Museum at Merida) 30 came from the Monjas, 21 from the Temple of the Interior Atlantean Columns and the nearby House of the Grinding Stones, 15 from the colonnade and court directly south of the Temple of the Phalli, 15 from a rubbish heap just off the southeast corner of the great terrace supporting the Court of the Thousand Columns, 6 from the North Colonnade of the same court, 4 from the Sweat House east of the Court, 4 from the Mercado, 2 from the South Annex of the Caracol, 2 from Actun, a site between Dzitas and Tizimin, 2 from the Temple of the Xtoloc Cenote, 1 from the Temple of the Warriors. Of 4 others from Chichen the provenience is unknown.

All the above buildings save the Monjas are either of the "Mexican" period or belong to the even later phase of degenerate architecture which preceded the abandonment of Chichen Itza as a ceremonial center; and the Monjas received accretions in very late times. All spindle whorls whose exact position was noted lay in superficial earth or in rubbish apparently laid down by people using already ruinous temples as dwelling places. G. W. Brainerd excavated a fragmentary specimen practically identical to that shown on Fig. 16.2o, at Mayapan, where it occurred with pottery of post-"Mexican" types. Data on the occurrence of spindly whorls in the Puuc ruins, now believed definitely to have antedated "Mexican" Chichen Itza, are mostly negative: only a single specimen is recorded from H. B. Roberts' extensive excavations in Puuc sites (Sabacche, Structure IV, undescribed); and there is one in the Peabody Museum of Harvard University from Labna, it is of the Chichen Itza geometric type. These may have been deposited after the abandonment of the temples. Thus, although the evidence is not conclusive, it seems probable that specially made, as distinguished from perforated potsherd spindle whorls, at least those of the sort found at Chichen Itza, came into use in northern Yucatan in comparatively late times, possibly even after the close of the "Mexican" period. In this connection it should be

noted that in the refuse deposit at the southeast corner of the terrace supporting the Court of the Thousand Columns, which yielded a group of 15 spindle whorls, there was found a fragment of a rectangular pottery stamp bearing the figure of a monkey. The animal, in relief in a small circular field, is represented in the same position as the monkeys on the spindle whorls and small wedge-shaped indentations are employed, as in the spindle whorls, to enrich the design. When more is known as to the chronological range of stamps of this type, the above association may aid in fixing the date of the spindle whorls.

Provenience of illustrated specimens. Monjas: Fig. 16.1e; Fig. 16.2g, y, aa. Temple of Interior Atlantean Columns and House of the Grinding Stones: Fig. 16.1a, j, k, l, n, o, p, s, v; Fig. 16.2d, f, o, p, s, w, z, dd. Court south of Temple of the Phalli: Fig. 16.1b,

c, f, h, i, m, q, t, z; Fig. 16.2a, e, k, m, x, bb. Refuse southeast corner, Court of Thousand Columns: Fig. 16.1w, x; Fig. 16.2b, h, l, q, r, v, cc. North Colonnade: Fig. 16.1y, aa; Fig. 16.2i, t. Temple of the Xtoloc Cenote: Fig. 16.1e; Fig. 16.2e. Temple of the Warriors: Fig. 16.2c. Caracol, South Annex: Fig. 16.2u. Actun: Fig. 16.1bb, cc. Chichen Itza, provenience unknown: Fig. 16.1d, r, u; Fig. 16.2n.

Court south of Temple of the Phalli: Fig. 16.1b, c, f, h, i, m, q, t, z; Fig. 16.2a, e, k, m, x, bb. Refuse southeast corner, Court of Thousand Columns: Fig. 16.1w, x; Fig. 16.2b, h, l, q, r, v, cc. North Colonnade: Fig. 16.1y, aa; Fig. 16.2i, t. Temple of the Xtoloc Cenote: Fig. 16.1g; Fig. 16.2g. Temple of the Warriors: Fig. 16.2c. Caracol, South Annex: Fig. 16.2u. Actun: Fig. 16.1bb, cc. Chichen Itza, provenience unknown: Fig. 16.1d, r, u; Fig. 16.2n.

Some Sculptures from Southeastern Quezaltenango, Guatemala

J. Eric S. Thompson

There is an important group of mounds and pyramids on the adjacent coffee farms of Santa Margarita and San Isidro Piedra Parada. These are situated on the road from Retalhuleu to Colomba, a few miles northwest of Asintal, in the southeast of the Department of Quezaltenango. This is the site which Karl Sapper (1897) marks in Map VIII of his *Das nordliche Mittel-Amerika* as having sculptures of the Santa Lucia Cotzumalhuapa type. It is probable that we did not observe all the sculptures at this site, but of those seen none was in that style. However, as Sapper places sculptures at Ahuachapan in this classification, clearly his Cotzumalhuapa category is very wide, and it is possible, therefore, that he had seen and had in mind the monuments to be discussed.

Rank vegetation and lack of time precluded mapping the ruins, but they are rather extensive and are situated on open ground without obvious defenses. No cut stone was observed. One large mound, cut through the center when the road was built, consists only of soil and a very few stones scattered haphazard through the fill. In one place three of these stones were arranged in a manner which suggested that they might have formed part of a retaining wall of what would have been an inner mound, but their arrangement might equally well have been fortuitous.

Close to one of the mounds, or the boundary between the two farms, had stood two stelae. One of these (Fig. 17.1a) was removed some years ago, and set up in front of the house of Sr. Guillermo Mohr, owner of the Finca San Isidro Piedra Parada. It is

1.36 m high from the bottom of the sculptured area, and is slightly tapering, with a maximum width of 72 cm and depth of 45 cm.

Only the front is sculptured. This shows an individual with head and feet in profile, but body partially turned to the front. The personage wears over the lower part of the face a snout-like mask that might represent the snout of Ehecatl or possibly the exaggerated muzzle of a jaguar. However, the rather bulbous nose above the mask is human, not animal. The right hand is prominently displayed with forefinger pointed forward in what appears to be a formal gesture. A large spiral dominates the head-dress, and there is a grotesque head of a monster on the left shoulder. A short vertical panel reveals the faint outlines of glyphs, and below this there is an elaborate representation of what appears to be a serpent. Above the individual is a complex arrangement which is almost certainly a celestial monster symbolizing the heavens. The figure stands on a low pedestal with a simple geometric pattern that spans the base of the stela.

The general style is reminiscent of that of Izapa, Chiapas, which is distant only some 60 km in a direct line, but there are also parallels with the sculptural art of the La Venta culture. The treatment of the heads of monsters is particularly close to that found at Izapa. The pedestal on which the figure stands recalls that of the Piedra Herrera at El Baul, Escuintla, the obelisk from Alvarado, Veracruz, and a band which occurs at Izapa not at the bottom, but at the top of a stela. The formal display of the hand in an act of



17.1. Stelae from southeastern Quezaltenango: (a) Stela 1, San Isidro Parada; (b) Stela 2, Santa Margarita.

gesture, the Eecatl-like mask, and the prominent, rather squarish anklets are features shared with La Venta art. The spiral of the headdress is somewhat like that found in Maya sculptures of the Middle and Great Periods, particularly at Yaxchilan (Lintels 3, 7, 33, and Stela 22), but in view of the prevalence of spirals in Middle American art, this resemblance probably has no chronological value.

Stela 2 stood close to Stela 1 but on the Santa Margarita side of the boundary. Because it was the object of offerings and worship by Indians working in the neighborhood, Sr. Zacarias Saenz, owner of the farm, had it interred, leaving exposed only the top few inches. So far as I could gather it was not moved

from its original location. Sr. Saenz graciously permitted us to excavate this monument to photograph it. After that it was again covered with earth.

This stela (Fig. 17.1b) is 2.12 m from top to bottom of the sculptured area, and 1.43 m across at the point of maximum width. It has a most unusual scalloped outline. Only the front is carved. The top is occupied by an extremely involved design in which spirals predominate. The subject is difficult to elucidate but may represent a celestial monster symbolizing the sky. Beneath the center of this is a vertical glyph panel with a width of 20 cm including the raised edges. The inscription opens with a glyph, 18 cm high, which is pretty clearly the Initial Series

Introducing Glyph of Maya inscriptions save that it lacks the variable element denoting the patron of the month of the Initial Series, and its flanking comb-like elements.

Nearly 5 cm beneath this is a numerical dot close to the left edge of the panel, and a numerical bar immediately below it. The surface above the right edge of the bar had flaked off, but for reasons of symmetry there must once have been a second dot there. It appeared that there had never been a third and central dot, although because of the condition of the stone, that possibility cannot entirely be eliminated. A reading of seven for the whole number is far and away the best. The area below this coefficient is eroded and partly flaked except close to the left edge, where it is plain. There are, however, traces of what may have been a numerical dot on the left of the panel 10.5 cm below the bottom of the bar. The rest of the inscription is entirely gone.

From the little that remains it is clear that the inscription is one of those numbers unattached to glyphs which have been reported from southern Veracruz, Chiapas, and Escuintla. Not far from Finca Santa Margarita, Walter Lehmann found on the Finca El Rosario Bola de Oro the monument known as La Piedra Schlubach, which he reports opens with the number seven with no glyph attached. The rest of the inscription was too badly damaged to yield more epigraphic data.

In the presence of an Initial Series Introducing Glyph, Stela 2, Santa Margarita, resembles Stela 1, Pestac, although the latter shows the variable element denoting the patron deity of the month.

The glyph panel was flanked by what appear to have been individuals or gods. That on the observer's left is partially preserved. This shows a personage who appears to wear a beaked mask over the lower part of his face and has an elaborate headdress which might represent a feathered serpent. The supposed mask is not properly placed if it is meant to cover the man's face. Viewed upside down it might pass for the head of the serpent, which, in that case, would entirely hide the man's head.

A feature of the individual on this stela, as well as that on Stela 1, is a chain which hangs diagonally to the rear from the belt. This feature is also found on the Leyden Plate, but occurs, too, on Maya sculptures dating from the middle of Cycle 9. There is, moreover, a vague resemblance between the headdress on Stela 2 and part of the headdress of the individual on the front of the Leyden Plate. However, the presentation in general and the scrollwork in particular are definitely in Izapa tradition.

About a kilometer from the main group and close to a small stream is a large boulder with a human

figure carved in low relief on one of its surfaces. The individual, like those on the two stelae, wears a mask, which in this case has as its main feature a long pendulous nose (Fig. 17.2a). He rests on one knee in an attitude in which ball-game players are often depicted. The right hand may be encased in a glove such as ball-game players used. The left hand grasps what appears to be a curved blade. The design shows considerable skill and lacks the awkwardness apparent in the figures on the two stelae. Curved blades, such as this figure holds, are rather rare. One may be seen on Stela 1, Comitan (10.2.5.0.0), on a fresco showing a human sacrifice from the Temple of the Warriors, Chichen Itza, and, in slightly modified form, on a stela at Izapa. The general presentation again has obviously been affected by the same influences responsible for certain features of the styles of Izapa and La Venta.

At the hacienda of San Isidro Piedra Parada there is also a zoomorph representing a crouching Jaguar with legs in low relief on the sides. This sculpture is 1.52 m long, 96 cm wide, and 52 cm high. Features are in low relief with straight lines and fret-like designs dominant, each eye being represented by a circle enclosed in three sides of a rectangle, the bottom line being absent. There is a bowl-like offering in the center of the back. The sculpture is somewhat reminiscent of a Jaguar altar before a stela at Izapa and a zoomorph at San Andres Osuna, Escuintla. There is also at the hacienda a drum-like altar of considerable diameter but undecorated (Fig. 17.2f).

An intricate curvilinear pattern on a boulder on the Finca San Francisco Miramar, near Coatepeque, hints that a careful search might reveal other sites in southwestern Guatemala with sculptures influenced by the Izapa style (Fig. 17.2g).

There are various other sculptures of a very different style on the San Isidro Piedra Parada farm. One (height 1.63 m.) is a very crude representation of a seated person or animal (Fig. 17.2b). An equally crude sculpture (height 93 cm) is at the Hacienda Santa Margarita, but the lower half is missing. The individual wears a necklace of tubular beads (Fig. 17.2c).

Two sculptures in the round at San Isidro Piedra Parada show a kneeling posture. The head is missing from the first (present height 82 cm) which represents a person with his hands tied behind his back with a sash, and who is naked except for a three-pronged loincloth (Fig. 17.2d, e). The second sculpture shows features, such as round, sunken eyes, a certain prognathism and marked supraorbital ridges meeting above the bridge of the nose, which indicate that the subject is a monkey or a person wearing a



17.2. Various sculptures from southeastern Quezaltenango: (a) relief on boulder, San Isidro Piedra Parada; (b) sculpture in the round, San Isidro Piedra Parada; (c) crude sculpture, Santa Margarita; (d) statue with hands bound behind back, San Isidro Piedra Parada; (e) profile view of *d*; (f) kneeling figure placed on round altar, San Isidro Piedra Parada; (g) relief on boulder, San Francisco Miramar.

monkey, mask. The hands rest in front of the stomach (Fig. 17.2f).

At the Hacienda Santa Margarita a fragmentary sculpture (42 cm high) is shaped as the trunk of a person with hands supporting a distended stomach (Fig. 17.3a). A similar motif was found at the Finca Buenos Aires (formerly Finca El Recuerdo), which lies only a few kilometers northwest of San Isidro Piedra Parada. The headless figure (45 cm high) has vestigial legs, and the hands rest on an enormously distended stomach (Fig. 17.2c). A third sculpture of an individual with very enlarged paunch was seen at Finca Moca, Solola, due south of Lake Atitlán.

A very few sherds were observed in excavating Stela 2, and with one exception all were too small to yield any information. The exception was a sherd of plumbate ware from the redeposited fill in front of the stela, but because of the conditions under

which it was found, it has no chronological value. The small archaeological collection of Sr. Enrique Montes at Finca Buenos Aires included a plumbate jar with a fine representation of what appears to be a turkey in relief on the front, two or three frog heads of plumbate, presumably from frog effigy vessels, and one complete jar of this form. This last was rather badly weathered. It appeared to be an imitation of this well-known plumbate form in another ware but might have been of misfired plumbate. Other plumbate vessels have been found on fincas near Colomba.

The Montes collection also included a number of feet of vessels in animal or human form. One was shaped as the flat head of a snake, and had been attached to a bowl with a slip of specular hematite red. A second support probably represents a foot, and is covered with a brownish red slip (Fig. 17.3b,



a



b



c



d



e



f



g



h



i

17.3. Stonework and Pottery: (a) headless figure with distended belly, Santa Margarita; (b) pottery feet of vessels, Buenos Aires; (c) headless figure and metate, Buenos Aires; (d) pottery spindle whorls, Buenos Aires; (e) pottery heads, Buenos Aires; (f) stonework, Buenos Aires; (g) "Palma"-like head, La Concepcion; (h) metate, El Paraiso; (i) profile view of g.

right). Another shows the wrinkled face of an old man (Fig. 17.3e, center), and two represent monkeys heads (Fig. 17.3b, left). In an article in *Los Mayas Antiguos* Robert Wauchope has shown that effigy supports are late and occur on the same horizon as do plumbate effigy vessels.

There were, too, in the Montes collection several pottery spindle whorls with incised (and in one case perhaps also stamped) designs (Fig. 17.3d). Excavations at San Jose, British Honduras, and elsewhere indicate that purposely manufactured spindle whorls of clay are a late innovation. There were also in the Montes collection some crude heads, presumably from incense burners but perhaps once set on the rims of vessel's (Fig. 17.3e).

Smaller stonework at Finca Buenos Aires included a small seated figure, headless, and with hands resting on the stomach (Fig. 17.3f), a complete metate (corn grinder) of rectangular trough type and with two short feet at one end (Fig. 17.3c). This latter seems to represent a common local type, since several metates in the collection of Lic. Vitalino Robles, which are of the same shape and similarly supported by two feet at one end, come from Finca El Paraiso in the neighborhood of Colimba.

A foot, probably broken from a metate, in the Montes collection is in the shape of a long-snouted animal head (Fig. 17.3f, right). There is also in this collection a spherical stone perforated for holding (Fig. 17.3f). There are other examples of such stones in the Robles collection which were found on the Finca El Paraiso and the nearby Rosario Tinhuinlinhuitz. They resemble closely stones from central Veracruz identified by Fewkes as sling stones. Yet Another stone in the Montes collection is ring-shaped. It is of lava, and of a type sometimes known as clubheads (Fig. 17.3f).

The Montes collection, all of which comes from the small mound where the farm buildings were erected, also includes two bark beaters. Both are rectangular and with a channel running around three sides. One has both faces scored with parallel grooves; the other has only one surface thus treated.

Most, if not all, of this collection from Finca Buenos Aires appears to be late, but naturally there is no evidence that it is of the same age as the best sculptures from San Isidro Piedra Parada and Santa Margarita.

This area produced some very fine examples of skill in smaller stonework. In the Robles collection there is a magnificent metate from Finca El Paraiso, the front support of which is in the form of a superbly modeled human head, beneath or in the jaws of a long-snouted reptile. There is a certain

Totonac feeling in the treatment of the head (Fig. 17.3h). In the same collection, but from the nearby Finca La Concepcion, is a very forceful monkey head of the type called "palma," which is also reminiscent of pieces from central Veracruz and adjacent territory (Fig. 17.3g, i). Recent evidence of Totonac Maya contacts would tend to place these two, pieces on a pre-plumbate horizon.

The area under discussion was perhaps Mam-speaking in the 16th century. According to the chronicler of Friar Alonso Ponce's travels, the town of Tlilapa, which was the last of the Province of Soconusco and which was nearly three leagues from where the Tonalá-Guatemala road crossed the Tlilapa river (the boundary between Soconusco and Guatemala), spoke a language different from that of Tapachula, and, by inference, not of the Achi (Quiche, Cakchiquel, and Zutuhil) group. It is highly probable that this was Mam, a language reported to have been spoken in parts of adjacent Zapotitlan. However, the chronicler adds that these Indians were recent arrivals, who used to visit this area to obtain cacao but who took up permanent residence there after the native population had been exterminated by disease. From other sources we know that the population of Soconusco declined very rapidly in the period between the Spanish conquest and Friar Ponce's visit. It is therefore possible that this southeastern corner of Quezaltenango was once inhabited by Tapachulteco.

The Tapachultec spoke a language which is generally grouped with Mixe-Zoque, and in their territory are situated the ruins of Izapa. It is, therefore, tempting to assign the San Isidro Piedra Parada and Santa Margarita stelae to a former Tapachulteca occupation. Nevertheless, one must bear in mind that boundaries of art styles and languages do not necessarily coincide, and, furthermore, that the San Isidro stela has a clearly Maya Initial Series Introducing Glyph.

In discussing the use of bars and dots without accompanying glyphs in *Dating of Certain Inscriptions of Non-Maya Origin I* (1941) suggested that the 400-day year of the Cakchiquel might have been borrowed from southern Veracruz, although at that time no evidence in favor of the idea was advanced.

Recently I have run across a statement indicating that a 400-day count did in fact exist on the coast of the Gulf of Mexico. Peter Martyr, in decade 4, chapter 8, of his *The Historie of the West Indies*, says, "In their language they call the Sunne Tonatico: yet somewhere it is otherwise, where yet without shew of reason they divide the yeere into 20 moneths, and include the moneths also into 20 days."

Peter Martyr wrote the fourth decade of his memorable book in 1520, before Cortes had despatched his second letter, and before the news of the advance on Tlaxcala and Tenochtitlan had reached Europe. On the other hand, Cortes' first letter, the gold, hieroglyphic books, and other presents had reached Europe. Peter Martyr had seen the Indians who had been sent to Spain with them, and had talked with various members of the original expedition. His narrative contains many details not found elsewhere, and these presumably came from verbal information, perhaps supplemented by data in the missing first letter of Cortes.

The region where this calendar of 20 months, each of 20 days, was used must have been in Yucatan, Campeche, Tabasco, or Veracruz, since those were the only parts of what is now Mexico concerning which there was any information at the time Peter Martyr wrote his fourth decade. We can eliminate Yucatan, Campeche, and northeastern Tabasco since these were areas where the lowland Maya calendar was in use. Unless Martyr's statement refers to the country between Honduras and Panama, which is hardly likely, the conclusion is unavoidable that

a 400-day period was in use somewhere in central or southern Veracruz or contiguous Tabasco. There are also vague hints at the use of a vigesimal system for counting years among the Totonac. Spinden has called attention to Torquemada's statement that every Totonac ruler governed 80 years, and the total period they ruled was 800 years. In the *Papeles de Nueva España* (Paso y Troncoso 1905) the statement is made two or three times that Xonotla and dependent Totonac towns were founded 400 years or about 400 years previously. These figures suggest that the Totonac counted in 20-year and 100-year periods, but, of course, in no way indicate whether the years were of 360, 365, or 400 days.

In view of what Peter Martyr says, it is clear that there were at least two areas in which the 140-day year was used. These were somewhere on the Gulf of Mexico and Cakchiquel territory in the southern highlands of Guatemala. Numerical bars and dots unaccompanied by glyphs have been reported from the Gulf of Mexico, Chiapas, and areas in the south and southwest of Guatemala. Whether the somewhat similar distributions of these two traits are significant remains to be seen.

The Initial Series of Stela 14, Piedras Negras, Guatemala, and a Date on Stela 19, Naranjo, Guatemala

J. Eric S. Thompson

The decipherment of the Initial Series of Stela 14, Piedras Negras, has been generally but reluctantly accepted as 9.18.0.3.1 7 Imix 19 Pax principally because the data given in the lunar series appeared to be in agreement with that decipherment. A reconstruction of the difficult Initial Series has to meet the following conditions:

1. The katun coefficient must be 10, 14, 16, or 17 because the eye of the head form is round, the jawbone is prominent, and there is no headdress.
2. The uinal coefficient must be 10, 14, 16, or 17 for the same reasons.
3. The day is 7 Imix, and therefore the kin coefficient must be 1.
4. Glyph G is form 8.
5. The moon age is 26 days. This cannot be six days because of the presence of Glyph D (Thompson 1929).
6. Glyph C appears to record two moons, but Glyph X is of a form found with 4C or 5C.
7. The month sign is enclosed within a cartouche and has a superfix. The coefficient is 19.

The reading 9.18.0.3.1 7 Imix 19 Pax disagrees with conditions 1, 2, 14, and 7, and therefore must be rejected.

Conditions 2, 3, and 4 require that the uinal coefficient be 17, because only uinal coefficients of 8 and 17 can combine with a kin coefficient of 1 to call for Glyph G8. A uinal coefficient of 8 can be eliminated since that head, which represents the maize god, in variably has an eye of almond shape. In fact, one can

make out the loop under the eye and over the nose which is the diagnostic of the heads for 7 and 17.

On the assumption that the cycle coefficient is 9, the only readings in Katuns 10, 14, 16, or 17 that will meet conditions 3 and 4 and produce the required uinal coefficient of 17 are:

A	9.10.9.17.1	7 Imix	19 Mac	? moons	16 days
B	9.14.7.17.1	7 Imix	14 Ceh	4 moons	14 days
C	9.16.6.17.1	7 Imix	19 Uo	5 moons	27 days
D	9.16.19.17.1	7 Imix	19 Kayab	2 moons	11 days
E	9.17.12.17.1	7 Imix	14 Kankin	4 moons	25 days

Dates B and E can be eliminated because the month coefficients do not meet condition 7. Dates A and D can be rejected because their month signs are not enclosed within a cartouche.

Only Date C remains. The moon age of the period of uniformity corresponding to this is 5C, 6E, or 7E. This agrees with the 6E actually recorded and with the form of Glyph X but disagrees with Glyph C. However, as the recorded forms of Glyphs C and X are incompatible, complete agreement is impossible. The approximate moon ages of all five dates are given, and it can be seen that only Dates C and E agree within reasonable limits with the recorded data, but Date E has already been eliminated.

The tun glyph is too eroded to supply a sure check on this reading, but the photograph almost certainly shows a rounded eye and this agrees with its decipherment as 6.

The position which this monument appears to have occupied supports the readings on the assumption that the stela commemorated the date 9.16.10.0.0 1 Ahau 3 Zip. It is one of six stelae in front of Structure O-13, apparently arranged in two rows. Stelae 14 and 16 form the back row; Stelae 13, 17, 18 and 19 are in front. Stela 14 then would commemorate 9.16.10.0.0. Stela 16, which is next to it, records the next hotun-ending, 9.16.15.0.0.0 Stela 13, which is in front of Stela 16, marks the following katun, 9.17.0.0.0. Stela 17, next to the last, is undecipherable, but Stela 18 very probably records the date 9.17.5.0.0. The last monument in the front row, Stela 19, yields no recognizable date. The custom of erecting in the same location several stelae recording consecutive hotun-endings was rather generally followed at Piedras Negras. The new reading makes Stela 14 the start of the sequence before Structure O-13o. Acceptance of the old reading requires a much less logical reconstruction, wherein several stelae were erected in front of the base of the structure, next two were placed on the terrace of the structure, and then Stela 14 was set up in front of the base but in a position in which it was partially obscured by Stela 19.

In presentation and style Stela 14 very closely resembles Stela 11, which was erected at 9.15.0.0.0. Stelae 25 and 6, dedicated at 9.8.15.0.0 and 9.12.15.0.0 respectively, fall into this group, which shows gods seated in niches formed by the bodies of celestial dragons. The decipherment here proposed reduces the interval between Stelae 14 and 11 by 35 or 40 years, thereby accounting more satisfactorily for their marked similarities.

More than a question of correct decipherment of an inscription is involved in advancing a new reading of the Initial Series of Stela 14. Should 9.18.0.3.1 7 Imix 19 Pax be accepted as the correct rendering

of this Initial Series, it would serve as evidence for the theory that the Maya commemorated important events on their recurrence at the end of one or more Calendar Rounds, for the date 7 Imix 19 Pax, at the position 9.12.14.13.1, occurs on three stelae at Piedras Negras. It is known that the Maya commemorated important dates after the lapse of one or more katuns or even at the end of five tuns, but there is little evidence, except for the above reading of the Initial Series of Stela 14, that Calendar Round anniversaries were observed. By casting doubt on this reading, we eliminate one good reason for imputing to the Maya a practice they may not have followed.

On another occasion (Thompson 1935:101–103) I have discussed cases in which a glyph like a tun sign with a lunar superfix is used with month signs, apparently with the meaning of completion. The small number there listed can be augmented by another example. The front of Stela 19, Naranjo, carries the date 9.17.10.0.0 12 Ahau 8 Pax expressed by means of a Period Ending. A panel of glyphs on the right of the main personage opens with a date 9 ?, Yaxkin completed, the glyph for completion being the same as those discussed in the citation. The glyph to which the coefficient of 9 is attached is clearly a day sign because of its position before a month sign and because of the cartouche which encloses it. It appears to contain a head with an infix on the right side such as is found with Eb. It is, therefore, probable that this date is 9 Eb, Yaxkin completed, corresponding to 9.17.6.8.12 9 Eb, Yaxkin completed, corresponding to 9.17.6.8.12 9 Eb, Yaxkin completed (or 0 Mol).

It must be more than coincidence that three of the four known cases of the use of this completion glyph should occur with Yaxkin and the fourth with Mol, the following month.

Representations of Tlalchitonatiuh at Chichen Itza, Yucatan, and at El Baul, Escuintla

J. Eric S. Thompson

The three friezes which gird the pyramid of the Temple of the Warriors at Chichen Itza, Yucatan, repeat with unrelieved monotony the same ritual. Jaguars, eagles, and an unidentified animal offer slightly conical objects to persons in recumbent positions. The animals are in pairs, set back to back, so that each faces a person. The latter, also in pairs, are placed feet to feet, but with their bodies twisted so that each faces outward toward an animal, at which he appears to point a highly ornamented staff or spear. Other sources of information permit of the ready identification of the conical object each animal holds as a heart.

Each individual has a ring around his eye, a bar-shaped nasal rod, and a peculiar headdress of the kind frequently worn by Tlaloc, the Mexican rain god, in codices of the Borgia group. The combination of ring around eye, straight nasal rod, and this peculiar headdress point unmistakably to Tlaloc, yet Tlaloc has no connection with the offerings of human hearts by eagles and jaguars. However, these Tlaloc-like figures have another attribute, a sweeping curved object, set with beads, which issue from behind the back. This has been correctly recognized as hair, on the strength of its identity with objects attached to the heads of figures depicted on frescoes in the same building.

The frescoes reveal that this coiffure was bright yellow and was set with green beads. There is little doubt that it represents artificial hair, for in one case it is attached to the side of the head of a man who otherwise is bald. The wearers are sacrificial victims, prisoners, and warriors engaged in battle.

One would hardly expect Indian warriors normally to wear flaxen hair studded with jade beads. Such a peruke must have ritualistic significance. It is, indeed, the hair arrangement normally worn by Tonatiuh, the Mexican sun god, and occasionally by other members of the Mexican pantheon, but in the latter case beads are seldom set in it. The facial paints of the solar god are red or yellow, and these and the golden hair obviously derive from the natural colors of the sun. Jade or turquoise beads were normally set in the sun disk, and clearly have a close association with the sun.

The connection between warriors and the sun was extremely close in ancient Mexico. Warriors fought to capture victims to nourish the sun, and, as a reward, after death on the field of battle or on the sacrificial block, they went to the sky. There they accompanied the sun on his daily journey from the point of sunrise to the zenith (women who had died in childbirth were classified as warriors, and escorted the sun from the zenith to, the western horizon). The finest warriors, as servants of the sun, formed various military orders, of which those of Eagles and Jaguars were most renowned. Eagle and Jaguar were names borne by the sun, and the members of those orders dressed in the skins of those animals. The Toltec painted the bodies of victorious warriors yellow and their faces red, and an Aztec who had taken a prisoner single-handed was permitted the honor of painting himself in the same colors. These, however, were precisely the colors of the sun, as just noted.

We can, accordingly, be sure that the warriors on the frescoes of the Temple of the Warriors with yellow hair set with beads and yellow or red body painting have donned a ritualistic attire in honor of their patron the sun.

Having established that the peculiar hair arrangement worn by warriors on the frescoes of the Temple of the Warriors is one of the attributes of the Mexican sun god, *Tonatiuh*, we must explain why this same unusual coiffure should be combined with unmistakable attributes of *Tlaloc* on the sculptured friezes of the same building.

A rather rare manifestation of the Mexican sun god is *Tlalchitonatiuh*, 'Sun near the earth,' who is the deputy ruler of the 16th week of the *Tonalpoualli* (260-day count) in certain Aztec codices. *Tlalchitonatiuh*, as his name implies, represents the sun at the horizon, and his picture combines the attributes of *Tonatiuh* and *Tlaloc*. This blending may refer to the fact that the sun so frequently rises or sets amid clouds or it might conceivably symbolize also the drinking of the dew by the newly risen sun. In any case, it is clear that the individuals on the friezes represent *Tlalchitonatiuh* because they combine the attributes of *Tlaloc* and *Tonatiuh*. As his impersonators they receive the heart which warriors of the orders of Eagles, Jaguars, and Coyotes(?), in the guises of those animals, offer.

Tlalchitonatiuh must here represent the rising sun, for the *Ciutateteo*, the women who had died in childbirth, would be in charge of any offerings made at sunset. Sahagun records the belief that the warriors who had died in battle or as sacrificial victims gathered each day on a plain, and at the moment the sun rose shouted and beat on their shields.

Although the object, which each impersonator holds, has been identified as a highly ornate spear, it is more probable that it represents the staff which the

sun god was believed to carry, for the dart propelled by means of a spear thrower, not a long-shafted spear, is the weapon of *Tonatiuh*. Duran describes the sun god's staff as very handsome, with its loops and knots of leather and feathers stuck in it. This description and his illustration check fairly well with the befeathered object carried by each impersonator of *Tlalchitonatiuh* on the friezes of the pyramid of the Temple of the Warriors.

On a large boulder at El Baul, Escuintla, on the southern coastal belt of Guatemala, there is an extremely interesting representation of human sacrifice (Waterman 1924). Two men clad in jaguar hides and one in the skin of an eagle are in the posture assumed by sacrificial victims. A priest holds the dripping heart of a fourth victim who is in the same sacrificial position. This last person wears the mask of *Tlaloc* and a headdress which is a simplified form of that worn by the *Tlalchitonatiuh* impersonators at Chichen Itza. All four victims seem to wear long artificial hair, and in one case beads are distinguishable. A head unattached to a body has the same sweeping artificial hair. The date 6 *Quiauitl* is associated with the scene. Here the actors are the same, but instead of offering and accepting the hearts of others, they themselves are the victims. Nevertheless, the same association of Eagle and Jaguar warriors with *Tlalchitonatiuh* holds.

In both cases there is ample evidence that the scenes were sculptured during periods of strong Mexican influence.

Noteworthy in this connection is a carved or molded bowl, found by Linné at Calpulalpan, Tlaxcala. This apparently shows the same deity in association with a Jaguar and an eagle. Here the hair is arranged like the rays of the sun, spreading in all directions, and the general attitude rather suggests that of the diving god.

Maya Epigraphy: Directional Glyphs in Counting

J. Eric S. Thompson

The manner in which the Maya may have indicated whether a Secondary Series was to be reckoned backward or forward has puzzled Maya epigraphists for nearly half a century; and our inability to find the answer to this problem has hampered research, since in the many cases of suppressed starting or ending points of counts it has not been possible to make a reliable reconstruction and thereby fix with certainty the dates with which unknown symbols were associated.

J. Thompson Goodman identified in a general manner a number of directional symbols in his epochal study of Maya glyphs. One of these forms has been generally accepted as indicating a Secondary Series count, but the others have been ignored by all subsequent writers on Maya epigraphy. Goodman, as was so often the case, came closer to the truth than those who followed him but failed to realize the complete meanings involved in these symbols. Actually there are affixes to mark whether the associated Secondary Series should be counted forward to or from the juxtaposed Calendar Round dates. They correspond roughly to our plus and minus signs.

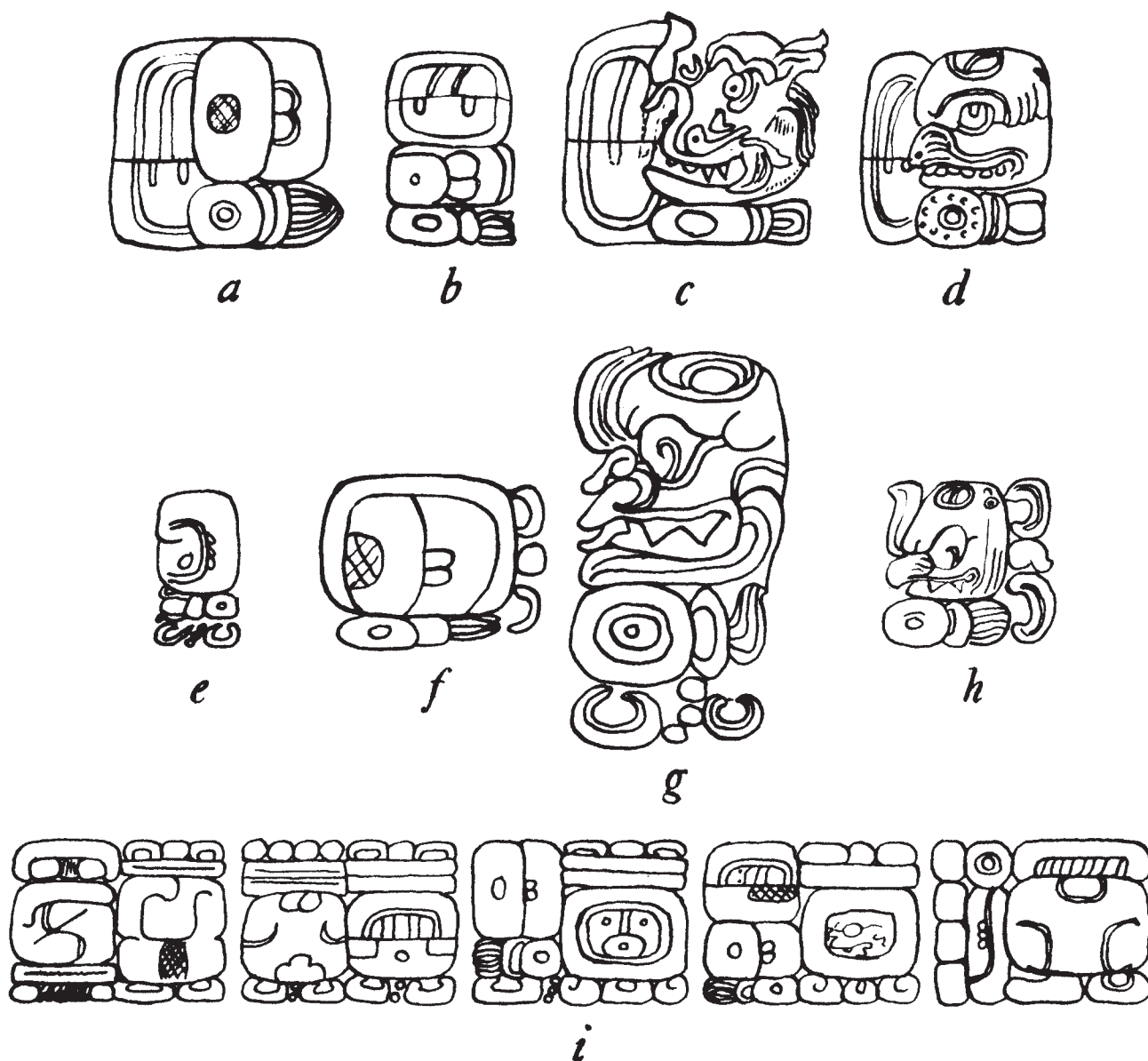
Direction Glyph A (Fig. 20.1a, b) consists of three elements. The first is a prefix, which may be to the left or above the main body of the glyph. This is a well-known character, which occurs in other combinations with a meaning such as "leading to," "falling on," or, perhaps, "ending." The second and main element is also found in many other compounds. For instance, it serves as a variant of the day sign *Muluc*. The third element is a postfix, placed to the right or

below the main element, and which is the so-called torch or vulture symbol. The glyphs on page 126c, d, are merely head variants of Directional Glyph A. The prefix and postfix are unchanged although the latter may become an infix. The head is that also used as the variable element of the Initial Series Introducing Glyph when the month is *Zotz*. Beyer considered it to be that of a mythical serpent; I think it may represent that of a fish, in view of the details which appear to represent fins. Furthermore, in at least one Directional Glyph A (Stela 32, Naranjo), the "comb" sign, which is a known symbol for fish, replaces the central element.

Directional Glyph A frequently stands between a Secondary Series and a Calendar Round date, and indicates that the count is forward to that date; that is, the Secondary Series is to be added to some other date to reach it. Occasionally it occurs with a date which is forward from the preceding one, but where the Secondary Series is suppressed.

Directional Glyph B (Fig. 20.1e, f) resembles Directional Glyph A except that the prefix is absent and a second postfix is added. This additional postfix takes the form of two crescents flanking a variable element which usually is composed of two or three small circles in a line. Sometimes, for lack of space, one of the crescents may be eliminated. There are also head variants of this glyph (Fig. 20.1g, h).

The change in affixes radically alters the meaning of the glyph. Directional Glyph B indicates the departure point of a count forward or, quite probably, the result of a subtraction. Unfortunately, we



20.1. (a–d) Directional Glyph A; (e–h) Directional Glyph B; (i) inscription containing both directional glyphs. (a) Yaxchilan, Lintel 25; (b) Quirigua, Stela F (west side); (c) Chinikiha, step; (d) Palenque, Temple of the Cross (P17); (e) Copan, Altar W'; (f) Copan, Altar I'; (g) Copan, Stela C; (h) Palenque, Temple of the Cross (E12); (i) Copan, Dates 22 and 23, Hieroglyphic Stairway.

cannot be certain as to the order in which glyphs are to be read. If they are to be read in the order in which they occur, Directional Glyph B, whenever it occurs with the second of the two dates joined by a Secondary Series, must convey the idea of a backward count or subtraction. At any rate whenever found with a Secondary Series it is always associated with the earlier of the two conjoined dates.

Many Secondary Series have neither of these two directional glyphs, and few give both. A text which illustrates well the use of Directional Glyph A is that

of the Panel of the 96 glyphs at Palenque. This contains five Secondary Series: four counted forward, one counted back. Immediately before the Calendar Round dates of all forward terminal points head variant forms of Directional Glyph A are carved. There is no Directional Glyph B before the date reached by the one Secondary Series that is subtracted. Instead, there is an eel-like superfix over the day sign. This superfix occurs quite frequently at Palenque, and invariably marks the point of departure of a forward reckoning, or, as in this case, the point reached after a

subtraction (the torch suffix correspondingly seems to mark the terminal of a forward count).

An example of the use of both directional glyphs is supplied by Dates 22 and 23 of the Hieroglyphic Stairway, Copan (Fig. 20.1i). The whole reads something like "A Secondary Series count: 11 tuns 14 uinals and 6 kins counted forward from 'Directional Glyph B' 11 Ahau lead forward to (end on or reach) Direction Glyph A 6 Cimi 4 Tzec." Altar W1, Copan, supplies another clear example which reads "9 uinals and 4 kins counted forward from 6 Ahau 13 Kayab lead forward to 8 Kan." The change in affixes in fact denotes a change in direction "from" becomes "to." Such interpretations may lead to a revision of current renderings of many elements now classed together as ending signs.

Frequently Directional Glyphs A and B are associated with glyphs of unknown meaning, and now that the direction of the count is known, the task of interpreting these unknown symbols should be easier. For example, on Stela J, Quirigua, there are two Secondary Series which have to be added not to the preceding dates but to the Initial Series. Directional Glyph B is in both cases associated with similar glyphs of unknown meaning. These glyphs, therefore, in all probability record that the count is from the Initial Series, not from the last Calendar Round date.

There are, too, other directional glyphs, as, for example, that used in reaching the "Oc" (Goodman's Burner Period) glyph. The whole problem is the subject of a lengthier study now in preparation.

Notes on Sculpture and Architecture at Tonalá, Chiapas

Linton Satterthwaite Jr.

The railroad town of Tonalá, about 150 km east of Tehuantepec and about the same distance west of Izapa, lies at the base of a high escarpment, which flanks the narrow coastal plain. C. Seler-Sachs (1900) and E. J. Palacios (1928) have described two ruins in the neighborhood: one, known as El Paredón, on the ocean side of the plain; the other, La Iglesia, on top of the escarpment and 3 leagues west of Tonalá. My wife and I saw only the latter site in the course of a one-day visit at Tonalá in 1937. Since then Edwin N. Ferndón Jr. and John Corbett have spent about a month at La Iglesia. I understand that they made a survey of the site but did not excavate.

Don Casiano Salazar, proprietor of the ranch on which La Iglesia is situated, supplied us with horses and was kind enough to serve as our guide. He himself is an enthusiastic and most helpful amateur archaeologist. He speaks of La Iglesia as Tonalá Vieja and states that between there and the town is yet another site where there is a carved stela. This, I think, is at the top of the escarpment or else near its base. Clearly, several distinct sites are to be considered as the possible sources of the antiquities now in the town.

The Ferndón map will locate the monuments and mounds which are disposed in more than one group. One of these was mapped by Palacios.

SCULPTURE

Mrs. Seler-Sachs provides drawings of two sides of a stela in the plaza at the town of Tonalá. My bad photograph of one face confirms her drawing as accu-

rate; my photo of the other side was a blank. Her drawing of that side shows a perfectly human figure wearing a grotesque mask in such fashion that his complete face appears between its jaws.

A drawing of the stela at the Tonalá railroad station was published by Palacios. I offer an unfinished drawing of my own, made while waiting for a late train (Fig. 21.1e), because the grotesque head in the bottom panel shows details which Palacios did not notice, and which I did not notice until I examined the drawing later. It appears to be a mask, with a fleshless lower jaw. This seems to be attached to a natural human head, only the lips and chin of which can be seen in profile between the open jaws of the mask. A similar arrangement (in a feline head) can be seen in the headdress of Stela 13 at Piedras Negras, now in the University Museum in Philadelphia, and in a grotesque head in the Chacmool Temple at Chichén Itza. The mask-jaw shows the non-Maya protuberances which Thompson might have predicted, but which Palacios did not draw. This panel was drawn to scale with special care. I was sure only of the two dots shown in the bar-and-dot numeral, whereas Palacios shows four dots. I have no doubt that the number was 9 (with four dots); it is even possible that the two of which I was doubtful were chipped off after he made his drawing. The glyph, presumably a day sign, is hopelessly eroded, the presence of a bar-and-dot numeral certain.

My drawing corresponds with Palacios' in indicating great erosion on the figures right side, but this is because the drawing is unfinished. A poor photo-

graph and my notes show masks at either side of the hips and on each knee, with more certainty than suggested by either drawing; and the photograph, revealing more than either drawing, discloses that the object on the figure's left knee, at least, is a more or less human head and surely not the cushion-like pad to be seen on southern Maya ballplayers, usually on one knee only. No doubt the next observer will be able to recover many details of hip and knee objects, but night-lighting will probably be necessary for good photographs. The left hand seemed to be eroded and I think neither drawing should be taken as evidence that fingers were not originally depicted. The back of the stone is scaled but probably was plain; the (observers) left side is entirely chipped off, but part of the right side remains and is plain.

Surviving height, from base of design, is 1.4 m, width at foot level 0.8 m, thickness about 0.2 m. The plaza stela is 0.75–0.77 m wide, 0.17–0.20 m thick, and stands 1.6 m high. To this must be added something for the feet, now buried, and the plain butt. With these as a guide the original height of the station stone can be fairly estimated at about 1.8 m for the figure plus 0.3 m for the panel at the base, or about 2.14 m for the design. Mrs. Seler-Sachs shows a very short plain butt for the plaza stone, probably the case here, for most of the bottom panel had to be dug out. These dimensions and the fact that the plaza stone, despite its short butt, is carved on both sides, should be considered in forming an opinion as to whether the station stone may have been a ball-court panel, rather than an upright stela.

Figure 21.1a shows Sr. Salazar at La Iglesia beside a stela which he discovered apparently some years after Palacios' visit. Pending a complete numeration I shall use his name for it, "El Soldado." It was chalked to bring out the relief. The reverse, which for convenience I will call the back; is not chalked (Fig. 21.1b), but the only well-preserved edge is chalked (Fig. 21.1c). This is the left side as we face the front. A drawing of this side was made from the original (Fig. 21.1i). I am under the impression that the lower glyph, if more carefully examined, might turn out to be a profile Tlaloc head of the Zapotec type described by Caso; but the drawing is not very reliable. I am fairly sure that the elongated elements at the left belong to the design on the back, this being carried around a rounded edge. To the right of these (whether I misconstrue my faulty notes or not) is the panel with glyph-like elements, certainly not Maya, with the glyph just noted at its base. It shows, I think, a certain vague resemblance to the back of a statue found by R. Burkitt at El Vicente, near Palo Gordo, Suchitepequez, Guatemala (Fig. 21.1j). The other edge of the Tonalá stela is badly scaled, but a good photo-

graph shows a small well-preserved section indicating a similar "inscription" containing rectangles.

There is a piece of sculpture which we can provisionally call "stela fragment," at Sr. Salazar's home in Tonalá (Fig. 21.1f). According to him this lay about 3 m from the "soldado" stela, on ground a little higher. He found the stela nearly buried, its best-preserved edge up, and re-erected it. If we consider the staff or spear-carrying man of figure 1a as the "soldier," then the question is raised whether the fragment is not the top of this stela, and the side drawn in figure is the head of the "soldier."

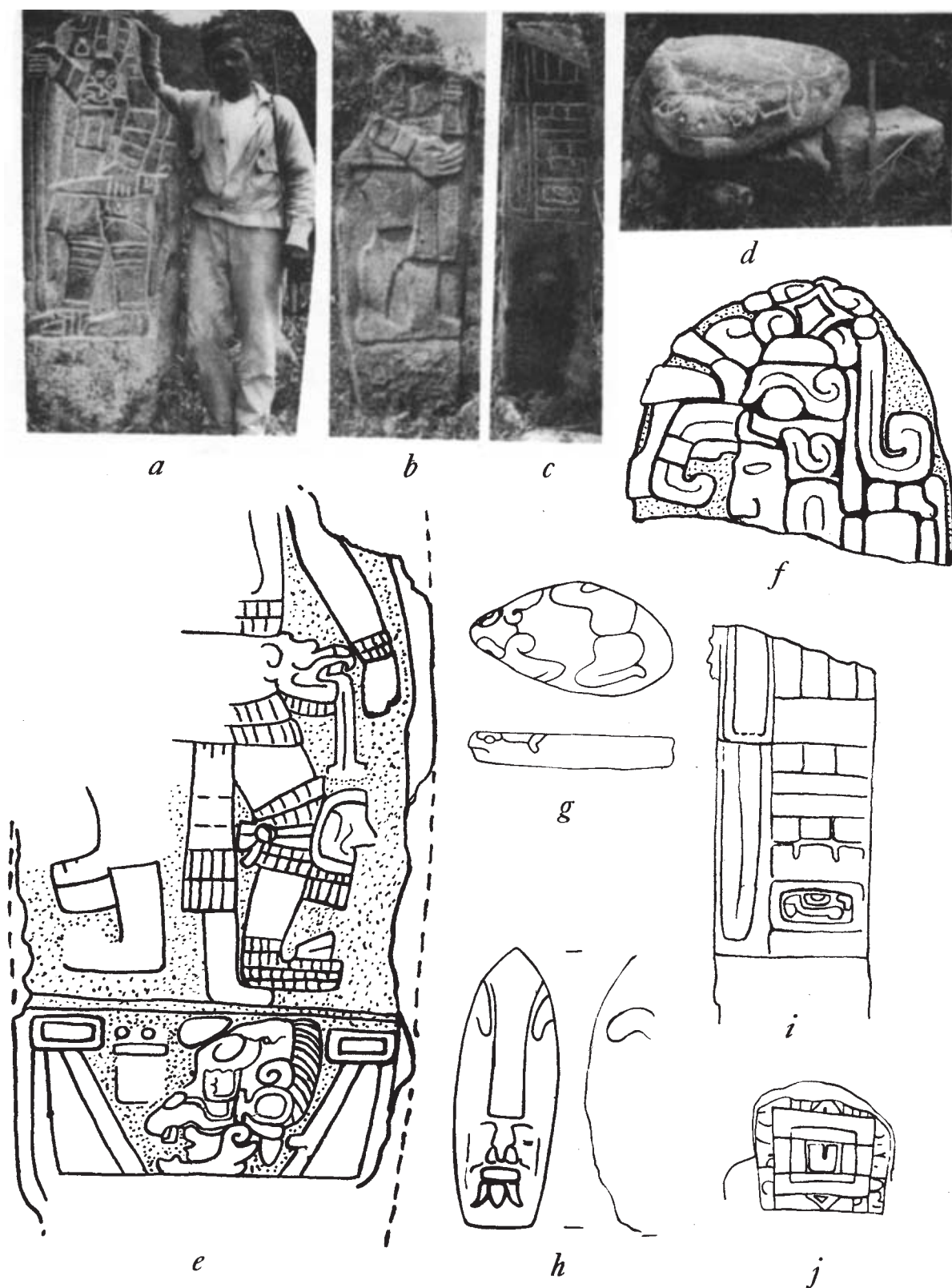
According to my notes pieces are of "the same mottled stone," which, to my inexperienced eye, is the same as that of the plaza stela but somewhat different from that of the station stela. This material occurs as bedrock at La Iglesia.

As there is a good probability that fragment and stela belong together, I would suggest that the next visitor make a paste-and-paper cast of the broken top of the stela and see if it fits the fragment now in the town. The stela is 1.5 total design height with 47 cm of this plain butt, 53 cm (front) and 44 cm (back) wide, 31 cm thick. The width of the fragment is 61 cm, thickness 20 cm. These measurements do not suggest a fit, but I do not know whether my dimensions for the top of the stela are correct. If two stelae are involved, the main part of the fragment presumably awaits discovery and should be in the vicinity of "El Soldado."

The (observers) right side of the stela is rounded; the other is comparatively flat, and not at a right angle to the front. The edges of the fragment are rounded on both sides and somewhat carinate. The ridges become sharper toward the top, which has the form of a gigantic celt. The side not illustrated carries a similar but not identical head and headdress, the latter with a similar staring eye and mouth-curl.

A slab, perhaps roughly shaped and engraved in the form of a frog or toad (about 0.6 by 0.53 by 0.15 m.) lay some meters to the left of El Soldado (Fig. 21.1d, g). Soldado and frog are near the edge of the cliff, well removed from the mound group described by Palacios. Figure 21.1h, is a very hurried and poor sketch of a stone in the neighborhood of that group, behind and above the "paved way" illustrated by Mrs. Seler-Sachs. It was found by Sr. Victor Escobar, an associate of Sr. Salazar. It is centered in front of, and about 5 m from, a mound about 1 m high. The drawing should not be relied on too heavily, but the Tlaloc-like fangs seem perfectly clear. The stone is carinate, with the ridge running down the front.

On another hilltop, near a large platform, is a boulder known as "El Sillon," about 3 m long, with part of its top cut out to form a flat surface at one side and end.



21.1. Sculpture at Tonalá, Chiapas: (a) front of "El Soldado" stela, La Iglesia, Tonalá; (b) back of a; (c) side of a; (d) slab in form of toad, La Iglesia, Tonalá; (e) design on stela, Tonalá station; (f) design on stela fragment, Tonalá; (g) design on d; (h) sketch of stone at La Iglesia; (i) panel with glyph-like designs on left side of a; (j) design on back of statue, San Vicente, near Palo Gordo, Suchitepequez, Guatemala.

Near the ranch house was a stone (1.6 by 0.5 by 0.2 m), said to have been brought from the neighborhood of the Soldado stela. It was somewhat irregular in shape and one edge had been nicely tooled to a flat surface. Neither this nor the "sillon" appear to be architectural elements, though perhaps they should not be described as sculpture either.

ARCHITECTURE

Palacios' plan and description give a good idea of the type and disposition of the mounds here. There is more than one such group, and we can look for their relationships when Ferndon's map becomes available. I can add a few notes to supplement those of Palacios on the architecture.

The terracing of at least two platforms carried what in the southern Maya area would be called an apron molding, doubtless the same as the "cornice" described by Palacios. In one case this was formed of three courses of stone, the faces beveled to give the slope. Where noted, this element is not used in the Maya manner.

The opening of a subfloor drain, 0.45 m high and 0.55 m wide, gives onto the top of another and lower terrace, and a shallow open channel leads from it across the top of the latter.

The vestiges of building walls will, with only minor clearing, yield more or less complete ground plans. Even without any clearing it was possible to note that the temple at the top of Mrs. Seler-Sachs "paved way," its side toward the latter, probably had only a single doorway about 2 m wide, and a single room of about that depth, with walls 0.8 or 0.9 m thick. In another case a rear building wall was 0.68 m thick. Two piers were placed 2.4 m forward of this, forming a room 2.4 by about 11 m, with three doorways about 2.8 m wide. The one completely visible pier was 0.7 by 1.8 m. The front of the piers is 0.8 m behind a plinth or step-down; there were here some hints that the side walls extended forward to enclose a second and front room at a lower level; but this was uncertain, and such a room might, if existent, be secondary.

Another building probably contained only one room about 2.6 m (or more) by about 11 m, with a single front doorway 2.4 m wide. Behind the doorway and against the rear wall was a small mound of debris, presumably the ruin of a bench altar or a "sanctuary," such as those figured at Quiengola. If the latter, it was miniature in size, such as that in Pyramid A-I at Uaxactun.

Palacios was quite correct in describing some of the masonry, as "megalthic," and I agree with him that all the stone had been split off from laminated

beds. But there is wide variety in the size of the slabs selected for different structures, and in one case a megalthic platform seemed to have been secondarily extended with a wall of small slabs. In one case I noted a building platform, about 1 m high and composed of much smaller stone than its basal platform, and the wall of the building composed of small thin slabs only. Like Palacios, I noted absence of mortar, but pending excavation I think this question should be left open. If poor in quality, it may have washed out of the exposed faces. Some chinking was evident, as well as a corner of nicely fitting, cut stone without chinking. Although stone-dressing was probably kept to a minimum, my impression was that the local builders knew perfectly well how to do it.

No free-standing walls are now higher than about 0.5 m. This, coupled with the scarcity of debris, guarantees that roofs were not vaulted and, I think, that walls were of perishable material above a height which may have varied but which was hardly more than a meter anywhere.

In view of "artificial stones" laid in clay, reported at Quiengola, we need not necessarily conclude that the walls were partly wood or wattle-and-daub. Ordinary adobes or the Quiengola variety (in which lime, gravel, and crushed stone seem to have been mixed) could presumably have weathered away and been washed out, leaving only the lower stone portions. Lime plaster was not noted. Unless this was available for weatherproofing flat roofs, probably thatch roofs should be postulated. In this connection I can testify that in carefully digging many nonvaulted buildings in the Maya country, I found sure remains of lime plaster on walls and floors but only after large areas had been thoroughly searched for it. I think that beam-and-mortar roofs should at present be considered as possible here.

At the mound behind the head of Figure 21.1h, "some small cut veneer" stone was observed, with the additional note that, "Stone used here on edge frequently, usually large and well-cut (in retaining walls)." It would be well to distinguish between veneering of free-standing vertical walls and that of sloping substructure walls when using veneer as a trait of chronological or distributional value. My notes do not make it clear whether veneering of free-standing building walls was seen at Tonalá.

Such hasty notes as these should not be used as a sure basis for theory; I offer them merely for use in forming or questioning tentative hypotheses, and especially so that the next visitor, with more time, will be led to confirm or correct them. The importance of Tonalá in the question of tracing southern Mexican influences on the Pacific coast of Guatemala has been noted elsewhere.

Maya Epigraphy: A Cycle of 819 Days

J. Eric S. Thompson

In five Maya inscriptions the month position of an Initial Series is separated from the context by an intervening Secondary Series and date, together with six (in one incomplete text four) explanatory hieroglyphs. In four cases the Secondary Series is subtracted from the Initial Series to reach a day with a coefficient of one; in the fifth example a subtraction was almost certainly made to reach a day with a coefficient of one, although the Secondary Series

and the day are destroyed. Only the month position remains.

In one text (Stela K, Quirigua) the parenthetical clause interrupts the Lunar Series; in the remaining examples it follows Glyph A of that series. There are no other known cases of an interruption of an Initial Series.

These Initial Series with their parenthetical clauses are:

Palenque Stela 1	A	A1-B5	9.12.6.5.8	3 Lamat	Initial Series
		A9-B9	1.10.1		Subtract
	A'	A10	9.12.4.13.7	1 Manik 10 Pop	
		A11-B11		Explanatory glyphs	
Yaxchilan Lintel 29 and 30	B	A1-A4	9.13.17.12.10	8 Oc	Initial Series
		E1-F1	1.1.17		Subtract
	B'	E2-F2	9.13.16.10.13	1 Ben 1 Chen	
		E3-F5		Explanatory glyphs	
		G1		13 Yax	Month of Initial Series
Yaxchilan Stela 11 (right/left sides)	C	B'1-B'7	9.16.1.0.0	11 Ahau	Initial Series
		C'2-C'3	1.3.6		Subtract
	C'	C'4-C'5	9.15.19.14.14	1 Ix 7 Uo	
		C'6-C'9		Explanatory glyphs	

continued on next page

		C'10		8 Tzec	Month of Initial Series
Yaxchilan Stela 1	D	A1–D3	9.16.10.0.0	1 Ahau ¹	Initial Series
			1.1.10		Subtract
	D'	E2	9.16.8.16.10	1 Oc 18 Pop ²	
		E3–F6		Explanatory glyphs	
		E7		3 Zip	Month of Initial Series
Quirigua Stela K	E	A1–A5a	9.18.15.0.0	3 Ahau	Initial Series
		A6	10.10		Subtract
	E'	B6b–A7a	9.18.14.7.10	1 Oc 10 Kayab	
		A7b–C2a		Exploratory glyphs	
		C4		3 Ahau 3 Yax	Day and month of Initial Series
		D4–		Further explanatory glyphs	

¹ Presumably on eroded section.² Day sign obliterated.

Only in the case of D' is the reading clouded. However, 18 Pop is perfectly clear, and in view of the parallel cases, the restoration suggested is almost certainly correct. For reasons of brevity it will be assumed that this reading is not open to question.

The explanatory glyphs obviously treat of the same subject, although there are certain differences, due possibly to the use of variable forms of the same glyph or substitution of another glyph with the same meaning (Fig. 22.1a–e). All five texts include a glyph with a coefficient of one, which, except in Text A', occupies the last place, immediately preceding the detached month sign of the Initial Series. This is the head of a rodent with the so-called bone glyph as affix, which forms one of the elements of Glyph B of the Lunar Series. To judge by full-figure representations of this animal at Acanceh, where it is shown with a long bushy tail, it is meant to indicate a squirrel.

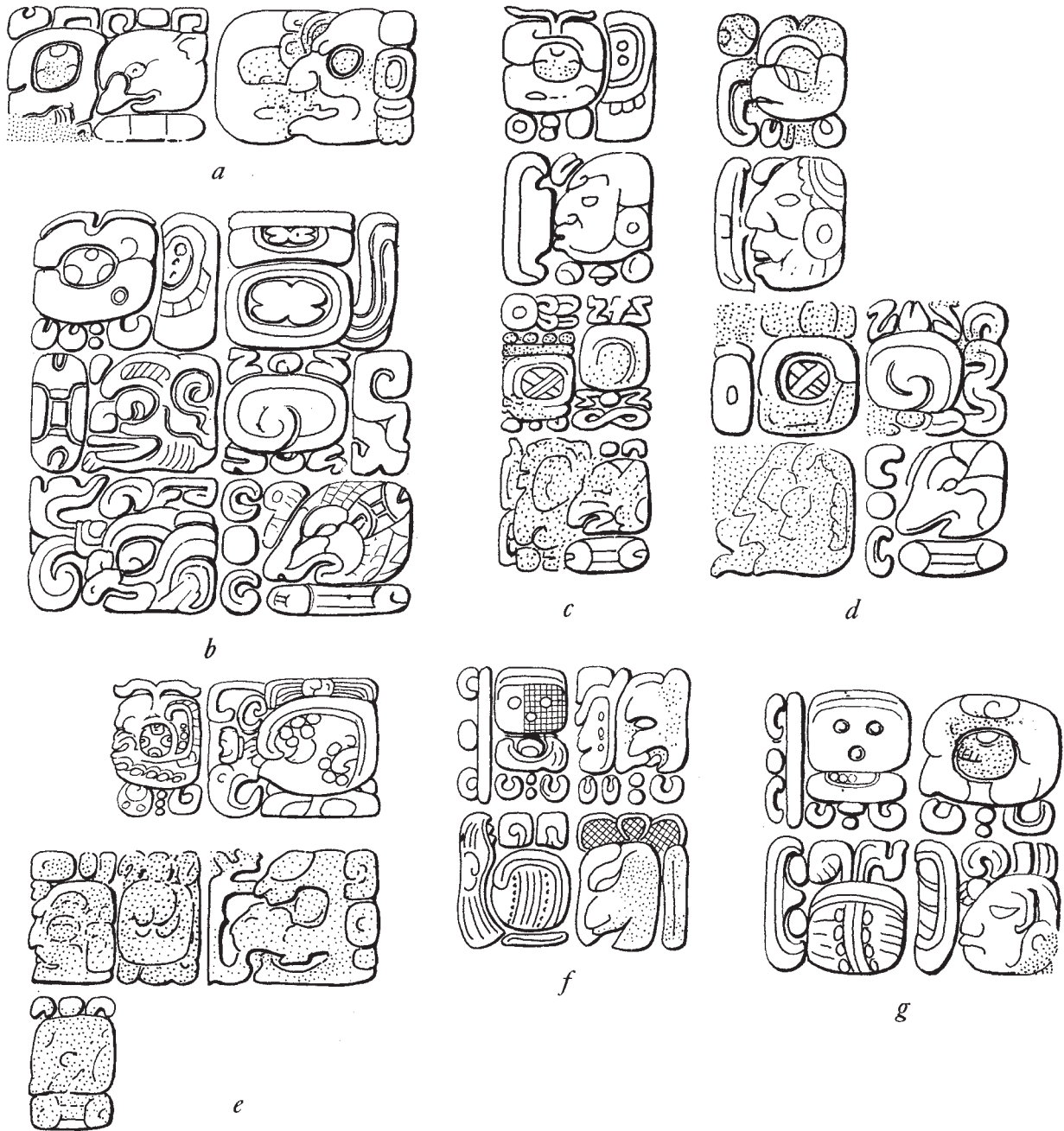
The principal features of the various glyphs, numbered in the sequence in which they occur, are as follows:

1. Obviously the same glyph in all cases. In all texts except A' it, like the month sign Pax, has at the top an opening, through which in three cases pass two diverging curls. There is an infix resembling the Chuen sign, and in three cases a lunar infix or postfix. This is Gates' Glyph 92, which occurs very frequently in the codices.
2. In Text B' this is a kin sign with a half kin as superfix. In Texts C' and D' this is replaced by the head of a god with a Roman nose and with an ending sign in front. In view of the kin sign in

Text B' these may be portraits of the sun god but they may represent Glyph G6. In Text E' the second glyph is a Cauac sign with an ending sign, but the partly obliterated third glyph appears to be the same face with a Roman nose.

3. In Texts C' and D' the central element consists of crossed bands. There is a "flame" affix and, in the case of Text C, what may be a coefficient of nine, but the details are hard to make out, and it is possible that this element is not numerical. One is reminded of the crossed bands in planetary bands. In Text B' a grotesque head with affix replaces this sign. In Text E' this glyph appears to be suppressed.
4. In Texts B'–D' this is the "beetle" glyph, also called Glyph Y, which occurs in some Lunar Series, particularly at Yaxchilan. The corresponding glyph in Text E' is largely obliterated.
5. In Texts B', C', and E' this is a grotesque head with a branching flame-like element emerging from the forehead. In Text A' this same head occurs but not in the correct sequence. In Text D' a grotesque head can be made out, but it is not possible to say whether the flame-like element is present.
6. This is the "squirrel" glyph to which attention has already been called.

To this group of Initial Series with their parenthetical clauses may, perhaps, be added a sixth. This, however, differs from the rest in that it does not interrupt the Initial Series but immediately follows the Lunar Series thereof:



22.1. Glyphs in parenthetical clauses: (a) Palenque, Stela 1; (b) Yaxchilan, Lintel 30; (c) Yaxchilan, Stela 11; (d) Yaxchilan, Stela 1; (e) Quirigua, Stela K; (f) Yaxchilan, Lintel 29, supplementary glyphs; (g) Yaxchilan, Stela 1, supplementary glyphs.

Palenque	F	A1–A9	12.19.13.4.0	8 Ahau 18 Tzec	Initial Series
Temple of the Cross		B13	1.0		Subtract, lunar variant for 20
		A16–B16	12.19.13.3.0	1 Ahau 18 Zotz	
		A14–B15		Explanatory glyphs	

In this text the explanatory glyphs differ from those already discussed. The first is the glyph with Pax and Chuen elements but without a lunar postfix. The second glyph has the branching “flame” element

emerging from a glyph which from other examples can be shown to represent the top of the head of the god who normally has this element. The other two glyphs do not figure in the texts already reviewed.

In several of the texts there are supplementary glyphs before or after the parenthetical clauses, to which they appear to be related (Fig. 22.1f, g). Also, on Stela K, Quirigua, the "Pax-Chuen" glyph is repeated, complete with lunar postfix following the detached conclusion of the Initial and Lunar Series.

As in all six texts the day sign coefficient reached by subtraction is one, the intervals between these positions must be multiples of thirteen. In days these intervals are 11466, 15561, 3276, 16380, and 1433250. However, the highest common factor of these intervals is not thirteen but 819. Such a high common factor could hardly be the result of chance. The odds are over a thousand to one against it. This number is composed of 91×9 , or 117×7 , or 273×3 , or $9 \times 7 \times 13$.

The numbers nine, seven, and thirteen are of great ritualistic importance. Nine represents the nine underworlds and the nine lords of the night, seven probably the seven layers of the earth, and thirteen the thirteen heavens. The number ninety-one is ritualistically and arithmetically important, but its multipliers, are four, five, and twenty in the Dresden Codex, not nine.

Since 819 is divisible by nine, the same form of Glyph G of the Lunar Series, G6, is required by all the parenthetical clauses. In this connection it is interesting to note that Texts B, C, and D, all of which are from Yaxchilan, are followed by a glyph with a coefficient of six. The glyph itself is a simplified face above what is probably a lunar affix. In one case half the face is covered with crosshatching, a symbol for black and presumably, by extension, darkness. (cf. crosshatching of kin sign when employed as lord of night.) One wonders whether this face with coefficient of six can refer to the fact that the sixth lord of the night and underworld rules over the parenthetical dates. It is also worth noting that it was this same sixth lord of the night and underworld who ruled over the opening night of the thirteen-day week in which 13.0.0.0.0 4 Ahau 8 Cumhu fell. His reign started at 12.19.19.17.17 1 Caban 5 Cumhu, three days before 4 Ahau 8 Cumhu. In fact this 1 Caban 5 Cumhu is the starting point of the 819-day cycle.

As only once in every sixty-three times will a day with a coefficient of one also mark the start of the 819-day cycle, the fact that this first day with a coefficient of one before 4 Ahau 8 Cumhu is a base in the 819-day cycle argues strongly for that count being primarily ritualistic.

The fact that the base of the 819-day cycle falls three days before 4 Ahau 8 Cumhu implies that the gods who were in power at the start of the period continued to exercise certain influence throughout its

span, thereby giving further scope to the balancing of good and bad influences inherent in the Middle American calendrical divination. Such a concept certainly existed. On the Mexican tableland the god of the thirteen-day "week" shared power with the patron of each day until a fresh god of the "week" entered into power with the return of a day with a coefficient of one. Similarly among the Ixil Maya the year-bearer deity who rules over a year bearer with a coefficient of one, continues to influence human affairs until, thirteen years later, another year bearer with coefficient of one enters (Lincoln 1942:115).

It is obvious that this cycle of 819 days must involve more than a grouping of lords of the night and underworlds. The number is too high, for after 117 days the cycle would have been completed, each lord of the night would have ruled over a thirteen-day period. However, only after 819 days would sequences of nine lords of the underworlds, thirteen lords of the heavens, and the presumed seven lords of the earth once more coincide.

The existence of a series of thirteen gods presiding over consecutive days is implied by the Maya face numerals. There also occurs in the Aztec codices Borbonicus and Aubin Tonalamatl a repeating series of thirteen deities. Seler considered these to be the rulers of the thirteen hours of the day, but as one is attached to each day sign, it is much more probable that they ruled the consecutive days of each thirteen-day week, and therefore corresponded to a certain degree to the head-variant numerals of the Maya. In the account of the creation in the Chilam Balam of Chumayel the thirteen gods fight the nine gods. The implication is that it was a struggle between the heavens and the underworlds.

There is no strong evidence for the existence of a group of seven terrestrial deities, but in this same account of the creation there is mention of a certain Ah Uuc Chekmal, 'he who fertilizes the maize seven times,' who came from the seventh stratum of the earth (or the seven strata of the earth). Since both the group of thirteen gods and the group of nine gods bear collective names used in the singular, it is not impossible that Ah Uuc Chekmal is really the name of a group of seven gods who are associated with the seven layers of the earth. Mr. Ralph L. Roys informs me that he sees no valid reason why the Maya text should not be taken to refer to seven deities and seven strata, not necessarily to a single deity from the seventh stratum.

It is, probable, therefore, that the 819-day cycle developed from a desire to mark the coincidence of the starting points of these three series of deities. It is also possible, however, that the 819-day cycle had, in addition, an astrological significance.

The cycle is 117×7 . In 117 the Maya had a good approximation to the synodical revolution of Mercury (115.877 days). Such an approximation would have suited them admirably because it complied with one of their most important desiderata, for it constituted a re-entering cycle in terms of the 260-day almanac. At the end of 117 days the day coefficient would be the same. However, in order to achieve a return to the same coefficient and day, the 117-day cycle would have as its next highest order 117×20 . In this case the multiplier of 117 is seven. Therefore, it is clear that any connection with Mercury would be a secondary, not a primary, purpose of this 819-day cycle.

The position of the parenthetical clauses immediately after or, in one case, in the middle of, the Lunar Series, and the lunar elements which enter in then suggested the possibility that a lunar meaning might also be involved in this count.

Faced by these astronomical problems, I turned to Dr. Maud W. Makemson, Director of Vassar Observatory, and to Dr. Alexander Pogo, both of whom most kindly undertook the many laborious calculations needed to determine the positions of Mercury and the moon on the various dates in question. Because both specialists possess that rare combination, a mastery of both practical and Maya astronomy, their many suggestions were most useful.

An examination of the positions of Mercury on the ten dates in question, using the Ahau equation 584285, produced no pattern. On Dates A, C, and D Mercury was 23° , 21.5° , and 19° east of the sun, which were possible, but unverified, points of greatest eastern elongation. On Date B Mercury was 14° west of the sun; on Date E, 15° east of the sun. The stars near which Mercury moved on those five dates similarly failed to show any pattern. Periodicity would, of course, be absent whatever correlation was used. It was therefore clear that the five Initial Series dates did not record observations of some significant point in the revolution of Mercury in contrast to calculated positions in an uncorrected cycle recorded in the parenthetical clauses.

On Date A' Mercury was three or four days before inferior conjunction; on Dates B' and C', 27° east and 27° west, respectively, of the sun, points of greatest elongation; on Dates D' and E', 14° west and 17° east, respectively, of the sun. Again there is a complete lack of pattern, disposing of the possibility that on these dates Mercury was at important points both actually and cyclically.

Because of the shortness of the revolution of Mercury and our uncertainty as to what phenomena would interest the Maya astronomer, only a clear and

orderly series of phenomena can have any meaning. On not more than two of the ten dates in question was Mercury near the same constellation, thereby disposing of the possibility that conjunction with stars or passage through celestial compartments was involved. It is, therefore, clear that the 819-day cycle did not primarily involve Mercury.

In connection with a possible lunar meaning being attached to this cycle, Dr. Pogo pointed out that 819 days were within a day of thirty sidereal months and at the same time they approximate $27\frac{3}{4}$ synodical months. After 819 days, therefore, the moon would be in about the same position in relation to the stars but its age would have decreased by one phase. However, Dr. Pogo notes that as thirty sidereal revolutions of the moon are actually 819.65 days and twenty-eight synodical revolutions are 826.86 days, an error will rapidly accumulate. Thus the 819-day cycle could not have been used without correction to calculate the actual positions of the moon against her stellar background, except for relatively short periods.

Again Drs. Makemson and Pogo kindly volunteered to calculate the positions of the moon on Dates A-E and A'-E' in view of the possibility that the Initial Series in question might record observed positions of the moon with regard to the stars, whereas the parenthetical clauses might record calculated positions in an uncorrected cycle, or, alternatively, the parenthetical clauses might record occasions when the moon was in conjunction with certain important stars, both by observation and according to the uncorrected cyclic reckoning. Again no pattern emerged.

Dr. Makemson has suggested other ways in which the 819-day cycle might have been used. A discussion of these would take us too far afield, and, in any case, would come best from her pen.

There remains another line of approach, that of linking the endings of the 819-day periods to the katuns current when the monuments in question were dedicated.

The dedicatory date of the lintels with which Date B' is associated is 9.17.0.0.0. The distance from Date B' to 9.17.0.0.0 is 22827 days. This is within a day of 197 revolutions of Mercury (22827.8 days). It is also 773 moons (22827.15 days), and exactly sixty-two and a half solar years. Also 1 Chen is a determinant of 18 Cumhu: $1 \text{ Chen} + 197 = 18 \text{ Cumhu}$ (Gregorian correction is $197\frac{1}{2}$ days). The Maya priest may have reasoned more or less as follows:

The 819-day cycle ended 377 days (just one synodical revolution of Saturn) before the Initial Series. As a rule we don't record these cycle endings, but in this case it can be brought

into an interesting relation to the dedicatory date, 9.17.0.0.0 13 Ahau 18 Cumhu. On both dates there was a new moon, and on both dates Mercury was at the same point in the heavens (maximum eastern elongation). Moreover the sun is just half a revolution away at 1 Ben 1 Chen (Date B') from where it will be at 9.17.0.0.0 13 Ahau 18 Cumhu. In the first case it is thirty-three days after the summer solstice; in the second, thirty-three days after the winter solstice. Finally, 1 Chen occupied at Cycle 13 the same position in the solar year that 18 Cumhu occupied in the year then current.

The lower part of Stela 1, Palenque, on which Date A' is recorded, is missing, but it is probable that the dedicatory date was 9.12.10.0.0 or 9.13.0.0.0. If the latter, a reason for giving the end of the 819-day cycle exists in the fact that 9.13.0.0.0, Date A, and Date A' all have the same moon age, which according to the lunar series was nineteen days. Also the moon number of both 9.13.0.0.0 and Date A' would be five according to the uniform lunar system, since the interval between them (186 moons) is divisible by six. The Initial Series is not in the uniform system, but records the moon number as five. It is an interesting possibility, although nothing more, that when Stela 1 was erected Palenque had adopted the uniform system, but gave the moon age of the Initial Series by the old system, thereby reaching the same moon number and moon age for all three dates. Lastly, 9.13.0.0.0 and the Initial Series (not in this case the parenthetical date) are separated by thirteen and a half solar years (the remainder is 183.8 days), the two dates lying about six days before the vernal and autumnal equinoxes. The Initial Series is also, as Teeple pointed out, a determinant of 9.13.0.0.0, for by Maya reckoning the sun on 6 Zac at Cycle 13 was in the same position as at 8 Uo in current time. $6 \text{ Zac} + 187 = 8 \text{ Uo}$ (Gregorian calls for a correction of 189 days).

Date C' was a new moon according to Maya calculation. Date C is recorded on this monument as five moons twelve days according to the uniform system. The Secondary Series of 1.3.6 equals fourteen moons and twelve days, thereby indicating a moon age for Date C' of three moons no days. The dedicatory date of this monument is uncertain. The Initial Series falls in Katun 9.17.0.0.0 13 Ahau 18 Cumhu, which, as we have already seen, was also the date of a new moon, and furthermore was the third moon. Date C also occurs on Lintels 29 and 30, the dedicatory date of which was certainly 9.17.0.0.0. Accordingly, it is quite probable that this is the dedicatory date of Stela 11 as well, or, failing that, marked the end of the current katun.

There is no solar association linking these two dates, but it may be significant that on both dates the first god of the series of seven (terrestrial?) deities was in power.

Stela 1, Yaxchilan, which carries Date D', was erected at 9.16.10.0.0 (Date D). The current katun was, therefore, again, 9.17.0.0.0 13 Ahau 18 Cumhu. There is, however, no direct relation between Date D' (1 Oc 18 Pop) and the katun-ending. Yet we have seen that solar half years and the same moon age seem to be the matters which interested the Maya in these particular texts. Half a year back from the current 19 Cumhu is 9.16.8.6.3 2 Akbal 16 Chen. However, 16 Chen is itself the determinant of 18 Pop at that date: $16 \text{ Chen} + 207 = 18 \text{ Pop}$ (Gregorian correction calls for 209 days). Also 16 Chen is the same moon age as 18 Pop, since 207 days is within a third of a day of seven moons (206.7 days). In other words 16 Chen is half a year away from 18 Cumhu, and 18 Pop is the anniversary of 16 Chen placed at Cycle 13, and the two linked dates of 18 Pop and 16 Chen have the same moon age. Also God G6 ruled on both dates.

Stela K, Quirigua, which carries Date E', has the dedicatory date 9.18.15.0.0. (Date E) as the Initial Series. The current katun was therefore 9.19.0.0.0 9 Ahau 18 Mol. The interval between Date E' and Katun 19 is 2010 days. This is one day more than five and a half solar years (2008.8 days). The katun ended, according to the correlation here followed, on June 28; Date E' fell on December 26, both dates being a few days after the solstices.

As Date E gives the moon age as eighteen days, the moon must have been thought to have been full (fifteen days old) at Date E'. The moon at 9.19.0.0.0 would have been seventeen days old by calculation from either of those points.

The precise secondary meaning of the early date (Date F') on the Temple of the Cross inscription is not clear. It is, however, of interest to note that, as pointed out by Teeple several years ago, the Initial Series is a determinant of 9.10.10.0.0 13 Ahau 18 Kankin. This last date, however, can not be connected with Date F', but the correction according to the Gregorian calendar would be 182 days. The Maya, however, reckoned this as 180 days. Furthermore, as Bowditch pointed out many years ago, the early date 1.18.5.3.2 9 Ik 15 Ceh falls at a time when a correction of half a solar year was required. It is, accordingly, possible that this date, indirectly grouped with the series already discussed, is in some way at present not clear, associated with solar time.

The various associations just discussed are presented below:

<i>Text</i>	<i>Parenthetical Dates</i>	<i>Katun-Ending</i>	<i>Interval In Days</i>	<i>Lunar Associations</i>	<i>Solar Associations</i>
A'	9.12.4.13.7	9.13.0.0.0	5493	Same moon age	Half-year advance over Initial Series. ¹
B'	9.13.16.10.13	9.17.0.0.0	22827	Same moon age	Half-year advance. ²
C'	9.15.19.14.14	9.17.0.0.0	7266	Same moon age (new moon)	None. ³
D'	9.16.8.16.10	9.17.0.0.0	207	Same moon age	Half-year advance. ⁴
E'	9.18.14.7.10	9.19.0.0.0	2010	Two days difference in moon age	Half-year and one day advance. ⁵

¹ Date A also same moon age. Solar positions close to equinoxes.

² Mercury at same position on both dates. Same god in series of seven.

³ Same god in series of seven ruled on both dates.

⁴ Association is with 9.16.8.6.3 2 Akbal 17 Chen, the current determinant of 9.17.0.0.0, but this is not actually given in the text. Same lord of night (G6) ruled both dates 16 Chen + 182 = 18 Cumhu.

⁵ Solar positions close to solstices. Moon at E' was full.

If the above interpretations are correct, the Maya did not bother to record every starting point of the 819-day cycle but only those on which there were lunar or solar relationships, or both, with the current katun-ending, presumably links with the series of nine and thirteen gods. As already noted, lunar elements occur in all the parenthetical clauses except Text A'. Text B' has a kin glyph surmounted by a second-kin glyph cut in half, conceivably to indicate a solar half year. The corresponding glyph in the remaining complete texts is the head of a deity possibly this is the head of the sun god, although the usual attributes are lacking. Alternatively this head might represent God G6, who reigned over the first night of the 819-day cycle.

In summary: The Maya had a ritualistic cycle of 819 days, which marked the return to the same starting point of the series of thirteen, nine, and seven deities, probably corresponding to the celestial, infernal, and terrestrial deities. The starting points of the

819-day cycle were seldom recorded on monuments of the Initial Series period, for only five indubitable cases have been reported. These are arranged in a unique manner as parenthetical clauses within the Initial Series to which they are joined. Presumably only those which were of enhanced importance because of certain coincidences of an astronomical or a calendrical nature were recorded. Possibly those were chosen which showed a lunar or solar relationship, preferably both, with the current katun-ending. If a determinant relationship existed so much the better. Only Yaxchilan, Palenque, and Quirigua, as far as we know, ever recorded a text of this nature.

Although 819 is a good approximation to thirty sidereal revolutions of the moon, no evidence was uncovered that the Maya used the number in calculations of that nature. Similarly, the approximation of seven synodical revolutions of Mercury to 819 days seems not to have been of primary interest to the Maya.

The Periods of Tribute Collection in Moctezuma's Empire

R. H. Barlow

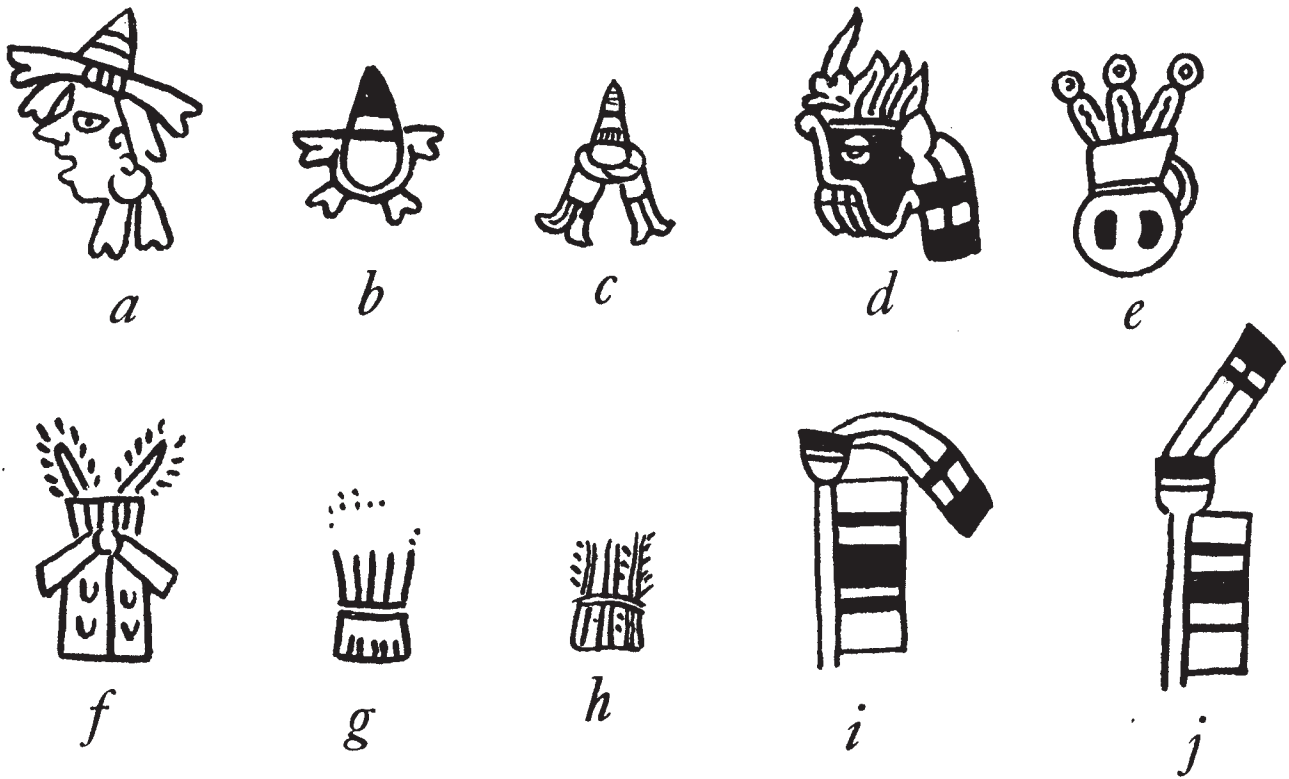
R.C.E. Long (The Payment of tribute in the Codex Mendoza. No. 10 of this series) has recently pointed out that the tributary provinces of Moctezuma's empire made their payments yearly, half yearly, and "quarterly," that is, what is termed every eighty days on the four festivals of Tlacaxipeualiztli, Etzalqualiztli, Ochpaniztli, and Panquetzaliztli. The present paper is intended as an extension of his remarks.

As evidence for his quarterly tribute dates he cites the Humboldt Codex I, part of a manuscript originating, as Lic. Salvador Toscano (1943) has shown, in southeastern Guerrero. It may be added that these same four festivals of the Humboldt Codex I appear in a tribute codex from the modern state of Morelos, where the "quarterly" payment (to new masters) was maintained well into the sixteenth century, as we read in the *Suma de Visitas* no. 163. This supplementary codex is the Mauricio de la Arena from Tlaquiltenango, Morelos (a part is published in Paso y Troncoso 1897:273-78). Dating from about the time of the Spanish conquest, the codex conserves the old calendar system despite the Christianized names of some of the tributaries listed. Two of the fiesta-symbols, those of the festivals of Ochpaniztli and Panquetzaliztli, which indicate tribute periods in the Humboldt Codex I take the same form as in that codex. Tlacaxipeualiztli is represented (as in Codex Mendoza, f. 47r) by Xipe's conical cap (*yopitzontli*) instead of by his whole head. The fourth festival, that of Etzalqualiztli, seems at first inspection to be absent. Between the symbols of Tlacaxipeualiztli and Ochpaniztli, however, just where Etzalqualiztli

should occur, is a glyph of a vessel filled with liquid. Now Etzalqualiztli was one of the principal feasts of Tlaloc, and is represented in the Humboldt Codex I by the mask of the rain god. Clearly, the artist of the Mauricio de la Arena has merely chosen another attribute of the same deity, one of the vessels in which rain is stored in his heaven of Tlalocano. Thus the same four tribute dates shown in the Humboldt Codex I for a town in southeastern Guerrero are confirmed by the Mauricio de la Arena from a town of southern Morelos. (We may surmise that the four rosette day-symbols of the Tlatelolco page, Codex Mendoza, f. 19r, refer to these same feasts.)

In the unique case where all payments were twice yearly, two of these same festivals, Tlacaxipeualiztli and Ochpaniztli, are retained. Cooper Clark points out that this is the only place (f. 47r) where month symbols are painted in the Codex Mendoza. This slower rhythm is caused by the distance of the indicated province (Soconusco), which was the most southerly tributary of the empire.

The yearly, half yearly, and "quarterly" payments are not the whole picture. To them we must add the payment, six times a year, which was received by Texcoco from the province of Quauhnahuac. This is somewhat at variance with the version of the *Matricula de Tributos* and the Codex Mendoza, but our source is certainly trustworthy. In Lehmann's *Die Geschichte der königreiche von Colhuacan und Mexico* (1938), verse 131. (the most reliable edition of the document) in addition to the four festivals already discussed, those of "Tecuilhuitl" (Tecuilhuitontli or



23.1. Hieroglyphs for months of payment of tribute: (a–c) Tlacaxipeualizli, Humboldt Codex I, Mauricio de la Arena, Fragment I, Libro de Tributos; (d–e) Etzalqualiztli, Fragment I, Libro de Tributos; (f–h) Ochpaniztli, Fragment I, Libro de Tributos; (i, j) Panquetzaliztli, Fragment V, Libro de Tributos

Uei Tecuilhuitl, the text is defective) and Quecholli figure as tribute dates. Unfortunately, the list is in writing, and there are no glyphs for theme.

We see, then, that certain festivals seem to have served as a framework for tribute in widely scat-

tered parts of Moctezuma's empire, being increased or decreased as distance demanded. It is not difficult to see why nearby Quauhnahuac paid tribute three times as often as Soconusco, on the remote and steamy frontier of the southlands.

Notes on Glyph C of the Lunar Series at Palenque

Heinrich Berlin

Since J. E. Teeple (1931) established, according to four cases where he studied Glyph C, that the Maya of Palenque used exactly 6 moons to a group, nobody, so far as I can see, ever tried to prove or refute this theory; on the contrary it was generally accepted. Nevertheless, during the excavations made in 1940 and 1941 under the Mexican government two inscriptions containing Glyph C were found which do not at all harmonize with Teeple's ideas.

Let us examine the problem as it was set by Teeple. He compared the Initial Series of the Inscriptions of the Temple of the Cross, of the Temple of the Sun, and of the Temple of the Foliated Cross with the Initial Series of Stela 1 and found that the corresponding Glyphs C of each inscription are separated from each other as if they were arranged in lunar half-years of 6 months. Thence he concluded, although with some reserve, that periods of exactly 6 moons were always used at Palenque.

Now, in an inscription in stucco discovered in May 1941 the Initial Series 9.10.14.5.10 3 Oc 3 Pop was accompanied by Glyph 6C. If Teeple's theory is correct, there should be a remnant of precisely 6C when one divides by groups of 6 moons, the difference which lies between any of the lunar bases from which his given points are reckoned and 9.10.14.5.10. The nearest of these points is 9.12.6.5.8, 5C 19 days, the date of Stela 1. The distance between these two dates is

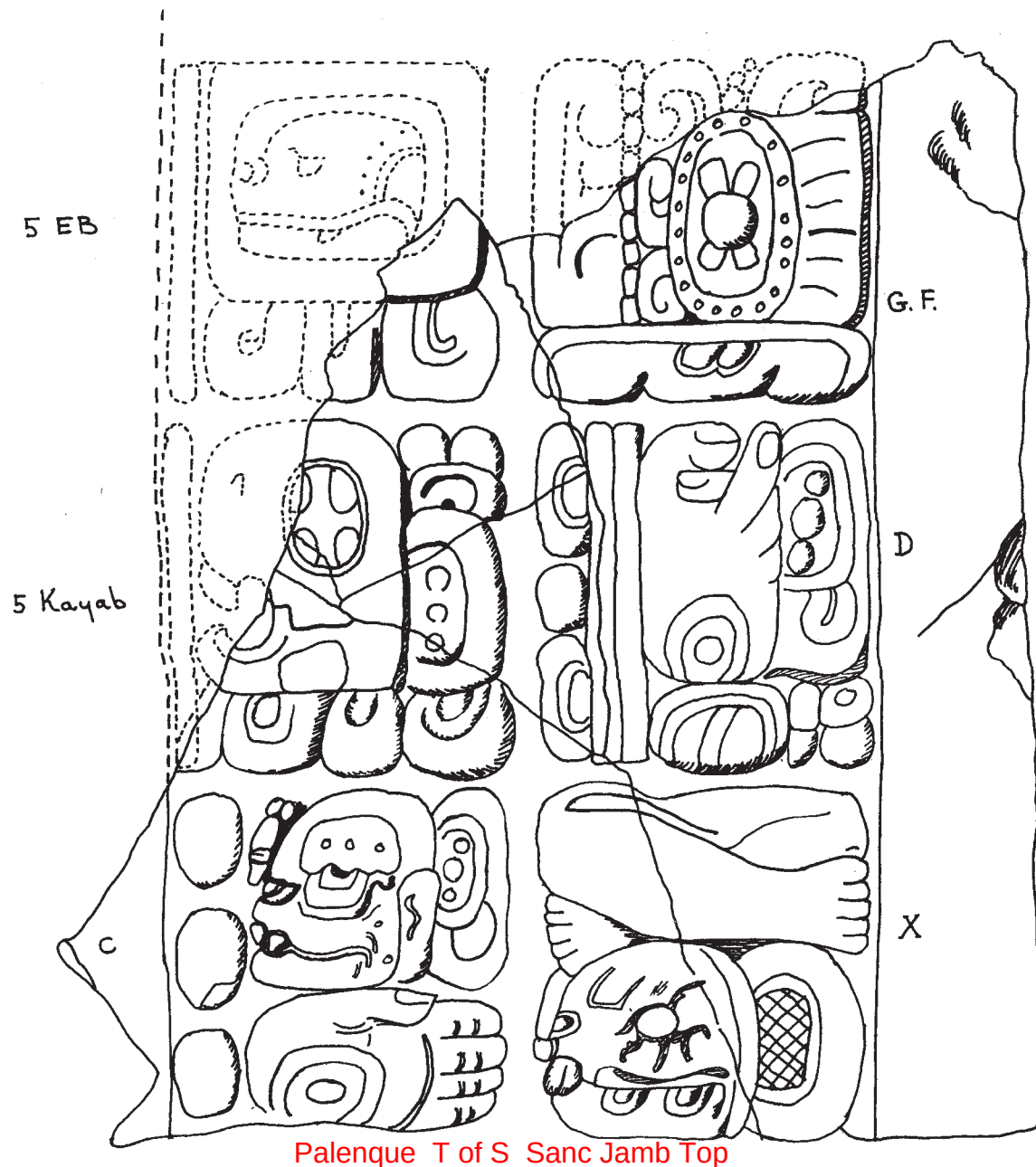
9.12.6.5.8	5 C 19 days
9.10.14.5.10	
1.11.17.18	= 11518 ^d

According to Teeple's lunar formula for Palenque, 81 moons = 6-11-12, 6 moons equal 177.185^d. Now 11518^d:1770185 = 65 groups of 6 moons + 0.975^d. If we subtract from 5C 19 days of Stela 1 the remainder of 0.975^d, we reach 5C 18 but not 6C as the inscription records.

In 1942, when cleaning the basement of the Temple of the Sun, Miguel Angel Fernandez found some fragments of an incomplete inscription (Fig. 24.1). It reads:

9.12.6.5.8	5C 19 days
-9.10.14.5.10	
1.11.17.18	= 11518 ^d

In the drawing, made also by Sr. Fernandez, the numerical bar of the Kayab does not come out very clearly, but it is my recollection that the small piece which remains is the beginning of a bar and not of a dot. The space between the glyph and the border is narrow and is such as would hold a numerical bar, but not numerical dots which in this inscription have a greater diameter. As the date 9.12.19.11.12 5 Eb 5 Kayab is very frequent at Palenque, it is highly probable that the present inscription originally occupied that position in the Long Count. On the other hand, the Glyph G seems to be of the G3 form, not G4 as here required. Comparing this date with Stela 19 we see that, if it were to fit Teeple's theory, it should read 2C 11, instead of 3C 11 as it actually does. Since the value for D of the inscription is in perfect harmony with the computed one, this can be adduced as evidence for the correct placement of the date.



Palenque T of S Sanc Jamb Top

24.1. Inscription on tablet at Palenque (from a drawing by Miguel Angel Fernandez).

In view of the new data presented, one cannot any longer maintain the theory that the Maya of Palenque uniformly grouped their moons in sixes. It is noteworthy, however, that both the last two inscriptions are in complete agreement with Teeple's Period of Uniformity. This fact is not so extraordinary especially, in the case of the last date, 9.12.19.1.12, for that falls with in the Period of Uniformity, provided that it really started at 9.12.15.0.0 as Teeple states. This conclusion involves another one: that the supposed differences between Palenque and Copan are not so

easily demonstrable and that it is still more difficult to prove the cessation of activity at Palenque, the date of which is still unknown.

In connection with the lunar reckonings at Palenque, one might add that the shield of the stairway of Palace House C does not read 11-11-13 as Teeple states, relying only on the drawing by Maudslay. According to my field notes it reads 6-11-13 (see also Maler's photograph, pl. 13, in Seler 1915a). The reading of 6-11-13 is an extraordinary approximation to the formula of 6-11-12 discussed above.

A Figurine Whistle Representing a Ball Game Player

J. Eric S. Thompson

The pottery figurine whistle here illustrated was found somewhere in the vicinity of Icaiche, Quintana Roo, Mexico, by a former inhabitant of that now abandoned village. The finder, a shaman, subsequently moved to Kaxil Uinic and thence to San Jose, British Honduras, taking the figurine whistle with him. In 1931, when I saw it in his hut at San Jose, he was very reluctant to part with it, setting the impossible figure of twenty-five dollars as his final price. This high valuation was due to the fact that the figurine was endowed with great power in effecting cures. The owner customarily burned copal incense before it and sprinkled it with rum when he was engaged in curing ceremonies.

Archaeological specimens which portray human figures, particularly stelae and incense burners, are generally regarded by the present-day Maya as malevolent. It is therefore somewhat surprising to find a benevolent status attributed to this figurine. I did not inquire closely into the activities of the owner, who may have indulged in some black magic and on those occasions employed the figurine whistle. Naturally, such affairs would not be disclosed to a stranger. Five years later the owner parted with the figurine whistle for a trifling sum. In the interval he and other inhabitants of San Jose had been moved to the urban center of Orange Walk, where the atmosphere is less congenial to magical practices, whether white or black.

The figurine whistle (present height 9.3 cm) lacks the top of the headdress and the mouthpiece of the whistle. The latter had been attached at the



25.1. Figurine whistle: (a) front view; (b) profile.

base of the back, and presumably was of the hog-snout type prevalent almost throughout British Honduras and the Peten. There are two finger holes in the back at shoulder level. The clay is a darkish brown and unslipped, but with traces of what may be white paint (alternatively lime incrustation) in the groove of the belt and around the bracelet. The figure appears to have been cast in a mold, and presumably belongs to the Tepeu horizon of the Initial Series period.

In view of the ball tucked under one arm and the heavy belt (Thompson 1941) I think there can

be little doubt that a ball-game player is portrayed. What appears to be the leathern hip cloth projects below the belt on each side of the narrow *maxtlatl* (loincloth). A queer arrangement is attached to the left side of the belt or hangs from the wrist of the arm above it. Could this be the glove dangling empty from the wrist? The detail of the left hand is

not sufficiently clear to indicate whether a glove was worn; the right hand certainly is ungloved. There is no kneepad visible, presumably because of the vestigial treatment of the legs.

The nearest reported ball court to Icaiche is that at the Initial Series period site of El Palmar, Quintana Roo.

Notes on a West Coast Survival of the Ancient Mexican Ball Game

Isabel Kelly

These notes were obtained in the spring of 1939, during an archaeological survey of the west coast of Mexico. Originally I planned to publish them jointly with Mr. Carlos Linga, who, through his commercial agents in southern Sinaloa, has acquired several accounts of the same ball game from the Mazatlan district, but as this has not been feasible, my Nayarit data are recorded here, without benefit of his somewhat fuller information. The account comes chiefly from Valentin Zamorano, a former player and a manufacturer of balls, with a few supplementary details from his son, Basilio Zamorano. In former times this family was among the rubber workers who supplied balls to the stretch of coast between Acaponeta and Culiacan (Sinaloa), at a price ranging from 25 to 60 pesos.

The game, called *hulama*, was current in the Acaponeta valley, Nayarit, until about 1930. It is said still to be played occasionally in the hills and in small villages, particularly on the feast days of San Juan, San Pedro, and Santiago, and on Sundays and the Saturday of Easter week.

The ball (*hule*, rubber) was round end of solid rubber. The standard circumference was three finger spans plus three fingers; the weight, 3 kilos, 600 grams. A specimen (3-7565 in the Museum of Anthropology, University of California, Berkeley) purchased from Bernabe Diaz, in the nearby ranch of Camalotita, is undersized and in poor condition from having become flattened during storage. The diameter ranges from 163 to 196 mm, with an average of 180 mm.

Rubber was obtained from the low coastal country immediately south of Acaponeta, and particularly from Pozo de Higuera and Huaritupa. The gatherer climbed the tree and, with a machete, notched the trunk its full length. A leaf of *aguama* (*Bromelia* sp.), stripped of the edge spines, was placed against the wound to carry the latex to a corked vessel. A five-gallon tin of rubber latex was sufficient for making one and a half balls.

To coagulate the latex, the root of the *machaquana* [*Operculina rhodocalyx* (Gray) Stardl.] was diced and added to water. For this identification I am indebted to Dr. Paul Standley, of the Field Museum of Natural History. Dr. Standley writes that the moonvine, which likewise is a morning glory, frequently is used to coagulate rubber. Prof. Maximino Martinez (1928:24) notes the use of the juice of *Ipomoea bona nox*. The solution was then strained into the latex, three parts solution to one of latex. A small quantity of this mixture was heated to luke-warm, tested with a small pointed stick, and, when of the proper consistency, removed from the fire. The rubber adhering to the shaped into a pellet, which was pressed against the knee and from which the rod was withdrawn. The ball was thus built up, layer by layer, as small quantities of rubber were added to the pellet-like nucleus. After each increment of rubber was squeezed free of the liquid, the ball was shaped on a flat board held slanting against the knees to let the liquid run off. From time to time the growing ball was shaken vigorously beside the ear to detect any remaining liquid, which was pressed out through



a



b

26.1. Ball-game play: (a) player with hip in position for a strike; (b) position of player immediately after striking ball with hip (photographs through courtesy of Marian E. Cummings).

the blister perforated with a small stick. When perfectly round, the finished ball was smoothed and polished with a stick.

After each game the ball was washed and dried thoroughly, suspended in a bag so as to hang freely, and turned frequently lest it become flattened. A well cared for ball lasts about six years. Although the purchased specimen mentioned above is old and neglected, it bounces waist-high when dropped to the ground.

Players were barefoot and ordinarily naked save for a breechcloth and a special belt or shield, called *chimal*. The latter generally was made of the root fiber of the *chamate* (*Ficus* sp.), a fig with aerial roots. A length of root, about 2.5 m long, was cut, steeped in water, and beaten with a stick to remove the outer bark. The remaining fiber was opened and spread in the sun to dry. The belt was not woven; a model made by Basilio Zamorano consisted merely of a strip of thick bark, 1.5 m long and 15 cm wide.

This particular example, however, is not from the *chamate* but the *haba* (*Hura* sp.). Valentin Zamorano described the belt as about 10 cm wide and laced in the front with leather thongs. The lacing was drawn tight by two men until the player felt "light." Within the belt was a protective pad of leather or, more recently, a section of automobile tire, to soften the blow of the ball. Also in keeping with modern trends is the report that drill or canvas might be substituted for the bark fiber.

The game was played on a court (*taste*), long and narrow, "like a street," Valentin Zamorano described it as 105 pasos or 3 varas wide by 15 varas long. The informal measure of *paso*, as used on the west coast, consists of two short paces, totaling a little over 1.5 m. A *vara* is roughly the equivalent of a yard (actually, 2.78 ft.). It may be assumed, therefore, that the court was roughly between 2.25 and 2.80 m wide. It was simply a rectangle marked on the ground, with no walls or other permanent construction. Stone or

brick marked the four corners, with one marker at the center of either side line to indicate the central transverse line. Three single markers, indicating respectively the two end lines and the central line, were not used. Stakes might serve as markers but, to avoid injury to players, they were set flush with the surface of the court. The outline of the court and the transverse line across the center (which invariably extended well beyond the sidelines) were drawn about 10 cm wide in the dirt with the foot. The center line was called *analco*; the zone behind either end line, *chiche*. According to Cecilio A. Robelo (1900:43), *analco* has come to mean "from the other side, on the other shore of a river." Jose Maria Arreola (1935:6) gives the same meaning.

The number of players varied. There might be but one on either side, but generally a team consisted of from two to five. If there were five, one of each team was stationed at the center line, with the remaining players of his side strung diagonally behind him, so as to cover their half of the court most effectively. The rear-most player of each team remained at his station by the back line; he was called the *golpeador*, 'striker'. Other players seem not to have had names.

At the beginning of the game an umpire (*juez*), or two, one for each team, stood at the center line. He started the play by rolling the ball into the court. It was recovered (in the hands) by any player who happened to be near. He then threw the ball swiftly (again, with the hands) into the court of the opposing team. One of the latter returned it, either at full, volley or on the bounce; he was required to receive it either on the hip or on the thigh, to within four fingers' distance of the knee. Disputes were settled by examining the welt left on the body. If the ball hit outside the acceptable hip-thigh zone, or if it were riot returned to the other courts a point was scored for the opposing team. Apparently the ball need not be returned on the first bounce. A player fell to the ground to receive a low ball and leapt in the air for a high one. He could receive on either hip, according to personal preference, but a given player always used the same hips. In the accompanying photographs a lad of Camalotita obligingly gives an impromptu demonstration. In Figure 25.1a, he awaits the ball; in Figure 25.1b, he has just struck it. It need scarcely be remarked that the game was dangerous. If the player misjudged by a few centimeters, he received a heavy, moving body in the solar plexus. Injuries frequently were fatal.

It is said that if the ball were received initially by the center player and if the latter did not touch the central line with any part of his body, his team had the right to invade the territory of the opponents.

The advantage of such an invasion is not understandable unless the end lines functioned as goals. Basilio Zamorano stated that if the ball hit within the court and bounced over the back line without being returned, a point was scored for the attacking team. But this is simply another way of saying that a ball which hit within the proper court and was not returned scored a point for the opposing team. Neither of the Acaponeta informants appeared to regard the end lines of any particular significance in scoring, although they were questioned specifically concerning this detail. In so far as I could determine, scoring was exclusively by means of fouls or failures made by the opposing team: by failure to return the ball by means of the hip-thigh blow; by having the ball fall in one's own court; or by knocking the ball out of bounds. A ball which fell out side the court, without first having bounced within, was called *muerta* (dead). The earlier accounts which were sent to Mr. Linga from southern Sinaloa indicated a scoring basically similar to that just described. He tells me, however, that in a later account the end lines do function as goals. It may be assumed that my data, as well as Mr. Linga's earlier information, should stand corrected.

The ball remained in the possession of the team which scored. Succeeding plays were started according to the number of points held by the team in possession of the ball. These may be outlined thus:

Una: The ball was put into action by the *golpeador* of the team which scored on the opening play. He bounced the ball one to three times, touched it to his hip, and threw it into the air (with the hand) so that it would fall into the opposing court. As the ball left his hand, he called "*una*."

Dos: If we assume that the same team scored on the play just described, the same *golpeador* again opened the play. He rolled the ball swiftly along the ground into the opponent's court, calling "*dos*."

Other plays were started according to the same pattern: *una*, *cuatro*, and *cinco* (1, 4, 5) being thrown overhead (*arriba*); *dos*, *tres*, *seis*, and *siete* (2, 3, 6, 7) being rolled on the ground (*abajo*). At each play the *golpeador* called the appropriate number as the ball went into action. J. Eric S. Thompson suggests that actually the *golpeador* called the score (*raya*) of his team rather than any number of play. This seems entirely plausible since, as stated above, the mode of patting the ball into action was determined by the number of points held by the team in possession of the ball. In any case, the initial play, followed by the 7 specified above, would account for a total of eight, which number of points presumably constituted a

game. Rolled plays (*abajo*) were called *male*; over-head plays (*arriba, en viento*) had no special name.

Ordinary progression of score was relatively simple. A team which won a play gained a point and one which lost a play relinquished a point. In other words, the scoring was double and that of both teams changed on a single play. After each play the ball was held by the scoring side. There were, however, some exceptions and ramifications, a number of which remain entirely obscure. For example, it was said that if a team had three points and lost one, it had the privilege of putting next play into action *abajo*. This is not clear, for a team which to a point presumably would not have the ball at the start of the succeeding play. Moreover, it was said that a team holding two points, but which then lost one, might start the next play by calling for 3. The same difficulty applies here. However, this would appear to be a means of giving a team a gambling chance, that of gaining the score of three or of losing all. Unfortunately, these complexities of scoring could not be disentangled because of linguistic handicaps, and it is hoped that when Mr. Linga publishes his Sinaloan data many of these obscure points will be clarified. If a team held either three or seven points it stood to lose all. If a team with three points permitted its opponents to gain two consecutive scores, then instead of losing two points, it yielded all three. So also, if a team had seven points and the opponents scored four times successively, the losing side relinquished all seven points, while the opponents gained four points and retained the ball. The above conditions were called *urde de tres* and *urde de siete*. The same situation may have held for the score of six, as well as for three and seven, for mention was made of *urde de seis*, said to obtain when a team with six points lost four consecutive plays. It may be noted that the *urde* applies exclusively to the *abajo* plays, but of these, Score 2 is exempt.

A game generally lasted from about 4 o'clock until dark, without rest periods. With good players a game might have to be continued three or four days, being resumed at the score of the previous afternoon. The implication is that a score of eight constituted the game, but Basilio Zamorano thought that a game could be played for any number of points arranged at the start. If, as has been suggested, above, the present data are faulty and the end lines actually served as goals, presumably the passing of the ball across the opponents' back line would terminate the game.

The modern version of the ball game at Acaponeta appears to have been entirely secular, except for the fact that religious feast days were favored for play. No mention was made of intervillage or inter-group

competition, but such rivalry may well have existed. A team was organized by an interested individual who might or might not function as umpire. He was called the "owner of the game" and apparently fed the players and supervised practice. Players were expected to train conscientiously, and an inattentive one might be whipped by the organizer. Training fare was normal, though supervised, until the day of the game, when diet was restricted to liquids, especially milk; but if the game was continued another day, solid food was eaten. Players were expected not to leave the house, to abstain from sexual intercourse, and to bathe immediately following a game. The organizer and financial backer apparently received his compensation in the attendant prestige and in winning bets. Heavy gambling invariably accompanied the ball game, and in this the women participated. A losing team gained nothing but "*puros golpes*" (just blows).

The above data presented a number of interesting points. Although the account manifestly is incomplete, it is at least definite and, in parts, detailed. Obviously, the modern game of Nayarit and Sinaloa is far from identical with that recorded for the high cultures of central and southern Mexico. But, at the same time, a genetic relationship is implied: both games involve corridor-like courts, a ball of solid rubber, the obligation to strike with the hip or thigh, and an accompaniment of lavish betting.

Unfortunately, the early accounts of the game, both in the Mexican and Maya areas, are so vague that little is known of the manner of play. Fundamentally it was probably not unlike that I have described, although undoubtedly it was much more complex. Masonry walls against which the ball must have bounced, elaborate I-shaped courts, wall rings; these and other traits all indicate a more elaborate ensemble. Probably this west coast occurrence should be regarded as a modern, peripheral survival either of an archaic form or of a simplified version of the classical game. In any case, it would appear that the chief hope of expanding knowledge concerning this famous Mexican-Maya institution is through study of the modern survival, the genetically related, albeit simpler, game of the west coast. It is noteworthy that such a survival should be found in a straight mestizo rather than in an indigenous milieu.

The distribution of the Sinaloa-Nayarit game is imperfectly known, but has been established definitely as far north as the Rio Fuerte (Beals 1932:188) [quoting Perez de Ribas]. Dr. Gordon Ekholm was told that the ball game still is played at Bacubirito, on the Rio Sinaloa, and at Mocorito. Dr. Beals writes me (June 8, 1940) that a similar game is reported for the Cahita; he suspects that it may not have been

general among them, but may have been confined to the Rio Sinaloa area. He mentions another modern game which may be an offshoot of the one under consideration. It is played with a small rubber ball, batted against the right forearm, on which a protective guard is worn. It is a foul if the ball touches any other part of the body. This game is specifically reported in Guasave, Nio, Bamoa, Tamazula, and Mocorito. The southern limits of the coastal distribution of *hulama* are not known below Acaponeta, in northern Nayarit. There are no data from the Jalisco littoral, although the game is known in Teocaltiche, in the old Caxcana province, along the modern Jalisco-Zacatecas border (*Noticias* 1878:357).

In view of the informal court herein described for modern Nayarit, it is evident that this, or a similar, ball game may have flourished in an area without having left any perceptible archaeological trace. Perhaps for this reason, there is no mention of prepared ball courts from the west coast of Mexico, from northern Sonora to the Colima-Michoacan frontier. The Sonoran court, said to be of the "Arizona type," was located during an archaeological survey by Dr. Gordon Ekholm, who placed it a few miles south of Santa Cruz, Sonora, on a mesa above the river. The Colima-Michoacan court is at Puente de Cerritos, in the Coahuayana valley, and has been dubiously identified from surface evidence alone. It consists of a long, narrow plaza enclosed by four low mounds, 1–1.5 m high. The end mounds are broader and slightly lower than the side mounds, which are long, narrow, and their surfaces cobble-strewn. In profile the side mounds are sharply peaked, and their upper surface averages less than 1 m in width, obviously too narrow to have served as a house foundation. Moreover, the floor of the "court" is flat and at a slightly higher level than the surrounding plain. The whole, from the floor to the mounds, appears from surface indications to be an artificial structure.

The historical and modern occurrences of the ball game in northern Nayarit and virtually throughout

Sinaloa suggest a former continuous or nearly continuous distribution into the American Southwest where, in recent years, a number of ball courts have been recognized and excavated. Although the modern version of the game may explain the apparent lack of prepared courts on the west coast, it by no means explains the reappearance of such courts in the Southwest. It is unlikely that the Arizona Hohokam and their neighbors would have gone to the tremendous effort of building ball courts unless the latter were an integral feature of the game as it was adopted by them. Thus, despite the suggestion of a nearly continuous distribution, it seems probable that the west coast can not be regarded as the potential source of the Southwestern game.

Archaeologically the west coast of Mexico still is little known, and it is possible that ball courts have hitherto escaped notice but will be found in the course of more intensive investigations. In northern Nayarit there are repeated rumors of stone ball courts in the adjacent sierra. These reports were not localized and time did not permit a search. Furthermore, ball courts have been reported in the nearby Sierra Madre of Durango by J. Alden Mason (1937). The Teocaltiche account noted above establishes the game as current in the Caxcana during the late sixteenth century.

As far as present information goes, there is no demonstrable evidence of Hohokam–west coast interplay in any sphere of culture, either ball courts or otherwise. Some inland route of contact, therefore, must be sought. It may be noted that, in addition to ball courts, pseudo-cloisonné painting is common to the Hohokam and the western highlands. Both ball courts and inlay painting are well dated in the Southwest, and occurrences in the western highlands should be examined, for both distribution and chronology. It may well be that the occupation of the western highlands, like that of the west coast, will prove to have been far too recent to have bearing on the comparatively early Hohokam occurrences.

Animal-Head Feet and a Bark-Beater in the Middle Usumacinta Region

Linton Satterthwaite Jr.

UNIVERSITY MUSEUM, UNIVERSITY OF PENNSYLVANIA

The accompanying photograph is recorded because J.E.S. Thompson (1943) has recently noted that "The Mexican period . . . is poorly developed in the Central Area," and has used "tripod dishes with feet shaped as heads of animals or persons" as a criterion of the Mexican period. If animal-head feet are a proper criterion of the Mexican period, I think the pictured bowl is good evidence, hardly conclusive, for existence of Mexican-period high culture in the Middle Usumacinta part of the central area.

In 1934 the following photograph-note, including information from the storekeeper, was made at Las Escondidas: "Tripod bowl with animal effigy feet, and bark beater. In possession of Don Casimiro Algara at his bodega at Las Escondidas, opposite Desempeño. Reported as being found at ruins two or three kilometers from his lumber camp Samaneo, which is supposed to be only two leagues from Piedras Negras, on the Chiapas side of the river. To be reached from Porvenir if river is crossable." Sketches and notes show that the bowl is perfectly flat-bottomed, with a tendency to bulge up in the center; it has straight flaring sides and a noticeable lip (diameter 39.5 cm; height 13 cm, of which 6 cm are the feet). In the back of one foot, which rattled, was a small tear-shaped slit. Probably all the feet were of this type. The mouth of the animal, supposedly an armadillo, is incised; the ears "seemed" to be applied. I do not remember whether or not the dull polished reddish orange inside and out covers the feet. The slightly oval, limestone bark-beater (diameters 8 and 8.5 cm, thickness 4 cm) has 12 grooves, 2–3 mm

wide, on one flat side and 17 on the other. The deep hafting groove, which fails by 2 cm to encircle the beater, is about 7 mm deep and 14 mm wide.

Casimiro Algara and his son, Jose, who had been lumbering only in this neighborhood and not farther up or down the river, would never have brought any find of this sort south from Tenosique. I think I confirmed my information with one or the other when they later passed through Piedras Negras, because I subsequently recorded that the dish and stone implement were seen at Las Escondidas but brought from Samaneo by Don Casimiro. Likely a workman made the discovery, about which the Algaras, now dead, knew none of the details.

This bowl probably came from La Mar or Bud-silha (see map in Maler 1901–1903) unless its provenience is some unrecorded site (conceivably of Mexican period in architectural type). Stela 1 at La Mar and Throne 1 at Piedras Negras are placed by Morley (1938) without question at 9.17.15.0.0. Other monuments at Piedras Negras carry Morley's sure readings there to 9.19.0.0.0. The Samaneo bowl could be considered a modification of Robert E. Smith's Tepeu form, "red ware tripod plate with flaring sides" (Preliminary Shape Analysis, Fig. 18), which has a different type of foot, a very slightly curved instead of straight side, and no lip. A still closer approach can be seen at Piedras Negras, where the feet are solid and the flaring sides almost exactly straight (Cresson 1937, Fig. 26). Flat-bottomed bowls and plates, tripod or not, are characteristic of the latest deposits at Piedras Negras. The bottoms usually but



27.1. Tripod bowl and bark-beater; former found in vicinity of Samaneo, Chiapas.

not always curve up toward the center, if the vessel is large. The position of the animal-head feet is straight down on the specimen illustrated here and resembles that of pointed rattle feet, and in fact that of all feet shown in Cresson's plates for Piedras Negras. In the southern area the animal heads may be at an angle (Butler 1940, Fig. 24h).

We may conclude that the Samaneo vessel dates from the Tepeu ceramic phase of the Initial Series period or later; and that it might have been produced locally, reflecting outside influences. For what it may mean I call attention to occurrence at Piedras Negras of what seem to be feet in form of more or less complete animals (Cresson 1937, Fig. 48). But I am sure that those are very few and probably trade objects.

Piedras Negras and neighboring sites were undoubtedly on a trade route, mostly by water, leading southeast to the Alta Verapaz, northwest to Jonuta, thence to either Veracruz or the borders of Yucatan (Satterthwaite 1943). Full publication of Piedras Negras ceramics will undoubtedly show late trade relations with the Alta Verapaz region (carved, untempered orange identities in form and design, probably in paste) and at least close correspondence with Jonuta in late form and incised design. The stage is thus set for Mexican influences to operate here, from either direction, at the close of the local Initial Series period. It is also set for an importation of the Samaneo bowl, at least as far as the feet are concerned. Compare its feet, and Cresson's (1937) Figure 5 with feet at Isla de Sacrificios, found by Miguel Angel Fernandez and Wilfrido du Solier (Fig. 14.9i-k, n).

If our vessel had been found broken, one might suppose it was discarded by Mexican-period traders

traversing an abandoned high-culture area. But since it is complete and still retains some polish, even as a trade piece it much have been received by local inhabitants who had a use for it and who eventually carefully buried it. It is not a "utilitarian" type, nor is it a censer, a class of pottery the manufacture of which probably survived abandonment of the architectural centers. Since it was found in a group of ruins, the rebuttable presumption is that buildings also were still in active use.

So, trade piece or not, I think this bowl is good evidence, though; not conclusive, that the theocratic organization responsible for Middle Usumacinta Maya sites survived to receive outside objects or influences during the Mexican period. If this is so, either the Mexican period (or at least the concept of animal-head feet) goes back to about the end of Cycle 9, thus overlapping the latest surviving Initial Series monuments in the middle of the central Maya area, or the Usumacinta sites were not abandoned when local carving of Initial Series monuments seems to have ceased, at or before the end of Cycle 9.

As a confirming circumstance I record a single tiny thin white sherd of what was presumably a marble or onyx vessel at Piedras Negras (Cat. L-39-250). It had been washed into a covered drain from its open end, along with a sherd of a flat-bottomed, flaring-sided bowl. Its presence suggests late trade relations with the Gulf Coast region or farther afield. At San Jose, Thompson found the marble vase only in San Jose V, and in his 11.16.0.0 scheme the start of that period is tentatively, placed well after the latest Piedras Negras dates (Thompson 1939, Table 17). With the alternative scheme, such reasoning as to Long Count date would not apply.

New Photographs and the Date of Stela 14, Piedras Negras

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Drawings of eroded inscriptions must, I think, be accepted as representing the possibly fallible judgment of the person who made them. While one may have confidence that the drawings of a given epigrapher are generally correct representations of what the Maya originally carved, if he proposes to make important deductions from a particular drawn detail, perhaps he should be careful to make it clear that the deduction is no better than the source and so subject to the same possibility of doubt. When it is possible to re-examine the stone itself, or otherwise confirm or correct the element of judgment in the drawing, it would seem wise to do so, and thus found the deductions on a record in which the human element has been reduced to the minimum possible.

J. Eric S. Thompson has recently proposed abandonment of Teeple's reading of the date on Stela 14, Piedras Negras, which was 9.18.0.3.1 7 Imix 19 Pax, 2 moons 26 days. Without taking the above precautions he proposes instead 9.16.6.17.1 7 Imix 19 Uo, 5 moons 26 days (no. 18 in this series). It happens that Stela 14 from Piedras Negras is now in the University of Pennsylvania Museum on loan from the Guatemala Government, along with Stelae 12, 13, and 40, Lintels 3 and 12, one leg of Altar 4, Throne 1, and Miscellaneous Sculptured Stone 16. Inquiries respecting these are always welcome, casts of doubtful portions can be ordered, and a series of photographs especially lighted to bring out glyphic details have been made by the museum photographer, Reuben Goldberg. These may be ordered by anyone, with permission to reproduce.

In Figures 28.1 and 28.2 are two pairs of these photographs showing the Stela 14 inscription, the left side of each pair lighted from below, the right from above. I shall use them in attempting to show where Thompson might easily have fortified his new reading, and where, I think, they suggest doubt.

The previously published sources for this inscription are Morley's drawing and photograph (Morley 1938: 5, pls. 39j, 141d). Another Morley photograph (Cat. 29-1-31) is on file here, and presumably was available to Thompson.

Thompson deduced that the kin coefficient of the Initial Series was 1, because the day reached was recorded as Imix. He seemed, when he wrote, to agree with Morley that the kin number could be either 1 or 8, considering the head numeral alone. One of our photographs shows rather more clearly than the published one that the forehead element probably consisted of two-parts. This is also fairly clear in the unpublished Morley one. On seeing ours, Thompson called my attention to the preferable reading of 1, by inspection alone. Morley's drawing is thus confirmed, and there is little need to derive the 1 kin; from the Imix.

In stating positively that the day is 7 Imix, Thompson probably relied on Morley's drawing; at least, to my eye, Imix elements in the Morley photographs were doubtful until I had studied the better photographs here supplied. Now, I can see faintly, as I shift from one to another view, the expected large circlet on the top, one of the line of tiny circlets below this, and two of the pendent lines. Morley's

judgment in drawing Imix is thus also confirmed, though he evidently reconstructed most of the glyph.

His drawing of the month coefficient, in which the three lower dots are evenly spaced, is reconstruction, as examination of the stone itself and, less satisfactorily, of our photographs, shows. There are three humps below a large hole, the two upper humps closer together; and the space between them is not so deep as that between this upper pair and the lowest hump. From inspection alone the upper pair might possibly be an eroded long crescent, though placed too high, or what remains of a long sign between two dots at the extremities, such as are common at Piedras Negras. A reconstruction of 17 instead of 19 appears a possibility as far as the remains of the coefficient itself are concerned. To avoid circular reasoning I think Thompson's flat statement that the coefficient is 19 should be amended by adding "because by inspection the kin sign is probably 19 surely 1 or 8, and the day sign almost certainly Iran." One king Imix, would require four dots in the month coefficient; 8 kins, Lamat, would require one dot, not two. But the condition of the stone does not justify reasoning in the other direction, to remove any lingering doubts as to the head for 1 and the Imix sign.

Thompson calls my attention to further confirmations of his readings. It is row clearer than before that the superfix, of the month coefficient is not that of Pax, as required by Teeple; and that there is a line looping down under the eye of the uinal coefficients.

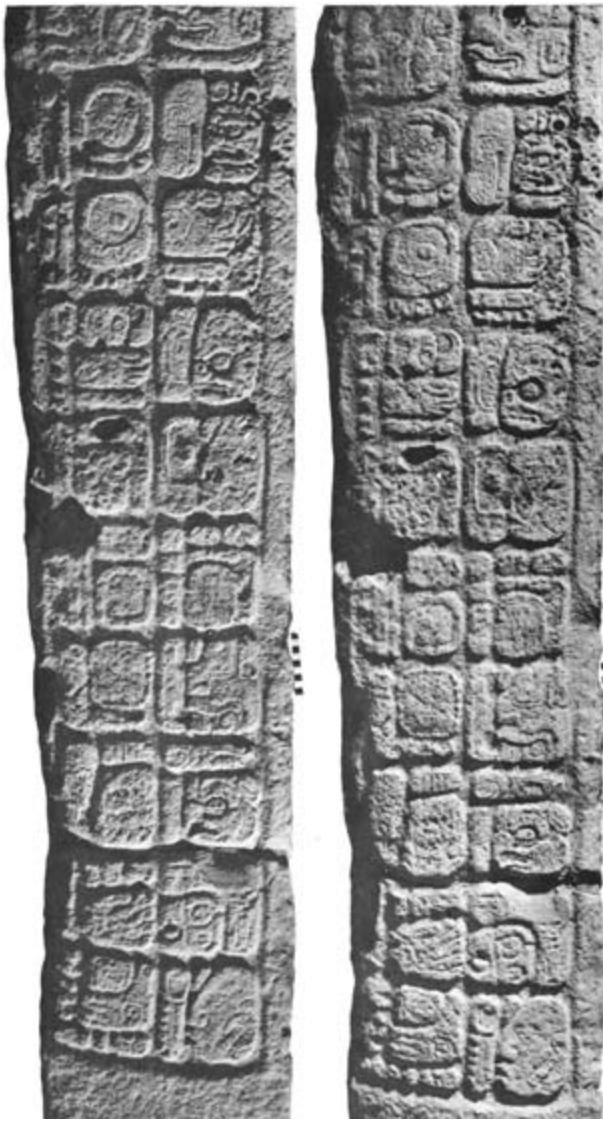
So far our photographs confirm Thompson's new reading of the Initial Series date by making it clearly unnecessary to rely on the drawing, and by adding certain details not available in either the drawing or the published photograph. It appears to me that the new reading is almost certainly correct.

Yet implicit in the new reading is an assumption that the Maya recorded a wrong moon number, or else, in the midst of the period of uniform moon numbers, recorded one in a nonuniformity system. Thompson said that "Glyph C appears to record two moons, but Glyph X is of a form found with 4C or 5C." A Maya mistake is thus implied, because of the Glyph X form; and a wrong moon number may just as well be corrected to 5 (required at the new Initial Series date) as to 4. But if the record is 4, Glyph X gives no independent support for changing to the required 5. Morley's main drawing and another (of this coefficient only) in his text do not agree with each other, and put one on notice that doubt of the reading 2C may properly exist; in Morley's mind 3



28.1. Stela 14, Piedras Negras: left side, upper part (scale in centimeters).

seems to have been an alternative which he eliminated. Our photographs support to a certain extent what an examination of the stone convinces me is so. There are two humps at the bottom close to each other, which might be an eroded crescent; the space between them is not so deep as between them and the two dots above. Yet I think a reading of four dots is a reasonable possibility, if unequal spacing was tolerated, as apparently it was in the month coefficient. If we consider the lunar glyphs alone, a reading of 4C, with its proper Glyph X form, is indicated, as one would then seek an Initial Series-value outside the limits of the period of Glyph C uniformity. So Glyph X does not surely support the new Initial



28.2. Stela 14, Piedras Negras: left side, lower part (scale in centimeters).

Series reading by certainly requiring some change in the C coefficient. It merely permits the required change to be made.

Finally, I come to the moon age, which has no bearing on the Initial Series value, except within unsettled limits. Thompson stated flatly that it is recorded as 26, presumably depending on Morley's drawing or the unpublished photograph, the latter of which also seems to indicate crescents above and below a central dot. This effect can still be obtained by proper lighting, so the stone has not changed since Morley's drawing was made. The effect is produced by shadow on a fractured surface (top element) and on a badly worn or fractured surface (bottom element). Our photographs show clearly enough that the upper element may be a fractured dot; for neither element is there certain indication of original crescents. The moon age may therefore have been either 26 or 28, as far as inspection goes.

Thompson says the age "corresponding to" his Initial Series reading is 6E or 7E (i.e., 26 or 27) without indicating his method of calculation. He advises me that he uses the Teeple Palenque formula 6.11.12 and 29.53059 from the nearest base. A permissible alternative method is to figure the true change since the double age record at 9.12.2.0.16, taking the 27 days recorded for this date on Stela 3 as in step with Maya lunar calculation. The true average lunation change (at 29.53059 days per lunation) between that date and the new Stela 14 reading is .83935, rather close to a full day. Hence an average Maya calculation would tend to raise the Stela 3 age of 27 to age 28 here, though observation or peculiarities of a whole-day prediction calendar might lower it to 26. I cannot see that we have any present basis for choosing between 26 and 28, and submit that either is a possibility.

Grooved Stone Axes from Central America

A. V. Kidder

It has commonly been supposed, although I can find no statement to that effect in print, that grooved stone axes do not occur in Central America. It therefore seems desirable to record six specimens from that region which have recently come to notice; four from Guatemala, one from Nicaragua, and one from Costa Rica. There is no doubt as to the authenticity of these objects, or as to their approximate provenience, but data are lacking as to the circumstances of their discovery and as to associated finds. Their age is accordingly a matter of conjecture.

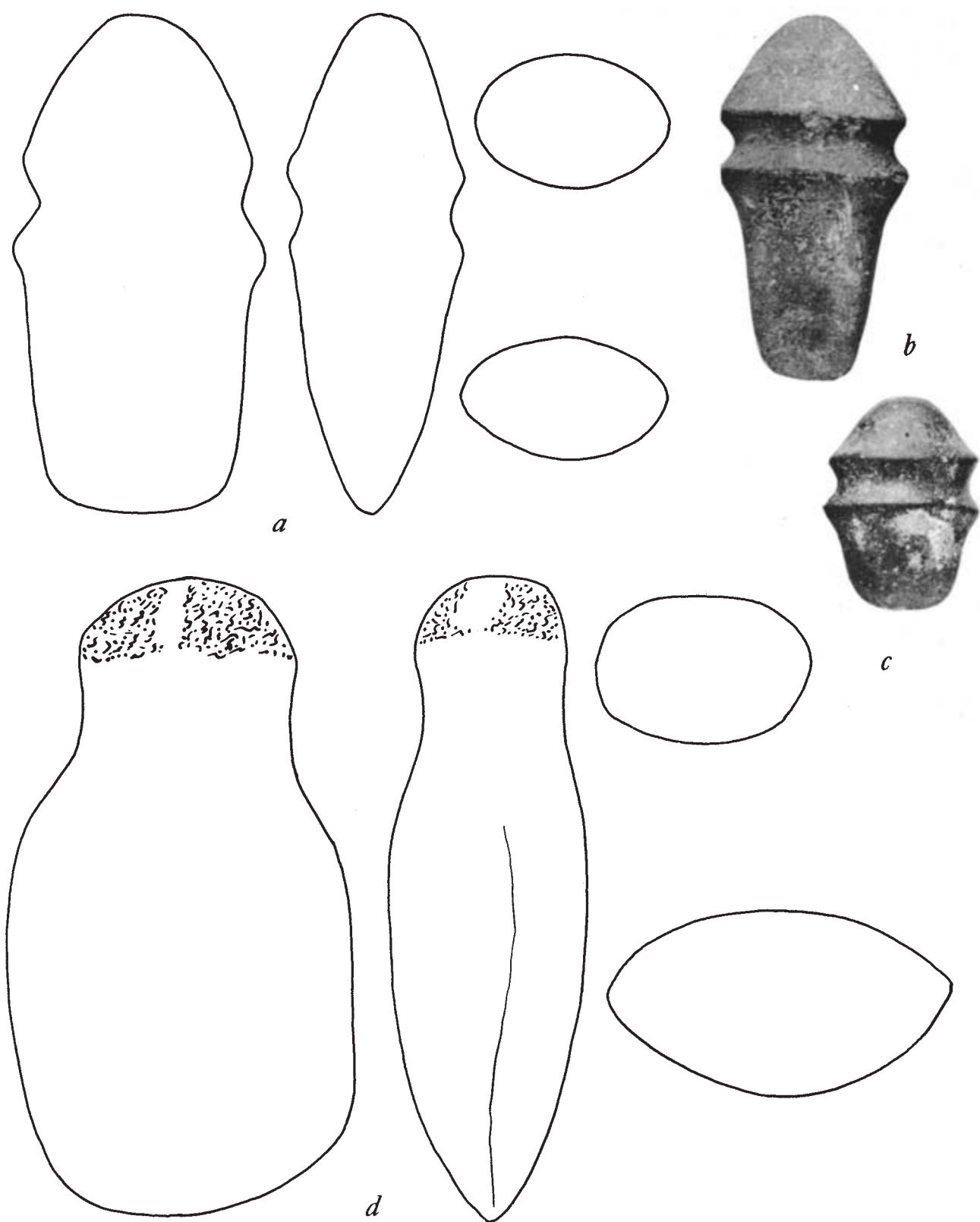
All four Guatemala axes (Fig. 29.1a, b, c) are of admirable workmanship. They are characterized by a laterally flattened, comical poll; full (as distinguished from three-quarter) groove, encircled above and below by low ridges; and blade whose converging sides round off to a slightly curving edge at right angles to the long axis of the implement. The only one of these specimens which I have been able personally to examine was purchased by Mr. Neil M. Judd at Chichicastenango in 1914 and is now in the United States National Museum (Cat. no. 284130). It is of greenish black stone; all surfaces are well smoothed, although traces of the pecking done in bringing it to shape appear in the groove and on one face just below the lower encircling ridge; length 10.5 cm, greatest thickness (at the ridges) 3.8 cm.

Of the two axes shown in Figure 29.1b, c, the larger is in the collection of Mrs. Gordon Smith. It was found on her Finca Moca, Dept. of Suchitepequez, several years ago. It is 17.6 cm long, 6.2 cm in greatest thickness. The smaller, for the photograph

of which I am indebted to Mr. Owen Smith, who also made available that of his mother's specimen, was found on Mr. Guthrie's Finca Adelaida, less than 10 km from Moca. Its length is 10.4 cm, greatest thickness 4.3 cm. The fourth axe, of which I have seen only a small photograph taken by Dr. J. A. Mason in 1930, is closely similar in shape to the other three. It is in the collection of Sr. Vitalino Robles and is said to have been found at Tinhuinlinhuitz, southwest of Quetzaltenango.

The axes from Nicaragua and Costa Rica differ strongly from the Guatemala examples. The former (Fig. 29.1d), in the collection of M. Margoux, Belgian Consul at Managua, is said to have come from near that city. It is of light gray stone heavily mottled with black. It has a shallow, full groove, small rounded poll, and wide blade with curved edge. The blade is well polished; the groove is smooth but unpolished and bears faint encircling striations; the poll is partly left in the waterworn surface of the pebble from which the axe was made, partly pecked and left unpolished. Length 13.5 cm, greatest thickness (just below groove) 4 cm. The Costa Rica specimen, in the National Museum at San Jose (Cat. no. 3323), is attributed to the Nicoya Peninsula. In size and shape it is almost a duplicate of the one from Nicaragua.

While it is conceivable, though because of their close similarity I think it unlikely, that the Nicaragua and Costa Rica specimens are, so to speak, "sports," those from Guatemala are so much alike and of so distinctive and specialized a form, that they are



29.1. Grooved stone axes: (a–c) Guatemala; (d) Nicaragua. Length of *d*, 13.5 cm.

obviously the product of a well-established industry, seemingly localized on the Pacific slope south of Lake Atitlan. It is to be hoped that further examples may be found under conditions permitting establish went of their cultural affiliation.

No grooved axes have, so far as I know, been found south of the Mexican state of Mexico, some 500 km to the northwest. Said to be from Tlacotepec, near Toluca, in that state, is a single specimen with full, shallow groove (Starr Collection, Chicago Museum of Natural History, Cat. no. 94858). Linné (1934, Fig. 249) illustrates from Xolalpan what appears originally to have been a celt with a very shallow secondary groove pecked about it. These two rather amorphous axes are the only examples of full grooving I have seen from Mexico, except the peculiar effigy forms from Jalisco and Zacatecas (Saville 1928). The standard axe of northern Mexico is three-quarter grooved. The southernmost of these of which I have record are two, attributed to Ahualulco and Etzatlan, Jalisco (Starr Collection, Chicago Museum of Natural History, Cat. nos. 95491, 95500). The

three-quarter grooved axe appears in respectable numbers only still farther north (La Quemada, Zacatecas; specimens in Mexico National Museum; see also Batres 1903, Pl. 19. Sinaloa, Sauer 1930, Fig. 7; Ekholm 1942, Fig. 20). These are presumably allied to the three-quarter grooved axes so common in the Casas Grande area of Chihuahua, and the Middle Gila in Arizona. The full-grooved type reappears in Anasazi sites (Pueblo II the earliest?) of Arizona and New Mexico. The closest parallels to the Guatemala specimens, and geographically the nearest with ridge-bordered groove, are seen in collections from the Mimbres Valley of southern New Mexico (Cosgrove 1932, Pl. 39e).

In view of the vast distance separating Guatemala and the Mimbres, it would seem, unless linking finds should tie made in the intervening territory, that the axes here noted must represent an entirely independent development. It is interesting, in this connection, to note that three-quarter grooved axes were also made in the Diaguite area of northwestern Argentina (Thompson 1936, Fig. 11e).

A Vase from Sanimtaca, Alta Verapaz, Guatemala

Elsie McDougall

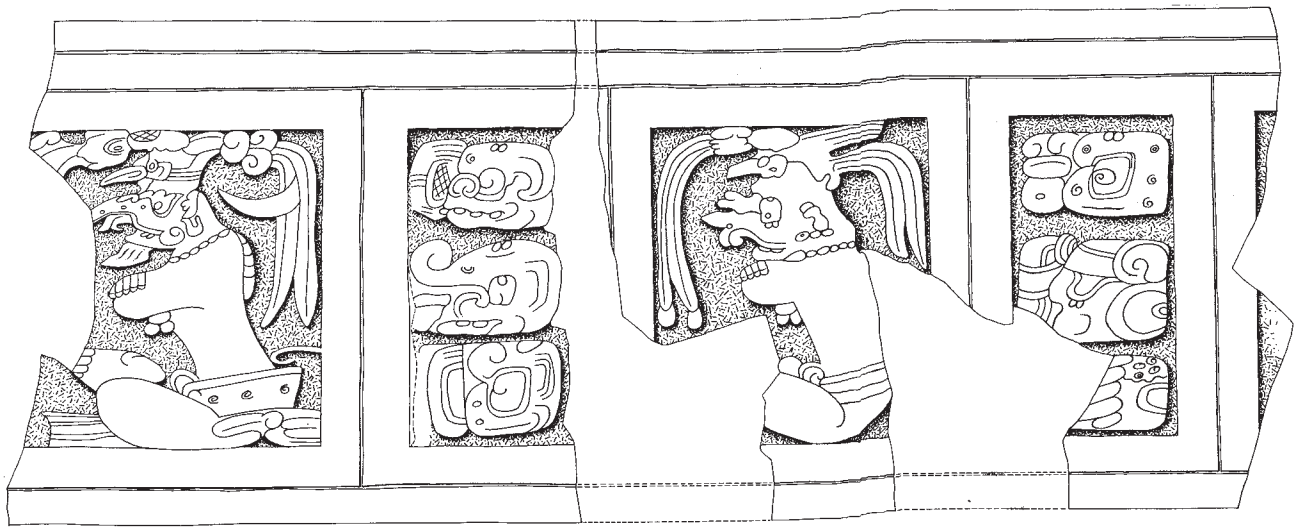
Figure 30.1 illustrates the design of a fragmentary vase, the pieces of which were amongst broken pottery of a cache, unearthed in 1927, at the mouth of a cave called Calajau, in a hill of that name. It was situated on, a property, Sanimtaca, in the Chama region of Alta Verapaz. At that time Sanimtaca was owned by Sr. Gustav Helmrich, who for about thirty years had owned and developed properties from his residential one, Finca Samac, just north of Coban and well into the Chama Valley. The cache was discovered by Sr. Hugo Doege, then employed on Sanimtaca, and his companion, Sr. Rudolf Hesse, who, taking shelter in the cave during heavy rain, commenced digging near the fire they had made.

Sr. Hesse's account of the experience, as supplied to me in 1931 following my brief visit to Finca Samac where I had the opportunity to reconstruct and draw the vase now illustrated, included a rough plan of the chambered cave and information that Sr. Doege had been able, then, partially to reconstruct this vase from the pottery fragments. Before 1931, Sr. Helmrich had found fragments of another cylindrical vase, somewhat higher and more fragile than the one which is the subject of this Note. Of this specimen enough remained to make clear the ceremonial character of the decoration, which was incised through cream slip and painted. On the reconstructed portion, the two standing personages, with spectacular headdresses, loincloths with long ends, elaborate ear ornaments, and necklaces faced an object of which the portion included in the reconstructed vessel was covered with curving plumes. In

handling the tray-basket of fragments from the cave, I noted a few pieces of a base and rim of an onyx or a marble vessel with carved design, a type represented by onyx vases from Isla de Sacrificios, Veracruz, and similar translucent marble vessels from Ulua Valley, Honduras. However, as sherds were collected from elsewhere in the cave, the association of these fragments with the vessel illustrated is not certain.

Sr. Helmrich, familiar with historical records of the peoples of the Alta Verapaz territory, told me that an important ancient trail through that region and Peten passed over the Calajau hill. Worship practices, of which vestiges have been recently recorded, included propitiation of recognized tutelary deities of certain hills and caves, so that possibly the pottery interred at the Calajau cave may have been an offering to the god of the hill or to the protector of travelers spending the night in what could be the haunt of a feared beast.

Description of the technique of the vase in Figure 30.1 depends largely on brief remarks penciled at the time I made the drawing. The walls of the cylinder were 23 cm high and about 0.6 cm thick. The base was flat. The two deities and their adjacent columns of glyphs were molded or carved, the lowering of the ground to panel form contributing to the salience of the four units, whereas the remaining portion of the cylinder walls provided frames for the panels. The rounded relief was slipped with fine white clay, elaborated with incised lines, and highly polished. The ground color of the panels appears to have been a dull red, apparently slipped. The rectangular frames



30.1. Design on vase from Sanimtaca, Alta Verapaz.

enclosing the figures were a creamy buff, presumably a slip; those around the glyph columns were slipped an orange-red. The terra-cotta color, of which there were traces on the bands at top and bottom of the vase, may also represent application of a slip. The terra-cotta of the base was unpolished, and may represent the natural color of the clay.

Traces of turquoise blue paint on the frames of the two large panels indicate supplementary decoration after firing and, possibly, service of the vase. Some trace of paint, bright red, was also perceptible on the white slip of the relief figures. This, too, is presumably a post-firing addition. Although polychrome slipping, sometimes combined with incised delineation, is represented by perhaps the majority

of straight cylindrical vessels, on which ceremonial scenes are portrayed, from Chama and adjacent region, the combination of polychrome slipping, carving or molding, and post-firing application of paint appears to be rare.

It is possible that the two partially constructed cylindrical vases from the Calajau cave eventually were acquired by Erwin P. Dieseldorff from his close neighbor and compatriot, Sr. Helmrich. If so, they may now be in the Museum für Völkerkunde at Berlin, the repository for many of Dieseldorff's finds; or in the National Museum of Guatemala, to which was presented the large archaeological collection owned by Dieseldorff at the time of his death in 1942.

WOODSTOCK, N.Y.

A Human-Effigy Pottery Figure from Chalchuapa, El Salvador

Stanley H. Boggs

In February 1943 Ing. don Augusto Baratta, Director of the National Museum of El Salvador, and I were informed by Sr. Domingo Mendoza of several antiquities which the latter offered for sale. All specimens had been discovered in the Chalchuapa Archaeological Zone and were subsequently purchased by the Museum.

One of these acquisitions, a hollow, modeled; pottery effigy of a man, affords a valuable addition to our knowledge of ancient art in El Salvador and offers some interesting suggestions regarding late preconquest cultural influences in Central America.

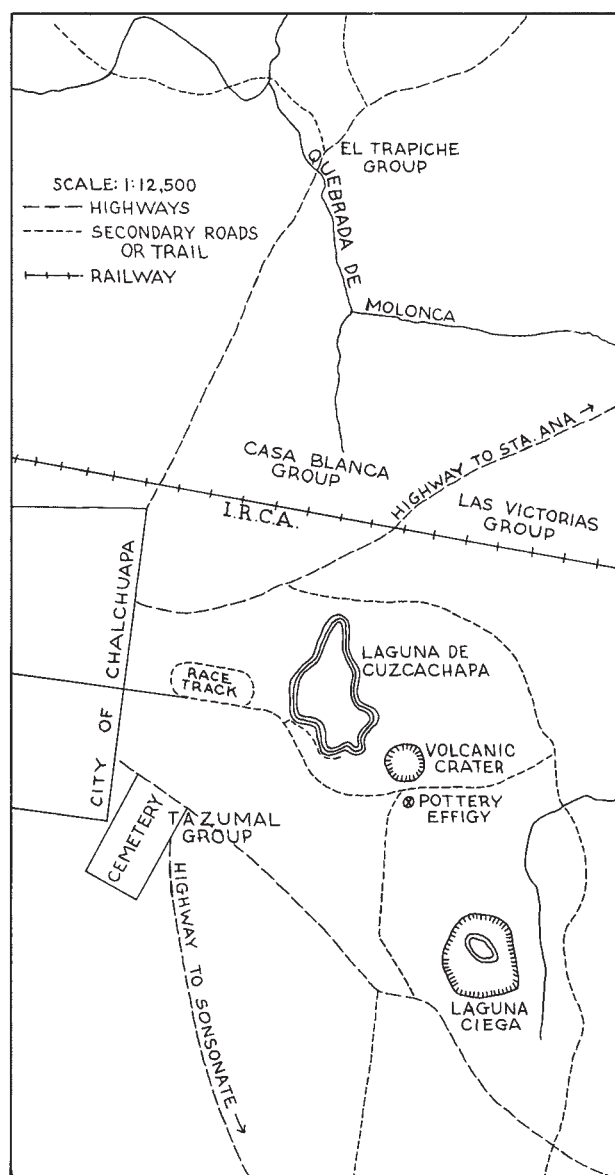
Unfortunately, this effigy was not found by trained excavators; consequently, data on its stratigraphic position are not available. However, I have been able to determine the exact locality from whence it came and hope eventually to establish its true chronological position and its relation to one or another of the cultures represented in the Chalchuapa Zone. To judge from the hole excavated by the pothunters who found it, sherds of this statue were encountered 50–100 cm below the surface near the south side of a long-extinct volcanic crater northeast of the Tazumal Group (Fig. 31.1). No mound appears to be closely associated with the effigy.

As repaired, the statue stands 143 cm high, but there is reason to believe that this measurement did not originally exceed 138 cm. Wall thickness of the head and body varies considerably, that of the former being generally less than 1 cm, the latter in places reaching 1.5 cm.

Head, trunk, legs, and arms were made separately, trunk and arms being joined while the clay was still moist and the junctures reinforced with additional strips of clay. Supposedly this method of joining was applied also to the legs, which probably were united by a clay belt encircling the waist. Since the groin, waist, and right buttock were represented by very few sherds, however, this supposition cannot be proved.

The entire figure was composed of three separate parts (1) lower extremities and waist, (2) upper extremities, trunk and neck, and (3) head. To assemble these, the legs-waist portion was set upright, the lower edge of the trunk was dovetailed into the upper edge of the waist, and finally the head was set on the neck and held in position by a hollow tenon which extended downward from the head to fit into the neck. Maximum height of the lowest portion was 60 cm, of the trunk-neck 59 cm, and of the head (exclusive of its tenon) 18.5 cm.

Only those parts meant to represent skin, hair, or garment accessories were smoothed. The accessories referred to are narrow strips or ribbons encircling calves of the legs, upper arms below the shoulders, and the wrists. All these seem intended to portray cloth, or possibly leather, perhaps used to secure to the body the garment which covers it, and bear laterally what appear representations of bow (?) knots. Sandals are bound to the feet by thongs which pass between the great and second toes and between the third and fourth, thence passing around the ankle to be tied in front. Heels of the sandals appear



31.1. Plan of eastern part of Chalchuapa Archaeological Zone, showing finding-site of pottery statue and location of principal mound groups.

to have been held in place by broad lateral straps which passed between the ankles and the thongs which encircled them, Hair of the head is indicated by a slightly raised and, at the back, a flaring area of smoothed, striated clay. The ear lobes are large loops, which probably once bore earplugs.

Most of the body appears to have been clothed, or perhaps armored, in a rough-surfaced garment secured at the waist by a broad belt (knotted in front?). Feathers or cloth tufts decorating the garment are suggested by the applied projections which cover it. The rather elongate-oval form of

these brings to mind feather-ornamented cloaks pictured in various Aztec codices.

Hair of the head; ears, under jaw, vertical stripes from brow to edge of jaw, hands, feet, sandals and thongs of footgear were dark dull red; the face, dark orange-brown; the garment (or armor), yellow.

The right hand, found intact, forms nearly a perfect circle. Undoubtedly the figure grasped some object round in cross section, perhaps a spear or pole held vertically. No fragments of the left hand were found, or at any rate none were offered for sale.

On top of the head is a small, vertical, fore-aft lug or loop through which runs transversely a small hole about 2 mm in diameter. The function of this lug is somewhat a mystery, for it is doubtful whether the loop could sustain suspension of the body (provided the three sections of the figure could be attached together) and there seems little reason for suspending the head separately. Two other explanations of the purpose of this loop, neither satisfactory in the absence of proof, are: (1) that some sort of headdress or other accessory was attached to the head at this point, or (2) that in some ceremonial it was necessary to portray the removal of an enemy's or a sacrificial victim's head, that by a pantomimic cutting of the neck and a lifting of the head by means of a short cord run through the lug, an actor could demonstrate decapitation symbolically.

It is hardly likely that the red stripes across the eyes represent tear lines since they run from brow to haw. Perhaps they are simply literal representations of the painting on a man's (warrior's) face, or even possibly are meant to show tattoo marks. The lack of teeth seems odd in view of the otherwise careful portraiture. Were wooden, bone, stone or other materials used to imitate teeth, or was this figure intended to represent a moan with teeth knocked out or extracted? No one of these suggestions can, unfortunately, be proved as yet.

As repaired by the Museum staff, this figure is certainly inaccurate in one particular and possibly in a second as well. The first variation from the original is in the addition of a waist and belt, for which no evidence exists. This portion was made in order to join the trunk to the legs so that the original parts could be exhibited. Any reconstruction of this waist area is largely guesswork. In Figure 31.2 I have indicated the effigy as repaired as well as what appears to me a more likely reconstruction. The second possible error is in the shape of the nose. The final third of this feature was missing and may have been depressed at the tip rather than straight, as reconstructed.

As stated above, circumstances of the discovery prevent exact determination of the age and cultural association of this figure. Furthermore, lack of similar



31.2. Pottery human-effigy figure from the Chalchuapa Archaeological Zone: (a) entire figure as reconstructed by Museo Nacional; (b–d) more probable appearance of original figure; (e–g) details of head; (h–j) details of torso; (k) left leg.

large effigies within El Salvador renders impossible at this time any study of distribution of this form of modeling within the country. Nevertheless, fragments of certain features, such as eye, hand, foot, and ear sherds, from what must have been figures similar in style technique if not identical in form, have been found in late debris at Tazumal. Eye and ear sherds from late Tlaloc jars of Campana-San Andres debris also bear a general similarity to these elements of the Chalchuapa statue. Since none of these resemble known Maya works, we must assume that they are the products of some other cultural group.

The Chalchuapa figure is duplicated in almost every particular by an effigy from Coatlinchan, a site lying a short distance east of Lake Texcoco, Mexico, which Saville first described in 1897 (1897) and later (1929:162) identified as Xipe Totec. Both figures closely resemble another, found by Linne (1934, Fig. 113) of much the same height and again identified as Xipe. Henning (1918) also identified as Xipe a stone sculpture from Chalchuapa locally known as the Virgin of Tazumal. The head of the Chalchuapa figure described in this Note is analogous to those from the vicinity of Las Mercedes, Costa Rica (see Lothrop 1926:368-370, Pls. CLXXXVIII, GLXXXIX, b, and Fig. 261).

Only in minor elements does the Chalchuapa effigy vary from the Coatlinchan example, the two appearing so similar that they might have been made by the same person. Vaillant (1939:528) assigns the latter, on stylistic grounds, to the Mazapan culture and has dated the flowering of that civilization to the 13th century.

Lothrop has illustrated a group of pottery heads which I believe analogous to those of the Chalchuapan and Coatlinchan effigies. Differences between the Costa Rican and the Mexican Salvadoran examples exist in that the former are more crudely mod-

eled, possess teeth, sometimes wear conical hats and earplugs, have eyes at least partially open and a nose generally concave or extremely convex. Furthermore, no bodies have been reported with these heads from the south. Lothrop believes that the Costa Rican specimens may pertain to the Guetar civilization and may possibly represent the heads of sacrificed captives.

Because of the size and weight of the Coatlinchan and Chalchuapa effigies, one must suppose them to have been made at or near the sites at which they were found. The great similarity between the two strongly suggests that potters from the same tribe if not from the same town, and at approximately the same time that is, within 50 or 60 years of each other) made these images. If Vaillant is correct in assigning the Coatlinchan example to the Mazapan culture, and in the dating of that civilization, then the Chalchuapa statue can hardly be earlier than A.D. 1300 and may be as late as 1450. An inference which may be drawn from this is that Mazapan potters may have been among the Pipil immigrants to El Salvador, or that some accompanied early Aztec traders. This theoretical traveling of Mazapan peoples is entirely possible from the standpoint of Pipil migration legends but as far as archaeology is concerned must rest for the moment upon very unsatisfactory foundations. Again, the possibility that the Coatlinchan-Chalchuapa style grew out of southern influences, from Costa Rica should not be overlooked. Until a reasonably secure dating and cultural assignment can be made for the Las Mercedes effigies, however, it seems to me safest to suppose that the style is a late import from the north adapted to local skills and, probably, uses in Costa Rica. Further documented finds made between the Valley of Mexico and Costa Rica may furnish us the evidence we now lack.

A Preconquest Tomb on the Cerro del Zapote, El Salvador

Stanley H. Boggs

In November 1943, while engaged in cleaning the grounds immediately north of the National Museum of San Salvador, workmen accidentally discovered a small stone cyst containing a badly decomposed human skeleton and two pottery vessels. Further investigation uncovered a third vessel lying a short distance south of the tomb. Ing. don Augusto Baratta, Director of the Museum, and carefully excavated, measured, and photographed all finds. The ceramic material is at present on display in the Museum.

As may be seen in Figure 32.1, the find was made slightly east of the 1^a Avenida Sur and north of the Museo Nacional, above the right bank of the Rio Acelhuate. This area of the city of San Salvador pertains to the Barrio San Jacinto, a residential ward extending over the Cerro del Zapote, to the Cerro San Jacinto along the southeastern limits of the city proper. While San Salvador itself lies mainly on the relatively flat land of the Valle de las Hamacas, the southern wards encroach on low hills such as the two aforementioned and the Lomas de Candelaria, all of which eminences are northern, flanking members of the Pacific coastal range, in most cases thickly mantled with geologically recent falls of volcanic ash.

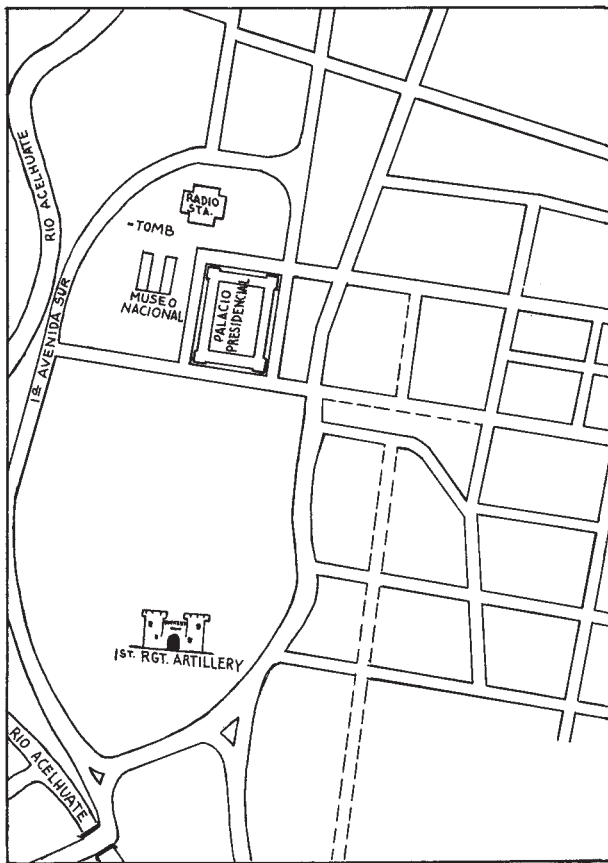
During the past twenty-five years, topography of the Cerro del Zapote has been altered fundamentally by modern constructions, terracing, and road building. Consequently, it is impossible at this date to determine the exact relation of the tomb to the original surface. As found, the uppermost stone of the cist lay 57 cm under the surface. A stratum of

humus 30 cm thick covers the flat terrain at this point and overlies a thick layer of white volcanic ash, supposedly the same as that which contained Lothrop's ("Pottery Types and their Sequence in Salvador") "upper level types" of pottery. About the tomb, the ash appeared slightly discolored, as though a small quantity of brown soil had been mixed with it at the time of the interment.

The grave was a remarkably regular rectangle 175 cm long, 50 cm wide. Depth of the tomb, from top to bottom of the stones marking it, varied considerably, scaling downward from 50 cm maximum. The long axis trended northwest-southeast, head of the skeleton lying at the northwest end.

There is no evidence that stone slabs formed a floor for the tomb, nor are the indications clear that a special covering was made. Over the skeleton, a fragmentary metate and several round, waterworn boulders were discovered. These, plus one slab which can hardly have formed part of the side walls, are the only signs of a roof remaining. Burial 2-42 of Tazumal, Mound 1, was somewhat analogous. The corpse was extended on its back with head to the east, and a stone structure was erected over it. Adobe was employed as binding material for the crude boulders of the cairn. Apparently this burial was made after the construction of the mound (see Boggs 1944).

As may be seen in Figure 32.2, flat slabs set upright on end lined the sides as follows: one at each end, four along the northern line, three marking the southern (plus a roughly cut, flat slab of scoria).



32.1. Plan of the Cerro del Zapote showing location of tomb.

Their irregular outlines suggest that they had been used in their natural condition.

Of the skeleton almost nothing remained. Long bones and those of the skull were represented by greenish brown stains in the soil which underlay the tomb. Lack of wisdom teeth and unworn condition of the others suggest a youth. From the position of the teeth relative to the bone stains, it appears probable that the corpse was buried extended on its back, and that the head was slightly elevated so that the face looked toward the southeast.

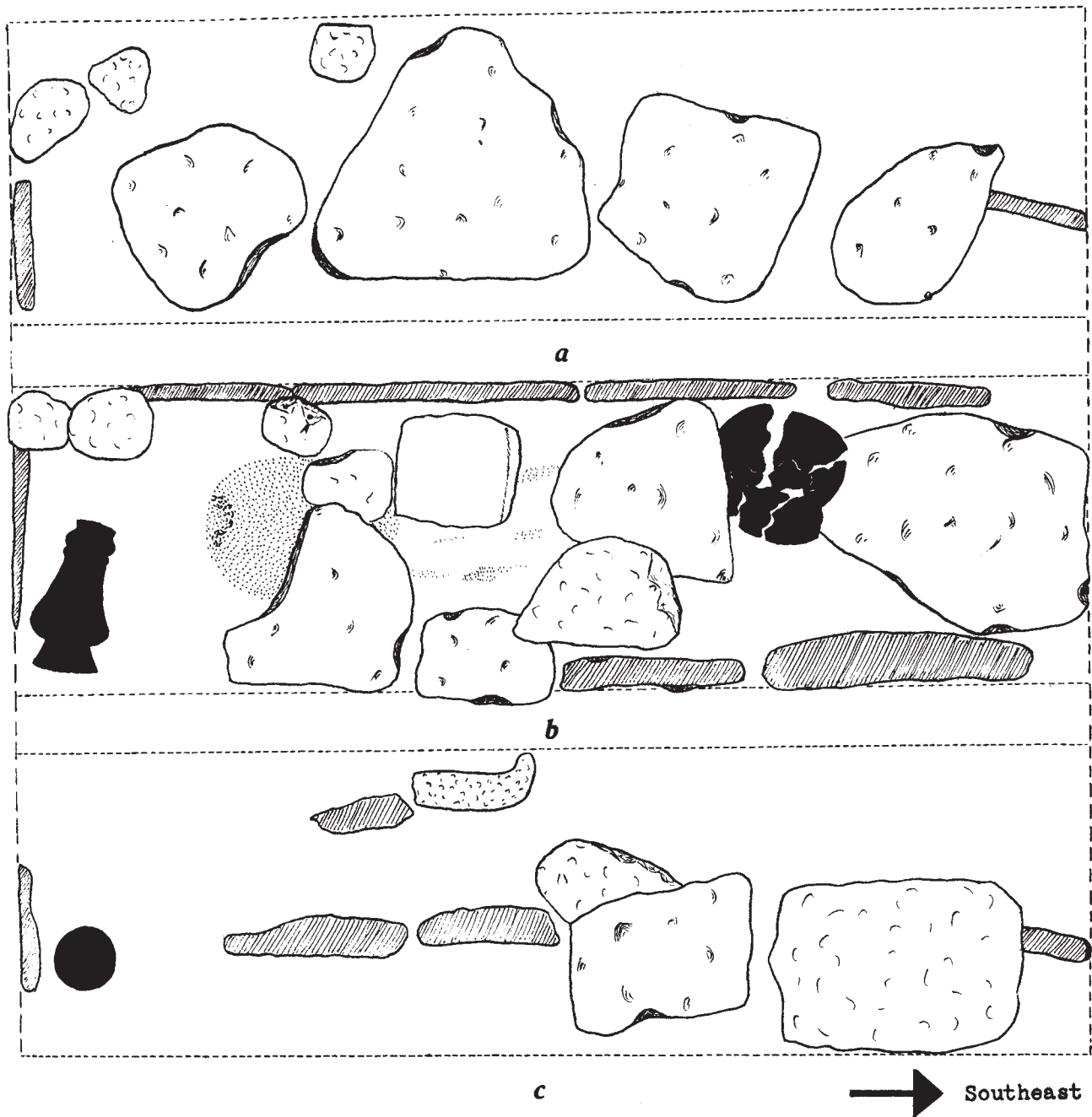
Grave furniture consisted of two pottery vessels. One, an incised plumbate, annular-based vase (Fig. 32.3a, e), reclined on its side between the head of the skeleton and the northwest end of the grave (Fig. 32.2b, c). This specimen measured 7.4 cm in rim diameter and 24.5 cm in maximum height. It was orange with large, irregular slate-gray and olive splotches. The second vessel, a tripod incised bowl (Fig. 32.3e), lay near the southeast end of the tomb (Figs. 32.2b; 32.3b). It measures 18.7 cm in rim diameter, 0.6–0.8 cm in thickness of side walls and 9.4 cm in maximum height. The feet are hollow knobs. The

surface is polished dark brown to black. Exterior incisions seem to have been made when the surface was hard, while the interior, unpolished except around the rim, bears what appear impressed or indented rather than truly incised lines, imparted probably while the play was still slightly moist.

Not in the grave itself, but in exactly the same discolored ash stratum and at the same level as the tomb, 2.92 m south of its northwest end, a tripod polychrome bowl was found. This specimen possesses a badly eroded, discolored (by smoke?) surface but apparently relates to southern styles of the Nicoya and highland polychromes as described by Lothrop (*Pottery of Costa Rica and Nicaragua*). Rim diameter is 23 cm; height 14.3 cm. There is a red primary slip, with a gray (perhaps originally white) secondary slip bearing black and red design. In places, traces of thin orange paint are found but whether this color formed part of the design or was intended as an orange-over-white slipping (as frequently occurs on Salvador pottery) cannot certainly be stated. The feet, cascabel rattles, are animal-head effigies and resemble most closely pisote heads.

I believe contemporaneity of the tomb furnishings with the separate pottery bowl extremely probable because of the stratigraphic positions of the objects and the character of the soil in which they occurred. That they were deposited shortly after cessation of the eruption which caused the fall of ashes surrounding them also seems likely; a carefully formed tomb would hardly have been made during an eruption, but the slight admixture of extraneous earth in the ash does not imply passage of many years following the cataclysm. Complete vessels, such as those of the Club Internacional and Orlando de Bola collections, were found in what appear caches near the bottom of the latest ash layer in San Salvador. These are not intrusive into the ash layer but seem to have been dropped or left at the place in which they were found when their owners were compelled to flee from the region by the eruption which was taking place at that time. No special care had been taken in placing these objects where they were discovered. The present tomb, however, shows care in arranging the stones, which, bespeaks ample time. Furthermore, as stone of the type of the slabs does not occur within miles of the tomb, they probably had to be sought out and brought from a considerable distance. Finally, an ash fall of several meters would blanket most natural features in this area for a considerable time, possibly concealing the known outcrops of the vicinity for years following the eruption.

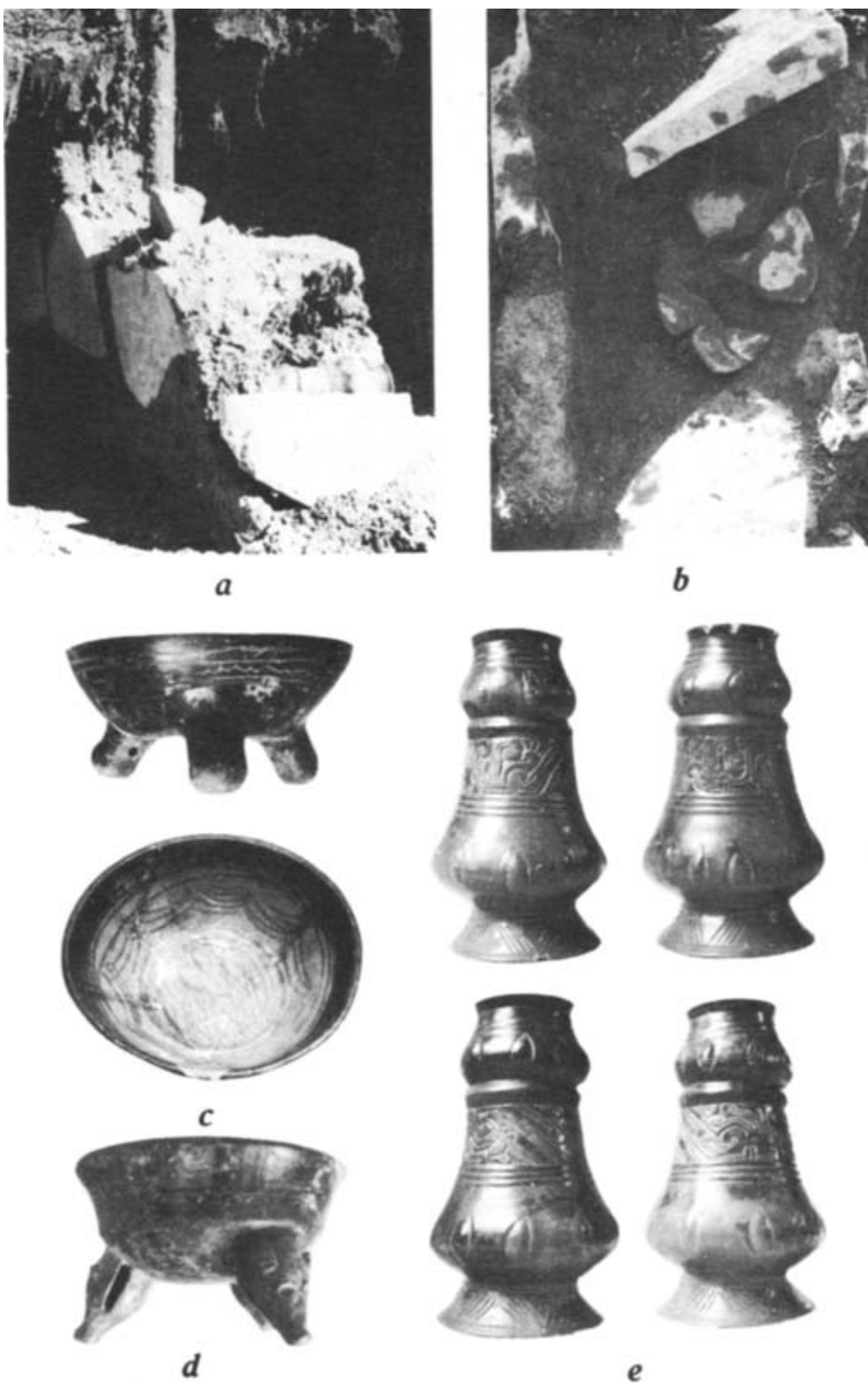
There are, however, difficulties inherent in any such hypotheses. To list but two of the most serious:



32.2. Tomb. Slabs represented by hachured areas, pottery by solid black, bones and bone artifacts by stippling: (a) profile along northern side; (b) plan; (c) profile along southern side.

(1) we have no means of determining even approximately the original surface or of establishing the thickness of humus covering this region when the cist was formed; (2) filtration of water from above, bringing with it dust or certain chemicals in solution, may have tinged the white ash in such way that it gives the illusion of disturbance by man.

Many thousands of sherds, as well as numerous complete pottery vessels, have been uncovered in the latest, thick ash deposit in central El Salvador. Supposedly most of these ceramic remains are more or less contemporaneous with the ash inasmuch as the usual finding-site shows such ancient material actually within the stratum, generally at or near the



32.3. Cist and associated objects: **(a)** view from north of northwest end, showing arrangement of Plumbate vessel and some wall stones; **(b)** view from southeast of southeastern half of a tomb, showing sherds of incised tripod bowl, collapsed and upright wall slabs; **(c)** incised tripod bowl; **(d)** tripod polychrome bowl found south of tomb; **(e)** four views of Plumbate vase showing incised band.

bottom of it. Therefore, by dating some types of the pottery, or the eruption itself, we might establish not only in space but also in time the interrelationships of many wares and, by extension, cultures in El Salvador.

The most widely recognized pottery types associated with this ash layer, both near San Salvador and in the western zones of the country, are Maya polychromes which have been found also in Copan and dated there to the Acropolis Period. Longyear (1952, Fig. 29c, d) illustrates polychrome bowls nearly identical with hematite red-and-black-on-orange painted vessels of similar form from the Club Internacional collection, San Salvador. Other polychromes found below Stelae I and M of Copan, dated respectively 9.12.5.0.0 3 Ahau 3 Xul and 9.16.5.0.0 9 Ahau 8 Zotz (see Strömsvik 1941:72, 73 and Figs. 14, 16, 18e, f), present close stylistic similarities of other ceramic specimens from the late ash stratum of San Salvador. Unfortunately, however, there is reason to believe that such types persisted until late preconquest times in El Salvador; consequently, only minute study of technological changes in these painted wares, coupled with stratigraphic excavation of many sites in a wide area, will establish a chronological sequence which will in turn permit accurate dating of either the ash stratum or the associated wares yet unidentified culturally.

As far as the present discovery of plumbate is concerned, we have already pointed out some of the difficulties in verifying the degree of temporal comparison between the tomb and the ash stratum. There further remains to be fixed a foundation in fact for assigning certain styles of plumbate to specific dates. Publication of Miss Anna O. Shepard's researches on this ware should clarify this problem greatly.

Salvador plumbate specimens have come to light almost entirely as the results of pothunters' activities. Nothing is known certainly of the provenience or the manner of occurrence of at least 90 percent of the vessels available for study. Therefore, as far as this country is concerned, there is little accurate evidence on which to base distribution studies of the ware, to place it in time, or to relate it to a specific ethnic group. The seven sites excavated cursorily by competent archaeologists in the entire country to date surely do not furnish sound foundations for final judgments on any of these points. My brief experience in three sites of western El Salvador leads me to the tentative belief that plumbate is rare in "architectural sites," that it is a comparatively late ware (almost certainly following the final heavy fall of ash), and that it is non-Maya. If, as has been contended generally, it was a manufacture of Nahuatl-speaking peoples of the 12th century and later, or may by other evidence be dated eventually to a certain era at least, we may have a second line of investigation along which to proceed in dating the late ash fall. In such an event, then, the aforementioned Maya polychromes might serve as supports for an earliest possible dating of the eruption, the plumbate to limit a latest.

For the present, importance of this cist to Salvador archaeology must rest on the following facts: (1) A special type of tomb adds to our knowledge. Very few burials of any kind have been reported in this area. (2) Plumbate pottery is associated with this style of grave. (3) An easily recognizable polychrome ware, of a decorative technique especially common in Nicaragua and Costa Rica; appears to be associated in time with the tomb. (4) The tomb and the separate polychrome bowl are associated in some way with the latest ash fall of the San Salvador area, either contemporaneous with it, or postdating it slightly.

A Tentative Identification of the Head Variant for Eleven

Heinrich Berlin

In 1942 during the regular season of field work undertaken at Palenque by the Instituto Nacional de Antropología e Historia de Mexico, I had an opportunity to start cleaning House XVIII, where F. Blom (1926–1927, Fig. 135) previously had found on the back wall of the inner room a stucco inscription. During the excavation there appeared about 90 more hieroglyphs, scattered among the debris which filled the room. Unfortunately, heavy rains and lack of workmen made it impossible to clean the room entirely and therefore a few hieroglyphs probably remain buried. These are essential, since the excavated glyphs, although many of them are numerical, do not make sense.

The stucco tablet found by Blom was 3 m long and 2 m high and was decorated with bluish green, painted hieroglyphs and with two or three molded stucco priests, the whole framed in a manner similar to the stucco pillar reliefs in the Palace and the Temple of the Sun. In short, this was a stucco counterpart of the famous tablets of the Temples of the Cross, of the Foliated Cross, and of the Sun at the same site.

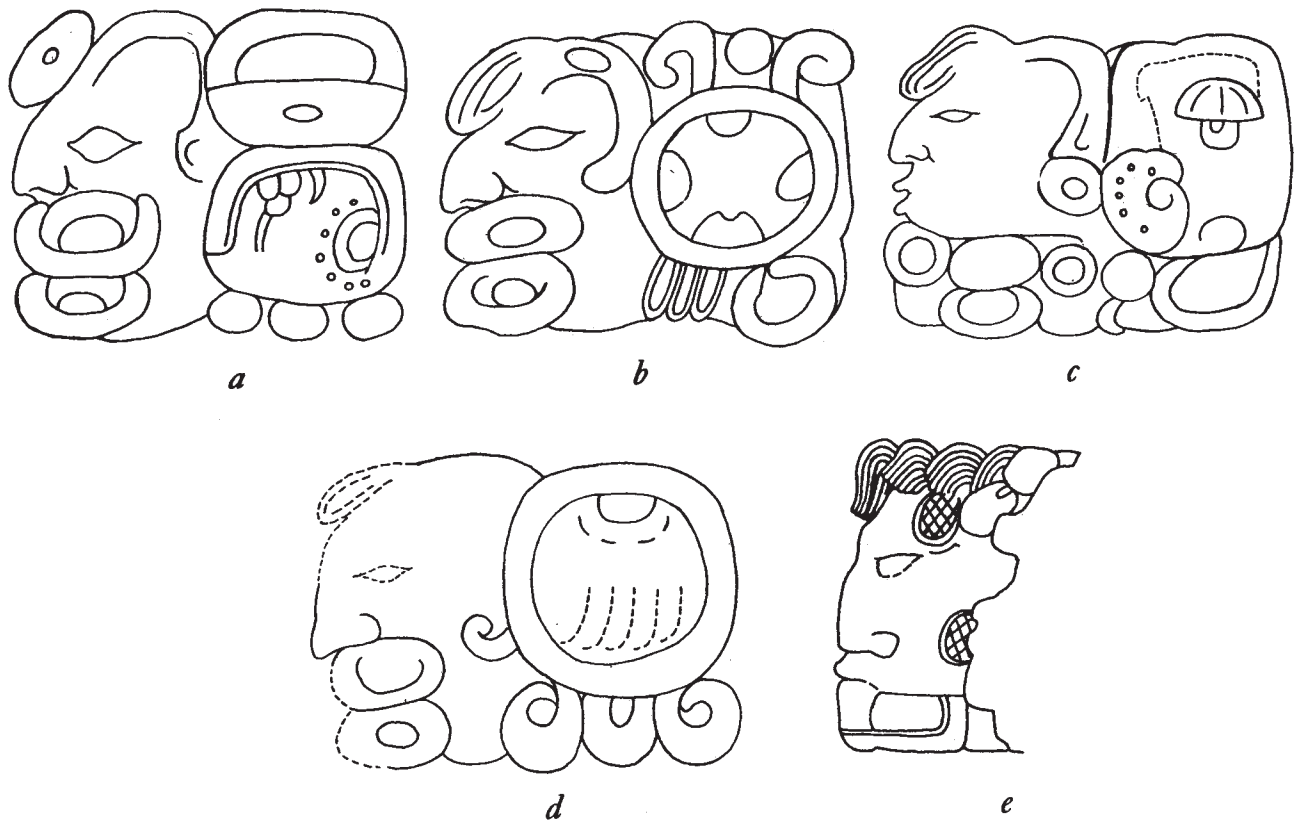
Among the newly found hieroglyphs there appeared four times a new type which beyond any doubt is a head variant of a numeral. Reproductions of these four glyph blocks are given in Figure 33.1a–d. Figure 33.1a, was drawn by Miguel Angel Fernandez from the original and Figures 33.1b–d were drawn over enlargements of photos made by me at Palenque. The four glyph blocks consist of two elements: the head variant of a numeral and a calendrical hieroglyph. Let us examine these glyphs first.

The calendrical part of Figure 33.1a, corresponds to a month sign of the Cauac group. I think it is Chen. The lower element is certainly the typical Cauac. The upper element is not the accustomed superfix but must be a rather uncommon variant. Generally the superfix of Chen is the same as that of the month Uo. Now it so happens that below each of the two persons flanking the stairway from the inner court to House A of the Palace the month Uo is carved with precisely the same unaccustomed superfix as in the present case, which fact can be adduced as a proof for our correctly identifying the month as Chen, the more so if one takes into consideration that our present aberrant form is at any rate more similar to the regular Chen superfix than to any other superfix of the Cauac month group.

In Figure 33.1b, the time element is the normal form of the uinal with one dot above it, the whole block thus being a Secondary Series reading for the moment ? kins 1 uinal.

Now in Figure 33.1c we again deal with a month. Apparently it is Kayab. It should be noted that the kan element which generally substitutes for the eye is replaced by a clearly defined eyelid, such as is known to occur, also rarely, in the Kayab hieroglyph. The dots of the beak are not very common but occur, for example, in the Kayab variant of Cab in inscription number 6 of the monumental stairway at Naranjo.

Finally in Figure 33.1d our numeral is associated with a day. The glyph is still partly covered with a clay layer, but the exposed surface shows that it could be only Imix, Kan, or Ben. The most prob-



33.1. Head variant coefficient: (a) with Chen; (b) as coefficient of a Secondary Series; (c) with Kayab; (d) with day sign, probably Imix; (e) head for number 11 from Lintel 2, Piedras Negras.

able reading is Imix, as we have drawn it, although only with dotted lines. The prime importance of the block in Figure 33.1d is the fact that the numeral in which we are most interested is combined with a day, whatever that may be.

I shall now describe the numeral associated with the four calendrical glyphs. In all four cases the face is that of a rather young person (although probably one should not emphasize this detail, as at Palenque the sculptor tends to create pleasing features). On the forehead, in at least two cases, is a tuft of hair with well-defined individual hairs. Starting from the forehead, running over its top and hanging down, at the end of the left cheek to where the left ear should appear, is a ribbon or curl in all four specimens. Finally in examples 1, 2, and 4 the lower jaw is covered by two oval ring-shaped elements. In example 3 the whole face is shown and the two ring elements hang down from the chin.

As stated above, we are dealing here undoubtedly with a head variant of a numeral. Through the association in Figure 33.1d with a day it can not have a value higher than 13 nor can it be 0, as days can be accompanied only by numbers lying between 1

and 13 inclusive. We can also disregard at once the values of 1, 3, 4, 5, 6, 8, 9, and 10 as our head does not possess any one of the well-known characteristics which identify these numerals. There remain then only numbers 2, 7, 11, 12, and 13. Through the findings at Palenque in 1935 it has been proven that the characteristic of number 2 is a head ornament formed by a hand; number 7 is considered to be characterized by a large ornamental scroll under the eye and curling up in front of the forehead; number 13 is a bird's face with a somewhat elaborate hair ornament or the head of 3 combined with the fleshless lower jawbone. Consequently we can eliminate these possibilities, too, leaving for discussion only numbers 11 and 12.

E. J. Palacios (1935:20–21), to whom we owe the definite identification of number 2, discusses and reproduces all known variants of number 12. None of them shows any likeness with our head, and they lack particularly the oval ring-like elements covering the lower portion of the face. The characteristic of number 12 must lie somewhere in a decorative element of the upper portion, and therefore I think we may exclude this numeral also.

Thus by elimination we are forced to identify our newly found four hieroglyphs as head variants for number 11.

Only three examples of head variants for the number 11 are known. One is the katun coefficient of the Initial Series on Stela 6, Yaxchilan. Little can be made out in either Maler's or Morley's photograph. The ring element is not recognizable, but it is possible that a crack runs diagonally across the face, and in that case it is barely possible that part of the ring was chipped off. The second example is also the katun coefficient of an Initial Series. This is on the east altar of Stela 5, Copan. No photograph is available, but Morley's drawing (1920, Pl. 20b) shows no rings on the lower jaw. The head is youthful. What may be

the ribbon or curl visible on the heads under discussion is shown, and it is barely conceivable that the circular element in front of the mouth is the ring.

The third example is again supplied by a katun coefficient, that of Lintel 2, Piedras Negras. I am indebted to Miss Tatiana Proskouriakoff for the drawing, made from the original, shown in Figure 33.1e. The details are not very clear, but it is not improbable that there is a circle on the lower jaw.

The comparative material, unfortunately, does not wholly support the suggested identification. On the other hand, it is not completely irreconcilable. Whether the head form in question does or does not represent the number 11, at least, it is a new variant for some number between 1 and 13 inclusive.

MEXICO CITY

A Possible Lunar Series on the Leyden Plate

Karl-Heinz Nottebohm

Little attention has been paid to 'the glyphs on the Leyden Plate following the record of Glyph G5 and Yaxkin in A7a. It is, however, quite probable that the remaining glyphs form a Lunar Series. Because of the positions of Glyph G5 and Yaxkin, I assume that the four sections comprising each of the two remaining glyph blocks are to be read in the sequence A7a upper, A7a lower, A7b upper, and A7b lower, and then the A8 block in the same order. There are, of course, many precedents for this manner of reading divided glyph blocks. A7b upper and A7b lower are quite similar. The element to the right of Alb lower is the moon symbol, and it is probable that the corresponding element in Alb-upper is the same. I suggest that the rather similar elements to the left of both signs represent hands. In that case the glyphs should represent Glyphs C and D of the Lunar Series, both without coefficients.

The moon age corresponding to the Initial Series, 8.14.3.1.12, 1 Eb 5 Yaxkin, can be calculated from 8.16.0.0.0, the moon age of which is given as 25 days on Stela 18, Uaxactun. The interval is 13288 days, which is 450 moons and 1.2 days, indicating a moon age for 8.14.3.1.12 of 26.2 days. A similar calculation

from 9.4.0.0.0, the moon age of which is recorded as 13 days on Stela 6, Tikal, gives a moon age from the Initial Series of the Leyden Plate of 27.5 days.

The absence of a coefficient with the supposed Glyph C would indicate that a new moon was recorded. Teeple has shown that there may be an error of two or three days in these observations. It is therefore plausible that Glyphs A7b upper and lower state that the Initial Series was that of a new moon, and that that moon was the first of the group.

The lower part of Glyph A8a is the so-called sky sign; the upper part is indistinct. This glyph should correspond to Glyph X of the Lunar Series. It contains elements of Form 6.

Glyph A8b upper displays prominently the bone element which is a feature of Glyph B of the Lunar Series. This glyph should occupy this position immediately after Glyph X. The elbow element, however, is not present. Glyph A8b lower should, if our thesis is correct, be Glyph A of the Lunar Series. It must, however, be admitted that the usual features of that glyph are not discernible. Nevertheless, the material, as a whole, supports the identification of these glyphs as a Lunar Series.

GUATEMALA CITY

Stucco Decoration of Early Guatemala Pottery

A. V. Kidder and Anna O. Shepard

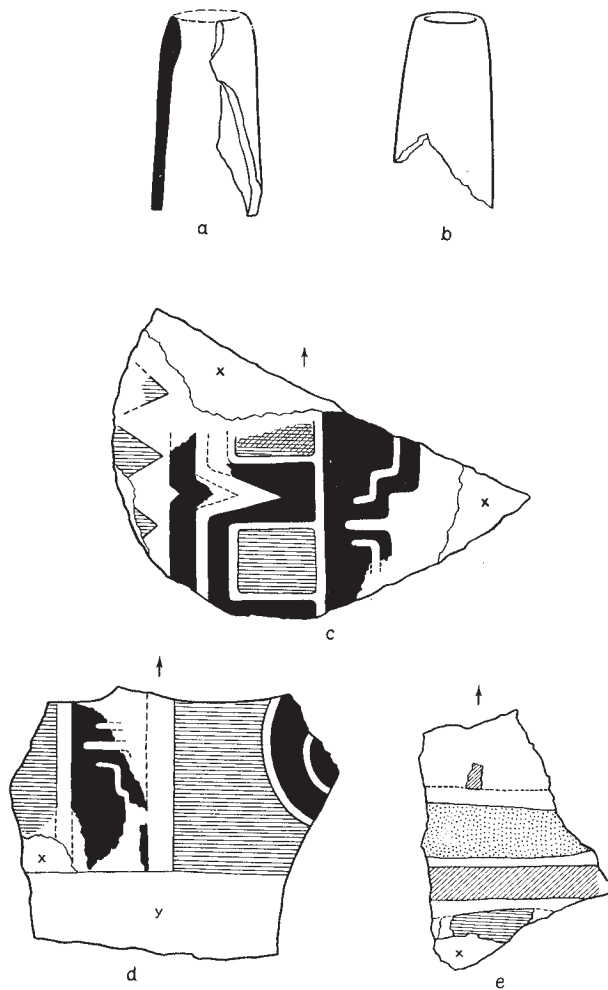
Stucco was used for the embellishment of prehistoric Mexican and Central American pottery in various ways: as a coating, tinted in plain colors, for whole vessels or parts of vessels; as a surface upon which more or less elaborate designs were painted; and as a background of which parts were cut away and filled with colored substances, paint cloisonné. These methods and their distribution have been discussed by Linné (1934) and Ekholm (1942). A fourth process, which has apparently not hitherto been reported, and which, as far as we are aware, involves the earliest known employment of stucco in Mesoamerican pottery decoration, is represented by a small group of sherds from the archaeological site of Kaminaljuyu, near Guatemala City.

The pieces were found in 1938 by Robert E. Smith in the course of stratigraphic excavation on Finca Miraflores in the southwestern part of Kaminaljuyu. They were taken from the lower measures of a thick stratum of rubbish of the Miraflores phase, the oldest so far identified at Kaminaljuyu and believed, on the basis of its handmade clay figurines, to have been roughly contemporaneous with the Middle (Archaic) cultures of the Valley of Mexico and the earliest (Mamom and Chicanel) phases of Uaxactun. As they came to light in a test column whose excavation was personally supervised at all times by Mr. Smith, and as nine fragments were found, there is no possibility such as might be entertained in the case of a single specimen, that they emanated accidentally from a higher, and much later, stratum which at that point overlay the Miraflores deposit.

Four vessels seem to be represented: (A) by a single fragment of a spout (Fig. 35.1a) from Cut 7 (counting from above downward); (B) by a slightly smaller spout (Fig. 35.1b) and five body sherds (two shown in Fig. 35.1c, d), all from Cut 9 and all evidently from the same piece; (C) by two body sherds, perhaps from different vessels (one shown in Fig. 35.1e), from Cut 10, close to the bottom of the test column. All had carried stucco but on only three pieces was it well-preserved.

The vessels were identical in paste and slap composition. Their temper is volcanic ash, in which particles of pumice and clear crystals of feldspar are prominent. They had more or less spherical bodies and, to judge from the roughness of their interiors, small mouths. No orifice fragments, except the spouts, were recovered. The interior surfaces are reddish brown (Pecan Brown of Ridgeway), striated as if by finger-smoothing; the exteriors bear an admirably smoothed, faintly glossy slip, Avellaneous in color in all except imperfectly oxidized sherds, but two of the fragments also have thin and ill-defined areas of Cinnamon. It was not determined whether this brighter color represents a flushing caused in firing or was produced by a wash of different material. No distinct surface film, however, can be detected with a magnification of 50x.

So much for the nature of the vessels as they came from the kiln. The first step in the secondary, or post-firing, treatment was the application of an extremely thin coat of ferruginous clay (c, Fig. 35.2). Although this is visible to the unaided eye on only



35.1. Stuccoed sherds from Finca Miraflores, Kaminaljuyu: (a, b) spouts from Vessels A and B, respectively; (c, d) sherds from Vessel B; areas marked *x*, here and in *e*, have lost all stucco; the area in *d* marked *y* is the unstuccoed lower body, its upper edge slightly below the point of greatest diameter; (e) sherd of Vessel D; Arrows indicate direction of orifice. Colors: Pink represented by horizontal hachure; white by oblique hachure; yellow by cross hachure; green by solid black; dark gray by dots. The grayish background coat of stucco is represented by white, save in areas marked *x* or *y*. Note that in some places parts of design elements have disappeared, exposing the background coat.

one piece, traces can be detected microscopically on the others; also when a flake of stucco is removed a light streaking of red is seen on both the freshly exposed pottery and on the contact surface of the stucco. There was no apparent advantage in the use of this red wash as it is soft and powdery, but it was nevertheless apparently applied only on areas later to be stuccoed: This is indicated by its absence from the unstuccoed area (*y*) of Figure 35.1d, and

suggests that it had some real or fancied utility. Its occurrence on these pieces is of interest because on a certain group of stuccoed vessels from later tombs at Kaminaljuyu (to be described in the report on that site) there is beneath the stucco a similarly colored but thicker undercoat.

The stucco proper of the present specimens is unusual, both in composition and in the nature of its application. Over the thin red wash was spread, in the case of the best-preserved pieces, a coat of grayish white clay, hereafter called the background coat, which served as a base for all subsequent applications and of which parts were left exposed as background for designs, the latter being made up of areas of stucco of various colors.

One would suppose that the simplest and easiest way to produce the same effect would have been to lay on the design elements in stuccoes of appropriate colors. This would have given the desired relief, which could then have been sharpened and emphasized by trimming the edges of the elements. Another method might have been to spread over the grayish white background a continuous secondary coat; to cut parts of this away to re-expose the background and thus achieve a design; and to paint the unexcised areas in the desired colors. Actually, however, each colored area was the result of a separate operation, or rather three operations: first a thick and relatively coarse base-layer (e.g., Fig. 35.2) was applied; this was then covered with pigment (f, h, Fig. 35.2); finally, the edges of the base-layer and of its thin surface layer of pigment were straightened and trued up. Close examination of the edges of the design elements suggests that this was done with a smooth, blunt-pointed implement; and that it was a final step, rather than having been carried out before the thin pigment layer was applied, is indicated by the fact that the latter does not lap over the beveled edge of the base-layer (see sections of edges, Fig. 35.2), as certainly could not have been prevented had it been painted on after the bevel of the base-layer had been produced.

That the above process was repeated in the case of each separate element of the design is proved by various bits of evidence: (1) the base-layers of different elements differ in composition (this will appear in the detailed descriptions which follow); (2) the base-layer of the white band on one of the sherds (Fig. 35.1e) is distinctly thicker than those of the immediately adjacent gray and pink bands (compare left and right sections shown in Fig. 35.2); (3) there are no scratches in the grayish white background coat along the edges of the elements, and such marks could hardly have failed to be made had a continuous coat been cut through.

There follow notes on individual sherds (all bear the thin red primary wash).

A (Fig. 35.1a). Spout. Stucco mostly gone. Only one coat was detected. It is chalky white, thick, and roughly pitted on the surface. It is of diatomaceous earth, composed largely of fragments, but several species are probably well enough represented for identification.

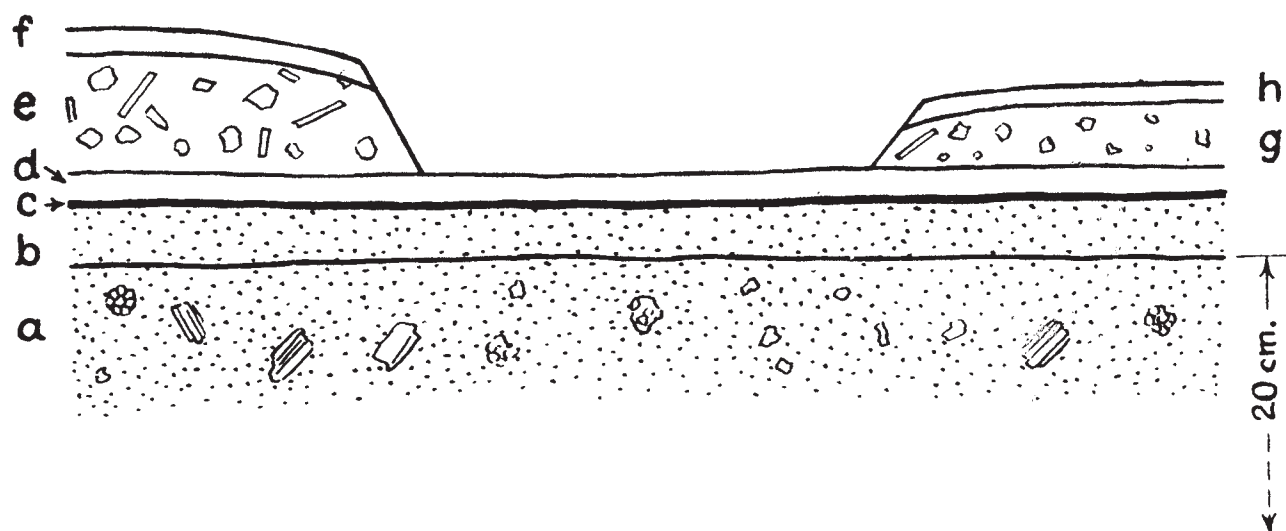
B (Fig. 35.1b–d). Spout and five body sherds. On the largest sherd (Fig. 35.1c) the well-smoothed background coat is of clay, grayish white mottled with darker gray. It is extremely fine-textured and free from mineral grains, but contains a few minute fragments of volcanic glass. Upon ignition it turns white; the gray is therefore undoubtedly due to carbonaceous matter. The pink triangles at the left (slightly deeper in color than Chatenay Pink) have a comparatively thick, deeper pink clay base layer which contains numerous granules of hematite and white clay. In the pink surface pigment there is an abundance of fine volcanic dust (fragments mainly under 0.003 mm in diameter, rarely as large as 0.01 mm) and a few grains of quartz in the same size range. The partially eroded upper rectangle has a base-layer containing sharp grains of clear feldspar, quartz, and hornblende, and fragments of volcanic glass mainly between 0.05 and 0.1 mm in diameter. The surface is pale yellow except at the lower edge, where it blends into a pinkish white, much paler than the pink of the triangles. The base-layer of the lower rectangle is the same as that of the upper, but the surface pigment (badly smudged) is apparently entirely of pale pink clay. The vertical stripe at the left is shown as green in the drawing, although its original color is doubtful. Its form was indicated by an unsmudged area on the background coat. When received in the laboratory this stripe had no base-layer and the only pigment remaining was a small patch of yellow in the upper section blending into orange near the central section. Since the surface of this area is rough and no clear line edges remain, it might be supposed that it represents foreign material deposited on the sherd subsequent to its ornamentation, were it not for the fact that the yellow is identical with the yellow of the upper rectangle, which has a smooth surface and coincides with a design element. All other areas marked green have a thick base-layer of coarse-textured, pale gray-green material; it approaches Pale Olive Buff but is stained. When the surface is scraped it matches Light Mineral Gray. The mineral inclusions are clear feldspar, quartz, hornblende, augite, and opaline fragments. It is coarser-textured than the base-layers

of the pink and yellow rectangles and is comparable to the base layer of the gray and white bands in the better-preserved stucco of Figure 35.1e, although the mineral suite differs. The coarse-grained base-layers have considerable "tooth" because of the sharpness and angularity of the grains, and their texture indicates that they are tempered clays.

The second large B sherd (Fig. 35.1d) is nearly identical in stucco and pigments. It has the usual background coat of mottled grayish clay; the base-layer of the pink design elements contains granules of hematite and white clay; and that of the elements recorded as green is of the coarse-textured, greenish gray material. A few remnants of a fine-textured white clay occur on the surface of the greenish gray material, from which it would appear that the surface pigment of these areas may have been white.

Three of the B sherds retain so little stucco that they are not illustrated. One of them has only remnants of white diatomaceous earth similar to that of Sherd A. A second has a grayish white background coat of the same composition as those of Figure 35.1c, d. It covers three-fourths of the surface, but stops short of what was apparently the rise of the orifice. On the upper edge, overlapping the background coat and extending over the vessel surface, is a chalky white coat containing stray diatomaceous particles. On the background coat is also a yellow substance coarser than the other clays, and similar in color and texture to the yellow of Figure 35.1c. It turns red upon ignition and is therefore probably limonitic. A third fragment of B has a remnant of pink pigment which overlies a granular pink and white base-layer, which in turn is underlain by the usual background coat of grayish white. The pink pigment is the same as that of Figure 35.1c, d.

C. The larger of the two sherds (Fig. 35.1e) has a background coat like that of Figure 35.1c, d. The decoration is of parallel stripes in pink, white, and gray. The pink stripe as usual consists of two layers: a pink and white granular base-layer, and thinner, fine-textured, homogeneous surface pigment which is considerably paler than the pink of the n sherds (paler than bright Vinaceous Fawn). The base-layer of the white stripe is noticeably thicker than that of the pink and gray stripes (see left side of Fig. 35.2). It is a grayish clay containing numerous sharp grains of clear feldspar, green hornblende, brown glass, and flakes of biotite, which are mainly between 0.05 and 0.15 mm in diameter, though a few are as large as 0.5 mm. The hornblende, brown glass, and biotite particles are sufficiently numerous to give this layer a distinctly peppered appearance. The white surface material is a clay containing considerable



35.2. Section at right angles to adjacent edges of gray and white stripes of Figure 35.1e (enlarged about 33 diameters): (a) paste (if whole thickness of sherd were shown at this scale, it would occupy a space of about 20 cm); (b) slip; (c) red wash; (d) background coat; (e) gray clay, tempered base-layer of gray stripe; (f) gray pigment; (g) tempered clay base-layer of white stripe; (h) white pigment. Note different thicknesses and compositions of base-layers of gray (e) and white (g) stripes, which indicate that they were separate applications rather than parts of a single coat from which the intervening area was excised.

volcanic dust. The base-layer of the gray stripe is of tempered clay similar to that of the white stripe; the clay matrix, however, appears somewhat grayer. Its surface pigment (Mouse Gray) is of homogeneous, extremely fine grained clay which ignites to a cream color, and therefore is probably carbonaceous. Above the gray stripe is a remnant of white (see Fig. 35.1e) which is fine-textured and lies directly on the background coat without a tempered base layer. It contains a few diatomaceous fragments. The second C sherd has remnants of a grayish clay background coat and of pink pigment. Also there is a small area of tempered white clay.

To sum up: The varied composition of these stuccoes is no less unusual than the technique of their application. They include clay, diatomaceous earth, clay with an extremely high percentage of volcanic dust, tempered clay, and pigments mixed with clay. The most surprising feature is the absence of calcite, which seems normally to have been employed in stucco work of later times, although clay stuccoes have been found on certain vessels from Esperanza phase tombs at Kaminaljuyu, which will be described in a later report. Another peculiarity of the present specimens is the nature of the

tempered clay base-layers under some of the design elements. These may have served to provide a firm footing for the pigments, functioning like the scratch coat used today in plastering. Formulas for some modern white paints include ground quart, which, being transparent, possesses practically no covering property, but is added to give "tooth" to the paint. The pink elements, with the exception of that of the lower rectangle of Figure 35.1c, have, instead of the tempered base-layer, a nonhomogeneous base, the composition of which suggests an imperfect mixture of hematite and clay.

We have described these specimens in detail because, as has been said, they exhibit the earliest known examples of the decorative use of stucco; also because preliminary study of stuccoed vessels from subsequent horizons at Kaminaljuyu and elsewhere in Mesoamerica indicates that various materials and techniques were employed and that these may prove to have regional and chronological significance. It would be interesting to know if the rather complicated process used to produce colored designs on these Miraflores sherds was a forerunner of the much simpler but equally effective paint cloisonné technique of central and northern Mexico.

Certain Pottery Vessels from Copan

A. V. Kidder

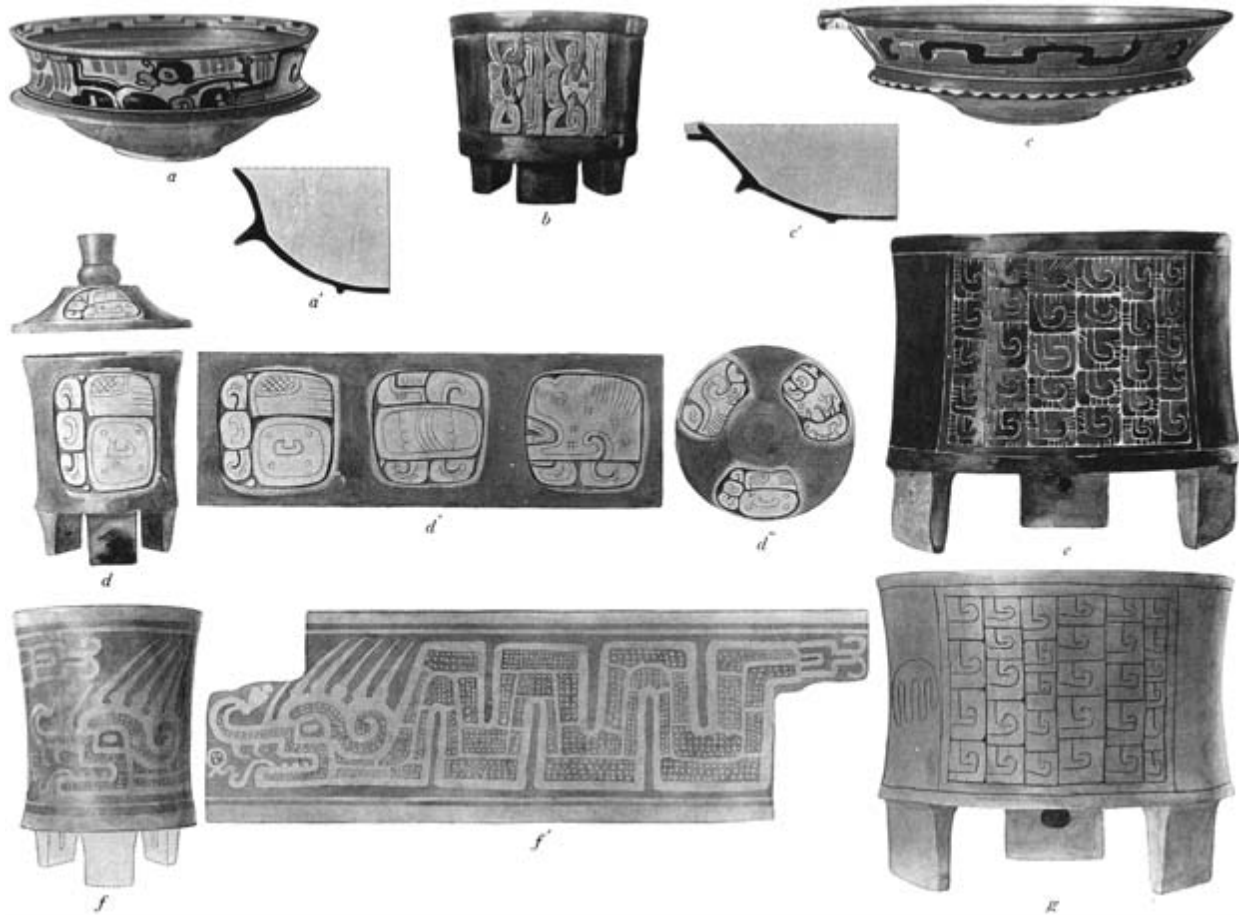
Encroachment of the Copan River upon its right bank a short distance below the Acropolis of Copan resulted in the washing out of human bones and pottery. Following this clue, Mr. Gustav Strömsvik, in 1942, trenched into its bank and discovered a number of graves of different periods, and refuse beds of considerable depth, which yielded valuable stratigraphic data. Shortly thereafter Mr. Strömsvik entered service in the Norwegian Navy and he has therefore been unable to publish the many mortuary vessels or to make studies of the great number of potsherds recovered from the refuse. The cylindrical tripods and basal-flanged bowls illustrated in this Note have been selected for reproduction in advance of a more comprehensive report on Copan ceramics because they are examples of widely distributed types that are proving very useful, in the current research of several investigators, in throwing light on the chronological relationships of, and commercial contacts between, a number of important Mesoamerican cultures.

Cylindrical tripods have long been considered a specialty, so to speak, of Teotihuacan, and wherever found, they have usually been considered to reflect influence, direct or indirect, from that center. But whether or not Teotihuacan actually furnished the inspiration for this form cannot surely be determined until specimens from all Mesoamerican regions where they occur have become available for comparative study. The typology and the distribution of these vessels will be discussed at length in a forthcoming report on Kaminaljuyu by Kidder, Shook, and Jennings.

The basal-flanged polychrome bowl is perhaps even more closely to be associated with an area and a chronological period, namely the Peten-British Honduras region and the early part of the so-called Maya "Old Empire" (the Tzakol phase of Uaxactun and Period II at San Jose). Discoveries of sherds of this type at Teotihuacan by Linné (1942) and of sherds and complete bowls by me at Kaminaljuyu indicate approximate contemporaneity of Periods II or III of Teotihuacan and the Esperanza phase of Kaminaljuyu with the above-mentioned Uaxactun and San Jose phases. But the full significance of such finds will become evident only when we have fuller information as to the subtypes of basal-flanged bowls, their distribution, and the exact periods to which they belong. Present knowledge regarding basal-flanged bowls is summarized and their archaeological importance is made clear by Thompson (1939).

Eventually the cylindrical tripods and the basal-flanged bowls from Copan can probably be assigned to a definite period in the life of that city and one which can in all likelihood be approximately dated in terms of the Maya calendar. This, however, will not be possible until the ceramic, stratigraphic, and epigraphic data gathered by Mr. Strömsvik and Dr. Longyear have been correlated. In the meantime, it is possible only to state that Dr. Longyear (personal information) believes both types, as represented at Copan, to pertain to the earlier part of the Old Empire. This reinforces conclusions based on the evidence from other sites.

The paintings are by Antonio Tejeda P.



36.1. Pottery vessels from Copan.

Fig. 36.1a. Basal-flanged polychrome bowl, black and red on orange. The very wide flange, the decoration of the inner side of the rim, and the red U-shaped elements on the exterior ally this bowl very closely with specimens from Esperanza tombs at Kaminaljuyu (Thompson 1940b, Pl. IV, a).

Fig. 36.1b. Cylindrical tripod, polished black; carved decoration, the excised parts filled with cinnabar. The carving is deeper than in the so-called "champlevé" technique of Teotihuacan tripods (cf. Linné 1934, frontispiece).

Fig. 36.1c. Basal-flanged bowl with lip spout, black and red on cream underslip, unclipped below flange. In shape (i.e. relatively short flange springing abruptly from a rather straight upper wall), in possession of lip spout, and in use of triangles as flange decoration this piece resembles bowls from Uaxactun (cf. R. E. Smith, 1936, Fig. 6, no. 1). Save for the spout, it has like analogies with a specimen from Kaminaljuyu (cf. Fig. 72 in the forthcoming report on that site).

Fig. 36.1d. Cylindrical tripod with cover, in light brown slip leaving incised panels "reserved" in cream underslip. In shape of both body and cover and in possession of light-colored panels bearing glyph like designs, this vessel much resembles a tripod from Kaminaljuyu, but the latter is black and its decoration is on stucco, the "reserved" white panels being set off by a red background (cf. forthcoming report, Fig. 204c).

Fig. 36.1e. Cylindrical tripod, polished black, incised decoration rubbed with red (cinnabar?) paint. Large panels containing double hook-shaped elements like these and those of g, occur on cylindrical tripods from Uaxactun (information from R. E. Smith).

Fig. 36.1f. Cylindrical tripod, gray, lighter gray serpent produced by negative painting. Tripods decorated by negative painting have been 'reported from Teotihuacan (Linné 1934, Fig. 23) and Uaxactun (R. E. Smith 1936, Fig. 8, no. 5).

Fig. 36.1g. Cylindrical tripod, pinkish gray, incised decoration.

Archaeological Specimens from Guatemala

Robert E. Smith

The pottery and other artifacts herein illustrated are contained in various private collections. Precise data as to the circumstances under which most of them were discovered are lacking, but the proveniences assigned them by their owners are probably correct. They should therefore be useful for distributional studies. Furthermore, representatives of pottery or other artifact types now recognized, or which may be recognized in the future, have value in adding to the corpus of information regarding those types; and in the case of categories of pottery that are known to archaeologists only in the form of sherds, whole pieces such as these are desirable for the light they can shed on vessel shapes and systems of decoration. Finally, it is always well to make a record of material in private hands, for not only is it often difficult of access to students, but there is danger that it may become scattered and lost to science.

Paintings and drawings are by Antonio Tejeda F. In the descriptions, Ridgway (1912) color readings are capitalized. Scale of illustrations: Fig. 37.1, $\frac{1}{4}$, except h, which is $\frac{1}{8}$; Fig. 37.2, $\frac{1}{4}$; Fig. 37.3, $\frac{1}{3}$; in Fig. 37.4 the longest celt measures 11.5 cm; b-d, $\frac{1}{2}$.

SPECIMENS FROM DEPARTMENT OF SAN MARCOS

Eleven pottery vessels, two potsherds, two effigy whistles, and a number of objects of jadeite and other green stones, the property of Mr. Hyde T. Clayton. The lot is said to have been found together in a mound at San Miguel Ixtahuacan. The objects of

stone and a small bit of sheet copper are reported to have been contained in the two vessels illustrated in Figure 36.1b, d.

Fig. 37.1a. Small jar with circular flattened areas on four sides; slip brown to black, paste Hazel; badly weathered.

Fig. 37.1b. Tripod vessel; incised decoration; heavy weathering renders presence or absence of slip uncertain; paste Ferruginous (cf. Gamio 1926-1927: 210, upper left).

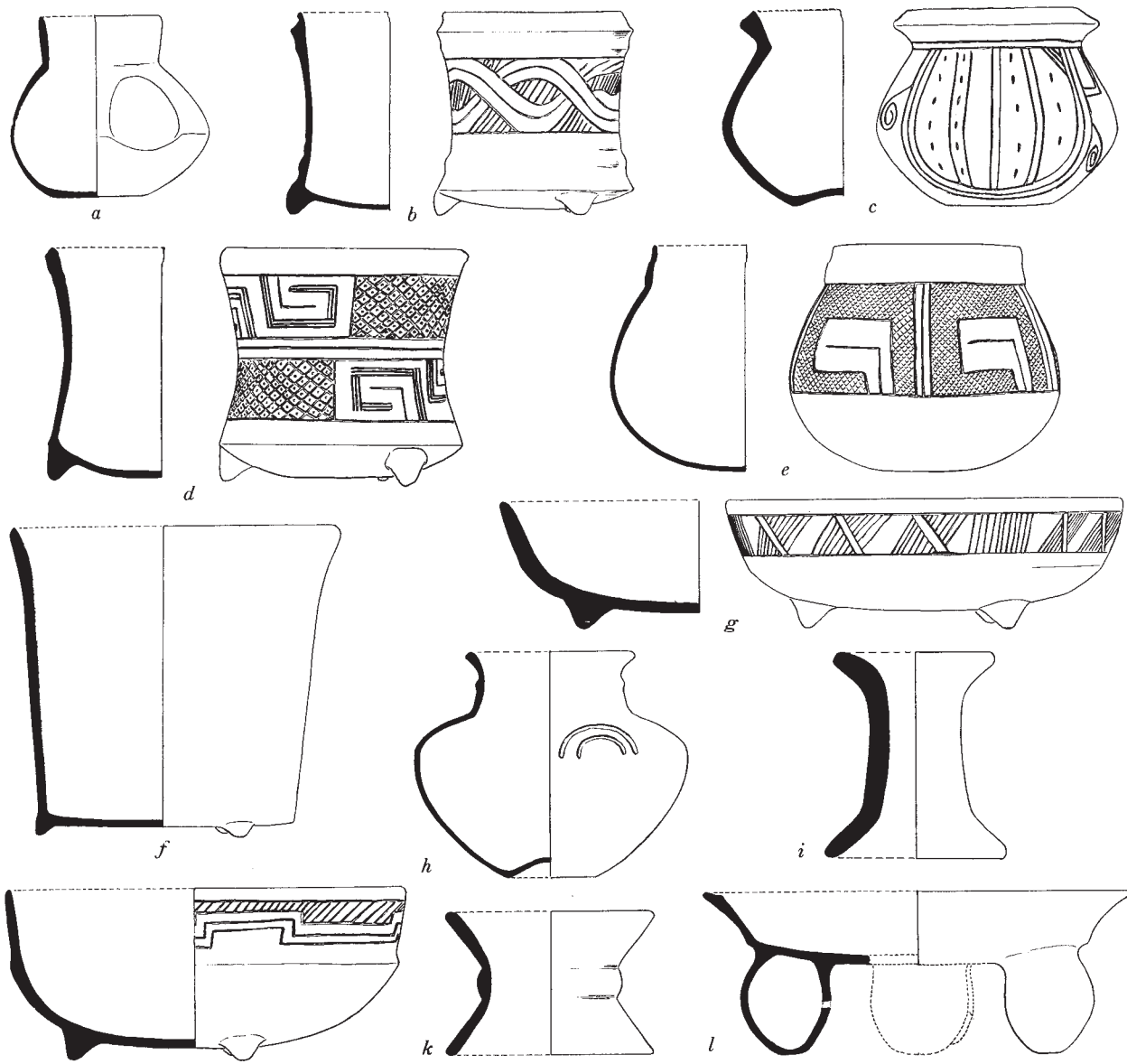
Fig. 37.1c. Jar; pre-slip incised decoration; brownish, badly weathered slip covers whole exterior, and interior of rim.

Fig. 37.1d. Tripod vessel; post-slip, but probably pre-firing, incised decoration into which red paint has been rubbed; slip brownish (cf. Gamio 1926-1927: 210, upper right).

Fig. 37.1e. Jar; pre-slip incised decoration; brown to black slip covers whole exterior, and interior of rim; apparently well polished.

Fig. 37.1f. Tripod vessel, too severely weathered for determination of color of slip, if any; paste Cinnamon Rufous.

Fig. 37.1g. Tripod bowl; incised decoration applied before polishing, when clay leather-hard; apparently unslipped; color dark brown.



37.1. Pottery vessels from Guatemala.

Fig. 37.1h. Large jar; paste near Vinaceous Rufous, slip? Thumb-punched fillet on neck and pairs of pre-slip (?) grooves on opposite sides of body (reproduction at 1/8).

Fig. 37.1i, k. Pot stands. i. Interior Cinnamon Rufous; there was perhaps primary slip on the exterior, which way covered by an Ocher Red slip with specular hematite inclusions; k. Paste Ferruginous, slip badly weathered; one side heavily burned, apparently subsequent to original firing. Pot stands have been reported from Tzimin Kax, British Honduras (Thompson 1931, Pls. XL, XLII); in Guatemala from Holmul (Merwin and Vaillant 1932, Pl. 19e, g) and

Zacualpa (Lothrop 1936, Fig. 38); in Mexico from Monte Alban (Caso 1938, Figs. 36–38), Cerro de las Mesas (Drucker 1943a, Pl. 21a, b), and the west coast (Kelly 1944).

Fig. 37.1j. Tetrapod (?) bowl, fragmentary; feet contain rattles; paste Hazel; slip Ferruginous to Cinnamon Rufous, interior somewhat cracked.

Fig. 37.1l. Tripod bowl, pre-slip incised decoration; brownish black slip on interior, exterior Cinnamon Rufous.

Fig. 37.3d. Whistles; brownish black; the pre-slip (?) incised and gouged decorations below the monkey face are filled with red paint.

Fig. 37.3f. Fish effigy vessel; pre-slip incised decoration; paste Chestnut Brown, slip brownish to deep black, originally well polished. Fish effigies, not clearly similar to the present example, have been found at Santa Rita, British Honduras (Gann 1900, Pl. XXXV; see also Joyce 1927:105), and at Kaminaljuyu in a tomb of the Esperanza phase (Maya Research 3:183).

Fig. 37.4a. Jadeite and green stone objects. Top row. 38 beads, subhemispherical; biconically perforated; all are light green and some are apparently of jadeite; diameters 0.4–2.8 cm. At right 3 pairs of jadeite earplugs; diameters 1.7–4.0 cm; some bear traces of red (cinnabar?) paint. Middle row: 149 cylindrical beads, gray to green, some with micaceous inclusions; mostly biconically perforated, but a few have a straight bore of uniform diameter. Lengths 0.9–4.1 cm. Bottom row: 3 green stone celts, lengths 6.0–11.5 cm. At right 27 unperforated cylindrical objects varying from gray to light green, many with micaceous inclusions. Lengths 1.6–10.6 cm. These specimens, because of their size and shape and because of the nature of their material, would seem to have been tubular beads awaiting perforation.

Remarks. The pottery from Ixtahuacan gives a definite impression of earliness, because of the resemblance of some of the vessels, in shape and in the nature of their incising, to specimens from the Salcaja-Momostenango region believed by Gamio (1926) and Lothrop (1926) to be early. Small, solid, conical feet are, in general, an early feature, as is the grooved lip of Figure 36.11. The swollen, probably tetrapod, feet of the latter bowl are of the sort appearing at Holmul in Period I (Merwin and Vailant 1932, Pl. 18), at Tzimin Kax on what Thompson (1931:285, Pl. XL) considers a Holmul I horizon, at Santa Rita and Nohmul, British Honduras (Gann 1918, Pl. 13b; Gann and Gann 1939:50), at Monte Alban in Period II (Caso 1938, Fig. 42), and at Copan in Usulután ware of the pre-acropolis period (information from J. M. Longyear). The filling of incised decoration with red paint was commonly practiced during the Miraflores phase the earliest as yet identified at Kaminaljuyu.

In view of the above and of the absence of any piece of known late type, I am inclined to doubt that the scrap of copper was found in association with these vessels. If such was actually the case, they would have to be assigned to a relatively recent period.

SPECIMENS FROM THE COBAN DISTRICT, ALTA VERAPAZ

Fig. 37.4b. Large, hollow, moldmade figurine; unslipped, slightly lighter than Mouse Gray; two sus-

pension (?) holes through headdress; part of a circular vent remains behind right ear (see section). Although its back is missing, this object was certainly a whistle (cf. the figurine whistles, also from Verapaz, illustrated by Dieseldorff 1926, Pl. 8, one of which is almost a duplicate of the present specimen). Found on a high hill on Mrs. R. W. Hempstead's Finca Chicoyou, in the northwest outskirts of Coban.

Fig. 37.3c. Tripod plumbate jar; typical plumbate gray, slightly darker than Dark Olive Gray, vertical part of body and lower body browner; surface shows considerable popping.

Fig. 37.3e. Small plumbate effigy jar; typical plumbate gray (Ridgway reading not made). Both this and the foregoing vessel acquired in Coban, no further data. Although a number of similar pieces have been figured, it seems well, in view of the great interest which attaches to this ware, to provide material showing even minor variations of shape or decoration.

Fig. 37.4c. Fragment of similar moldmade figurine, also doubtless a whistle. Paste Ferruginous, slip Pecan Broom. Found by me in excavating a refuse bed discovered during road work on Miss Rosita Dieseldorff's Finca Chipoc, adjoining Finca Chicoyou.

Fig. 36.4l. Hollow Jaguar (?) head with rattle; evidently broken from a vessel, part of whose apparently upper wall remains at the back; circular vent in top of head. Acquired in Coban, no further data.

VESSEL FROM DEPARTMENT OF SUCHITEPEQUEZ

Fig. 37.3g. Cylindrical vase; incised, painted, and appliquéd decoration; slip Kaiser Brown; lip and wall above topmost incised line painted red; post-drying, but pre-slip, incising; tau-shaped elements, animals, and interpanel areas painted brown; negative-painted circles with central dot in two interpanel areas; on one side an appliquéd monkey head. Acquired in Coban, said to be from Ingenio Palo Gordo.

VESSELS FROM LAKE PETEN ITZA

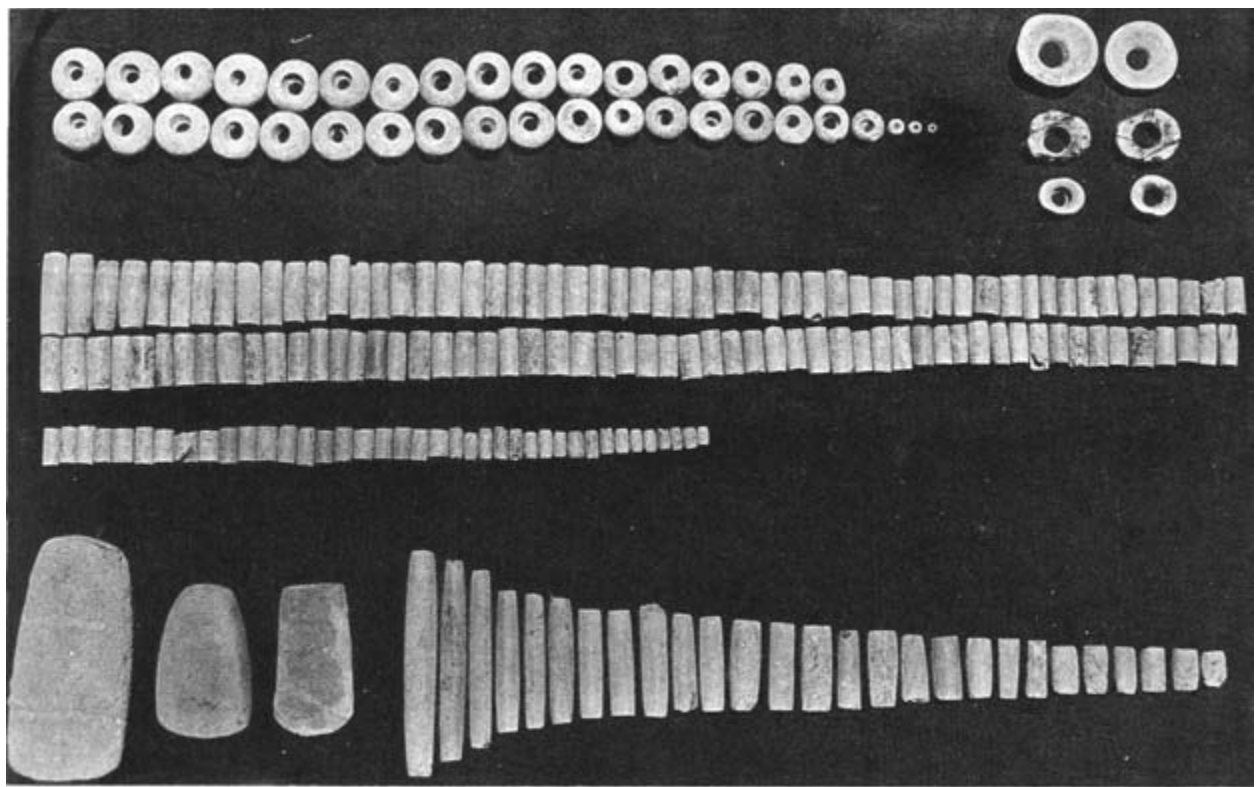
These five specimens, the property of Sr. Federico Gonzalez, are reported to have been found at San Jose on the north shore of Lake Peten Itza, Department of the Peten.



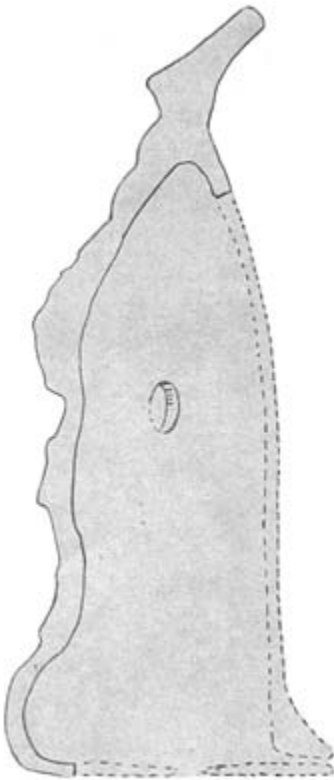
37.2. Pottery vessels from Guatemala.



37.3. Pottery vessels from Guatemala.



a



b



c



d

37.4. Pottery vessels from Guatemala.

Fig. 37.2f. Incense burner; pedestal base broken off; orifice slightly oval lengthwise (13 by 12.2 cm); a circular hole below each earplug and one in center of floor; surface unslipped, gray to Salmon Color; interior heavily burned. This is undoubtedly a relatively modern Lacandon incense burner, almost identical specimens having been observed in use by these Indians and others having been found, evidently recently deposited, at various ancient sites: Chiapas and Tabasco (Seler 1908:585–89); Yaxchilan, Lago de Petha, Palenque, Piedras Negras (Tozzer 1907, Fig. 26, Pls. XVII, XIX; Butler 1935, Pl. 6(18); Quintana Roo (Gann 1918, Fig. 69; 1927:56).

Fig. 37.2e. Cylindrical tripod; gashed solid slab feet; incised decoration; black slip covers entire vessel save exterior base and feet. Although the cylindrical tripod has a wide distribution on the Tzakol–Teotihuacan III–Esperanza horizon, specimens with the present type of gashed foot have hitherto been found only at Kaminaljuyu (information from A. V. Kidder) and San Agustín Acasaguastlan, Late phase (Smith and Kidder 1943, Figs. 25, e, f; 26; 38q, r) in Guatemala, and at Copan in Honduras (Peabody Museum, Harvard University).

Fig. 37.2h. Cylindrical vessel, pre-polish incised decoration (the small circles are hand-incised, rather than punched with a reed-end while the clay was still soft; cf. Smith and Kidder 1943, Fig. 47d, a vessel from San Agustín Acasaguastlan; cf. also Fig. 44d, a cylinder from the same site, with stepped frets resembling those of the present specimen); slightly indented ring in base (this feature also occurs at San Agustín Acasaguastlan, Magdalena phase: Smith and Kidder 1943, Figs. 24b, 43b); surface, originally well polished, badly weathered, grayish brown, possibly unslipped.

Fig. 37.3a. Bowl with restricted orifice, post-slip incised decoration; well-polished black slip from 1–5 cm within orifice to slightly below point of greatest diameter, rest of surface cursorily stone-smoothed. In distribution of polish this piece resembles an incised bowl of somewhat similar shape from San Agustín Acasaguastlan, Late (?) phase (Smith and Kidder 1943, Fig. 49b).

Fig. 37.3b. Cylindrical vessel, grayish brown slip, severely weathered and stained, over whole exterior and down 2 cm on interior. The relatively short cylinder is a characteristic shape at San Agustín Acasaguastlan in the Magdalena phase (Smith and Kidder 1943, Fig. 25a–d, h).

Remarks. The resemblance of the above five vessels to specimens of both the Late and Magdalena phases at San Agustín Acasaguastlan suggests that cultural connections between the Lake Petén Itza and Middle Motagua regions may have existed over a considerable period of time.

CEREMONIAL WARE FROM DEPARTMENT OF THE PETEN

These five objects (Fig. 37.2a–e), the property of Sr. Emilio Cordon, are said to have been found at Paso Caballo, northwest of Lake Petén Itza. All save e, which is Wood Brown, are of brick-red clay. Although they are much weathered, a thin slip can apparently be made out on their carelessly smoothed and somewhat popped surfaces. Four show faint traces of red and blue paint of the impermanent sort often seen on incense burners.

That these objects played a ceremonial role there can be no doubt, as in ware, crude appliqué modeling of the faces, supplementary decoration with appliqué fillets and “buttons,” and possession of vertical flanges, they are obviously allied to the flanged incense burners so commonly found in many parts of Middle America (see, for example, the specimens from Chacula figured in Seler 1901). But their open bases render them unfit to hold a charge of incense. They might have served either as removable chimneys for burners or possibly, like pot stands, to support an incense receptacle.

The only specimens of the same nature as these that I know of were found in a ceremonial cache at Uaxactun. Although squattier, they also have open bases and bear crudely modeled faces flanked by vertical flanges (Ricketson and Ricketson 1937, Fig. 191, Pl. 85e–g).

Jottings on Inscriptions at Copan

J. Eric S. Thompson

The purposes of this paper are to propose alternative readings of some dates at Copan, and to suggest that for a short while at Copan lunar data were recorded in some system which increased the recorded moon ages of dates by two or three days from what might have been expected.

At 9.11.0.0.0 12 Ahau 8 Ceh the priest-astronomers of Copan were extremely active, to fudge by the number of stelae erected there at that time. No less than seven monuments (Stelae 2, 3, 10, 12, 13, 19, and 23) commemorate that katun-ending or record dates immediately anterior thereto. Certain stylistic peculiarities make it virtually certain that all seven monuments were erected within a few years of one another. The decipherment of the Initial Series on several of them presents serious difficulties.

A quarter of a century has passed since Morley tackled these involved texts. In that interval progress in the field of Maya epigraphy has provided various aids and arithmetical checks to decipherments not then available. Nevertheless, several of Morley's readings, expertly made without these aids, are undoubtedly correct. His decipherments of the Initial Series of Stelae 10, 19, and 13 as respectively 9;10.19.13.0 3 Ahau 8 Yaxkin, 8.10.19.15.0 4 Ahau 8 Chen, and 9.11.0.0.0 12 Ahau 8 Ceh have been amply confirmed by data since brought to light. Similarly there can be no challenge to his readings of the date 9.11.0.0.0 12 Ahau 8 Ceh recorded as a Period Ending on Stelae 2, 12, and 23. Some obscurities that baffled him still remain.

The Initial Series of Steles 23 was correctly read by Teeple as 9.10.19.12.8 8 Lamat 1 Yaxkin. This decipherment

has been confirmed by the form of the Initial Series introductory glyph.

The Initial Series on the east side of Steles 3 was read by Morley as 9.11.0.0.0 12 Ahau 8 Ceh. However, Beyer's subsequent study on the Initial Series introductory glyph invalidates this reading. The central element of that glyph is nest the so-called new fire symbol required by Ceh, but a youthful face, such as serves as the head of the patron of the month Kayab (Fig. 38.1a). Furthermore, the Lunar Series fails to agree with a reading of the Initial Series as 9.11.0.0.0 12 Ahau 8 Ceh.

The cycle and katun coefficients are missing. The tun coefficient is a youthful face with what are almost certainly dots around a very clear jawbone. Accordingly, the best reading of the head is 19. The uinal coefficient is gone; that of the kin has a hand clasping the lower jaw, the symbol for zero. There follows a Lunar Series which reads 10 ?D (the jawbone and the circle before the forehead are very clear), 3C, tasseled variant of Glyph X, Glyph B, 10 A.

The next glyph is 12 Ahau, but the month sign which should follow is suppressed. Instead there are carved two outstretched hands, a glyph of unknown meaning, 13 uinals, the two outstretched hands repeated, 8 Ceh, 11 katuns.

The best interpretation of these data is:

I.S.	9.10.19.5.0	12 Ahau (13 kayab)	
S.S.	13.0	add	
P.E.	9.11.0.0.0	12 Ahau 8 Ceh	11 katuns

The concluding glyphs form an abbreviated equation, 12 Ahau serving for both dates. As we shall see, the moon age, if correctly interpreted as 10D, is in agreement with the proposed reading of the Initial Series.

The Initial Series on the west or inclusion side of Stele 3 (Fig. 38.1b) was read by Morley as 9.4.0.0.0 8 Ahau 13 Ceh. This decipherment must also be disallowed, and for the same reason that led to the rejection of the Initial Series on the east side. The central element of the initial Series introductory glyph is a somewhat reptilian head, not the new fire symbol of Ceh.

The cycle coefficient is 9. The head which forms the coefficient of the katun is partly gone, but the jawbone is clear. The katun coefficient must, therefore, be 10 or more, but as it is extremely unlikely that the Initial Series is later than the date of the monuments erection (9.11.0.0.0 12 Ahau 8 Ceh), the katun coefficient is almost surely 10. Morley reads this as zero, having noted a clear case of the use of a head with jawbone for zero on Stela 19 of this group. The example cited, however, is extremely irregular, and might well be the result of careless copying of a hand in the original drawing by the sculptor who executed the design. It should hardly be used as a precedent for interpreting other heads with jawbones as zero.

The head which serves as the tun coefficient has a prominent jawbone with a circle above it, indicating that it represents the number 19. As added confirmation of this identification, it will be noted that the forehead ornament is similar to that of the head for 9 which serves as the cycle coefficient.

Little remains of the uinal coefficient. The head which denotes the number of kips has a circle around the eye. The ramus of a jawbone is clearly visible. The value, therefore, must be 10 or more. The next glyph block, which once held the day sign, is entirely gone. Next is what is presumably Glyph G of the Lunar Series. The interior is crosshatched. The superfix may be that of Glyph F, suggesting that, as is often the case, the two glyphs are combined.

There follow Glyphs E and D, combined in, one quarter glyph block, and with no coefficient. Glyph C is obliterated, but the form of Glyph X, the tasseled variant, indicates that the coefficient of Glyph C must have been 2 or 3. There follow Glyphs B and A, the latter with a coefficient of 10. Morley, who made his drawing of this Lunar Series at a time when its function was unknown, arranges the four glyphs of this glyph block in the order top left, top right, bottom left, bottom right, whereas it is amply clear that in this inscription they should be read top left, bottom left, top right, bottom right. As a result

of this error, he is forced to read Glyphs D and E as Glyph C. This he does by converting Glyph E into a hand, and making it part of Glyph C.

Following a glyph of unknown meaning, but with a coefficient of 9, there is recorded the month position 4 Cumhu. The superfix is somewhat unusual, but occurs with an undoubted Cumhu on Stela 23, one of the monuments under discussion. The main part of the glyph and its coefficient of 4 are quite clear. Money appears not to have recognized this 4 Cumhu, which, of course, would be meaningless were the Initial Series in truth 9.0.0.0.0 8 Ahau 13 Ceh.

In view of the month position 4 Cumhu, the day sign must be Imix, Cimi, Chuen, or Cib. As the kin coefficient is over 10 but is certainly not 16, all these day signs except Chuen can be eliminated. Accordingly the coefficient must be 11. It is true that the hand does not resemble known forms of the head for 11, but these are very few in number. Also, as there are two head forms for 13, one of which combines elements of the heads for 10 and 3, it is probable that 11 could also be written combining elements of 10 and 1.

The only possibilities are:

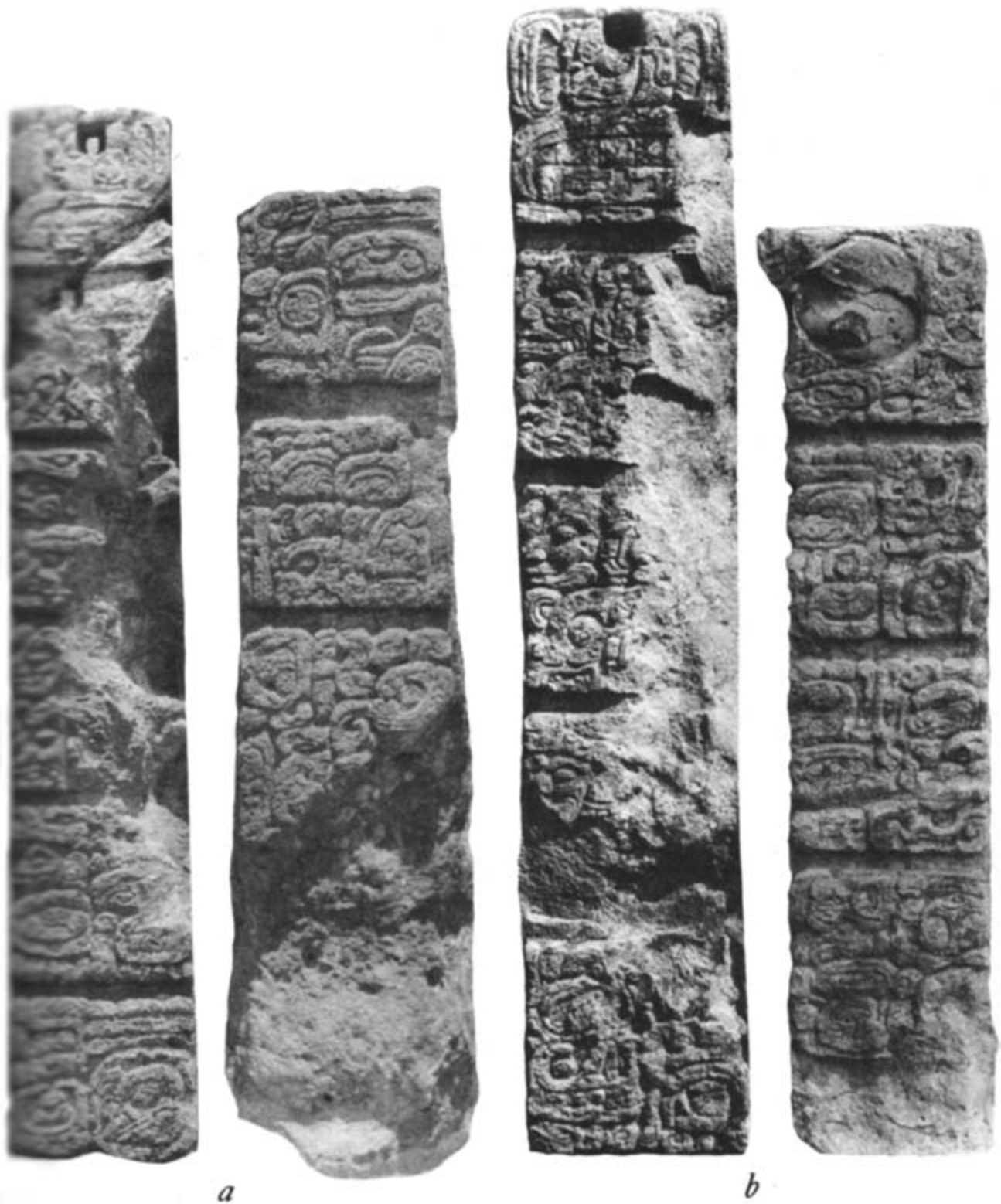
9.10.11.3.11	2 Chuen 4 Cumhu
9.10.15.4.11	6 Chuen 4 Cumhu
9.10.19.5.11	10 Chuen 4 Cumhu

Of these the second can be eliminated because the tun coefficient certainly is not 15, and because the lunar data are in disagreement. The first can be eliminated because the recorded moon age also fails to agree with this reading. There remains only the third date. This, as we shall see, is in agreement with the moon age, recorded as 20 days. It also agrees with the preferred reading of the tun coefficient.

The Initial Series, therefore, must be 9.10.19.5.0 12 Ahau 13 Kayab on the east side, 9.10.19.5.13 10 Chuen 4 Cumhu on the west side.

The Initial Series of Stela 12 presents many difficulties. Morley was sure only that the katun coefficient was 10, that the day was 6 Ahau and that the month had a coefficient of 13. To Morley's criteria we can add that the Lunar Series opens with Glyph G8, and that the moon age is 3D. On the other hand, it is not certain that the day sign is Ahau, and conceivably the month coefficient might be 11 or 12. This last is extremely unlikely.

Morley's reading, 9.10.15.0.0 6 Ahau 13 Mac, disagrees with the recorded form of Glyph G. Beyer's reading of the date as 9.30.2.13.0 6 Ahau 13 Zac yields a moon age of around 16D, and for that reason must also be rejected.



38.1. Inscription on Stela 3, Copan: (a) east side, top and bottom; (b) west (inclusion) side, top, and bottom.

If we assume that the month coefficient is 13, the day sign must be Chicchan, Oc, Men, or Ahau. Only readiness at intervals of 585 days will bring the day sign, its coefficient, and the required form of Glyph G into agreement. This is because 585 is the lowest common multiple of 5, 13, and 9, the intervals at which the three factors repeat themselves. There are 12 dates in Katun 10 which meet these conditions. The series starts with 9.10.1.1.15 6 Men 18 Cumhu and ends with 9.10.18.17.10 6 Oc 3 Ceh, but of these only three have month coefficients of 13. These are:

no. 2	9.10.2.13.0	6 Ahau 13 Zac
no. 8	9.10.12.8.10	6 Oc 13 Zotz
no. 9	9.10.14.1.15	6 Men 13 Muan

Nos. 2 and 8 can be eliminated because the calculated moon age at those dates fails to agree with the recorded 3D. There remains only No. 9, 9.10.11.1.15 6 Men 13 Muan.

A re-examination of the Initial Series reveals that the head which serves as the tun coefficient is shown in Morley's drawing with a loop beneath a round eye, indicating that it is the head for 4, 14, 7, or 17. This detail is not clear in available photographs.

Photographs show, however, that the headdress of the head of the kin coefficient bears a fair resemblance to the tun sign which forms the headdress of the heads for 5 and 15. As a jawbone is distinctly visible, the head can not be that of 5 but might well be that of 15. The uinal coefficient, with its strange headdress, resembles no known head variant for the number 1, but a sweeping line visible beneath the earplug may well be the end of the lock of hair which is a prominent and constant characteristic of the head for 1.

Finally, let us examine the day sign. Examples of Men on monuments of the Initial Series period are not numerous. The best preserved are on Lintel 3, Piedras Negras; Stelae 23 and 29, Naranjo; and Stela 17, Tikal (twice). The characteristics appear to be a hooked nose, a square or round eye, a cap, and a lateral perpendicular ornament in the vicinity of the ear. These features are to be seen with varying clarity on all the examples cited, the best delineation being that on Lintel 3, Piedras Negras, which is as clear now as the day it was sculptured. In the codices the head is treated cursively, but there is usually a line across the top of the head, presumably corresponding to the line where cap and forehead meet on sculptured examples. In the bottom right corner there are usually three hooks or slightly curving lines, which might well correspond to the base of the lateral ornament of the sculptured glyphs. I find no evidence

that the serrated teeth are, as is generally supposed, a constant characteristic of the head for Men.

The day sign on Stela 12, Copan, is somewhat weathered. There is a smallish rounded eye, a very clear cap, a nose that has no marked features so far as one can make out, a curved lateral ornament in the vicinity of the ear, and some curved lines at the bottom right corner. With a little imagination (I use the word advisedly) one can reconstruct the weathered profile to produce a Hebraic nose reaching almost to the cartouche edge at the bottom. Although these characteristics are not in very close accord with those listed above, they are by no means at variance. The head is not necessarily that of Men, but there is no reason why it should not be so considered.

On the off chance that the month coefficient might be 11 or 12, I prepared lists of dates at intervals of 585 days, and applied the same tests to them. Not one is satisfactory.

The Initial Series may accordingly be accepted with a slight reservation as 9.10.14.1.15 6 Men 13 Muan.

The Initial Series of Stela 2 must be omitted from the discussion. The inscription is so incomplete and weathered that it is impossible to submit it to the tests already employed. If, as is highly probable, the glyph following the day sign is

Glyph G of the Lunar Series, Morley's reading of 9.10.15.0.0 6 Ahau 13 Mac must be incorrect. Furthermore, it is very doubtful that the day sign is Ahau, and less likely that the kin coefficient is zero.

The moon age of 9.11.0.0.0 12 Ahau 8 Ceh is given very clearly on Stela 13 as 5D. The same moon age of 5D will be reached for 9.11.0.0.0 if all multiples of moons (29.5306) are removed from the intervals between three of the Initial Series in this group of seven stelae and 9.11.0.4.0, and if the remainder in each case, is added to the recorded moon age. That, however, is not the case if the process is repeated for other stelae at Copan. In other cases calculations lead to a moon age of 1-4D for 9.11.4.0.0, usually 1D or 2D.

These results are presented in Table 38.1. The calculated moon age of 9.11.0.0.0 is given to the nearest day. 'Exact' means a deviation of not over one-tenth of a day. The readings suggested above have been included, as well as that of 9.13.18.17.9 of the Hieroglyphic Stairway, the moon age of which is clearly 27 (note the loop under the eye and over the nose). I have omitted dates, such as 9.7.5.0.8, which were calculated far into the past; one or two listed by Teeple which are quite doubtful; and that of Stela M, since the coefficient of 5 is open to doubt. I have also omitted that of Stela 9 which appears to have an error in the moon age, since 5D is recorded where one would expect about 27D. Dates from the 9.11.0.0.0 group are boxed so that they may be more readily recognized.

Table 38.1. Moon Ages for Copan.

<i>Monument</i>	<i>Initial Series</i>	<i>Moon Age</i>	<i>Distance to 9.11.0.0.0</i>	<i>Calculated Moon Age of 9.11.0.0.0</i>
Stela 7	9.9.0.0.0	13D	14400 days (487 moons, 18.6 days)	2D exact
Stela P	9.9.10.0.0	9	10800 days (365 moons, 21.3 days)	1 minus
H.S. 5	9.9.14.17.5	23	9015 days (305 moons, 8.2 days)	2 minus
Stela 12	9.10.14.11.5 ?	3	2125 days (71 moons, 28.3 days)	2 minus
Stela 23	9.10.18.12.8	5	472 days (15 moons, 29 days)	5 minus
Stela 3	9.10.19.5.0	10	260 days 8 moons, 23.8 days	4 plus
Stela 3	9.10.19.5.11?	20	249 days (8 moons, 12.8 days)	3 plus
Stela 10	9.10.19.13.0	23	100 days (3 moons, 11.4 days)	5 minus
Stela 19	9.10.19.15.0	4	60 days (2 moons, 1 day)	5 exact
Stela 13	9.11.0.0.0	5	0 days (0 moons, 0 days)	5 exact
Altar 5	9.11.15.0.0	28	5400 days (182 moons, 25.4 days)	3 minus
Stela 1	9.11.15.14.0	12	5680 days (192 moons, 10.2 days)	2 minus
Stela I	9.12.3.14.0	0	8560 days (289 moons, 25.7 days)	4 minus
Altar H'	9.12. 8. 3. 9	22	10149 days (343 moons, 20 days)	2 exact
Stela 6	9.12.10.0.0	22	10800 days (365 moons, 21.3 days)	1 minus
Stela J	9.13.10.0.0	18	18000 days (609 moons, 15.9 days)	2 plus
H.S. 10	9.13.18.17.9	27	21229 days (718 moons, 26 days)	1 exact
Stela A	9.14.19.8.0	15	28600 days (968 moons, 14.4 days)	1 minus
Stela D	9.15.5.0.0	8?	30600 days (1036 moons, 6.3 days)	2 minus
Stela N	9.16.10.0.0	1	39600 days (1340 moons, 29 days)	2 minus

The table makes clear that Copan during most of its history would have calculated the moon age of 9.11.0.0.0 as 1-3D. Yet on five stelae of the group erected at 9.11.0.0.0 the moon age of that katun was accepted as 3-5D. On one stela of the group, Stela 12, the lunar data lead to a moon age of 2D for 9.11.0.0.0. However, the decipherment of the Initial Series is not absolutely certain. On stylistic grounds Spinden considers this stela to be the earliest of the group, a finding with which the proposed reading agrees. It is therefore possible that this stela was erected before the shift in moon age was authorized.

As three of these stelae reach a moon age of 5D for 9.11.0.0.0, this deviation from normal can hardly be an error. Furthermore, as observation and calculation would show that the reckonings were out of kilter, one must assume that the difference was deliberate. Either the moon age of the point from which the reckoning was made was shifted or a new lunar formula was employed.

Purely as a hypothesis one might suggest the following explanation. Teeple has produced some evidence that Copan at 9.12.10.0.0 used the formula 149 moons equal 12.4.0, and thereby reached a moon age of 22D for 13.0.0.0.0 4 Ahau 8 Cumhu. He has also shown that by the Palenque formula a moon age of

24D was obtained for the same date. A combination of the Palenque 24D base (perhaps firmly established by tradition) and the 149-moon formula would produce a moon age of 4-5D for 9.11.0.0.0. Alternatively, the point from which the moon age was counted might have been shifted from the appearance of the new crescent to the disappearance, some three days earlier of the crescent of the waning moon.

The former hypothesis seems more probable, because the date 13.0.0.0.0 4 Ahau 8 Cumhu is recorded on Stele 23. It is linked with a repetition of 8 Lamat 1 Yaxkin, which, in turn, is followed by a hand ending sign and a glyph which appears to combine the Cauac glyph with a moon sign, as though to indicate that the two dates were linked by a solar-lunar formula. Nevertheless, the interval is not an integral number of moons by any known Maya formula.

At 9.11.0.0.0 the Maya knew that the correction in their calendar amounted to (two solar years and) half a tun. The Gregorian correction would have been two solar years and 182-3/4 days, but Maya corrections generally ran about two days under Gregorian at that date. This correction is probably indicated on Stele 19, the Initial Series of which, as pointed out by Teeple, is a determinant of 8 Cumhu (8 Chen + 180 =

8 Cumhu). This suggests that in some way a lunar-solar formula was under consideration at that time.

Whatever the solution of this divergence may be, Copan, repenting of its heresy, soon returned to orthodox dating of the moon age, and not much later adopted the uniform system of lunar reckoning.

One other matter which may be of consequence emerges from the tabular presentation of calculated moon ages. The date outside the 9.11.0.0.0 group of stelae which has the highest moon age in terms of 9.11.0.0.0 is one which, according to Teeple's interpretation, records new moon because there are no lunar coefficients. The glyphs are of rather unusual types, and it is therefore possible that they do not record new moon, but the last day of the old moon. Thereby the calculated moon age of 9.11.0.0.0 for that date would be reduced by one day, bringing it into closer conformity with the others. Teeple considers that when both Glyphs E and D are present without coefficients, they record new moon. Such an interpretation is highly illogical. They should denote 20, and that is how I have translated the Lunar Series on Stela 3 (west). Teeple's thesis arose from inability to distinguish certain extraneous glyphs, meaning 'day' from Glyph E. At first glance the weathered Lunar Series on Stela 13, Piedras Negras, might appear to support the Teeple thesis. However, the glyph identified by Teeple and Morley as E might equally well be D since it is impossible to see whether the central element is a circle or an oval, the latter being indicative of Glyph D as established by Beyer. Glyphs D and E are both without coefficients on Stela 4, Piedras Negras, the Initial Series of which calls for a moon age of around 20 days. Indeed, Teeple reads the combination as 20, thereby contradicting his own thesis.

Altar L, Copan, has an abbreviated inscription, the first two glyphs of which Morley reads as 2 Chicchan 3 Zip and places at 9.16.1.0.5. He identifies the month sign as Zip on the strength of the somewhat unusual suffix. This, he notes, occurs twice at Copan with indubitable examples of Zip. However, this same suffix also occurs with Uo. Among several examples might be cited those on Lintel 31, Yaxchilan; Altar 1, Hatzcab Ceel; and Stelae 12 and 23, Naranjo. It can not, therefore, be used in differentiating between Uo and Zip. On the other hand, this month glyph on Altar L has a very clear crosshatched area at the top. This, the symbol for black, is precisely the identifying characteristic of Uo. This it shares with Chen. Gates has shown that the word 'black' enters into the name for this month in the calendar from the Alta Verapaz. The characteristic of Zip, on the other hand, is the symbol for red.

As the month here sculptured is undoubtedly Uo, there remains only the question of placing the Calendar Round date in the Long Count, for Morley's identification of the day sign as Chicchan can be accepted. In view of the general style, the position 9.17.11.4.5 2 Chicchan 3 Uo can be used with little hesitation.

For the dubious date reached by a long-distance number on Stela N, Copan, Beyer (1932) has proposed 15.7.15.14.0.0 1 Ahau 8 Chen, over 100,000 years into the future. This he does by changing the tun coefficient of the distance number from 10 to 4. However, the distance number is followed by a variant but recognizable form of the anterior date indicator. The distance number, therefore, must be subtracted, not added. In fact, most long-distance numbers are into the past, not the future. There is another objection to Beyer's reading. Goodman, Bowditch, Morley, and Beyer accept the month sign as Chen, but there are no valid grounds for this identification. The knotted element can occur with Yax (Lintel 21, Yaxchilan), Zac (Stela 1, Piedras Negras), and Ceh (Temple of Sun, Palenque), as well as with Chen. This is not a symbol whereby Chen can be distinguished from the other month signs of the Cauac group but an element which all may take, and which, therefore, pertains to the Cauac element, not to the prefix. It is sometimes the only prefix of Chen because the usual prefix of that month, the symbol for black, may appear as an infix instead of a prefix.

On the glyph in question the symbol for black (a prefix with crosshatching or an infix also crosshatched) is completely wanting. Instead, we find the knotted element as superfix and a strange prefix to the left. This last is shown by Maudslay as a thumb. However, a thumb is never employed as a prefix for a month. Clearly there is an error, either in Maudslay's drawing or in the original. Yet a slight change will convert the thumb into the prefix of Zac. An unpublished photograph in Peabody Museum, Harvard University, shows that the curve to the left of Maudslay's thumbnail is the loop at the top of the prefix converting the shape into that of the Zac prefix. The edge of the thumb would then be that of one of the two nubbins of the prefix of that month. This detail is not sufficiently clear to be certain, but I think there can be little doubt that the Zac prefix is here intended.

Difficulties still remain with the acceptance of the month sign as Zac, for the distance number as it stands will not connect 1 Ahau 3 Zip with Zac, or for that matter with any month of the Cauac group. Beyer has pointed out the frequency of errors in Maya long-distance calculations, and it is obvious there is an error here. However, if the katun coef-

ficient is changed from 19 to 7, the distance number joins the two dates satisfactorily:

1.11.4.12.9.0.0.0	1 Ahau 8 Zac
14.17.7.10.0.0	
1.11.19.9.16.10.0.0	1 Ahau 3 Zip

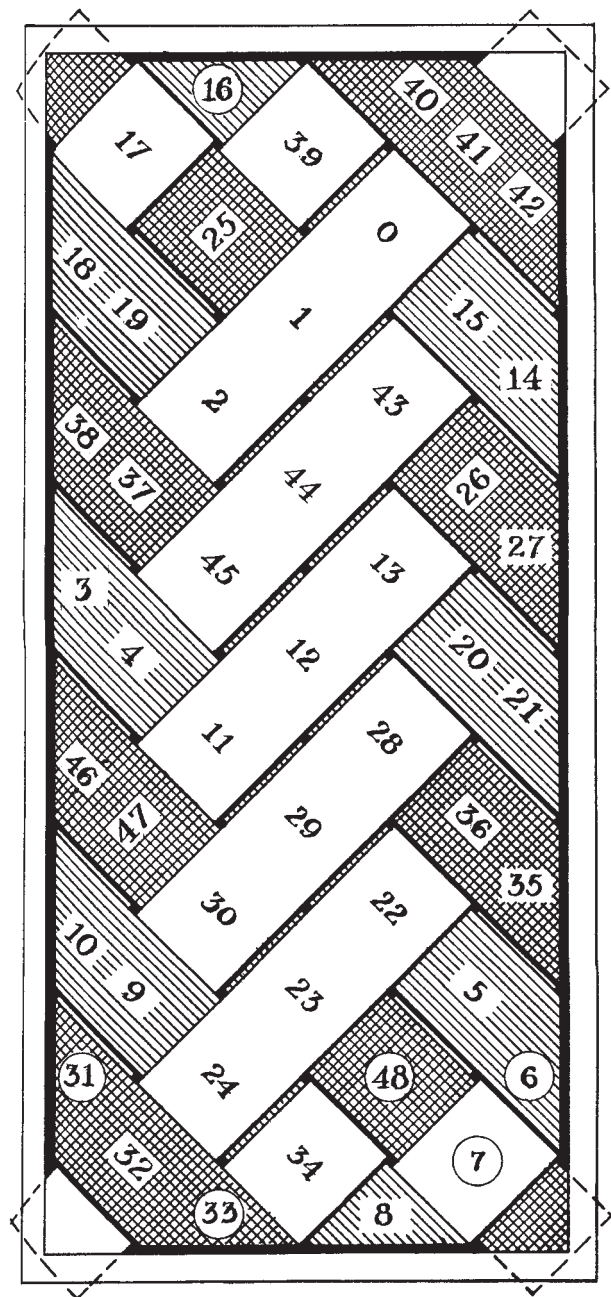
The coefficients above that of the cycle are those used on Stela 10, Tikal. Morley (1939) gives a reading of 9.17.4.0.0 10 Ahau 18 Kayab, which, he says, "may be accepted without reservation as the dedicatory date" of the last ball court at Copan. He decipheres the three last glyphs of the inscription as 10 Ahau 18 Kayab, end of Tun 4. Nevertheless, the element which he takes as a coefficient of 4 does not belong with the last glyph, but is a postfix of Kayab, as is clearly shown by the fact that it is beneath the coefficient of Kayab. Furthermore, this element is not four numerical dots, but the flame-like postfix which is almost always found with Kayab. Indeed, this element alone is sufficient to differentiate Kayab from any other month sign. It is perfectly clear in the photograph.

The first glyph seems to me to be a head in profile. In view of the month coefficient it might be Ahau, Men, or perhaps Chicchan. The last glyph resembles the tun sign, but it has a pair of superfixes which never occur with a tun sign in such a connection.

Since architectural students may base their conclusions as to the age of the ball court on epigraphic material, this reading of 9.17.4.0.0 10 Ahau 18 Kayab, although possibly correct, should be accepted with reservation. Another possibility is 9.16.10.14.15 10 Men 18 Kayab. However, it is quite likely that this is not the dedicatory date of the ball court, since it is neither at the beginning nor at the end of the inscription. As the inscription appears to close with a day sign 10 Ahau, the most likely date is 9.15.5.0.0 10 Ahau 8 Chen, for by the text occurrence of 10 Ahau at the close of a round number (9.18.10.0.0 19 Ahau 8 Zac) the Initial Series appears to have gone out of use at Copan.

The glyphs on the east face of Stela J, Copan, are arranged in an interesting mat pattern, first unraveled by Maudslay. There is some confusion as to how the pattern was followed at the base. Maudslay's numbering is certainly correct as far as No. 24, save that his Glyph Block 8 should be omitted from that sequence, and Glyph Block 25 inserted between 6 and 7.

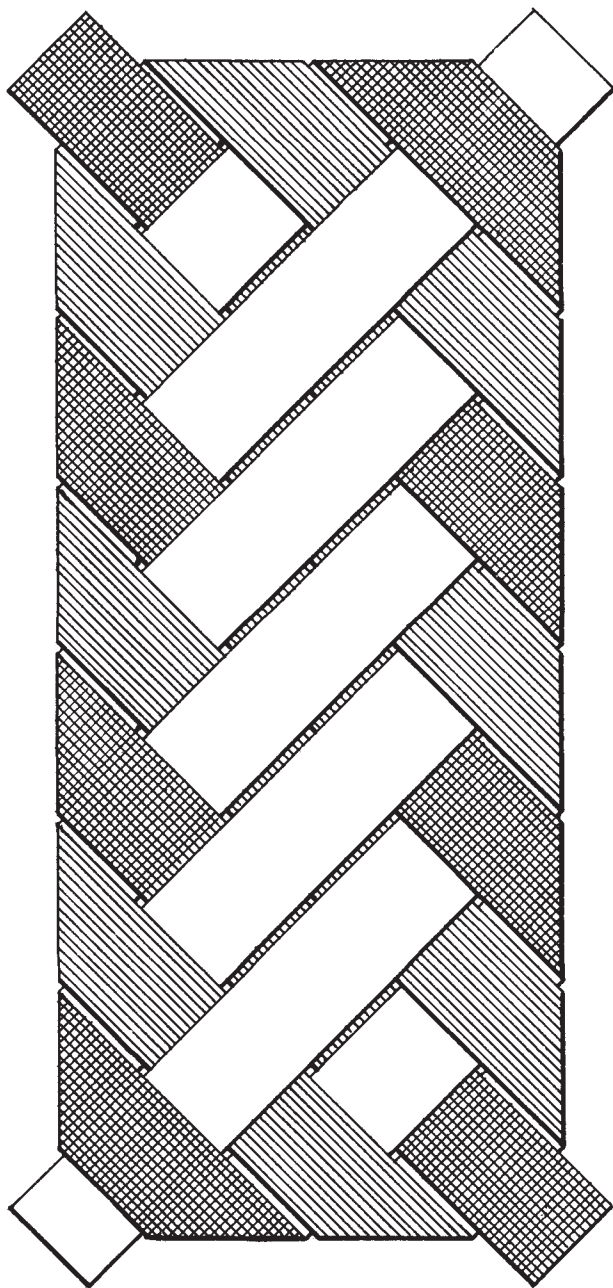
Beyond that point there is an error, for if the glyphs are read as numbered, the distance number recorded by Glyph Blocks 31 and 32 is reversed. That distance number, as Morley pointed out, leads to the



a

38.2. Mat pattern on Stela J, Copan: (a) suggested arrangement with two strands. Circled numbers show direction uncertain; other numbers oriented to glyphs.

date 7 Lamat 1 Mol. Morley noted the presence of 7 Lamat, but failed to identify the clear 1 Mol at Glyph Block 26 because, following the Maudslay sequence, he looked for it at Glyph Block 28. Actually, it is at Glyph Block 26. This is added evidence that the sequence here has been wrongly read.



b

38.2. Mat pattern on Stela J, Copan: (b) pattern of mat motif in Maya art.

In a discussion of the sequence Miss Tatiana Proskouriakoff has suggested to me that the design is based on the use of two strands, a common motif in Maya art (Fig. 38.2b). She called attention to lines at the corners of the stela face which appear to represent the projecting ends of the strands.

On the basis of that identification, the inscription would start on Strand 1 at the top right corner and continue to the end of that strand at the bottom left corner. Thence it would pass to the start of Strand 2 at the top left corner and terminate at the end of the strand at the bottom of the right corner. The design of the stela, however, is not quite the same as the conventional intertwined pattern. Apparently all four ends of strands pass under a counterstrip before projecting (Fig. 38.2a). This is certainly true of the two top ends. The inscription starts with Glyph Block O. The orientation of Glyph Block 17 (new numeration) to top shows that it can not be part of the same sectional strip as Glyph Block 26 (orientation to top left). On the other hand, Glyph Block 25 has the same top left orientation as Glyph Block 26. The strip, therefore, must pass under 17 to emerge at 25, then pass under two strips to re-emerge at 26. This arrangement is clear on the stela itself. Similarly the sequence 31, 32, 33 is partially supported by the dividing lines around the glyph blocks. Furthermore, this arrangement is strengthened by Glyph Blocks 34 and 35, which almost certainly record a Calendar Round date. There remains only the bottom right corner, unfortunately badly damaged. The line between the projecting end and the corner glyph block is clear in the photograph. This indicates that the former is not a continuation of the latter, but that the band passes under a strip before terminating. One must conclude that Glyph Block 6 contained a head form coefficient, and Glyph Block 7 the day Ahau.

Glyph Block 34 (Maudslay's 8) has the outline of a day sign with coefficient above. Glyph Block 35 (Maudslay's 38) is drawn as a birdlike head with a coefficient of 13. Photographs show that this is probably the Cauac element of Chen, Yax, Zac, or Ceh. The superfix is gone. The two glyphs can probably be restored as 8 Ahau 13 Ceh, as called for by the calculations. The text then reads:

0-12	9.13.10.0.0	7 Ahau 3 Cumhu (I.S.)
18, 19	13.10.0.0	subtract
34, 35	9.0.0.0.0	8 Ahau 13 Ceh (?)
40, 41	6.11.12	subtract from first date
46, 47	9.13.3.6.8	7 Lamat 1 Mol

Decipherments of Copan inscriptions made since the publication of Morley's *The Inscriptions at Copan* are to be found in the following papers: Beyer 1932, 1936a, b; Long 1923; Morley 1939; Teeple 1930; Thompson 1931, 1935, 1936.

The Dating of Seven Monuments at Piedras Negras

J. Eric S. Thompson

Morley (1938) has reaped a rich harvest of skillful decipherments from the large body of hieroglyphic texts at Piedras Negras. However, fields are seldom reaped so clean that nothing is left for the gleaner, and that is the case with the Piedras Negras texts. New datings are given below for seven monuments. In the order of their decipherment these are: Stela 8, Altar 1, Stela 23, Lintel 3, Miscellaneous Sculptured Stone 16, Lintel 7, and Miscellaneous Sculptured Stone 1. In the discussion that follows readings not offered as amendments are those of Morley except for decipherments credited to Beyer, Proskouriakoff, and Satterthwaite. In tabular presentations new readings are marked with asterisks.

The text of Stela 8 opens on the left side with the Initial Series 9.11.12.7.2 2 Ik 10 Pax. A distance number of 1.2.3.9 carries the count forward to 9.12.14.10.11 9 Chuen 9 Kankin (B18-A19). Morley reads the next date (A22-B22) as (9.11.1.15.16) 12 Cib 14 Chan, a backward move of some 33 years. However, at B20 there is a glyph which resembles somewhat forms of kin used in distance numbers. This has a coefficient of 3. If we assume that this glyph represents a distance number of three days, the eroded Calendar Round date at A22-B22 can be restored as (9.12.14.10.14) 12 Ix 12 Kankin.

The last glyph (B24) on the left side is described by Morley as very unusual. Nevertheless, it is the well-known kin variant, consisting of one or two inverted Ahau over a serpent segment (Beyer 1938). As the coefficient here is plainly 3, the glyph indicates a distance number of three days. The text then passes, not

as Morley supposed to the right side of the stela, but to the front, where at E1-F1 2 Caban 15 Kankin, three days after the last date, is plainly recorded. The text for these three dates accordingly reads:

B18-A19	9.12.14.10.11	9 Chuen 9 Kankin
B20	3	
A22-B22	9.12.14.10.14	12 Ix 12 Kankin
B24	3	
E1-F1	9.12.14.10.17	2 Caban 15 Kankin

As added confirmation, it may be noted that the middle date is found also on Stela 7 at this site.

For the various dates in relief on the front of Stela 8 Morley's readings can be accepted except for the text from L3 to M2 inclusive. The glyph at L3 he reads as 2 uinals and an uncertain number of days. To judge by his drawing, the two dots above the sign may not be numerical but may be the inverted Ahau faces of the kin variant (repeated elsewhere on this stela), which consists of the "serpent segment" with one or two inverted Ahau faces above. On that assumption, the whole would record somewhere between 1 and 10 kins. An addition of 3 kins will bring the count to 9.12.14.13.4 10 Kan 2 Kayab which is precisely 1 katun earlier than the first date recorded on the right side of the stela, and 5 tuns earlier than a date recorded on Altar 1. As is well known, the astronomer-priests of Piedras Negras delighted in recording such anniversaries of dates that were not tun-endings. Unfortunately the

Calendar Round date and the subsequent Secondary Series are entirely eroded, but the above appears the most probable interpretation. At C1, the first glyph on the right side of the monument, there is a glyph which Morley reads as 2 uinals 8 kins. To get this reading he was forced reluctantly to assume that the coefficient of 8 to the left was reversed, the bar coming in front of the three dots. Such an arrangement is against all Maya tradition and practice.

Fortunately, it is not necessary to impute such an unprecedented arrangement to the Maya. There is little reason to doubt that the glyph is again the kin variant consisting of one or two inverted Ahaus over the "serpent segment," Morley's coefficient of two dots above becomes the two inverted Ahaus of that glyph, and his bar to the left can be read as a somewhat eroded count bracket, such as sometimes accompanies this glyph (cf. Glyph F3, Stela 1, Piedras Negras).

This distance number of 3 kins serves to connect 5 Imix 19 Zac, the last date in relief on the front of the stela, with 8 Kan 2 Ceh, the first date on the right side of the monument, as deciphered by Morley. The only difference is that this last date must be moved forward one Calendar Round from the position given it by Morley, viz.:

Front	U1-V1	9.13.14.13.1	5 Imix 19 Zac
Right side	C1	3	
	D1-C2	9.13.14.13.4	8 Kan 2 Ceh

Naturally, the rest of the dates on the right side of this stela must also be moved forward from the positions Morley assigned them. The last date then becomes 9.14.12.7.2 9 Ik 10 Pop.

This last date is followed in C20 by "End of count of 3 Katuns." As this date is precisely 3 katuns later than 9.11.12.7.2 2 Ik 10 Pax, the Initial Series of this text, the various interpretations here offered are certainly correct. Katun and tun anniversaries of non-tun-ending dates are frequent at Piedras Negras. The date 9.13.14.13.1 is another example on this same stela, and the Initial Series of Lintel 3 reads 9.15.18.3.13 5 Ben 16 Chen, count of 1 katun, referring to the anniversary of 9.14.18.3.13 recorded on Stela 11 and Altar 2. As a matter of fact the date 9.13.14.13.4 8 Kan 2 Ceh is also an anniversary, for it is 15 tuns after the date 9.12.19.13.4 3 Kan 17 Muan, which, as we shall see, was declared on Altar 1. There does not, however, appear to be any glyphs indicating the passage of these 15 tuns on the rather weathered surface of the right side of Stela 8. I have in preparation a paper dealing with these numerous anniversaries.

I am indebted to Miss Tatiana Proskouriakoff for the readings on the right side of this stela (except

the first distance number). She called my attention to the record of 3 katuns after 9 Ik 10 Pop, pointing out that meaning was given the record by moving the dates forward one Calendar Round from the positions favored by Morley.

The whole text of this stela accordingly reads:

Left	A1-B8	9.11.12.7.2	2 Ik 10 Pax
	A17-A18	1.2.3.9	Posterior date indicator
	B18-A19	9.12.14.10.11	9 Chuen 9 Kankin
	B20	*3	
Front	A22-B22	*9.12.14.10.14	12 Ix 12 Kankin
	B24	*3	
	E1-F1	9.12.14.10.17	2 Caban 15 Kankin
	G1	(4)	
	H1-G2	9.12.14.11.1	6 Imix 19 Kankin
	I1	2.0	
	I2-J2	9.12.14.13.1	7 Imix 19 Pax
	L3	*3	(?)
	M1-N1	*9.12.14.13.4	10 Kan 2 Kayab (?)
	M2	*4.16	(?)
	N2-N3	9.12.15.0.0	2 Ahau 13 Zip, end of tun count
	O3-P3	5.0.0	Posterior date indicator
	O4-P5	9.13.0.0.0	8 Ahau 8 Uo. End count 13 katuns
	S1-T2	14.13.1	S.S. and posterior date indicators
	U1-V2	9.13.14.13.1	5 Imix 19 Zac. End count 1 katun.
Right	C1	*3	
	D1-C2	*9.13.14.13.4	8 Kan 2 Ceh
	D7-C8	7.16.5	Posterior date indicator (?)
	D8-C9	*9.14.2.11.9	6 Muluc 7 Mol
	C13-D13	9.1.3	Posterior date indicator (?)
	C14-D14	*9.14.11.12.12	6 Eb 5 Yaxkin
	C18-D18	12.10	Posterior date indicator
	C19-C20	*9.14.12.7.2	9 Ik 10 Pop. End count 3 katuns
	D23	*(9.14.15.0.0)	11 Ahau (?)
	Y1-Y2	*(9.10.6.7.4)	4 Kan 17 Zotz
Incised glyphs on front	Y5-Y8	4.8.2.14	Posterior date indicator
	Y9-Y10*	(9.14.14.9.19)	5 Eznab 16 Zip

The question next arises as to the dedicatory date of this stela, Morley, having placed the dates on the right side of the stela one Calendar Round too early, considers 9.13.0.0.0 8 Ahau 8 Uo to be the dedicatory date of the stela. Such an ascription was open to question even with his readings, for a Secondary Series carries the count over 14 tuns beyond that date. With the new arrangement there are two dates in the second half of Katun 14, the second of which is only 162 days before 9.14.15.0.0 11 Ahau 18 Zac, and may represent a determinant thereof ($18 \text{ Zac} + 203 = 16 \text{ Zip}$; Gregorian is 200-3/4). That date is probably the dedicatory date of the stela. In fact, 11 Ahau may be inscribed at D23, the last glyph block on this side of the stela. A weathered glyph with what appears to be a day sign cartouche and trinal support is clearly visible. The coefficient is seemingly 11 or 16. As a day sign coefficient of 16 is an impossibility, the whole may read 13 Ahau, an abbreviated reference to 9.14.15.0.0 11 Ahau 18 Zac. The right half of the glyph is even more weathered. Conceivably it might be the "5 tuns lacking" glyph.

Morley speaks of Stelae 1–8 as forming a single line, but in the more recent map published by Satterthwaite ("Piedras Negras Architecture"), which includes results obtained after Parris' preliminary map was supplied Morley, Stelae 1–7 stand on a single platform, Stela 8 being detached. In his text (p. 30) Satterthwaite notes that Stelae 2–7 were set on this platform, but Stela 8 definitely was not. He remarks that there is a possibility that Stela 1 also may have been off the platform. The sequence of erection of the stelae was as follows:

Stela 6	9.12.15.0.0
2	9.13. 5.0.0
4	9.13.10.0.0
1	9.13.15.0.0
3	9.14.0.0.0
5	9.14.5.0.0
7	9.14.10.0.0
8	9.14.15.0.0

Assuming that Stelae 1–7 are on the same platform, and that the katun 9.13.0.0.0 8 Ahau 8 Uo was commemorated, like several other katun-endings at Piedras Negras, on a large altar, the sequence of stela erection would have been:

4	2	5	3	6	1	7	8
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

The numbers above refer to sequence of erection; those below to the designations of the stela. Stela 6 was erected first, then Stela 2 well to the left. Next Stela 4 midway between the two. Then starting on the left, Stelae 1, 3, 5, and 7 were erected in that sequence to fill the gaps at the sides of the stelae already in position. With the erection of Stela 7 the platform was filled. Accordingly, Stela 8, the last of the series, was placed by itself a little farther to the side: In view of the discovery of the detachment of Stela 8, this is a more logical arrangement than to suppose that Stela 8 was erected by itself off the platform when only one stela had been placed asymmetrically on the platform.

Morley believes that Stela 23 recorded the date 9.14.15.0.0, to which Stela 8 is now assigned. The reading of the Initial Series of Stela 23 is extremely doubtful, and, because of evidence yet to be presented, it is far from likely that that was the dedicatory date.

It is reasonably certain that Altar 1 commemorates the katun 9.13.0.0.0 8 Ahau 8 Uo, although that date is no longer visible. There are, however, excellent reasons for believing it was once inscribed on Support 2, the surface of which is now entirely eroded.

In contrast to his brilliant decipherments of most inscriptions at Piedras Negras, Morley commits several errors in deciphering the text of Altar 1. At times even Jove nods. Beyer (1943) has rectified Morley's date at S1-T2 to 8.13.0.0.0 9 Ahau 3 Zac, and this correction is here utilized.

It is simplest to start the discussion with the two dates recorded on Support 1, although these do not actually open the inscription. The first of these Morley reads 3 Muluc 17 Muan, and places thousands of years in the past. An inspection of the photograph makes it quite clear that the day sign is Kan, The looped line, the circle above, and the parallel lines below are all quite clear. A position for this date is 9.12.19.13.4 3 Kan 17 Muan, which is just 5 tuns after the restored date on the front of Stela 8, and 15 tuns before another date on that stela. At J'2 there is a winged Cauac glyph with a head coefficient to the left. The head appears to be that of the number 5 (note the tun-like headdress). There seems, therefore, little doubt that this records the end of 5 tuns from the date 9.12.14.13.4 10 Kan 2 Kayab. Next there is a day with a coefficient of 9. Morley reads this as Ahau; but the dot in the center indicates Muluc. The next glyph should be the month sign, but appears to be something different. Unfortunately the next glyph block is eroded.

At K'4-J'5 there is a Secondary Series consisting of 11–13 kins, 1–3 uinals, and a posterior date indicator. This last Morley reads as a tun sign, but

the flame-like element of the indicator can be distinguished beneath. The central dot of the uinal coefficient is a shade larger than the flanking dots, making 2 the better reading. If the kin coefficient is read as 1, the date connects with 9.13.0.0.0, viz.:

Support 1	J'1-J'2	9.12.19.13.4	3 Kan 17 Muan. 5 tuns
	K'2-J'3	(9.12.19.15.9)	9 Muluc (2 Cumhu)
	K'4-J'5	2.11	
Support 2		(9.13.0.0.0)	8 Ahua (8 Uo)

Anniversaries of the first two dates occur elsewhere at Piedras Negras (Stela 8 and Lintel 7), making it virtually certain that the decipherments are correct. Complete confirmation, however, is supplied by the Secondary Series of 19.13.4 recorded at A2. If this is counted forward from 9.12.0.0.0 10 Ahau 8 Yaxkin, the position 9.12.19.13.4 3 Kan 17 Muan will be reached. Moreover, this latter date lies immediately beneath the position held by that distance number on the perimeter. It is, accordingly, clear that the whole of the text on the perimeter should be read until B2 is reached. Then the inscription passes to Supports 1, 2, and 3 in that order.

Support 3, as Morley recognized, carries the date 10.0.0.0.0 7 Ahau 18 Zip. However, immediately before this, at N'5a there is a katun sign with a coefficient of 7. This, of course, links 9.13.0.0.0, which we have already assumed to have been on the weathered Support 2, with 10.0.0.0.0.

The whole text then reads:

Perimeter	E1-E2	9.0.0.0.0	8 Ahau 18 Pax	End 9 cycles
	J2	4.(0.0.0.0)	Add	
	K1-K2	13.0.0.0.0	4 Ahau 8 Cumhu	End 13 cycles
	Q2-R1	8.13.(0.0.0)	Add	
	S1-T2	8.13.0.0.0	9 Ahau 3 Zac	End? 13 katuns; end tun count
	A'2	*11.(0.0.0)	Add	
	C'2-D'2	9.4.0.0.0	13 Ahau 18 Yax	End count 4 katuns
	F'1a	*6.(0.0.0)	Add	
	H'1-L'1	9.10.0.0.0	1 Ahau 8 Kayab	Count? 10 katuns; End tun count
	A1a	*2.(0.0.0)	? Add	[half cycle]
	A1b	*9.12.0.0.0	12 Ahau 8 Yaxkin	?
	A2	*19.13.4	Add	
Support 1	J'1-J'2	*9.12.19.13.4	3 Kan 17 Muan	5 tuns
	K'2-J'3	*9.12.19.15.9	9 Muluc (2 Cumhu)	
	K'4-J'5	*2.11	Add	
Support 2	?	*(9.13.0.0.0)	8 Ahau 8 Uo	
Support 3	N'5a	*7.(0.0.0)	Add	
	O'5-N'6	10.0.0.0.0	7 Ahau 18 Zip	Count to 10 cycles

There is a small possibility that 9.12.0.0.0 was not recorded on this altar, but, instead, that the distance number was 2.19.13.4. This is not very probable since A1a probably records 2 katuns, and A1b appears to carry a Calendar Round date, presumably 12 Ahau 8 Yaxkin, although the text is too weathered at this point to be certain of this.

One small matter deserves attention. The glyph blocks on the perimeter are read in fours, for example K1, L1, K2, L2, then M1, N1, M2, N2, etc. However, there is a single vertical pair of glyphs I'1, I'2, which have to be read as a single group. This is clear from the fact that H'1, G'2 record 1 Ahau 8 Kayab, count 10 katuns; H'2 records end of a tun, and I'2 a clear half-cycle. Yet the next four glyphs obviously have to be read in the usual sequence.

There is a logical explanation for this. After H'2 there remained spaces for only six glyph blocks. Perhaps the last four glyph blocks at A-B had been carved, and it was necessary to fill the two uncarved glyph blocks at I'. One suspects this may have happened from the fact that 1 Ahau 8 Kayab is recorded as "Count (?) 10 katuns, end count of tun, (two eroded and unidentified glyphs), half-cycle glyph." More important dates in this text had been treated with less attention. Moreover, the hand ending sign practically never precedes the tun sign, as here. The information could well have been carved in three glyphs, but five were taken, as though expanded to fill the two extra glyph blocks, for which no provision had been made. Even the Maya may have had to justify margins.

In view of what has been written above, 9.13.0.0.0 or 10.0.0.0.0 must have been the dedicatory date of this altar. I think there can be little doubt that the former was the katun this altar commemorated for the following reasons:

On several monuments calculations lead forward from the dedicatory date to 10.0.0.0.0. Examples are Stelae J and 8, and Altar S, Copan; Temple of the Inscriptions, Palenque; Zoomorph G, Quirigua.

In the texts of Stela J, Copan, and the Temple of Inscriptions, Palenque, these recordings of Cycle 10 are combined with reckonings into the distant past, as on Altar 1, Piedras Negras.

The dates 9.4.0.0.0, 9.10.0.0.0, 9.12.0.0.0, 9.13.0.0.0, and 10.0.0.0.0, all of which occur on Altar 1, are also found on the Temple of the Inscriptions at Palenque, the dedicatory date of which was almost certainly 9.13.0.0.0.

Thirteen katuns was a sacred number. It brought memories of 13 cycles, and thereby gave an impetus to reckonings into the past and future. The commemoration of a Katun 13 gave occasion for seeking various linkages involving the number 13: 9.0.0.0.0 ends on 8 Ahau; Katun 13 falls in the next Cycle 9 and also ends on 8 Ahau. It is 13 cycles and 13 katuns later. The date 8.13.0.0.0 ends 13 katuns just one cycle earlier than 9.13.0.0.0. The katun 9.x.0.0.0 ends on 13 Ahau, and, of course, 4 Ahau 8 Cumhu ends 13 cycles.

I must express my disagreement with the thesis advanced by Morley that the Maya at Cycle 10 were more apt to make long calculations into the past. Toward the end of the cycle most matters in dispute appear to have been settled, and texts generally become shorter. It was around 9.13.0.0.0 that the liveliest discussions and the fullest research were in progress. Arguments about the length of the solar and lunar years sent the Maya priests calculating far into the past. The following texts, all dating from near 9.13.0.0.0, prove this: Tablets of the Cross, Foliated Cross, Sun, and Inscriptions at Palenque; and Altar I' and Stelae T and J, Copan. This matter has received some comment from Teeple. I consider the presence of these early dates an excellent reason for dating the altar as 9.13.0.0.0.

Lastly, one must consider the position of Altar 1. It is situated in front of Stelae 1-8, which, as we have seen, date from 9.12.15.0.0 to 9.1.15.0.0 with the exception of that one katun-ending. Furthermore, if Stela 8 was dedicated at 9.1.15.0.0 and Altar 1 at 9.13.0.4.0, every 5-tun-ending from 9.12.5.0.0 to 9.16.0.0.0 inclusive was commemorated by a monument in the plaza of the west group. Similarly dates earlier than 9.12.5.0.0 were commemorated by stelae

in the south group, and those subsequent to 9.16.0.0.0 by monuments in the east group.

In rebuttal of one of Morley's arguments for assigning Altar 1 to 14.0.0.0.0, the absence of an Initial Series, it would be well to bear in mind that the glyphs on the surface are entirely eroded. They might have carried an Initial Series. Also, should 10.0.0.0.0 be commemorated by Altar 1 with its lengthy inscription, denoting full cultural activity, where are the stelae to commemorate 9.19.5.0.4, 9.19.10.0.0, and 9.19.15.0.0?

Everything considered, there can be little doubt that Stela 8 commemorates 9.1.15.0.0; Altar 1, 9.13.0.0.0. There remains only the placement of Stela 23.

Teeple and Morley consider that the Initial Series on the left side of Stela 23 records 9.1.15.0.0 11 Ahau 18 Zac, basing this reading partly on the Initial Series introductory glyph, partly on the Initial Series itself, and partly on the moon age.

That the variable element of the Initial Series introductory glyph is that of the patron of Zac there can be little doubt, but Morley's assumption that the coefficients of the uinal and kin are zero and the further assumption that this Initial Series represents the dedicatory date of the stela are very different matters. There are two Initial Series on this stela, and, accordingly, the chance of that on the left side being the dedicatory date is less than even, for the other Initial Series or a weathered Period Ending might equally well represent the dedicatory date. Of the 36 fairly certain Initial Series at Piedras Negras, 14 do not mark the ends of 5-tun period: or their multiples. Thus the chances of an Initial Series recording a Period Ending are about three to two. More important than this, however, is the fact that the texts of monuments at Piedras Negras almost invariably start on the left side. Since the first of two Initial Series which opens a text is likely to be earlier in date, the chances of the Initial Series on the left side of a monument marking its dedicatory date are not very great.

On the right side (C16-D16) there is a date which Morley deciphers as 7 ? 17 ?, but the circle of Kan is fairly at the top of the day sign. This is followed at C24-D24 by a Secondary Series which Morley deciphers as 9 tuns, 6-13 uinals, 16 kins. The two glyphs immediately beneath them are entirely eroded. To fudge by other examples, the final date of the monument may well have been recorded on these weathered blocks.

Leaving the question of this part of the text in abeyance for the moment, let us turn to the back of the monument. Much of the inscription has gone, but a number of glyphs are in fairly good shape in the last two columns. The text closes in the middle of a

sentence, for there is a distance number of 11 uinals, 11–13 kins, and lastly the “forward-sky-earth-sun” glyph. This ultimate glyph invariably lies between distance numbers and the dates they reach. As there is no date here, it must have been recorded on the front of the stela or as one of the Initial Series. If the former, it is likely to be a date given elsewhere on the monument.

A possible reconstruction of the past of the text already discussed, together with the dates immediately anterior thereto, would be:

		*(9.17.19.2.17	7 Caban 0 Kayab)
Back	16	13.3	
	I7-J7	*9.17.19.16.0	10 Ahau 18 Zac
	K2?	*(13)	
	K3-L3	*9.17.19.16.13	10 Ben 11 Ceh
Right	K7	*11.11	
	C16	*9.18.0.10.4	7 Kan 17 Tzec
	C24-D24	*9.7.16	
	C25-D25?	*(9.18.10.0.0	10 Ahau 8 Zac)

This reconstruction, although far from proved, obtains some confirmation from the pattern of day coefficients. There are three dates with the number 10 and two with the number 7. The former includes the supposed dedicatory date. There are also two occurrences of Ahau and three occurrences of the month Zac, for the Initial Series on the left side fell in that month. As is well known the priest-astrologers of Piedras Negras were much given to such dicing with numbers, days, and months.

The coefficients of the second and third dates and the Kan sign are certain. The first distance number is sure. The uinal coefficient of the second is certain, and the day coefficient is 11, 12, or 13. The two top dots are partly eroded, the bottom one solid. A reading of 11 is possible, although 12 or 13 is somewhat better. The tun and kin coefficients of the third distance number are certain, and the uinal coefficient is 11–16 inclusive.

A dedicatory date of 8.18.10.0.0 10 Ahau B Zac for Stela 23 finds some confirmation in the location of that stela in the court of the east group, the deciphered dates of which range from 8.16.5.0.0 to 9.19.0.0.0. It is, of course, possible that the Initial Series on the left side carries the date 9.14.15.0.0 11 Ahau 18 Zac, but for reasons already given this is likely to be the earlier of the two Initial Series.

Attention might also be called to the unusual postfix of uinal glyphs on Stela 23. This suggests lateness and a relaxation of rigid standards of glyphic delineation. It may be a development of the postfix

attached to a uinal glyph on Lintel 3, which, as we shall see, probably was dedicated at 9.17.15.0.0.

The evidence for dating Stele 23 at 9.18.10.0.0 can be summarized:

1. The Initial Series on the left side is probably earlier than that on the right because of the order in which sides of stelae at Piedras Negras are almost invariably read. The text on the back breaks off in the middle of a sentence, and therefore it is most probable that the final date is given on the right side (it may have been repeated, according to a fairly common practice, on the now weathered front of the stele).
2. The last distance number on the back probably connects with a date on the right side, and a distance number forward from that can be read to reach 9.18.10.0.0.
3. The juggling with the same numbers and month name supports the interpretations given.
4. The unusual postfix of uinal signs suggests lateness.
5. The location of the stele calls for a late date, one after 9.16.0.0.0.

For the above reasons it is not improbable that Stele 23 was dedicated at 9.18.10.0.0 10 Ahau 8 Zac.

In view of the new dates for Stela 8 and Altar 1 and the probable dedicatory date of Stele 23, it is apparent that in all likelihood no monument was erected at Piedras Negras in a group to which it did not chronologically belong. The monuments are arranged as follows:

9. 4.0.0.0? to 9.12.0.0.0	south group
9.12.5.0.0 to 9.16.0.0.0	west group
9.16.5.0.0 to 9.19.0.0.0	east group

The various dates deciphered by Morley on the beautiful Lintel 3 at Piedras Negras do not reach a tun-ending. The latest found by him is 9.16.6.12.0 10 Ahau 3 Pax, and he concludes that the lintel commemorated 9.16.10.0.0, that half-katun-ending being, he believes, inscribed on Lintel 3.

It is very probable that the dedicatory date of Lintel 3 was a katun later or 25 tuns later.

At U7-V7 there is a distance number which appears to have escaped Morley’s notice. Beyer (1942) calls attention to it without attempting its decipherment. The katun and tun signs with coefficients of 1 and 4 respectively are very clear. The coefficients of the uinal sign are badly eroded. At U8 there is the “forward-sky-earth-sun” glyph, such as frequently lies between distance numbers and dates at Piedras Negras. The details are weathered, but

enough remains to make the identification plain. This is followed in V8 by the day Imix with a blurred coefficient and the month Zip, also with a blurred coefficient. It is, however, clear that both coefficients are high. The only reconstruction which will fit the data is:

V4-U5	9.16.6.12.0	10 Ahau 3 Pax
U7-U8	*1.4.12.1	Forward-sky-earth-sun symbol
V8	*9.17.11.6.1	12 Imix 19 Zip

The date 9.17.11.6.1 3 Imix 19 Zip is just one tun after a date on Throne 1, 9.17.10.6.1 3 Imix 4 Zotz. Furthermore, there are close similarities in hieroglyphs between the two inscriptions. The last four glyphs of Lintel 3 (U11-V12) are almost surely repeated in that order on Throne 1 (I'3-J'4).

Lintel 3 (the designation is retained, although Satterthwaite doubts that it is actually a lintel) was connected with Structure 0-13. The terrace on which this structure stands supported Stelae 15 and 12. These record respectively 9.17.15.0.0 and 9.18.5.0.0 (9.18.0.0.0 is carried by Altar 4 in the center of the plaza). On the assumption that Stelae 15 and 12 were erected shortly after the completion of Structure 0-13, it is reasonable to suppose that Lintel 3 was dedicated to commemorate 9.17.10.0.0 or 9.17.15.0.0. The first would be rather over a tun before the, last date recorded; the latter somewhat under tuns later. Most generally the latest non-tun-ending date in a text is earlier than the dedicatory date. Although this is not a hard and fast rule, it is so generally observed that it tips the balance somewhat in favor of 9.17.15.0.0 5 Ahau 3 Muan as the dedicatory date of the lintel.

Satterthwaite (1940) describes and illustrates part of a monument which bears the designation Miscellaneous Sculptured Stone 16. He thinks this may have been a small stela. The inscription opens with a Calendar Round date, which he reads as 8 Manik 0 Ceh, giving information from Morley for this interpretation. However, the element before the month Ceh is not the spectacle glyph but the tun variant which it has been shown indicates completion. To the five examples I have discussed elsewhere (Thompson 1935b, 1943) may be added two more: this example on Miscellaneous Sculptured Stone 16, and one on the Hieroglyphic Stairway, Naranjo.

For this example at Piedras Negras there are no distance numbers to place the date in the Long Count. For the Naranjo case, the position in the Long Count is certain, but the glyphs are somewhat weathered. The reconstruction is as follows:

A1	9.10.3.2.12	2 Eb, Uayeb completed
U1	1.13.10	
V1	9.10.4.16.2	8 Ik 5 Kankin

The calculations are completely clear except for the sign which I read as Uayeb completed at A1b. This is where the month sign should be. It certainly is not Pop. The main element is a fairly clean tun, but the elements which form the superfix are hard to distinguish. Possibly only the superfix of Uayeb is present, the whole indicating the completion of the 365-day year.

The date on Miscellaneous Sculptured Stone 16 must be 8 Manik, Ceh completed, which is the equivalent of 8 Manik 0 Mac. Positions which this could have occupied are:

9.12.3.6.7	8 Manik	Ceh completed (or 0 Mac)
9.14.16.1.7	8 Manik	Ceh completed (or 0 Mac)
9.17.8.14.7	8 Manik	Ceh completed (or 0 Mac)

The Cauac element is poorly preserved, but the angularity of the infix to the right eliminates any earlier reading than the first (in early inscriptions this element is rounded.). As Satterthwaite believes that this sculpture was re-used in Structure 0-13, a date later than the third reading is impossible. Indeed, the third reading itself is for that reason unlikely, for Structure 0-13, as we have seen, was probably dedicated at 9.17.15.0.0. The sculpture would have been brand new at the time it was broken up unless one is to assume that it broke while being made or was not considered satisfactory for one reason or another; the roughness of the surface might give some support to such an assumption).

None of the three possibilities is an anniversary of some other known date at Piedras Negras, and our knowledge of the accompanying glyphs does not help us to choose between them.

By the use of anniversaries it is possible to suggest a fairly certain dating for Lintel 7. The Initial Series of this monument is 9.9.8.0.?, but there can be no question of that being the contemporaneous date. Morley considers the lintel was dedicated at 9.12.10.0.0, but there is some evidence that the dedicatory date was probably 9.14.5.0.0.

Much of the inscription is entirely gone, but in the last column of glyphs readings are obtainable. Glyph Block XI4 is the Secondary Series introductory glyph. This is followed in Y14-X15 by a distance number of 5 kins 11 uinals. Morley reads the latter as 11 Chuen, but in view of the introductory glyph and the absence of any corresponding month sign it

is virtually certain that the glyph is the rather similar uinal sign. X16-X17, as Morley notes, unmistakably records 7 Ahau 8 Kayab.

Employing a position for 7 Ahau 8 Kayab two Calendar Rounds later than that preferred by Morley, the following decipherment is obtained:

	*9.14.4.15.9	13 Muluc 17 Zac
X14-X15	*5.11	
X16-X17	9.14.5.3.0	7 Ahau 8 Kayab

The first date is 1 katun and 5 tuns after the date 9.12.19.15.9 9 Muluc 2 Cumhu recorded on Altar 1, an arrangement precisely similar to 9.13.14.13.4 8 Kan 2 Ceh on Stela 8 which is 1 katun 5 tuns after the date 9.12.19.13.4 3 Kan 17 Muan, inscribed on Altar 1 immediately adjacent to the 9 Muluc 2 Cumhu date. Since this double 25-tun anniversary can hardly be coincidental, it is virtually certain that the last dates of Lintel 7 are as given above. Conceivably X8 carries 13 Muluc, but this is far from likely.

The dedicatory date of Lintel 7, therefore, is quite probably 9.1.4.5.0.0. The sophisticated treatment of the subject matter is in agreement with such dating.

Miscellaneous Sculptured Stone 1 has a fragmentary Initial Series, the uinals and kins not hav-

ing been recovered. Morley suggests filling these as 5 and 9 to obtain the reading 9.10.6.5.9 8 Muluc 2 Zip, although he notes that the variable element in the Initial Series introductory glyph is not that of the month Zip.

Actually that variable element is the youthful head of the patron (or patroness) of the month Kayab. As the date 9.10.6.2.1 5 Imix 19 Kayab occurs on Lintel 4, and has its katun anniversary on Lintel 2, we can be reasonably sure that that was the date commemorated on Miscellaneous Sculptured Stone 1.

For the benefit of nonspecialists in Maya hieroglyphs who may desire to utilize Piedras Negras inscriptions, there are listed below scattered papers containing amended or new readings of Piedras Negras texts which have appeared since the publication of Morley's *Inscriptions of the Peten* (1938).

- Stela 12 (Beyer 1940)
- Stela 14 (Satterthwaite 1943; Thompson 1943)
- Stela 38 (Andrews 1942)
- Altar 1 (Beyer 1943)
- Lintel 2 (Beyer 1939)
- Miscellaneous Sculptured Stone 16 (Satterthwaite 1940)
- Jade head (Proskouriakoff in press)

Archaeological Finds near Douglas, British Honduras

A. Hamilton Anderson and Herbert J. Cook

In building the road from San Pablo westward to Douglas in northern British Honduras, workmen used soil dug from two Indian mounds, in the larger of which they penetrated two chambers containing skeletal material and pottery. These mounds form part of the site of Noh Mul, partially excavated by T. Gann.

When A. H. Anderson arrived on the scene, he discovered that the first mound was in the nature of a fairly extensive platform, about 4.5 m above the surrounding land and composed of marl and limestone. Accurate observation of the whole mound is exceedingly difficult because of the heavy bush which covers it. Since it was easier to take spoil from the second and larger mound, very little of the first was cut away, and in the process only a few vessels were found, of which the most notable, a black ware bowl, was stolen by a laborer.

The second mound rises about 7.5 m above the road; but on the northern side, where it slopes steeply down to the swamp, the height is nearer 15 m. The present conical shape is no doubt due to the piles of debris thrown out during the digging of a shaft from the summit under Gann's direction some years ago. It is possible that this mound is referred to as Mound 9 at Noh Mul (Gann and Gann 1939). This shaft exposes a section of stucco-faced wall, running east-west, with the exposed surface towards the center of the mound. From the edge of the wall to the outer edge of the mound is about 3 m; the top of the wall, about 3–3.5 m below the apex of the mound, is slightly convex. The stucco is now stained a deep lichenous

green which must have obliterated any paintwork it may have borne. Subsequently, M. Castillo, who dug the shaft for Gann, has stated that the surface of the wall was covered with red painted figures.

The shaft also reveals that the upper portion of the mound was constructed with roughly squared limestone blocks and mortar.

The road cutting is 1.5–1.8 m deep over this mound, and on each side is a bay from which spoil is dug. The chamber in which the polychrome dishes were found was in the bay on the southern side, and the other chamber was in the northern bay. Skeletal material was in both chambers but was not retained for examination. The foreman stated that one of the painted dishes, a very fine specimen, had an inverted dish standing in it, but apart from this nothing could be learned of the contents or size of the chambers. Since the spoil was not searched, it is not surprising that no jade or flint objects were reported. Only one small fragment of obsidian was found by the foreman.

Both chambers had been completely demolished before Anderson could reach the site. The laborers had crowded into the chambers, in spite of orders to the contrary, and had smashed most of the dishes. They still foolishly believe that Indian mounds contain gold, and their greed has been the cause of the destruction of much useful archaeological material. This vandalism had occurred while the foreman was away, and at his return he had the good sense to collect as many of the broken pieces of pottery as he could. Many of the fragments had already been



a b c



d e



f g h



i j



k l

40.1. Dishes and bowls: (a) exterior, red slip with slightly darker vertical lines; interior, red slip; (b) exterior, interiors, and feet, red slip; (c) exterior of bowl slipped orange with orange-red lip; area within incised lines has slip unevenly applied; interior unslipped; the "pot stand" beneath has an orange-red slip; this is a single vessel; the bowl has no bottom, the pot stand supplying the only bottom (see Fig. 40.3f, g); (d) exterior, black and red on unslipped paste; below flange unclipped; interior, black on red; ring base (see Fig. 40.4a); (e) exterior to flange and interior, red and black on orange; base unclipped; very shallow ring base (see Fig. 40.4c); (f) exterior, red and faded black on unslipped buff; base unclipped; interior slipped orange-red with red lip; shallow ring base; (g) traces of red slip on buff; (h) design in red and faded black on unslipped buff; interior slipped orange-red with red lip; tetrapod; (i) exterior, black on orange-red; interior, red and black on orange-red; base and four feet unslipped (see Fig. 40.4f); (j) exterior, red and black on orange-red; interior, red on orange red; base and four feet unslipped; (k) tetrapod bowl with orange slip (see Fig. 40.21 for design); (l) exterior, black and red on orange; interior, orange with red lip. Diameters respectively: 19, 16, 14.7, 35, 33, 34, 12, 32, 36, 35, 33, and 29 cm; heights respectively: 12, 20.5, 15, 8.5, 11, 7, 7, 12, 13, 15, 11.5, and 9.5 cm.



90

a b c



d e



f g h



i j



k

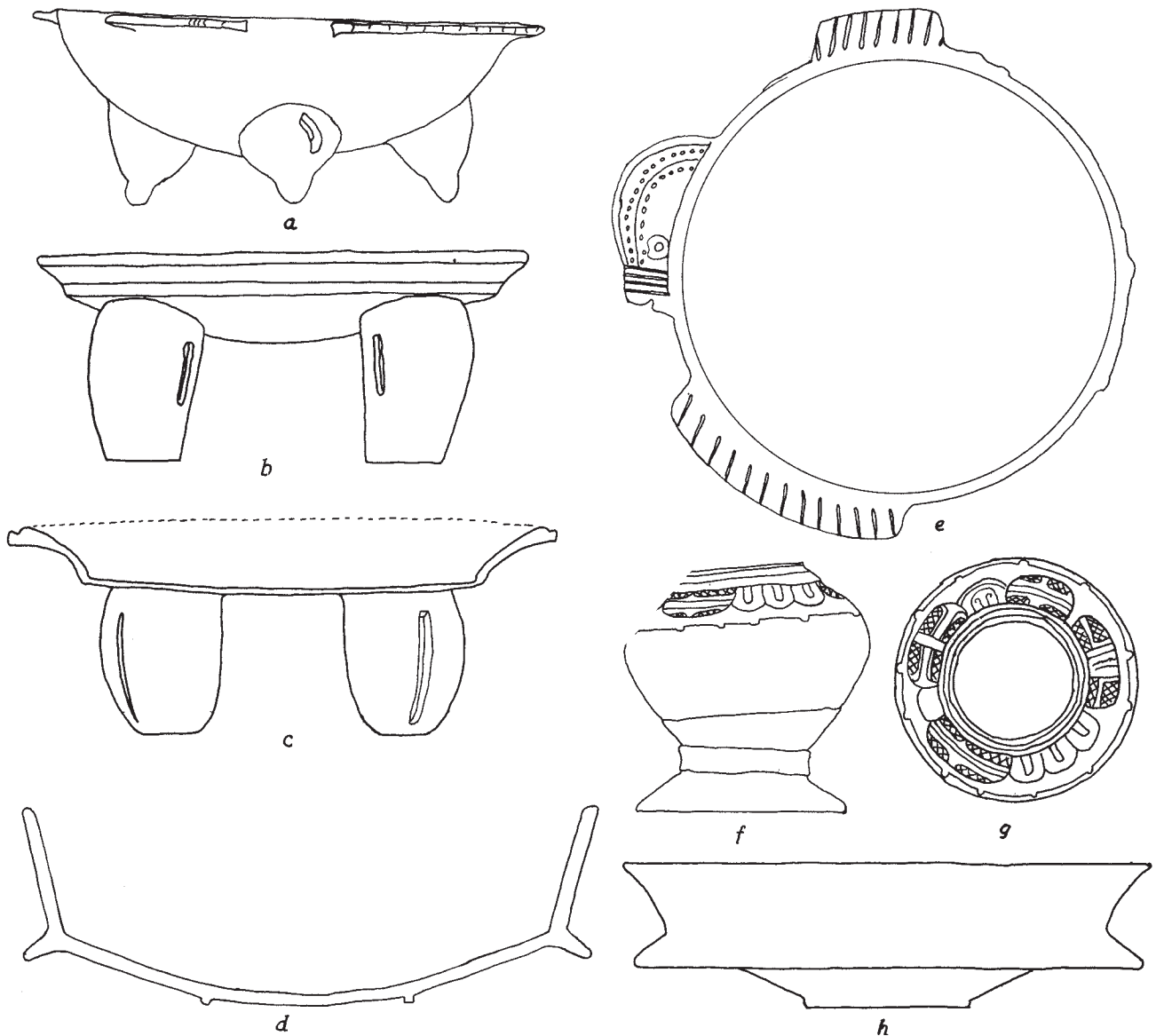


l



m

40.2 (*previous page*). Dishes, bowls, and jars: **(a)** exterior, worn red slip with legs and base unclipped; interior slipped red; tetrapod; **(b)** exterior, orange-red with legs and base unclipped; interior slipped red; tetrapod; **(c)** exterior, red on orange; interior, orange slip; **(d)** exterior, red and black on orange; interior, orange slip with red lip; two sherds between *d* and *e* illustrated in Fig. 40.4d, g; **(e)** exterior and interior slipped red; base unslipped; **(f)** exterior and interior slipped orange-red; base and legs unslipped; tetrapod (see Fig. 40.3a, e); **(g)** exterior and interior slipped red; **(h)** exterior black (?) on red; red slip continues to tops of four legs; interior slipped red; **(i)** exterior and interior, red and black on orange; base and four legs unslipped; **(j)** orange on unclipped paste both exterior and interior; **(k, m)** eccentric flints; length of *k*, 14 cm; **(l)** tetrapod bowl with orange slip (see Fig. 40.1k); design reminiscent of that of Usulutun ware, but lines more consistently parallel than is usual in that ware; perhaps made by wiping wet slip with multiple-pointed instrument, in which case it is not a true Usulutun technique; edges of individual lines more sharply defined than in most Usulutun ware (see Fig. 40.3c). Diameters, respectively, of all except flints: 25, 20.5, 22.5, 26, 25, 27, 16, 30, 24.5, 25, and 33 cm; heights, respectively: 8, 11, 11, 10, 8.5, 11, 12, 12, 8.5, and 11.5 cm.



40.3. Vessel shapes and designs: **(a, e)** shape and decoration of tetrapod dish in Fig. 40.2f; **(b)** tetrapod dish; orange slip with red lip and circle around bottom of sides; diameter 29 cm; **(c)** shape of tetrapod dish in Figs. 40.1k and 40.22l; **(d)** shape of vessel from which designs are shown in Fig. 40.4e; **(f, g)** shape and decoration of bowl in Fig. 40.1c; **(h)** form of vessel shown in Fig. 40.4b.



40.4. Basal-flanged bowl designs; water colors by H. J. Cook: (a) Design on interior of Fig. 40.1d; repeated on opposite side; (b) interior and exterior, red and black on orange; water colors illustrate design on base and on sides (same inside and out) and simple pattern on flange; (c) design on exterior of Fig. 40.1e; repeated on opposite side; (d) sherd attributable to a later period; red and black on buff; diameter of complete vessel 15 cm (see sherds between Fig. 40.2d and e); (e) interior slipped red; exterior, red and black and a light gray on unslipped buff surface; three top watercolors show design on exterior sides; the sequence was first, second, third, second; design at bottom is from basal flange; diameter 34 cm; (f) design on interior of base of Fig. 40.1i; (g) sherd of figure-painted vase; clearly not of same period as complete vessels; red, black, and gray on buff; diameter of complete vessel, 15 cm (see sherds between Fig. 40.2d and e).

carted away, and now lie buried somewhere in the roadbed. Anderson brought several hundred pieces of broken pottery back for cleaning and examination; but in spite of much patient piecing together, very few of the dishes can be reconstructed.

By probing into the cuts on the northern side, behind where the chamber had been, Anderson discovered another chamber, cylindrical in shape, measuring roughly 80 cm in diameter by 1.75 m. About 50 cm down was the skull of a child, seven or eight years of age. Fifteen cm lower and slightly to the left

of the skull, arm and leg bones came to light. A little lower still appeared a legless metate which appears to have been reworked into a toy (?) metate. No hand or foot or pelvic bones were found, but there were traces of a secondary burial among rib material discovered above the skull. All the bones were extremely friable and could not be removed intact. The chamber had no capstone over its mouth. The extreme hardness of the argillaceous earth filling suggests that it was rammed or tamped, probably to prevent the platform floor from settling.

Behind the chamber was found a T-shaped chert tool, either in the platform floor or in the debris on it.

Some time later, as the spoiling of the mound continued, another chamber was unearthed. Again the foreman tried to preserve it, but the throng of laborers caused the walls to collapse on him. Dishes were broken by this fall and by subsequent vandalism. From the foreman's information, it seems that the upper part of the mound had been raised over another building, which had been turned into burial chambers. One of these contained a skeleton lying full length, with pottery and eccentric flints alongside. One jar with a cover contained a red paint like substance. A polychrome dish with another inverted over it also stood near the skeleton. The foreman salvaged as many pieces as he could, including several jade beads and part of an annular jade ornament. The "paint pot" disappeared.

Thus, we have very little accurate information on what may have proved a valuable site. Many of the dishes remain incomplete, although most were

whole (apart from the small hole in the center) when found; but even so, details of their position have been unobtainable. There appear to be no scutate lids nor remains of tripod cylindrical vases. Besides the vessels photographed or listed, there are only some very large dishes of rather coarse ware, approximately 50 cm diameter. Only the most significant vessels are illustrated. Because of war time conditions many monochrome vessels have not been mended.

It is clear that all the pottery, with the exception of the two sherds shown in Figure 40.4d, g, is attributable to the Holmul I phase and perhaps to the Tzakol-San Jose II phase. The two sherds surely belong to the Tepeu-San Jose III phase. Material excavated by Dr. and Mrs. Gann at Noh Mul is largely of the same two phases.

We believe that the design of wavy lines arranged vertically has not hitherto been reported on the basal-flanged bowl horizon. Possibly this represents a decorative element evolved locally.

The collection under discussion is on exhibition in the Jubilee Museum, Belize.

BELIZE, BRITISH HONDURAS

The Vienna Dictionary

Ralph L. Roys

In the National Library at Vienna a Spanish-Maya dictionary of considerable importance has come to light in recent years. Miss Eulalia Guzman is reported to have discovered this manuscript, for a photostatic copy of which we are indebted to S. G. Morley.

The first page bears the title "Bocabulario De mayathan por su abecario," followed by the heading "A, ante, B." At the top of the page above the title is written "de Diego Rejon" in a hand which appears to be much later than the manuscript itself. On the last page of the manuscript in the same hand is the notation "Este Bocabulario de lengua Maya es de Diego Rejon / Rejon Arias," so it would appear that this person was a later owner and not the author of the work.

The dictionary consists of 199 numbered folios. One, written only on one side, is cut to a third of its size, and three other pages are blank; but there appears to be no break in the sequence of the contents. Consequently the dictionary, as it stands, consists of approximately 393 pages. Probably one folio is missing at the end, since the last word is *vino*. To judge by Molina's "Vocabulario de la lengua Mexicana," little more than a single page would be needed to complete the dictionary. Following f. 199 is a folio numbered "I" containing a few miscellaneous notes.

As yet I have been unable to learn anything of the authorship or history of this book; nor have I any precise information as to the size of the pages. The reproduction, which is approximately 14.5 by

21 cm, has evidently been somewhat reduced, perhaps by one-quarter or one-third. In any case there are usually 34 or 35 lines to the page. The first thirty-seven folios are written in double columns, but in the remainder of the book the items often occupy almost the entire width of the page, since the margins are narrow.

There are probably about 13,000 items, but it is difficult to determine the size of the vocabulary represented without making an actual count. In many cases a Maya expression illustrating the use of the word is a part of the item, but often the example is listed separately. As a rough estimate I think there may be approximately 10,500 words; but when the same Spanish word has various meanings expressed by different Maya words and is repeated in separate items, I have treated each of these items as a different word. Consequently this is rather an estimate of the Maya words presented than of the Spanish. One gets the impression that the author's knowledge of Maya words was more ample than his Spanish vocabulary, although the extreme simplification of the latter may have been intentional. The following extract is typical of many parts of the book.

conçertar los gueços (to set bones). pak bac.
pasivo. paakal bac.

conçertaronle los gueços. paaki u bacel.

conçertador de gueços. ah paak bac.

conçertar poniendo en orden (to regulate, setting in order). tzol ah ob. [Here the principal

parts of the verb are indicated. Colonial grammarians would consider *tzol* the infinitive, *tzolah* the “preterito perfecto,” and *tzolob* the “futuro imperfecto.”]

conçertada cosa asi. tzolan. pasivo. tzoolol.

conçertar y concordar en to que diçe (to agree in what one says). hunppelili than. conçertarse o yguarse en el preçio (to agree on a price). Ch'imba. choiba. [Apparently chimba and ch'oiba are intended.]

conçerteme asi con Juan por dos reales. in ch'imtah [chimtahl] in ba yetel Juan ti cappel tomin.

conçertar o tratar de halter algun mal y el tal conçierto (to agree on or to discuss doing some mischief and such an agreement). keban than.

conçertarse. con otro (to concert with another). accunah than etel.

conçiertate con Juan ahcunah than yetel Juan.

conçertarse con otro y haçer conçierto y amistad (to concert with another and make an agreement and friendship). kax than. kax caan.

conçierto y pacto haçerla [sic] (to make a concert and pact) xot than

conçertame con mis ojos. in kaxma in than yetel in ich (my speech agrees with my eyes [?]).

conçertar y apalabrar a la muger para que se case (to arrange and speak for a woman to marry) uinic. t[ah] te].

he conertada [sic] asi con Juana co[n] mi hijo (I have made such an arrangement with Juana for my son), tin uinictah Juana tin mehen.

conçertar un muchacho, con una muchacha para quando tenga edad (to conclude an agreement for a boy with a girl when they shall come of age), pedz ah ob.

he conçertado asi a mi hijo. con la hija. de Juan. in pedzah yxmehen tin mehen.

conçerto mi hijo con su hija. u pedzah in mehen tial.

conçertadamente hablar (to speak in an orderly fashion). hunhunppelcunabil than.

conçertado que viven con orden y conçierto (living together in order and harmony), bean.

conçertado en sus sermones. bean a tzeç, bean a can bean a than. [Literally: orderly and consistent are his admonitions, his teaching, and his speech.]

On the first 75 and the last 178 pages the writing is so similar that it is probably by the same person. The remaining third of the manuscript is in several hands. Barrera Vasquez believes that it dates possibly from the end of the seventeenth century. I am unable to judge by the calligraphy, but since the several hands suggest that it is a copy, I am inclined to ascribe the original to the first part of the same century. The mention of the caciqueship as a temporary office would appear to indicate that it was little, if any, older; but the names of various pagan deities and dances and the descriptions of flint working suggest that it dates from a fairly early period. (Barrera Vasquez 1943; Roys 1943:125, 139–40).

For one untrained in the technique of lexicography it is difficult to make a valid comparison of the Vienna with the other Maya dictionaries; and I can discuss it only from the standpoint of a student of the Maya language and literature.

Besides the well-known Motul dictionary, of which the Maya Spanish portion (hereinafter called Motul I) is supposed to have been written originally during the last quarter of the sixteenth century, three others have come down to us from colonial times. Two of them, the San Francisco and the Spanish-Maya part of the Motul (Motul II), might be tentatively ascribed to the middle of the seventeenth century. The third, named the Ticul dictionary from the town in which it was discovered, bore the date 1690. A Spanish-Maya dictionary by Alonso de Solana and dating from the sixteenth century is also reported to have survived, but it has never been accessible for study. All these, as well as other colonial dictionaries which have disappeared, are described and discussed in detail by A. M. Tozzer (1921).

Martinez Hernandez (1929:xvii), the editor of Motul I, believes that it was written by Antonio Ciudad Real, who lived in Yucatan from 1573 until his death in 1617. He was a well-known scholar and is reported to have spent forty years in the task of writing an enormous Maya lexicon; and it is hard to believe that another Maya-Spanish dictionary as large as Motul I would be compiled during the same period. The authorship of the other surviving colonial dictionaries is most uncertain.

The oldest and best of the Maya dictionaries that have been preserved is Motul I, which has been described and discussed by various writers during the past seventy-four years. It gives the Spanish equivalents of perhaps 17,000 Maya words, but its special merit is its wealth of examples. Moreover, it contains a large number of old words and phrases, which went out of ordinary use after the sixteenth century but survived in the native rituals and prophecies.

The San Francisco dictionary consists of two parts, one Maya-Spanish and the other Spanish-Maya, although the two do not closely correspond. The original, which has been lost, was copied and extensively amended by Pio Perez, who is reported to have supplied several missing pages from the Ticul, modernized the alphabetical order and the spelling of some of the Spanish words, and made various corrections. The most serious change is in the Maya-Spanish part, where he combined all the words beginning with *h* into a single group. In the original, as in Motul I, the words commencing with the aspirated "*h recia*" were separated from the "*h simple*" which is said to have been unaspirated. The Spanish-Maya part contains a little over 9000 words. Although the Maya-Spanish portion is almost as voluminous as the other, my tentative estimate shows a vocabulary of only about 5000 words, the difference being largely due to its numerous examples.

Martinez Hernandez ("Diccionario de Motul," p. xv), Berendt (MS. introduction to "Diccionario de San Francisco," p. vi), and Tozzer (1921:173) discuss this matter at greater length. The Spanish-Maya portion of the San Francisco has an appendix containing lists of numerals, adverbs of time, numerical particles, relationship terms, and parts of the body: Berendt made a copy from that of Pio Perez. By comparing the Maya-Spanish part with a still earlier partial copy by J. M. Meneses, he was able to distinguish between the words beginning with the aspirated *h* and those with the "*h simple*."

The Ticul was the first old dictionary to fall into the hands of a modern investigator. It contains about 6,000 Spanish words followed by their Maya equivalents, presented in the shortest possible form and with very few examples of their use. The original, found at Ticul in 1836, is lost, and we know it only through a much-edited copy by Pio Perez, which has been published in the same volume (1898) with a vocabulary extracted from Beltran's works. Berendt reports that the original title was "*Vocabulario de la lengua Maya que comienza en romance, compuesto de varios autores de esta lengua.*"

Of these dictionaries only the Ticul and the Maya-Spanish part of the Motul have been published. A still earlier Maya lexicon ascribed to Villalpando is believed to have been printed in Mexico in the sixteenth century. A copy of this book is reported to be still in existence, but nothing is known of its whereabouts. In 1882 Alphonse Pinart reported that he had acquired a copy published in Mexico City in 1577 (León 1905).

About the middle of the nineteenth century Juan Pio Perez compiled for publication a Maya-Spanish dictionary from the material available at the time.

The latter consisted largely of the San Francisco, the Ticul, and the eighteenth-century grammar and other works of Beltran de Santa Rosa. This was supplemented by a number of words which he apparently got directly from the Indians. Brinton appraises its vocabulary at about 20,000 words, and it is certainly no less; my own rough estimate is around 23,000 items. Pio Perez (1866–1877) unfortunately omitted some of the Maya words and most of the examples in the San Francisco dictionary, but it is nevertheless a well-edited and very useful work.

I believe that to the linguistic student and the ethnologist the Vienna dictionary is second only to Motul I in importance. In spite of the difference in size and the fact that one is Spanish-Maya and the other is Maya-Spanish, they seem very similar in conception and purpose. The difference in phraseology, however, would indicate that they are not by the same author, and each is a valuable supplement to the other. It is from these two dictionaries, from Coronel's small Maya grammar, and from a brief series of Maya documents actually written by Indian scribes between 1557 and 1600 that we are able to form some idea of the language as it was at a time when hieroglyphic writing was still in use.

The Maya grammars, or artes, composed by some of the best Franciscan linguists for the instruction of newly arrived missionaries, have been severely criticized by modern scholars. They contain translations of the paradigms from a Latin grammar into Maya. For verbs four regular conjugations were compiled, which include the subjunctive mood, pluperfect and future perfect tenses, gerunds, supines, and participles, but the aspects of the verbs seem to be little recognized. Naturally these writers missed the spirit of the language in their treatises, although a number of them are known to have spoken it idiomatically. Coronel, San Buenaventura, and Beltran de Santa Rosa, I think, were aware of this failure, for they sought to remedy the deficiency by numerous explanations.

Once the pupil had learned the forms in the arte and had acquired a fair-sized vocabulary and some mastery of the difficult phonetics of the language, he could probably make himself understood. Such a manner of speaking, however, would hardly enhance his prestige, especially among the upper class, who continued to occupy a position of social and local political importance. Much more could be learned through conversation, but books of reference were needed, especially for the preparation of a sermon. The Vienna and Motul dictionaries with their wealth of examples of polished diction, would supply the deficiencies of the grammars, and it seems obvious that they were so intended.

As we have seen, the Vienna manuscript is not much more than half the size of the great Motul I. Naturally it has not the vocabulary of the latter, nor are the uses of the words so profusely illustrated. Moreover, it is less carefully arranged and coordinated than the Motul, where the examples are practically always a part of the item headed by the word under discussion. The only really serious failing of the Vienna is its spelling of Maya words. The orthography of Motul I is riot impeccable, but errors are comparatively rare and confined largely to Spanish words. In the Vienna misspelled Maya words are fairly frequent. Very often *c* is substituted for the *k*, which designates a glottalized palatal in the Yucatecan notation, and *ch* for a certain emphatic articulation of this sound, distinguished in the Yucatecan notation by adding a cross bar to the shaft of the *h*. (In the present study it is indicated by *ch'*.) These are by no means merely academic distinctions; they seriously affect the meaning of the word. Other typical errors are *chabac* for *chauac* ("long") and *cum* for *çum* ("rope").

These mistakes, which may well be the fault of copyists and not of the author, are apparently due to carelessness rather than to ignorance, for the misspelled words are written correctly elsewhere, sometimes even on the same page. For the linguistic student this is a source of uncertainty, unless he can check the word in another dictionary or in a reliable Maya text.

Nevertheless, in spite of these errors, the book is a most valuable aid to the translator of the older Maya texts.

Except for the Motul, which mentions the rain god and that of the underworld, the Vienna is the only dictionary that pays much attention to the pagan deities. To these the missionaries applied the term *cizin* ("devil"), but I believe that in pre-Spanish times it was applied chiefly to gods of the lower regions, and perhaps also to evil spirits. In this connection the following extracts from the Vienna manuscript are of interest:

To idolize (ydolatrar): *kul cizin* ("worship the devil"), *ciz inyah*, *cizinil than* ("devil talk"), *tanlah cizin* ("serve the devil").

To idolize, burning incense to the idol or devil: *toc pan [pom] ti cizin*. [*Pom* is copal gum.]

Idol (ydolo) or image, representation of the devil: *a uinbail cizin*.

Idol, statue which is adored: *culche*, *a uich ku* ("the face of the god").

Idols and gods of the heathen: *kuulob* ("gods").

Idol of clay, the idolaters call it *lac*. [Primarily a shallow bowl. The term has been applied to effigy incensarios, but I do not know that it designated other clay figures.]

Old idols, when they had made other new ones: *hel lac*. [*Hel* usually means "something different."]

To make idols: *pat cizin*, *pat culche*. [*Culche* usually means a wooden image and *pat*, to shave a plastic material.]

Idol of clay: *patbil kat* ("shaped clay"); of wood: *polbil the* ("carved wood"); *thohbil turiich* ("hewn stone").

Principal idol [god], which these Indians of this land had, from which they said all things proceeded and who was incorporeal; hence they made no image of him: *Colop-u-uich-kin*. [*U uich kin* means "face or eye of the sun." Other writers thus describe a deity named Hunabku, "one and only god."]

Idol said to be of the preceding: *Hun Itzamna*, *Yax-cocah-mut*. [Possibly the son of *Colop-u-uich-kin* is meant here.]

Another idol, who was a man and whom they worshipped for having discovered the art of the letters of this land: *Itzamna*, *Kinch-ahau* ("sun-faced or sun-eyed ruler").

Idol of the rain, of the maize (panes), of the thunder and lightning: *Chac*.

Idols of the chase: *Acanum* [cf. *Landa's* *Acanum*, a hunting deity], *Ah Tabay* ("deceiver" or "snarer"), *Ku-bolay*, *Ceh-lac*. [*Ku* means god and *bolay*, a beast of prey. *Ceh-lac* suggests a clay effigy of a deer.]

Idol of Cozumel, whom they painted with an arrow in his hand: *Ah Hulane*, *Ah Hulneb* ("he who pierces with an arrow or dart"?).

Idols that the ancients had at the site of Merida: *Uaclom-chaan*.

Another idol of the Indians of Merida: *Ah Chuncaan*; and this was the name of the *ku*, or large hill, behind San Francisco to the east.

Idol of cruelties, to whom the people of Campeche sacrificed human blood: *Kinchahaban*, *Kinch-ahau-haban*. [This and the three preceding items are very similar to descriptions given by *Lopez de Cogolludo*.]

Idol of the people of Campeche: *Moco*. Other idols; *Ah Bolon Ahau*, *Ah Bolonil*. [*Bolon* means "nine."]

As might be expected in dictionaries intended for the use of missionary workers, the subject of sin does not suffer from neglect. We find three general terms: *tanal*, *zipil*, and *keban*. *Tanal*, which was also the Manche Chol word for transgression, went out of use fairly early in Yucatan. It is already called an "old word" in the Motul, and we no longer find it in the Ticul or in Beltran's grammar. It is defined as "sin and misery generally." Although the friars used the terms *zipil* and *keban* more or less indiscriminately, there appears to have been a distinction between them in the native mind. *Zipil* could also designate error, fault or defect, sometimes even an innocent mistake. It is harder to determine the fundamental meaning of *keban*; but one gets the idea of more deliberate wrongdoing, especially from certain compounds. *Keban than*, literally "sin talk," is defined as "conspiracy," "treachery," or "calumny."

Both the Motul and the Vienna contain an extensive catalogue of sins including many of the flesh. For a number of the latter, as well as other words pertaining to sex, there was a double nomenclature. The Motul pays more attention to this aspect of the language, but it is not entirely neglected in the Vienna. One set of words was considered vulgar or obscene, but the other category was quite respectable. Such information enabled the newly arrived missionary not only to understand the confession of a rude or an ignorant penitent but also to discuss the matter, when necessary, in grave and dignified language. To a preacher who had not grown up in the country some instruction in improper language was indeed necessary, for a neglect to glottalize a single consonant might well have a disastrous effect. The numerical classifier peel is among the most frequently used words in the language, but a failure to give it an emphatic articulation achieves a result which the lexicographer defines in Latin. It is difficult to reconcile the references to homosexual practice in these books with Landa's statement that Yucatan was free from the *pecado nefando*. I do believe, however, that the latter was not prevalent. One of the early Xiu rulers is reported to have burned a culprit in a furnace for this offence. The sexual mores in early colonial times are not without some historical significance, in view of the native accounts of certain immoral foreign invaders and the problematic origin of the very small amount of pornographic art that has been found in Yucatan.

As in the Motul, Maya plant names are well represented in the Vienna manuscript. Besides those listed under Spanish names which had been applied largely because of some real or fancied resemblance to an Old World species, about seventy-five are grouped under such general headings as *yerba*

("plant" or "herb"), *arbol* ("tree"), *bejuco* ("vine"), palms etc. About 60 percent of these are not in the Motul, so in this respect the Vienna is an important supplement to the other. Most of these names are either known to the modern Indians or to be found in other colonial sources, such as the Maya medical literature of the eighteenth century (Roys 1931). However, such early accounts of the use of many of these plants and trees constitute a valuable basis for the comparison of sixteenth-century medical practice and material culture with late colonial and modern times. It must be admitted that in the Motul the names are more carefully written and the comments more ample than in the Vienna manuscript.

The wealth of fauna names in the Vienna is also an important supplement to the information contained in the Motul. Here, are new names that I have not been able to find in any of the other dictionaries. These are sometimes of especial value in translating an obscure Maya text. The meaning of *itzam*, associated with the names of two important cities, the sky god Itzamna, and the mythological monster Itzamkab-ain, had long been surmised, since Izamal was said to signify "the place of iguanas" (*Relaciones de Yucatan* 1898-1900:1:270); but it is only in the Vienna that we find it specifically defined as "lizards like iguanas, of land and water." In the Books of Chilam Balam the frequently repeated word *bulcum* was long a problem. Often associated with the blowfly, *yaxcach*, it was evident from the contexts that it represented death by violence or massacre; and I thought it must be a word signifying slaughter (Roys 1933:103). In the Vienna, however, it is defined simply as "a large hairy fly." Here also some fourteen different names for worms, caterpillars, or grubs are to be found under the headings *gusanos* or *gusanillos*; and there are similar, though shorter, lists of ants and spiders.

The Vienna dictionary, like the Motul, reflects a period of transition from what was essentially a stone age to one of metal. Here we find words for both flint working and horseshoeing, and for the musket as well as for spear, bow and arrow, and blowgun. There had been a little gold and copper, but *mazcab*, the original word for copper, is now also applied to iron in general and to machete in particular, and *chachac* (red) *mazcab* has become the special term for copper. Gold had always been called *takin*; now silver is either given the same name or called *zac* (white) *takin*, and gold is sometimes called *kankan* (yellow) *takin*. The first Spaniards were given a few silver objects in Mexico, but I have not found any mention of it in pre-Spanish Yucatan. Lead or some dull metal resembling it may have existed, however, for in the Vienna manuscript it is named *tau* or *ek* (black) *tau*, while tin is called *zac* (white)

tau. Apparently it is an old word for just as *ta-kin* can be translated as "excrement of the sun," so *ta-u* could mean "excrement of the moon." Thompson (1939:176) reports two pebbles of lead found with copper in a late cache at San Jose. The Nahuatl word for lead, which is *temetztl*, also implies an association with the moon (*metztli*).

There are two expressions for making fire. One, *hax kak*, is by friction. Since *hax* means to swirl something between the palms and the lower stick is called "the mother" (*u naa*) of the device (*artificio*), it is obvious that the apparatus, called *haxab kak*, was a fire drill. The other expression, *thah kak*, is the newer method with flint and steels

The Spaniards were somewhat slow in introducing iron, probably to keep the natives from possessing many metal weapons; and the rather ample vocabulary covering the processes of quarrying flint and shaping flint implements (ff. 7v, 134r, 150r, 159r; also Roys 1943:49–50) would seem to indicate that stone tools were still in use at the end of the sixteenth century.

Although many intrusive Spanish words are now to be found in the language, the old dictionaries show a remarkable ability on the part of the Maya to adapt their own language to the new animals, devices, and ideas introduced by the Spaniards. It is true that the crossbow was simply called *castelan chulul* ("Spanish bow"); but the musket was christened *dzon* ("blowgun"), and to shoot one was *dzon kak* (literally, "to shoot fire from a blowgun"). *Tzimin*, the former name of the tapir, was now applied to the horse, and in some localities today the tapir is called *tzimin kax* ("forest *tzimin*").

In both the Motul and Vienna dictionaries the vocabularies relating to the various crafts are very full. The items concerned with tanning include the words for scraping, cleaning, smoothing, softening, and dyeing the skins. The last operation was very important and the Maya equivalent of curtidor ("tanner") is sometimes given as *ah bon keuel*

("skin dyer"). Among the terms connected with the potters art are those for the special mortar used for grinding clay, the kiln, the materials for the slip, and various types of pottery including some reference to their decoration. I have been disappointed, however, in not finding any mention of the *kabal*, a block of wood which was set on the ground and rotated by the foot of the potter, somewhat like a potter's wheel. Spinning and weaving are well covered, including the materials employed, the parts of the loom, and the various kinds of cloth manufactured. The vocabularies of the other trades or professions are also ample, and the missionary who had studied these dictionaries diligently was well prepared to converse intelligently with almost every class of people.

One profession, however, which was of much interest to the missionary, could hardly be amicably discussed with its regular practitioners. This was sorcery. Besides medical incantations, which were a mixture of religion and magic, love spells, snake charming, and fortunetelling; there were two important branches of genuine black art. One was practiced by the *ah uaay*, who had a familiar animal spirit, usually a beast of prey. Like the European werewolf, he sometimes transformed himself into such an animal. The other was the *ah pul yah*, or "disease thrower," who might cause any affliction from a child's nightmare to a serious disease. As in the medical incantations, some magic was beneficent.

The vocabulary covering sorcerers and sorcery in the Vienna manuscript is much like that in the Motul, but it is by no means so ample. One supplements the other, however, and in the Vienna I find two interesting expressions, which I have not encountered elsewhere as magical terms. The word conjurar heads an item which reads: "To conjure the weather (los tiempos): *tzak kin*, *mac ik*." The first is hard to translate, but apparently it has something to do with the sun (*kin*). The other, *mac ik*, could mean "to obstruct or smother the wind."

Ixtla Weaving at Chiquilistlan, Jalisco

Isabel T. Kelly

At the time of the Spanish conquest, clothing of maguey fiber was common over a large area of western Jalisco and southern Nayarit. There are specific statements written in 1525 of its use in Tenamaxtlan, Ayutla, Autlan, Tequesquitlan (then in the Purificacion), Etzatlan, Ocotitlan, Aguacatlan, Ixtlan (del Rio), and in most of the settlements listed as subject to those just mentioned. For the first two pueblos and for one subject to Autlan, only maguey clothing is noted; the others are credited with both cotton and maguey. These data come from a 1525 visita, made the year following the entry of Francisco Cortez. The entire account appears to be systematic, conscientious, and reliable (Nuño de Guzmán 1937).

Today maguey fiber (*ixtle*) is used extensively in Mexico for rope and cordage, for scouring pads, mattresses, sweat blankets, floor mats, and bags and sacks of many kinds. When one reads of clothing of maguey fiber, therefore, one is inclined to think of a heavy, coarse, rough textile. This is not necessarily the case, as witnessed by the remarkably fine *ixtle* weaving still produced on a small scale in the little Jaliscan town of Chiquilistlan.

Chiquilistlan lies in the central part of the state, in the uplands north of Tapalpa, northwest of Sayula, southwest of Zacoalco, and southeast of Tecolotlan. It is not, as most published maps indicate, on the Rio Juanacatlan but on a small perennial stream which is said to drain to the Jalpa. I visited Chiquilistlan in the spring of 1941, in the course of an archaeological survey supported by a fellowship from the John Simon Guggenheim Memorial Foundation. At that

time Chiquilistlan was accessible by horseback from Tapalpa or from Tecolotlan, a trip requiring close to six hours from either point. However, during the past year, a new road has been opened to approach Tapalpa from the north; during the dry season this is traversed by trucks and is said to pass within a short distance of Chiquilistlan.

Concerning the etymology of Chiquilistlan, there are differences of opinion, with versions varying from Place of Crickets to Place Where One Cries Out and Scraped or Rased Place (Arreola 1935: 14; Paez Brochie 1940:22). Local residents have still a different interpretation, namely Place of the Weepers, saying that this refers to early and incessant appeals for more land. In Tapalpa the current and somewhat uncharitable translation is Place of Fleas or Place of Bedbugs.

During the middle sixteenth century Chiquilistlan was a part of the Provincia de Avalos, which centered in the Sayula drainage and included the western shores of Lake Chapala (*Papeles de Nueva Espana* 1905:1, no. 104, under Xequilistla). It is not certain, however, that cultural ties were with Sayula. A small collection of surface sherds, although not yet studied in detail, seems to suggest a local development, perhaps with ultimate ties to the north, with the modest culture of the Tecolotlan-Tenamaxtlan-Atengo area.

The history of Chiquilistlan is little known. Municipal archives were destroyed during the Cristero uprising; the church records may have escaped, but we were unable to arrange an audience with the priest, who was engaged in Holy Week ceremonies.

It is known, however, that in 1563, at the request of a local delegation, a formal title was issued and boundaries with adjoining pueblos were established. The title has been published (Cuadro 1881:4–9), and a copy of the pictorial map said to have accompanied the original title soon is to be published by Don Jose Ramirez Flores of Guadalajara.

Of subsequent history there is almost no record. The Chiquilistlan zone seems to have had a considerable if intermittent flurry as a mining center. Iron evidently was the mainstay of the town in 1843 (*Noticias geograficas* 1843:93); but gold, silver, copper, mercury, and lead also occur (Villasana 1916:150). Large-scale activities appear to have ceased before the middle of the nineteenth century (*Cuadro estadístico* 1881:13), but there must have been a subsequent renaissance. There is a statement to the effect that the quicksilver deposits were worked twenty-five years prior to 1905 by a company of Spaniards and Mexicans who employed state convicts as laborers (T. Smith 1903). Furthermore it is said that for five years prior to 1916 the mines of Chiquilistlan had been inactive (Villafana 1916:89).

A certain amount of activity and prosperity during the past century is attested by the surprising abundance of nineteenth-century English crockery in Chiquilistlan. This in itself presupposes a certain amount of outside contact. Furthermore, as far back as the early eighteenth century, the timber of the Tapalpa uplands was being exploited for sale in Guadalajara (Ornelas 1941:42). In other words, it cannot be assumed that Chiquilistlan had been genuinely isolated, even though it be relatively remote by modern standards.

Because of this, it seems curious that Chiauilistlan should be the seat of fine ixtle weaving, for the latter presumably represents the survival of an old, perhaps preconquest, craft. In 1881 the working of maguey fiber was listed as one of the local industries. It is said that “in this industrial branch the natives are very advanced, weaving mats and bags of maguey fiber which are so fine that they can be distinguished from muslin only because of their stiffness” (*Cuadro estadístico* 1881:13). Twenty years ago there were several weavers; today, the fine work is made by only one woman, Doña Sofia Gonzalez. There is, however, a large production of coarser ixtle goods.

Women purchase the fiber from the men who gather the leaves, for the latter are said to be harsh to handle. All fiber comes from wild plants (of several distinct kinds) which grow in the nearby hills. The supply has been greatly diminished, despite recent protection by the government forestry service. The cut leaves are placed on an inclined board and the flesh removed with a drawknife. For coarse work

the resultant fiber is spun; for fine textiles, each warp and weft is formed of *untwisted* fibers (Fig 42.1g, h). Fine weaving is done on a narrow loom, complete with heddles and batten, and attached to a waist strap. The warp strands consistently outnumber the weft, in one specimen six to one (Fig. 42.1f Random counts are given in the figure caption; warps range from 28 to 72 the centimeter, wefts from 12 to 24.

The fine work of recent years is confined to miniature bags and to table runners (Fig. 42.1a–g). Actually, the bags are of little practical utility but are prized as curiosities. Several still are treasured in Sayula, and a few in Chiquilistlan. Bag styles are well established. They include a simple, sack-like pouch (Fig. 42.1a–c), bags with an envelope-like flap (Fig. 42.1d, e), and miniature saddle bags, *arguenas* (Fig. 42.1f). Handles are of braided fiber and are sewn to the top, at either side seam. New specimens are a light cream; with age they turn straw-color. The fabric has a beautiful sheen and, except for the stiffness, might pass for raw silk.

A simple pattern usually is woven as border; it may be of dyed ixtle (Fig. 42.1a, b, d, e) or of woolen yarn (Fig. 42.1c, f); Figure 42.1 has a blanket-stitch edge of mercerized thread. The sacklike bags may have one selvage at the top, with the other edge hemmed; or both upper edges may be hemmed. The

42.1. Ixtle weaving at Chiquilistlan, Jalisco: (a–f) miniature bags, unspun maguey fiber; (g) table runner, unspun maguey fiber; (h) border of a shoulder bag of spun fiber. (a–c, f) made in Chiquilistlan, ca. 1923, for Sr. Cura Juan Quintero; gift of Doña Paula Quintero, Sayula; (d, e, g) made by Doña Sofia Gonzalez, Chiquilistlan, 1941; (h) purchased in Chiquilistlan, 1941, maker unknown. Below are the approximate dimensions of the bags, exclusive of handles, and of the exposed areas of the runner and larger bag. These measurements are followed by a random count per centimeter of the warp and weft; needless to say, the specimens are not mechanically uniform, and the count is somewhat variable.

		Warp	Weft
a	5 × 7 cm	32	23
b	12 × 16	28	22
c	10 × 11	29	19
d	13.5 × 15	44	22
e	15 × 16	68	23
f	6.5 × 7.5	72	12
g	17 × 11	50	24
h	7.5 × 12	6	4



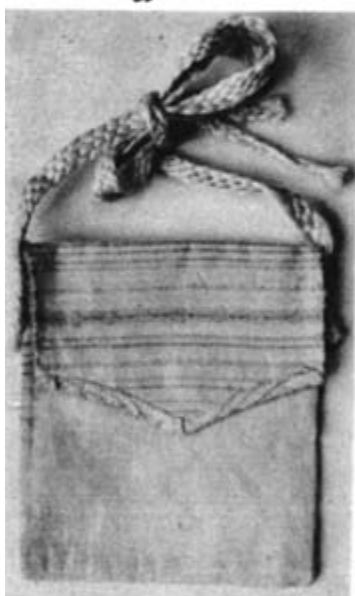
a



b



c



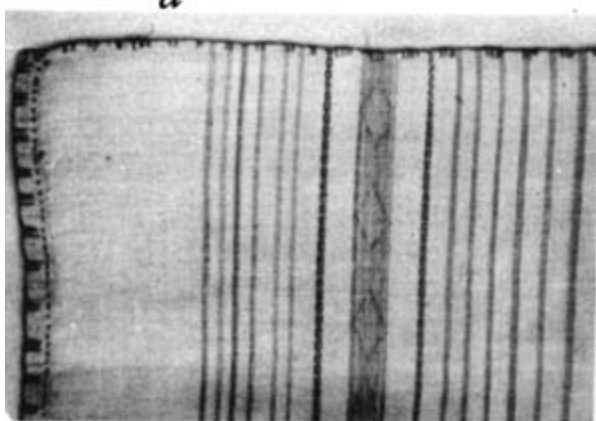
d



e



f



g



h

V-flap of the envelope bags is hemmed with ixtle and ornamented with a simple-blanket stitch border, also in ixtle; some specimens have supplementary cross-stitch embroidery and drawn work (Fig. 42.1e).

Of coarser ixtle products, shoulder bags (*costalillos*) are most important and are made primarily for local consumption. They are simple, sacklike containers, wider than they are long; they are of spun maguey fiber, often with a simple woven border at the top (Fig. 42.1h). These bags are indispensable in every, rural household and are used chiefly for carrying food on the trail or to workers in the fields.

Other ixtle manufactures include a miscellany of items made for sale elsewhere. Their immediate destination is uncertain. Most people thought that the output was marketed in Guadalajara, although I have noticed no recognizable Chiquilistlan products offered there. The latter are sufficiently distinctive to attract attention, since they consist largely of filet crocheted bedspreads, table runners and mats, and bags, of fiber dyed in garish colors; magenta is predominant.

Even the relatively coarse shoulder bags of Chiquilistlan are considerably finer than is the average

work in other areas; some of the older specimens, in particular, are extremely fine and well woven. It might even be suggested that the Tapalpa upland as a whole has a tradition of good ixtle work. Grain sacks which ordinarily are attributed to Tapalpa, but which actually are made in nearby Atacco, are beautifully woven and are far better technically than are equivalent sacks from other zones.

I know only one other area in Jalisco where there is even a faint approximation to the fine weaving of Chiquilistlan. This is the small and impoverished settlement of Mazatan, on the Rio Armeria, downstream from Zapotitlan, and almost on the Colima border. Here the small shoulder bags enjoy local fame and are, indeed, extremely well woven, although they fall short of Chiquilistlan standards. I was not able to acquire a specimen of the fine Mazatan work but am under the impression that it also involves untwisted rather than spun fiber. In any case, I submit that if the aboriginal clothing of western Jalisco and southern Nayarit was of maguey fiber, we need not be supercilious. The natives may have been quite handsomely garbed if their weaving was on a par with that of modern Chiquilistlan.

SAN PEDRO TLAQUEPAQUE, JALISCO, MEXICO.

Worked Gourds from Jalisco

Isabel T. Kelly

So few crafts in modern Jalisco can be considered even potential survivals of pre-Cortesian arts that the working of gourds is of sufficient interest to warrant being placed on record.

Ayotitlan. The chief center of manufacture is the village of Ayotitlan, in the modern municipality of Autlan, not far from the Colima border. It lies in the rugged country (Fig. 43.1a) which drains to the Rio Sihuatlan (Marabasco) from the north and which, at the time of the Spanish conquest, constituted the western zone of the famous old Provincia de Amula. This whole area was better known in the sixteenth century than it is today, for modern routes of travel have left it to one side, and it is accessible only by pack or on foot.

Ayotitlan appears in the "Soma de visitas de pueblos" as Ayutla (Paso y Troncoso 1905:1, no. 168) and is said by local informants to mean 'place of gourds.' Another source (Arreola 1935:8) gives "lugar en donde cultivan calabazas." However, a 1579 account (*Noticias varias de Nueva Galicia* 1878:316) states that the name is derived from "calabasa" but was applied because a stone in the village was shaped like a calabash.

Gourd-working in this general area goes back at least as far as the early eighteenth century, for Ornelas (1941:43) speaks of "los tecomates que llaman de Acmulan." And a few decades later it is said that Ayotitlan is populated by seventy-six Indian families who make "Bateas, primorosamente pintadas" (Villaseñor 1746-1749:218). In former times the working

of gourds may have been general throughout the province; today it is limited to Ayotitlan and to nearby Telcruz, whose products are indistinguishable.

Ayotitlan considers itself an "Indian" community. A few of the elder residents still remember some words which clearly stem from Nahuatl; at the time of the conquest, Mexicano was understood generally throughout Amula, side by side with Otomi (*Noticias varias* 1878:315, 317).

Modern Ayotitlan is isolated, poor, and land-hungry. The village is situated on a low and sloping hilltop, in a cleft between higher hills, and with an abrupt mountain scarp to the north. It lies well above the level of the little Arroyo de Ayotitlan, which is tributary to the Sihuatlan. There is almost no level land; agriculture is virtually confined to hillsides, many of which are precipitous. The staple is maize, of which several kinds are grown; beans are planted separately but not in large quantity; and various cucurbits are raised. Other crops include tomatoes, tobacco, and chic (*Salvia hispanica* L., identification by the Instituto de Biología, Universidad Nacional de México). Along the arroyo there are a few small plots of sugar cane, and most houses have a cluster of banana trees adjacent. Fruit trees include guamuchil (*Pithecellobium* sp.), mango, guayabo, papayo, mamey, and aguacate; the growth is so rank that the village is almost hidden (Fig. 43.1a). Virgin pine (*ocote*) forests and oak parks cover the higher hills and adjacent sierra.

Few old-arts have survived in recognizable form. Until recent years, cotton was brought from the coast



a



b



c



d



e

43.1. Scenes at Ayotitlan: (a) panorama from the west, on the trail leading to Cuzalapa; village at lower right is all but hidden by vegetation; (b) Center of Ayotitlan; the house in the rear, with columns; faces the main plaza, which is partially hidden by adobe building in the middle ground; the shelter at the left serves as a church; (c, d) village inhabitants; (e) woman spinning.

at Sihuatlán, and was spun and woven locally. At least one woman still spins (Fig. 43.1e), using a slender rod and a baked clay whorl. But she makes only cordage for lamp wicks, and cotton weaving seems to have been entirely abandoned. Yucca (*izote*) fiber also is worked into cordage, being twisted between the palms or on the thigh. It is woven into shoulder bags (*costalillos*) which, from description, appear to be made on a belt loom. Hammocks of yucca fiber, used chiefly as cradles, are said to be warped on a frame of two upright posts. Baskets are made of cane (*otate*) splints but not in sufficient quantity to meet local demand during harvest season. The manufacture of *equipales* may be old; these seem to be mostly low stools, but it is said that chairs also are made. The seat is woven of the bark of an unidentified tree (*cuernavaca*); cane (*otate*) is used for the diagonal seat supports. A few women make crude, undecorated, and unglazed cooking pots for home use, and several exhibited metates, likewise of their own manufacture. These grinding stones are footless and might easily be confused with archaeological specimens.

By far the most interesting of the local crafts is the preparing of gourds; they are the only manufacture which Ayotitlán supplies to outside commerce. Formerly they were sold in Manzanillo (Colima), Pueblo Nuevo (old Cuautitlán), Autlán, Tuxcacuesco, and Sayula (all in Jalisco). The bulk of the output was prepared for sale at the annual Holy Week fair (El Ramos, in local parlance) in Sayula, but in recent years the supply has been largely absorbed by traders who come on foot from Zamora, Michoacán, to carry back shoulder crates filled with Ayotitlán gourds. The traders often pass through Sayula at the time of the fair but prefer not to sell locally, since they obtain a better price in Michoacán.

I visited Ayotitlán at Christmas, 1940, in the course of a survey supported by a grant from the John Simon Guggenheim Memorial Foundation. At this time the gourd harvest was barely ripe and had not yet been worked. No plants were available for identification, and I assumed that the common gourd (*Lagenaria vulgaris* Ser.; Martínez 1928, under *Bule*) was involved. A Tuxcacuesco informant, however, believes that there are two more or less distinct plants, both with white blossom, both called *m to de bule*, but one producing the bottleneck form, the other, fruits which are less elongated and more nearly round.

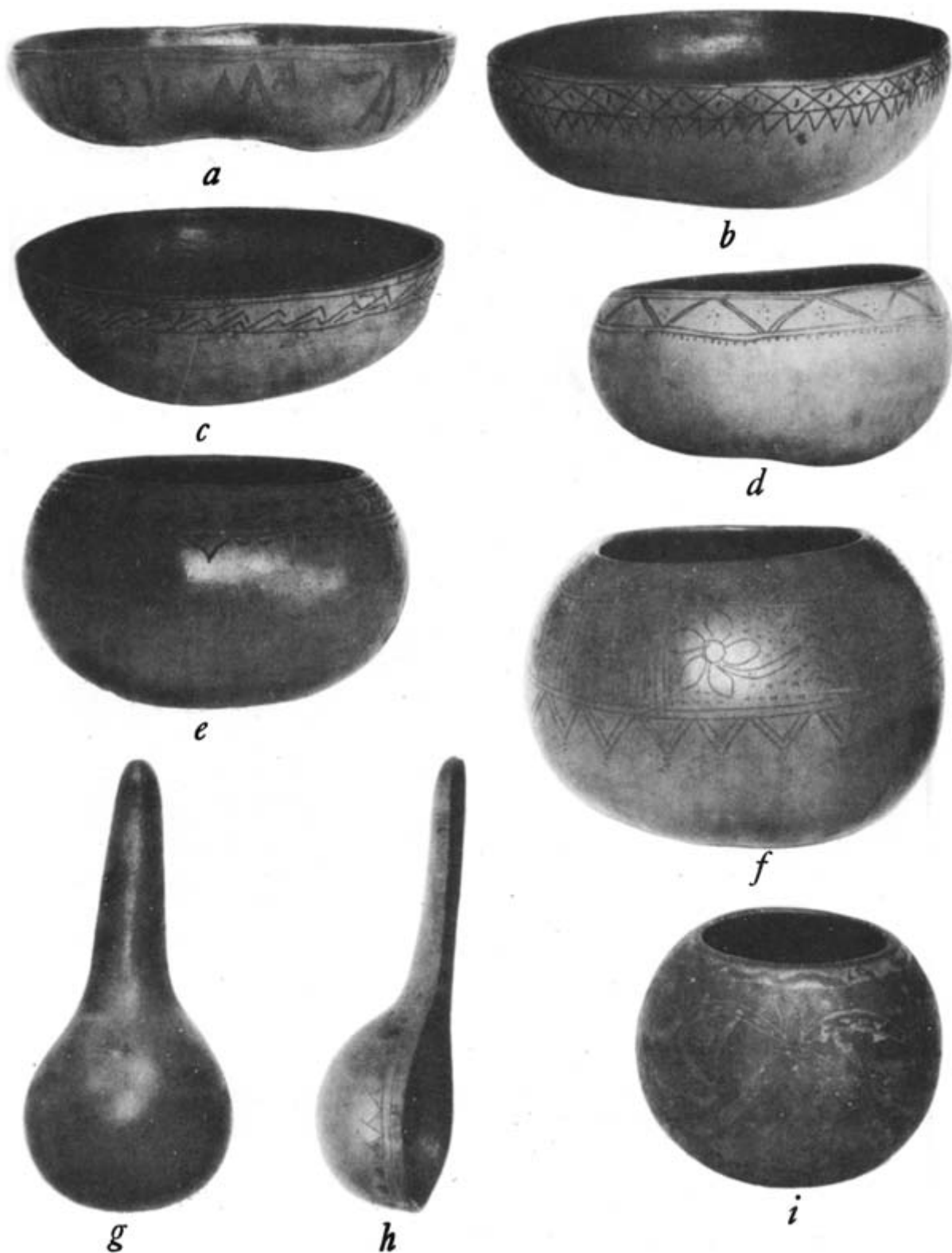
Few worked specimens were available for demonstration, but informants gave a brief account of the preparation, which is summarized below, together with supplementary data from informants in Tuxcacuesco and Sayula.

At the start of the rainy season (May–June) seeds are planted in the hills of the arriera ant; it is said that elsewhere the ground is hard and the young plants dry. From time to time the fruit is tapped to determine the degrees of ripeness. Finally, during December, it is cut from the vine and piled until the women have time to prepare the gourds. Many are said to understand the technique; an inexperienced worker generally has a heavy breakage.

Gourds are cut to form several standard shapes (see below), and the seeds and pulp are removed. If desired, simple geometric designs (Fig. 43.2b–e, g, h; Fig. 43.2f unique in its floral motif) are marked with a steel awl, set in a wooden handle. Some of the older specimens, purchased several decades ago at the Sayula fair, show more precise delineation of motif and some evidently were marked with a hot iron (Fig. 43.2e, g, h). The incised gourd is placed in water for twenty days then is allowed to dry for eight days, after which the interior is cleaned with a small stone and is rubbed smooth.

Next comes the interior finish, for which chic oil and red earth are used. Chia is a cultivated crop, sown broadcast in separate fields. It ripens at the end of December, and its seeds are ground to extract the oil (the entire, unground seed is used to make a beverage). The gourd interior is saturated with the oil; red earth dug from nearby hills is worked in, being well polished with a *coquito* palm nut brought from the coast at Sihuatlán; a pebble is said to be too heavy. Then comes a second dressing of oil, rubbed in with a tuft of cotton. Several applications of red earth follow (none of oil), until the entire interior and the rim of the exterior are smooth, hard, and polished. The finish is terra cotta in color, often with faint purplish cast. It is surprisingly durable and water-resistant. Figure 43.2c, f shows two specimens which have been in daily use for nearly ten years; the interiors are somewhat worn but largely intact.

Ayotitlán gourds have many uses. The large *jicaras* (Fig. 43.2a) are almost traylike and are used for serving and storing food. Smaller ones (Fig. 43.2b, c) function as dippers for removing water from household storage deposits. Incurved bowls, of relatively wide mouth, are known as *tecomates* (Fig. 43.2d, e); they also are used as dippers and as general kitchen containers. Incurved bowls with restricted orifice are called *balsas* (Fig. 43.2f, i). Large ones are the standard receptacles for tortillas, as the latter are removed from the fire; the small opening helps to keep the maize cakes warm and tender. Balsas also are used for general storage; the Ayotitlán spinner (Fig. 43.1e) keeps unspun cotton in one. Perforated at the rim for suspension or for carrying, they serve



43.2. Gourds: (a–d, f) Ayotitlan gourds; (a, f) gifts, Tuxcacuesco, dating from 1934; (b–d) purchased, El Ramos, Sayula, 1941, from Ayotitlan vendors; (e, g–i) “old specimens,” purchased “many years ago,” El Ramos, Sayula; (e, g, h) almost surely from Ayotitlan (*i* possibly). (a–h) incised ornament; (e, g, h) marked with hot iron; (a) special order, inscribed with date and name of Tuxcacuesco purchaser; (f) unique in its floral motif; (i) decorated in stripped painting; not to uniform scale; approximate rim diameters of a–f, *i*, respectively: 41, 27, 25, 18, 10.5, 17, and 7.8 cm. Lengths: (g) 28.3 cm; (h) 21.5 cm.

as pulque containers. Small balsas are used for storing miscellanea.

Two forms were not mentioned by Ayotitlan informants. One is a large spoon or ladle (Fig. 43.2g, h) produced by cutting a bottle gourd lengthwise instead of transversely. In Sayula such ladles formerly were used for serving maize gruel (*atole*); in recent years their manufacture seems to have been abandoned. The other form is the *alacate*, a long, tube-like gourd, used for sucking the juice from pulque maguey. It is said that formerly alacates from Ayotitlan were sold in Sayula and that some were decorated. Obviously, because of the form, the interior could not have been treated with oil and red earth.

The use of chia oil is of particular interest because, according to sixteenth-century reports (Paso y Troncoso, 1905, 5:180, 6:319) this same oil was used in Guerrero (presumably in the working of gourds). Traditionally, it is the oil which, together with that of the chicalote (*Argemone* sp.), was used in the preparation of Uruapan "lacquers" until it was replaced by commercial linseed (León 1921:333, 336). Moreover, I am informed by Ins. Roberto Weitlaner that chia oil is used in the preparation of gourds at Acapulahuaya, Guerrero. He reports that the seeds are toasted, ground, and the oil squeezed out with the hand. The technique at Ayotitlan probably identical, although informants did not mention toasting the seeds, and I did not think to make specific inquiry. In any case, the use of this oil is a most suggestive parallel between the gourd-working of southwestern Jalisco and that of Michoacan and Guerrero. At Ayotitlan and Acapulahuaya its current use may well represent the survival of an old culture trait, formerly more widespread.

Sayula. Sayula is a relatively large (ca. 9,000) Jaliscan town, too well known to require any introductory statements concerning location or terrain. Here, during at least the second half of the past century, elaborately ornamented gourds were produced (Fig. 43.3a–c). They seem not to have been turned out on a large scale but were made during spare time, as curiosities rather than commercial products. Various individuals reputedly decorated gourds, and craftsmen ranged from prisoners in the local jail to the church notary.

I have seen five gourds from Sayula. One is in the Museo Regional at Patzcuaro, Michoacan; one (Fig. 43.3a) is the property of the Brooklyn Museum; two (Fig. 43.3b, c) are in my possession; and one is or was in the hands of a Guadalajara curiosity dealer. All these Sayula specimens are balsas and presumably were pulque containers.

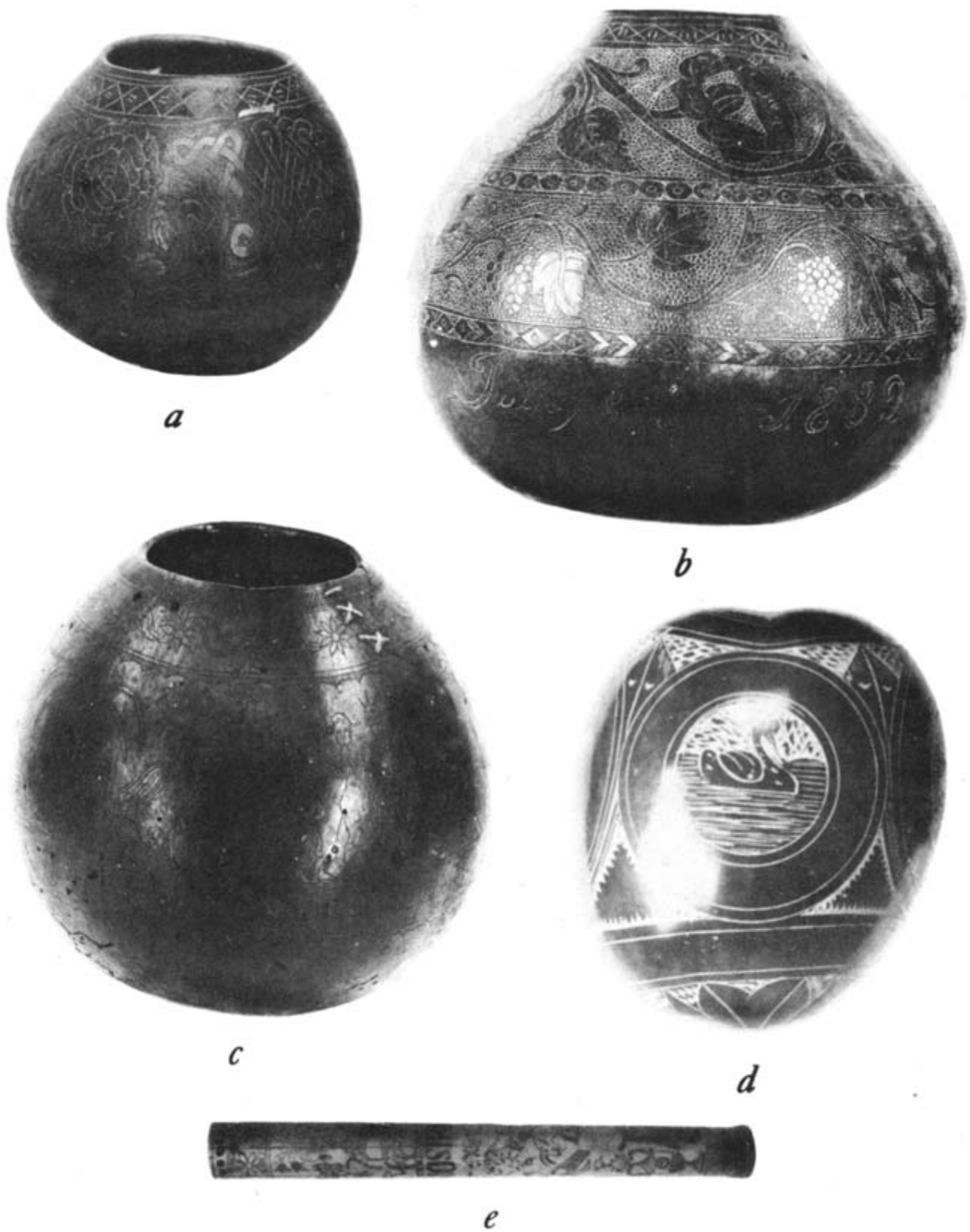
Sayula informants give contradictory statements concerning the manufacture. Some are under the impression that the product was entirely local, from the terra-cotta lining to the incised ornament. Others believe that Ayotitlan gourds, already prepared on the interior, were purchased at the Easter fair, and that subsequently they were decorated in Sayula. The latter seems highly probable, for at least three (Fig. 43.3a, 1) of the five Sayula specimens bear the typical, extremely simple Ayotitlan geometric motifs at the rim. But below this border are the involved realistic and conventionalized designs which characterize the more sophisticated Sayula work. The latter ornament presumably was copied from commercial patterns, perhaps embroidery books. Motifs include arabesques, the national eagle with the serpent in his beak, sprays of flowers, and so on. One specimen (Fig. 43.3c) is less stereotyped and is covered with an involved assemblage of animal, human, and floral motifs. There are scorpions, fighting cocks, birds, a fish, a dog, a goat, a crab, an armadillo, and several unidentified animals. Human figures include three women with long, full skirts; a man on horseback; another in Indian costume, armed with bow and arrow. With this latter exception, the men wear formal attire: a tall hat, a long full coat, and tight-fitting trousers.

The Sayula specimens are inscribed. That in the Patzcuaro Museum says, "Miguel Ponce, gravada en Sayula, setiembre de 1865." Another (Fig. 43.3a) is dated 1872. Still another (Fig. 43.3b) is marked "Teofilo Davalos Sayula Julio 5 de 1882." That shown in Figure 43.3c is undated but states, "Sirbo a mi dueño Alejandro Dias."

It is said that even now, pulque vendors in Sayula buy simple Ayotitlan gourds and add incised ornament to their liking. One balsa which perhaps belongs in this category is marked "Sayula Marzo 30 de 1910"; on the opposite side, but painted, is the name "J. Ines Covarrubias." The incised border of this specimen is simple and is less tidily executed than is the run of Ayotitlan work.

In all probability the worked gourds of Sayula may safely be regarded as a mid- and late nineteenth-century offshoot of the Ayotitlan craft. During those decades, carving and incision seem to have had a considerable vogue in Sayula. Jewelry (necklaces, bracelets, brooches) were carved, as were horns for calling cattle; and short lengths of cane were incised and used to hold rolled papers or letters (Fig. 43.3e). The illustrated cane bears several motifs virtually identical with those of Figure 43.3c, and it seems not unlikely that both were incised by the same unidentified individual.

Except for occasional products of pulque vendors, decorated gourds of the types described above



43.3. Incised objects from Sayula: (a–c, e) nineteenth century; (a–c) gourds; (e) cane tube; (d) modern; tree gourd; various scales. Rim diameters: (a) 7 cm; (b) 7.8 cm; (c) 9 cm; max. width of *d*, 9.5 cm; length of *e*, 20.5 cm.

no longer are made in Sayula. Today the fruit of the tree gourd (*cuastecomate*, presumably *Parmentiera elata* Pliers; Martinez, 1937:128; Arreola 1935:9) is stained and incised for tourist consumption. Motifs on the illustrated specimen (Fig. 43.3d) include an Indian head, a dove bearing a letter, a swan, and twin volcanoes. These tree gourds are not cut or hollowed to form receptacles. They are left entire, and a small quantity of mezcal liquor and a piece of stick cinnamon are introduced through a break made at the stem juncture. The concoction is allowed to ferment the pulp, and the resultant product allegedly is medicinal, being recommended especially for pulmonary disorders. Tree gourds are similarly decorated in nearby Ciudad Guzman and perhaps elsewhere.

San Pedro Tlaquepaque. This is a small town adjacent to Guadalajara. Its gourd industry is so unobtrusive that, after three years of nearly continuous residence there, I was completely unaware of any such enterprise. Quite by chance my aide, Jose Maria Corona, noticed through an open doorway that a number of gourds were being packed; he made inquiry and determined that they had been prepared locally.

Tlaquepaque gourds are unornamented except for the usual terra-cotta lining. The interior is scraped clean with an iron tool which is roughly stirrup-shaped but with the arc not completely closed; one or both (?) edges of the curve are sharpened. The lining is produced by applications of raw linseed oil and red earth, the latter purchased in nearby San Martin de las Flores. A small stone (*piedra china*) is used for polishing, and the final sheen is said by one informant to be applied by burnishing with the leaf of an orange tree. There is no knowledge of chia oil.

Raw gourds are purchased for the most part in San Martin. Formerly, the Hacienda de Oblatos, a few kilometers north of Tlaquepaque, supplied a considerable quantity. Present workers include Doña Concepcion Corona and two brothers, Don Fausto and Don Raymundo Tornero. The first-mentioned and one of the Tornero brothers were interrogated but could give no information concerning the age of the local industry. Both learned from relatives of the past generation, now dead. Other informants, not gourd-workers, were similarly vague. But some thirty or forty years ago there must have been close to a dozen persons who devoted at least a portion of their time to preparing gourds.

The process presumably was secret, and individuals worked at night so that the technique would not be witnessed. It is said that formerly Tlaquepaque specimens were decorated, but no example could be found, nor could a coherent description of the

ornament be obtained. It appears almost certainly to have been incised.

Tlaquepaque gourds are prepared exclusively for sale elsewhere; this appears to have been true in times past as well as present. The bulk of the lot is taken to the annual fairs in San Juan de los Lagos and in Sayula. Any excess finds a ready market in Zamora, at a good price. In the course of nearly five years of residence in the Guadalajara area, I have never seen a lined gourd for sale in the local markets, either in Guadalajara or in Tlaquepaque.

It is not impossible that the local work, like that of Sayula, stems from Ayotitlan. Traditionally, large quantities of Tlaquepaque and Tonalá pottery are taken to Sayula for sale at El Ramos (in local parlance), the same fair which, in former times, was the chief outlet for Ayotitlan gourds. Thus residents of Tlaquepaque had at least first-hand contact with vendors of the Ayotitlan products. Today the craft is spreading from Tlaquepaque, and within the last few years several persons in San Martin are said to have imitated the Tlaquepaque technique of preparing gourds.

Unplaced. The specimen shown in Figure 43.2i, is of unknown provenance, as is a large jicara decorated in similar technique and on display in the Patzcuaro Museum. These two examples are of some interest since they are ornamented in what may be called stripped painting. The interior is finished with the usual terra-cotta lining, but a similar coating of pigment has been applied to the exterior, then cut away to expose the gourd surface and to delineate rather involved designs. The illustrated specimen bears an elaborate floral and butterfly (?) design. It is the gift of Doña Paula Quintero, of Sayula. The donor, who claims to be well over eighty years of age, says that this gourd was purchased at El Ramos, in Sayula, by a much older half-sister. No precise date can be assigned, but the chances are that the specimen is at least sixty or seventy years old.

Friends in Tuxcacuesco and Sayula do not remember having seen Ayotitlan gourds with this type of ornament. Unfortunately, this particular example did not come to light until after my visit to Ayotitlan, hence no inquiry was made there. Nevertheless, my guess would be that these examples of stripped painting may represent an old Ayotitlan decorative treatment which was abandoned years ago.

Stripped painting parallels a decorative treatment which occurs archaeologically in western Mexico and elsewhere in the republic. The archaeological examples involve pottery rather than gourds, and two or more colors. But technically, the treatment is closely parallel. In each case, large, zones of

unfired pigment were applied to the surface of a vessel, then cut away to expose the underlying ground. This is, of course, the basic principle of the modern Olinala (Guerrero) "lacquers," the more complicated specimens of which involve several layers of pigment of various colors. Archaeological occurrences of stripped painting come from Chanchopa, near Tecoman, Colima (in definite Teotihuacan III association); from Apatzingan, Michoacan (unplaced chronologically); from Los Volantines, Tzintzuntzan, Michoacan (unplaced but Preclassic Tarascan); and from Monte Alban (in Monte Alban II association). Evidently the stripped technique is of considerable antiquity and of considerable distribution. Its appearance on what, presumably are two nineteenth-century gourds from Jalisco is, consequently, of historic interest.

In summary, it may be said that the rather modest worked gourds of modern Jalisco probably rep-

resent a survival of an old and formerly widespread culture trait. The Ayotitlan occurrence may be the survival either of a simple, archaic style or of an attenuated, peripheral manifestation, marginal to a Michoacan-Guerrero center. In the latter zones and at Ayotitlan the use of chia oil is a precise and probably significant parallel. The nineteenth-century ornamentation of gourds at Sayula probably is little more than a Victorian gilding of the Ayotitlan lily. Nothing is known of the history of the modern Tlaquepaque gourds, which are undecorated except for the terra-cotta lining; they may represent a distinct survival or they also may be offshoots from the Ayotitlan center.

Two gourds ornamented in stripped painting are of unknown provenance. Technically, their ornament is closely related to the stripped painting which occurs archaeologically in western Mexico and in Oaxaca.

SAN PEDRO TLAQUEPAQUE, JALISCO, MEXICO

The Graphic Style of the Tlalhuica

R. H. Barlow

One of the means by which the boundaries of pre-hispanic Mexican cultures may be traced is by mapping the codical and petroglyphic styles of different zones. Connections between these areas and linguistic or ethnic groups will then often become clear.

It is true that we now know with certainty that the Nuttall and Vindobonensis group come from such towns as Tilantongo and Teozacualco in Oaxaca, as Caso has established on the basis of the unpublished codex of the latter town. This same style of painting obtained as far west as Tecomaixtlahuacan (Schmieder 1930, Appendix I), and other frontiers can doubtless be defined. A second distinctive style, that of the Borgia group, has been linked to the Tlaxcala area via the altars of Tizatlan. But a number of art styles remain to be defined geographically (the Huamantla style, for example) and the graphic traditions of Morelos have never been examined.

A good specimen of the style I shall call Tlalhuica, for reasons advanced below, is afforded by the Codex of Xochitepec, Morelos, a tracing of which was generously loaned the writer by Sr. Guillermo Echaniz (Fig. 44.2). This codex was seen and traced by Francisco del Paso y Troncoso, and the tracing exhibited in Madrid in 1892, though it does not appear in the published catalogue of that exhibition. Later the tracing came into the hands of Sr. Ramon Mena, who wrote a one-page explanation identifying it as coming from Xochitepec, Morelos. It was purchased from him by Sr. Echaniz. Where the original is, does not seem to be known.

The chief purpose of the present note is to make the codex available as a touchstone for the Tlalhuica art style. A summary comment on the subject matter of the codex, however, will not come amiss.

The tracing measures 80 by 88 cm. It has been colored by hand with a cream background suggesting native paper, which agrees with Sr. Mena's note, and a few details are painted in weak greens, browns, pinks, and grays. It is obviously a colonial production but one which follows native styles, and it deals with matters of genealogy, tribute, and landowning.

Left Hand of the Codex. Down the left margin six chiefs sit on mat "thrones," all with closed eyes denoting that they are dead. In the center of the codex a vertical column of ten other figures faces them, only the bottom one being painted with an open (living) eye. This personage is clearly the descendant of so many generations, the last figure in a 300-year stretch, if we assume the conventional number of thirty years to a generation. On this basis the first figure in the central column would be the founder of the dynasty in Chichimec times, around A.D. 1200. It will be noted that the areas of matting are drawn as if to represent a great variety of weaves.

Between these two columns of dignitaries are six human heads, two of them female, as the coiffure indicates, and eight turkey heads accompanied by an equal number of what appear to be eggs. Each egg in turn bears the fern-shaped symbol for 400. In the top row in front of the female heads are two rolls of paper tied about (Fig. 44.1i) and a sharp-pointed

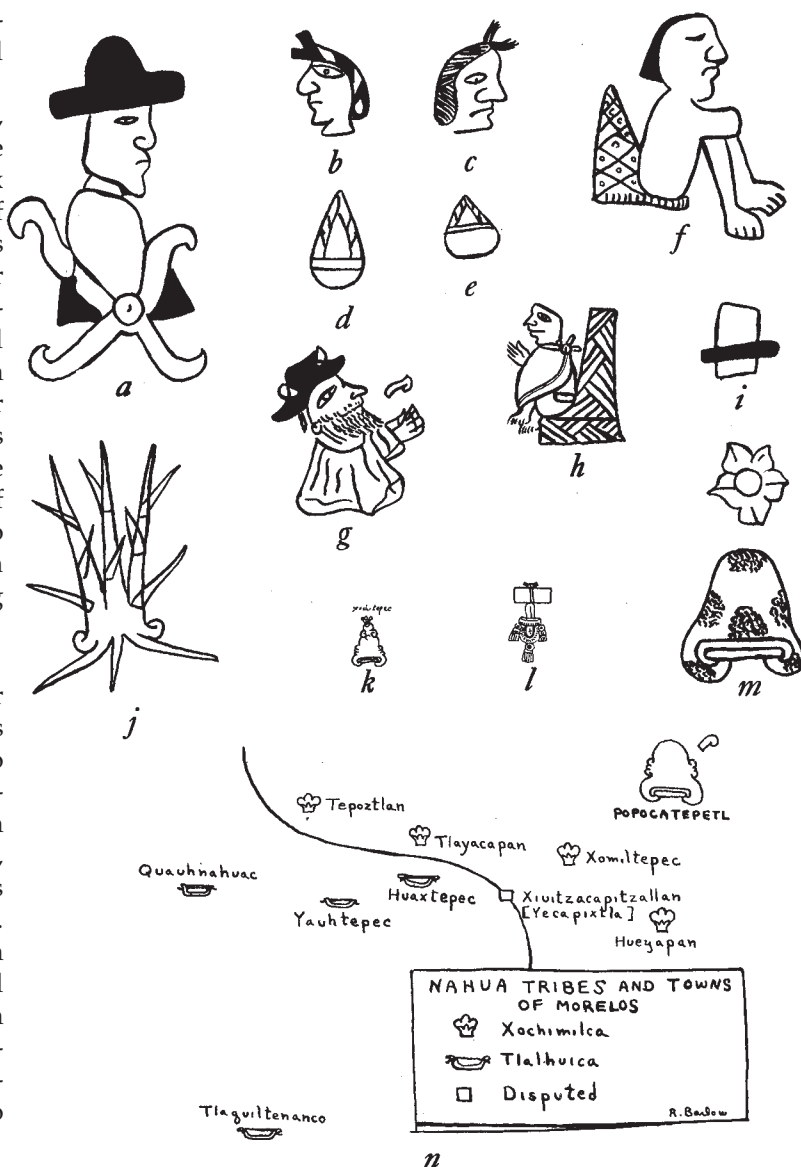
tepetl glyph; and in the second row, immediately below the latter, a house decorated with checkerboard painting.

In the left central part of the codex, below the turkey heads, six squares, one of them having two divisions, denote six milpas. As these do not have the glyphs of their proprietors painted inside them, it is possible that their ownership was under discussion, giving occasion to the painting of the codex. In the lower left-hand corner a person of authority in a Spanish hat sits on a Spanish chair above another *tepetl* sign, toward which two streams flow from two smaller plots of land. These two small plots seem to be property of the two masculine heads drawn close to them, heads which are accompanied by a symbol resembling a drum, the meaning of which the writer does not know.

Right Hand of the Codex. The other side of the *mapa* is divided into numerous small plots of land, which with one or two exceptions bear the glyphs of their owners, sometimes for two generations. In seventeen cases the owners are women, as the style of hairdressing in two knots on the forehead indicated (Fig. 44.1b, c). Many of these women have names which include the element "Xochitl," represented by a conventionalized flower. One man wears a noseplug; another, a beard. Footsteps, indicating paths, follow the margins of the fields and divide them into two mayor areas.

Parallels. Other manuscripts in the same style are known from the Cuernavaca area and from Tlaquiltenango. The Cuernavaca manuscripts, originating in various barrios of that center, such as Caltengo, and in such nearby towns as Xiuhteppec, deal also with landholding. (They are twenty-eight in number and are published in *Códices indígenas de algunos pueblos del Marquesado del Valle de Oaxaca* (1933). These Cuernavaca *mapas* provide us with additional glyphs, the glyph of Xochitepec itself (Fig. 44.1m) and what appears to represent the new crop, sugar cane (Fig. 44.1j).

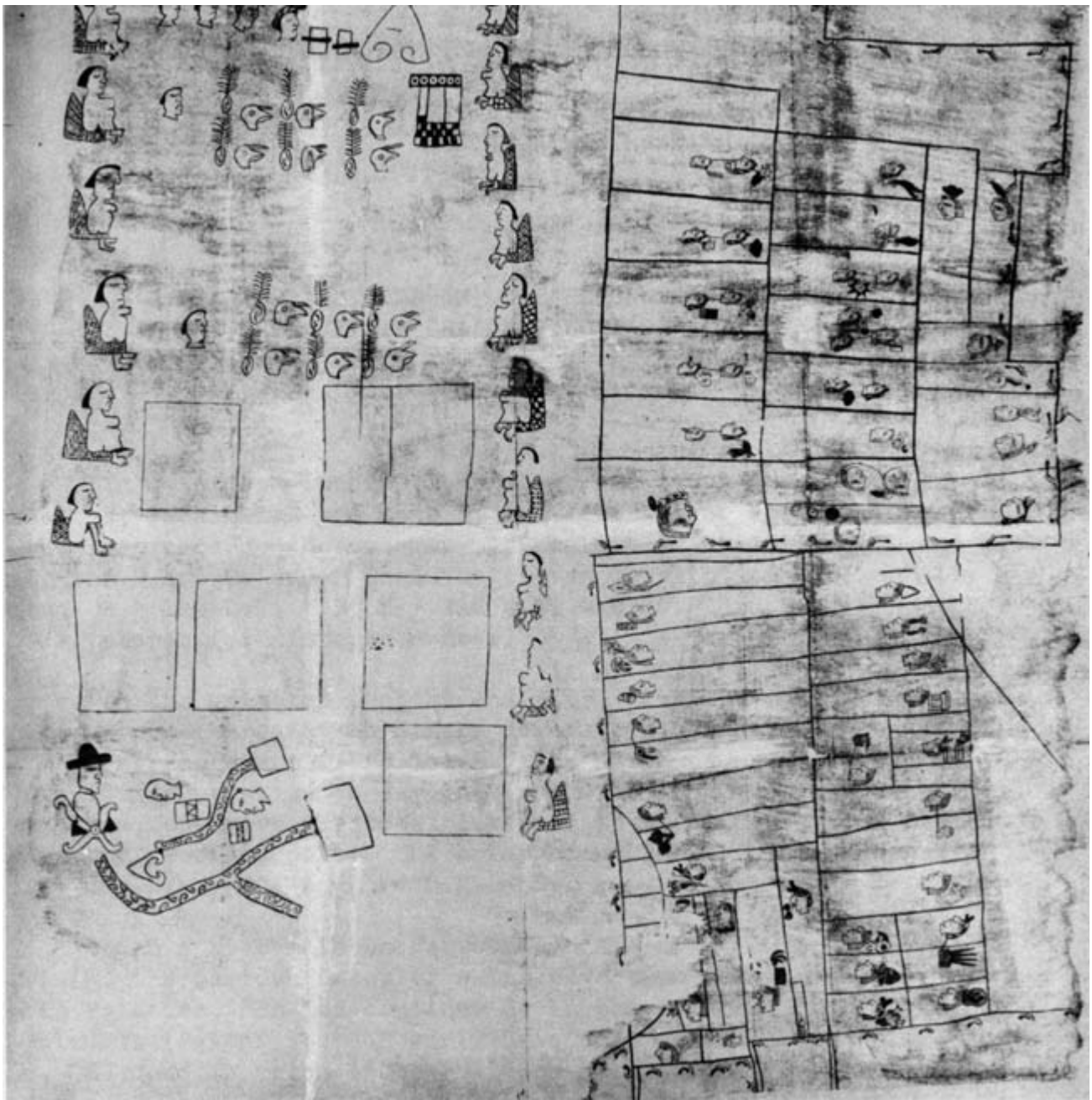
Most of the abundant Tlaquiltenango collection reposes unpublished in New York (*Tlalocan*, 1:4), but the fragments called the Codice Mauricio de la Arena and published by Mazar (1926) suffice to indicate that the Xochitepec-Cuernavaca tradition prevailed in that town also. Moreover, Codex



44.1. The Tlalhuica style of painting: (a, b, f) Codex of Xochitepec; (c) Mauricio de la Arena (Tlaquiltenango; copied from original); (d) glyph from Mauricio de la Arena (Tlaquiltenango); (e) glyph from Algunos codices, cod. 3; (g) Algunos codices, cod. 28 (from Tlaquiltenango); (h) Algunos codices, cod. 11 (from Caltengo; cf. cod. 1); (i) glyph for paper, Codex of Xochitepec; (j) glyph for sugarcane, Algunos codices, *passim*; (k, l) glyphs for Xochitepec and paper, for comparison, Matricula de Tributos; (m) glyph for Xochitepec, Algunos codices, cod. 10 (Caltengo); (n) sketch map of area.

28 of the "Algunos codices" volume was painted in Tlaquiltenango.

I have called the style of painting dealt with in this note Tlalhuica. This would appear to be a safe denomination, since the three towns mentioned fall within



44.2. Codex of Xochitepec.

the Tlalhuica zone, and the paintings are in a style which still flourished in the mid-sixteenth century. The relief decoration of Xochicalco and Jonacatepec (Guzman 1934) and other points falling in the same area is probably pre-Tlalhuica, part of a southern art style containing strong parallels with Monte Alban III and the altars at La Venta. They presumably represent the art style which flourished before the arrival

from the north of the Tlalhuica with their distinctive Cuernavaca-Xochitepec-Tlaquiltenango style.

A map (Fig. 44.1n) of the zone demonstrably occupied by the Tlalhuica tribe, based on my paper on the geography of Moctezuma's empire (1949), is included. By means of the Morelos codices listed in Mazari's (1926) a more exact definition and delimitation of the Tlalhuica art style should be possible.

Variant Methods of Date Recordings in the Jatate Drainage, Chiapas

J. Eric S. Thompson

In most Maya inscriptions which include several Secondary Series, reckonings are made by additions to or subtractions from the last recorded date. Thus, if A is the Initial Series and B, C, and D are Calendar Round dates, an inscription will usually run: A $\pm$ 1st D.N. = B; B $\pm$ 2nd D.N. = C; C $\pm$ 3rd D.N. = D. Here D.N. stands for distance number.

In the only two lengthy and fairly legible inscriptions now known from the Jatate drainage of eastern Chiapas a somewhat different arrangement is followed. The distance numbers are not cumulative, that is to say, not reckoned from the last date reached, but give the total interval between the Initial Series and the recorded date. The arrangement is: A + 1st D.N. = B; A + 2nd D.N. = C; A $\pm$ 3rd D.N. = D.

Such a system is to be found on Stela 3, Santa Elena Poco Uinik, the various dates of which have been deciphered by Blom (Palacios 1926:138; Palacios and Meyer 1932:52), and Thompson (Note 7). The decipherments can be found in the table at right.

It will be noted that of the five distance numbers, four relate the associated Calendar Round date with the Initial Series, but the latter is not repeated. One distance number is of the normal cumulative type. Attention has been called by Thompson in the paper cited to the various examples of Glyphs G and F of the Lunar Series placed between the two parts of three of the Calendar Round dates.

Monument T-20, Tonina, was discovered by Blom and La Farge (1926-1927:289-92). Blom reads the Initial Series, most of which is on a missing fragment, as 9.18.0.0.0 11 Ahau 18 Mac. His reading is

Books: En Los Confines - Palacios 1926, page 111

A1-A8	9.18.0.0.0	11 Ahau 18 Mac
C8		Count of the tun completed
A10-A11	1.4.7.14	Anterior date indicator
B11-B12	9.16.15.10.16	2 Cib 14 Ceh. Glyph G9. Glyph F?
	(9.18.0.0.0	11 Ahau 18 Mac) not repeated
C12-A13	8.7.2	
C15-B16	9.17.11.10.18	5 Eznab 16 Mol? Glyph G2
	(9.18.0.0.0	11 Ahau 18 Mac) not repeated
C16-B17	8.3.4	Anterior date indicator?
C17-C18	9.17.11.14.16	5 Cib 14 Ceh. Glyphs G8, F
C20-B21	7.17.0	Posterior date indicator
C21-A22	9.17.19.13.16	5 Cib 14 Chen
C22	4.4	
	(9.18.0.0.0	11 Ahau 18 Mac)

amply confirmed by the new readings now presented. In order to retain the Blom lettering, the top column will be given the reference letters Upper C-D. The photographs of this stela in the work just cited are on the whole superior to my photograph (Fig. 44.1a), but the latter is reproduced because it shows certain details more clearly than does the former.

Columns A and B are badly damaged. They record in part a Lunar Series with a possible 5E (A2), Glyph C probably without a coefficient and with a fish-head count prefix (B2), Glyph B with same prefix to left (B3), and Glyph A with coefficient which is

probably 10 (A4). There follows an indecipherable reckoning.

Columns C and D have two Calendar Round dates and two distance numbers: The whole can be restored without serious question as:

Upper C-D1-B1	9.18.0.0.0	11 Ahau 18 Mac
C1-D2	1.14.13.11	With S.S. Introductory Glyph
C3-C4	9.16.5.4.0	6 Muluc 17 Mol. Glyph G8?
D4		Lunar computation indicator
	(9.18.0.0.0	11 Ahau 18 Mac) not repeated
C6-D6	1.4.11	
C7-D7	9.17.18.13.9	2 Muluc 12 Chen

The first Muluc is badly eroded, but the details of the second are reasonably clear on a photograph taken this year (Fig. 441a). The first distance number is quite straightforward, and 1.4.11 is the best reading for the second on inspection alone. Mol is quite clear, and its coefficient is best as 17 with 19 the only alternative. The second month sign has a clear coefficient of 12, and appears to belong to the Cauac group. The Cauac infix on the right is fairly clear, and the superfix resembles closely one of the variants found with Chen.

There appears to be another Secondary Series at the top of Columns E and F but the details are not clear, and no associated Calendar Round date is recognizable. Perhaps 11 Ahau 18 Mac, a repetition of the Initial Series date, occurs at E4-F4, but as there is some doubt as to the month sign and its coefficient, this is far from certain. Furthermore, there may be another Secondary Series at E8 and perhaps on the missing F8. At least we can be certain that two of the Calendar Round dates are reckoned directly from the Initial Series.

Two more cases of the occurrence of Glyph G with Calendar Round dates at Tonina may be noted.

Monument T-17 is a rectangular stone block first illustrated by Blom (Fig. 44.1b-d). The last glyph on Side A records 3 Ahau. The three glyphs on Side B read: Glyph G9, Glyph F, 3 Xul. An examination of the original revealed the features of the head for Xul quite clearly. The second glyph on Side C is probably the tun-count-completed glyph. There can be no question that the whole reads:

(9.12.5.0.0)	3 Ahau 3 Xul	Glyph G9, tun count completed
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Monument T-1 now supports a post of the veranda of the kitchen of the house in front of which it was found by Blom and La Farge.

Glyph B1 is Ahau with a coefficient which is best as 12. A2 is partially missing, but enough remains to make it virtually certain that it is Glyph G9. B2 is the month sign with coefficient of 18 to left. The main element is a head with the prefix to left. Prefix looks like that of Yaxkin and Yax. C2 is tuns. The crescentic form of the suffix shows that this is to be read as a distance number. E1 has a coefficient of 9. Blom reads the glyph as Ahau. D2 is a very clear 18 Xul. E2 is the tuns-lacking glyph. Morley has already placed the second date at 9.15.15.0.0.

The whole inscription, accordingly, reads:

B1-B2A1-A8	(9.15.11.0.0)	12 Ahau 18 Yaxkin? G9
C2	4 (0.0)	
E1-E2	(9.15.15.0.0)	9 Ahau 18 Xul. Five tuns lacking.

Tonina supplies yet another example of the interposition of Glyph G between day and month of a Calendar Round date. This is to be found on Monument 30, Tonina, first illustrated by Seler (1901, Fig. 282) and reproduced by Blom and La Farge, (1926-1927, Fig. 256). Unfortunately the date can not be read. The first three glyphs record respectively: day sign with coefficient of 12, Glyph G2, and what is presumably a month sign with a coefficient of 2 or perhaps 3 or 4. Glyph G2 is clearer than any other part of the text.

A small rectangular stone with glyphs lies close to Structure A, Tonina. This appears to have been seen first by Heinrich Berlin. It was given the number 42 by Money and myself in the spring of 1944. There is no Calendar Round date on the surviving fragments, but two juxtaposed glyphs record Glyph G9 and what may be count of a katun. The former is unmistakable. It is the head of the aged sun god with kin headdress surmounted by three shells, and with sweeping "tail" element to the right (Fig. 44.1e).

A single stela was found at Tzendales, on the river of that name, by A. M. Tozzer. The Tzendales River is an affluent of the Rio Lacantun, into which it flows a short distance above the confluence of the Jatate with the latter. The site, therefore, is in the neighboring drainage. The stela carries a short inscription drawn and deciphered by Spinden (1913:197; 1924:272). The opening date is (9.12.19.1.1) 7 Imix 14 Zip. This is connected with 9.13.0.0.0 8 Ahau 8 Uo at the bottom of the column by a distance number of 16.19. Its position in the Long Count is therefore certain. There is a glyph between 7 Imix and 14 Zip which, as drawn by Spinden, is almost certainly G3 combined with Glyph F. The latter is quite plain. Of



45.1. Inscriptions at Tonina: (a) Columns B–F, Monument T-20; (b–d) Monument T-17; (e) Monument T-42.

the former, Spinden's drawing, made hastily, shows details strongly indicating the two compartments of G3 and the encircling dots. It must be remembered that at the time this drawing was made, the meaning of Glyph G was unknown, and that consequently there can be no question of reading into the glyph block the details one would like to see. The Calendar Round date calls for Glyph G3.

There are now at Tonina one dubious and six certain examples of Glyph G unassociated with Initial Series, four examples of the same arrangement on Stela 3, Santa Elena Poco Uinik, one on the ball-court marker at Chinkultic (Señor Javier Mandujano Solorzano, of Comitán, informs me that this marker was actually found by his father, not at Chinkultic but at Colonia La Esperanza, about 9 km farther north), and one almost certain example at

Tzendales. In three cases Glyph G is accompanied by Glyph F. The idea may have traveled up the Rio Lacantun since it also appears at Yaxchilan (Lintels 3 and 10), and perhaps on Stone 2 of the Hieroglyphic Stairway at La Amelia (between 13 Manik and 15 Tzec).

Accordingly, in the marked tendencies to connect Calendar Round dates directly with the Initial Series and to associate Glyph G and sometimes Glyph F with Calendar Round dates, these rather peripheral Maya sites diverged somewhat from standard Maya practice. The differences, however, were in the nature of emphasis on known methods rather than in the development of new methods.

It is tempting to associate these variations with linguistic divisions. All three sites are in Tzeltal or Tojolabal territory.

The Venus Calendar of the Aztec

R.C.E. Long

Sahagun says that the Aztec festival of Atamalqualiztli occurred every eight years, sometimes in the month of Tepeilhuitl and sometimes in the month of Quecholli, and that after seven days of fasting the principal ceremony took place on the eighth day. Nothing is said as to when these festivals fell, so they cannot be fixed in the calendar, nor is there any indication of the days of the month or of the tonalpoualli on which they fell. The statement that they were sometimes in one month and sometimes in another is not made about any other festival. The commentator of the Codex Telleriano-Remensis says that Atamalqualiztli was celebrated in Tecpatl years, each of which necessarily had different numbers, and that it occurred or rather should have occurred in 1548, which was a year 4 Tecpatl. Using the table of Dr. Alfonso Caso and allowing for the shift in the vague year, one can show that in 1548 Tepeilhuitl began on 9 Quiahuitl 1 Tepeilhuitl, 4 October 1548 Julian, and that Quecholli ended on 9 Tecpatl 20 Quecholli, 12 November 1548. So the festival fell somewhere between these limits.

According to Sahagun, Motolinia, and other Spanish sources, the "Indians of New Spain" worshipped the planet Venus and knew when it would appear again in the east (heliacal rising). An Indian was sacrificed at dawn on that day as soon as the star became visible. Seler has shown that in the Codices Vaticanus B, Fejervary-Mayer, and Borgia, all of which are from south-central Mexico, and perhaps of Mixtec or Cholultec origin, many pages relate to Venus, and that the days Cipactli, Coatli, Atl, Acatl,

and Ollin which occur on these pages are the ending days of synodic periods of Venus of 584 days each. But he properly adds that in none of these codices is there a detailed statement of the Venus calendar such as that in the Dresden Codex. So in these supposedly Mixtec picture writings we can only infer the existence of a Venus calendar from the repetition of the days appropriate to it. As far as I know there is no Aztec codex showing these days and no Spanish source specifying on what dates either the Aztec or Mixtec celebrated their Venus festivals.

Several years ago it occurred to me that the Atamalqualiztli festival might be connected with Venus, owing to its occurring every eight years, but there was no evidence available in support of this theory. Now, however, Mrs. Makemson (1943) has greatly advanced our knowledge of Maya astronomy and, what is important for the present discussion, has fixed the position of the Dresden Codex Venus tables in the Long Count and in the Julian calendar. Carrying forward the Maya Venus computation to the sixteenth century, she shows that 11.14.13.7.0 1 Ahau 18 Pop fell on 12 August 1513 in the Julian calendar and was by Maya calculation the date of a heliacal rising of Venus; and, what is very remarkable, that the true date of heliacal rising according to Willson's tables was only three days earlier. We have then the following:

Maya Venus calendar end	11.14.13.7.0	1 Ahau 18 Pop, 12 August 1513
Add 4 × 8 vague years	1.12.8.0	

Reach	11.16.5.15.0	7 Ahau 18 Pop, 4 August 1545
Add two synodic periods	3.4.8	
Reach	11.16.9.1.8	5 Lamat 11 Tzec

But this would be 7 Itzqintli 12 Tepeilhuit for calculated heliacal rising in 1548 and the true rising was probably about 11 October, that is, 3 Miquiztli 8 Tepeilhuitl. It was usual for Aztec feasts to fall at the end of the period named from them, so probably the feast of Atamalqualiztli fell on 2 Tecpatl 20 Tepeilhuitl as the eight days began to run from heliacal rising, or on 11 Ocelotl 16 Tepeilhuitl, 19 October 1548 if counted from true rising.

From the above calculation we see that Atamalqualiztli may have fallen eight days after heliacal rising, calculated or observed, but that it did not fall eight days after the end of one of the eight-year periods of the Maya Venus calendar. Of course there is no reason why it should. It must occur near heliacal rising to agree with the astronomical facts but need not be at a date fixed by the Maya formal reckoning. The Aztec Venus calendar, like their annual calendar, was no doubt quite independent of the Maya one, and we know that the Aztec (or at any rate the painters of the Borgia group of codices) made their synodic periods end on Cipactli, Coatli, Atl, Actl and

Ollin, which correspond to the Maya Imix, Chicchan, Muluc, Ben, and Caban, while the Maya made theirs end on Kan, Lamat, Eb, Cib, and Ahau. The Aztec apparently did not employ any rule for correcting the annual calendar, and the uncertainty of the dates of their feasts seems to show that they were irregularly corrected from time to time when the discrepancy with the seasons became too great. Therefore we may assume that they did the same with their Venus calendar. In this case the formal calendar was much nearer to the facts than the annum calendar was, and the discrepancy therefore not so obvious. The actual discrepancy is about 5.2 days in two Calendar Rounds (104 vague years).

If Atamalqualiztli fell on 16 or 20 Tepeilhuitl in 1548, then, allowing for corrections (probably irregular and unsystematic but roughly accurate) of about five days every two Calendar Rounds, it would have fallen in Quecholli in 1544 in the reign of Montezuma I and probably during a long period of time previous to that. This would explain the statement of Sahagun that it was sometimes in Quecholli and sometimes in Tepeilhuitl. It had got into Tepeilhuitl only about the beginning of the current Venus cycle and had been in Quecholli ever since the first Calendar Round recognized by Aztec history, namely that which commenced in 1091 after the departure from Aztlan.

PORTARLINGTON, IRELAND

An Inscription on a Jade Probably Carved at Piedras Negras

Tatiana Proskouriakoff

Finely carved jades were doubtless regarded by the Maya as objects of great value. They could be passed on from generation to generation and could be traded in distant parts. In most cases one cannot rely on the circumstances of their discovery to evince their origin, and often the only clue is the style of the carving itself, at best an uncertain criterion, especially since conclusions must be based largely on analogy with arts of different technique. Fortunately, a few jades were inscribed with dates, and when these dates can be related to inscriptions on monuments they sometimes furnish more reliable evidence than does either style or stratigraphy. The piece described here is one of the rare examples which can be dated and placed with reasonable certainty, even though the Old Empire site of Piedras Negras, whence it came, has no known historical connection with the distant city of Chichen Itza where it was found among the offerings of the famous Sacred Cenote. It is now in the Peabody Museum of American Archaeology and Ethnology in Harvard University and is here described and reproduced with the kind permission of the Museum.

The jade is about 8.5 cm in its greatest dimension and is carved in half-round to represent a human head wearing an animal (serpent or jaguar) headdress. The style is idealistic and keenly sensitive to natural form, qualities characteristic of the best period of classic Maya sculpture. The back of the head is hollowed out, as if to reduce its weight, and along the flat edge of the hollow and on the top of the headdress runs an inscription of lightly incised

hieroglyphs. Five holes drilled with a pointed tool probably served to fasten the ornament and to attach to it beads or other embellishments. One of the holes was drilled through a glyph apparently after the inscription was made. This tends to confirm the assumption, otherwise not susceptible of proof, that the glyphs and the carving are contemporaneous.

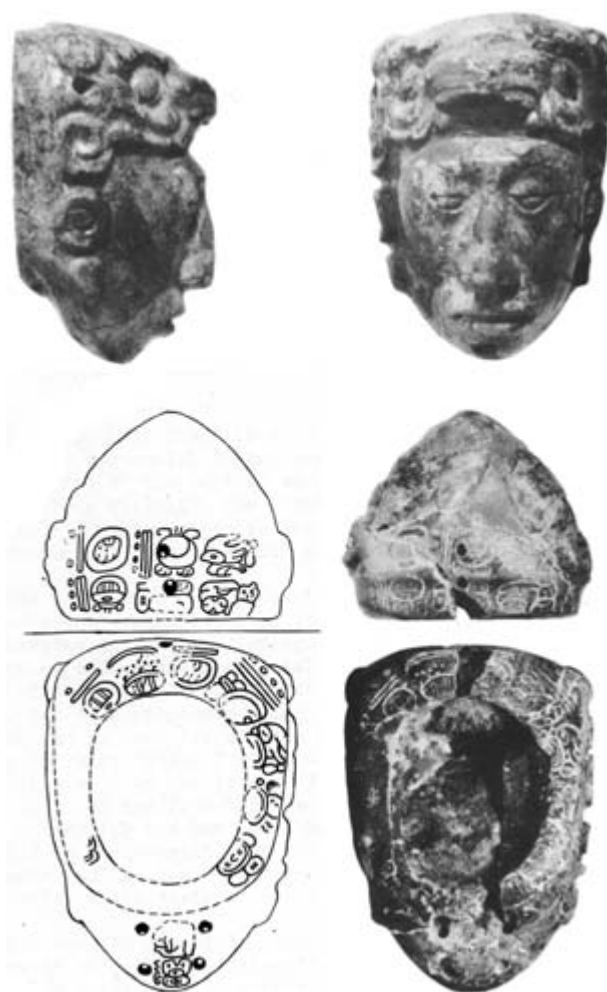
The head resembles ornaments worn by the principal figure of Maya stelae, particularly the ornamental heads attached to the figure's belt. On such ornamental heads, the animal headdress occurs most frequently in the early period (cf. Stelae 9 at Tikal, 27 at Yaxchilan, E and 3 at Copan). Later, the headdress is replaced by a simple knot with its ends falling to each side of the face, but it recurs sporadically, as on Stela C at Copan and on Stela 5 at Tikal. At Piedras Negras, however, several stelae of the Late Classic period have ornamental heads with the animal headdress (see Stelae 2, 4, and 13). On Stela 10 at this site such a head is particularly clearly depicted as an ornament on a cushion. Although the features, shown in front view and in low relief cannot be compared with fairness to the full-round carving of the jade, in a general way it may be worth while to note that the excellent sculptural tradition of Piedras Negras, including as it does sculpture in the round, is entirely consistent with the style of the Cenote carving, which, especially in profile, is reminiscent of the faces portrayed on Piedras Negras stelae.

The connection of the jade head with Piedras Negras, however, is more clearly demonstrated by its inscription. The text begins on the top of the

headdress with two horizontal rows of glyphs: Although one dot of the day number is missing, the first two glyphs clearly record the Calendar Round date 7 Imix 14 Mac. The finer details of the month sign are obscure, but the elements characteristic of Mac are unmistakable. The next glyph is a familiar hand-and-tassel ending sign followed by 13 tuns (first glyph, lower line), and two glyphs of unknown meaning. From this record the unexpressed beginning of the count can be calculated as 7 Imix 19 Pax. On the back, the inscription is resumed at the lower left, but here a piece is broken out and the first three glyphs are missing. The fourth records 7 tuns, which, if added to the preceding date, reach 5 Imix 19 Zac, recorded by the sixth and seventh glyphs. The bars of the month numeral are depicted here by single lines instead of by full outline, but it is fortunately quite clear that the ends of these lines are not connected and there is no doubt that the number 19 was intended. Another hand-and-tassel ending sign follows and the record of one katun. The tun element is obscured by a break, but the coefficient and the comb elements flanking a cartouche can be readily made out. This establishes the date as a katun anniversary, referring to the previously calculated beginning of the count, 7 Imix 19 Pax. The meaning of the last glyph, which has a ben-ik superfix, and of the two glyphs below the border is unknown.

The same Calendar Round positions define an important katun anniversary at Piedras Negras. The earlier date 7 Imix 19 Pax is carved on Stelae 3, 7, and 8 in the Long Count position 9.12.14.13.1. The terminal date 5 Imix 19 Zac (9.13.14.13.1) occurs on Stela 1 and also on Stela 8, where it is specifically stated that it marks the end of one katun. The explicit notation on Stela 8 and on the Sacred Cenote Jade that 5 Imix 19 Zac is a katun anniversary makes it, in my opinion, virtually certain that both refer to the identical katun, and establishes also the Long Count position of the first date inscribed on the jade as 9 13.7.13.1. Moreover, if this argument is sound, the probability that the jade was carved and inscribed at Piedras Negras must also be accepted, for the dates involved seem to have a particular importance at the site and do not occur, so far as I know, anywhere else.

A brief summary concerning the distribution of Calendar Round dates in the Maya area may serve to clarify the justice of this contention. The following data are abstracted from a list of 372 different Calendar Round positions recorded or implied on Maya monuments and are compiled from the dates mentioned in *The Inscriptions of Peten* (1938) and *The Inscriptions at Copan* (1920) by S. G. Morley, supplemented by a number of dates from Palenque. Although this list does not include all known Old



47.1. Jade head from the Sacred Cenote at Chichen Itza; cat. no. C6100, Peabody Museum of American Archaeology and Ethnology, Harvard University.

Empire inscriptions, it covers fairly completely a large part of the Maya area and reveals certain definite tendencies in the distribution of dates. Dates falling on the day Ahau are not included since this day occurs on all period endings and also since its greater frequency increases the chances of its fortuitous repetition. Of the 372 different Calendar Round positions noted, 40 are repeated in some other text, and since some are repeated in several texts the total number of repeated notations is 66. By far the greater number of these repetitions, 62 occur at the same site as the original notation, and represent the same Long Count position in every case that it can be determined. Morley cites several Calendar Round anniversaries at Yaxchilan, but his interpretation of these dates is based on stylistic criteria which he does not state explicitly, and his conclusions seem to me to be open to serious doubt. I

should like to stress parenthetically the importance of this apparent association of dates with particular sites, for it seems to be neglected by some students who attempt to base arguments on the assumption that Maya dates represent records of astronomical observations. If conspicuous configurations in the sky were habitually recorded, eclipses and other dramatic celestial events would have been observed and noted simultaneously at many sites. Yet not a single date which could represent such a record is known. On the contrary, the most often repeated dates seem to have a purely local importance, suggesting that their significance was at least in part historical.

Only two prominent dates are recorded at more than one site: 9.15.6.14.6 6 Cimi 4 Tzec is inscribed on Stelae J, F, and E and Zoomorph G at Quirigua and on the Hieroglyphic Stairway at Copan; 9.12.10.5.12 4 Eb 10 Yax repeated at Naranjo on Stelae 3, 24, and 29 probably is the same date recorded on Stela 1 at Coba. The first of these instances can be explained readily by the geographical proximity and the cultural contact between the two sites. The second is perhaps a fortuitous exception, though a historical connection between Naranjo and Coba is suggested by many similarities in their sculptural and architectural styles (Thompson, Pollock, and Charlott 1932).

The two remaining repetitions seem to be chance occurrences of the same Calendar Round position in different Calendar Rounds. One is the date 9 Eb 10 Tzec. On Lintel 12 at Piedras Negras it is written as an Initial Series 9.3.19.12.12 and on the Hieroglyphic Stairway at Copan as 9.14.10.10.12. The other is 2

Eb 0 Pop. Its Long Count positions are not entirely certain but seem to be 9.10.3.2.12 at Naranjo on the Hieroglyphic Stairway of Structure B-XVIII and, according to Thompson, 9.19.1.5.12 on Altar U at Copan. Such apparently unconnected repetitions can be expected to occur by chance at rare intervals, and the curious fact that both dates cited fall on the day Eb is probably a mere coincidence.

This brief résumé of the facts furnishes the basis for placing an unconnected Calendar Round date in the Long Count series and associating it with a particular site. In my opinion, the evidence in the case made for the jade of the Sacred Cenote is so strongly reinforced by the explicit record of the katun anniversary that it may safely be accepted as virtual proof that the piece came from Piedras Negras.

The actual date of the carving is not so readily determined, but, in the absence of stylistic indications to the contrary, it might be considered as roughly contemporary to the monuments recording the same dates, i.e. within the katun between 9.13.15.0.0 (Stela 1) and 9.14.15.0.0 (Stela 8). Unfortunately we do not know when and by what route this perfect example of Old Empire lapidary art reached the city of Chichen Itza and how it came to be deposited in the Sacred Cenote. Were they recoverable, the facts of its history might prove highly significant, for such easily portable and almost imperishable objects could have exerted long-lasting and far-reaching influences on later sculpture by preserving the continuity of artistic traditions even after the southern Maya cities were abandoned and their larger monuments no longer were available for study.

Costumes and Wedding Customs at Mixco, Guatemala

Lilly de Jongh Osborne

Santo Domingo Mixco is a Pokoman-Maya village in the Department of Guatemala, 15 km west of Guatemala City. Despite the proximity of the capital and many Cakchiquel villages in the immediate vicinity, the Pokoman of Mixco still retain many of their old customs, particularly those relating to the important ceremonial occasions such as baptisms, weddings, and burials.

The women have changed their everyday costume considerably, but for great ceremonies they still keep to the old traditions. The everyday costume is distinguished by a well-made huipil, woven either in Quetzaltenango (although in only two sections instead of the three of the Quetzalteca's costume *de rigueur*) or in San Pedro Sacatepequez. The latter is white with multicolored figures and is made for sale in Mixco and other villages. The *refajo* or skirt, about 7 yards wide, is pleated in imitation of the skirts worn by the ladies of the sixteenth and seventeenth centuries. It has from three to five bands of narrow ribbon or braid encircling the hem about 10 inches from the edge. The material is nondescript, but for best wear it comes from the highlands and has many tie-dyed designs in the best technique obtainable: white designs on red, yellow, and green background.

For special occasions such as weddings and burials the costume takes on particular significance. The *refajo*, as described above, has a trimming of velvet ribbon around it. The huipil must be one which has been woven at San Martin Jilotepeque in the local style, dark blue, almost black, founda-

tion in basket weave with multicolored designs in silk or, nowadays, rayon covering the surface and distinguished by the peculiar San Martin dots made by placing extra pattern yarns under and over three different filler yarns, cut off short on the right side of the textile. The whole has a tapestry-like and gay appearance.

Forty years ago no self-respecting Mixco woman would have worn any but the typical Mixco belt, but this has disappeared almost entirely and is now regarded as a precious heirloom. These magenta and white or purple and white belts, woven in Oaxaca, Mexico, were brought to Mixco by traders. For ceremonies the hair is arranged in one long braid with very long *tocoyales* (strands of wool) in magenta or red. The whole is wound around the head to form a halo. Rings, earrings, and a short bead chain complete the costume for a girl about to be married.

Overpopulation led to the migration, just before the conquest, of a part of these Pokoman from their homes in Cuzcatlan to Guatemalan territory, where they settled between the lands of the Cakchiquel and Sacatepequez nations. They soon constructed a fortress city near the present San Martin Jilotepeque. The conqueror of Guatemala, Pedro de Alvarado, subdued these Indians, some of whom he settled in the aforementioned San Martin. The greater part he moved in 1526 to the present site of the village of Mixco. The old fortress is now known as Mixco El Grande or Mixco El Viejo.

It may be of interest to mention briefly how the *costumbres* for a marriage are carried out. The young

**a****b**

48.1. Huipils at Mixco, Guatemala: (a) everyday huipil; (b) wedding huipil made in San Martin Jilotepeque.

man's parents and the principal men of the village arrive on a prearranged day at the hut of the girl's parents. In front of the closed door, they kneel and pray, lighting the tall candles (worth at least 5 cents each). When they have concluded their prayers, they say in unison "*Ave Maria Purisima*," to which the girl's family responds from behind the closed door "*Sin pecado concebida*"; and the boy's delegation returns home. This function is called *la razon*.

On the second visit the boy's sponsors are admitted. They bring gifts of beer, liquor, and candles, and,

after discussing the weather, the crops, and the hard times the world is going through, they finally mention the reason for their visit. They retire, assured that the matter will be considered. At the third visit, also accompanied with liquor, the answer is given that the arrangements may proceed for wedding in at least three months' time.

Now follow other costumbres. The first visit of this second series (*el pedimento*) involves more expense for the young man's family. Friends and relatives arrive in ceremonial clothes on a given

Sunday. A special kind of bread is wrapped in a *chivo* (a small cloth with loops at intervals all over the surface) woven of the natural brown cotton known as *cuyuscate* or *ixcaco*. The bundle is carefully examined by two members of the girl's family, who discover five quetzales (formerly gold coin) under the bread, and report that it is all according to "costumbre." The rest of the basket is filled with chocolate, which they proceed to brew and drink with their guests.

The second visit of this series likewise requires an outlay of drink, chocolate, bread, etc. Further plans are made for the wedding, and the young man's ability to maintain the girl is discussed. On the third and last visit five quetzales and ceremonial sweet bread are again presented and in turn examined, to be sure that the gift conforms with custom. At this function a large turkey, well seasoned with many peppers, is brought as a final offering of good will towards the girl's family. I have known a wedding to be much delayed because the boy's family, which belonged to an outlying district, had lapsed in etiquette, for they proposed to present the turkey on the wedding day instead of at the third pedimento. Once they were informed of the proprieties, they arrived speedily a couple of Sundays later with a gigantic turkey, and the final arrangements proceeded.

On the wedding day the bride's godmothers dress her in the costume already described. Nowadays old customs are vanishing, and some brides appear even in ladino-wedding costume, complete with artificial wreath of flowers and white wedding veil.

The godmothers wear their best and widest refajos. Older women wear the enormous tocoyal head-dresses. These have a ceremonial significance and consist of a veritable mountain of black, purple, and red interwoven wool strands, over which is thrown a hand-woven sheer white textile in a veil effect. The fat candles these women carry in their hands are wrapped halfway up in canna leaves.

After the Roman Catholic service in the village church, the wedding party repairs to the girl's home. At the entrance the young couple kneels in front of their elders. The father and oldest godfather then proceed to admonish them at length on their future obligations to each other and to the community, stressing adherence to their *costumbres*, particularly in relation to the idea of their fertility and that of their crops. After this lecture refreshment, especially tamales and intoxicating liquor, is consumed.

Refusal of consent to the marriage for some reason or other by the girl's parents is considered a bad omen for the girl and her family. She will probably never again be asked in marriage, and must either work hard to maintain herself or form an alliance with some man not contemplating marriage, without all the beguiling prenuptial *costumbres*.

The San Martin Jilotepeque huipil used during the wedding ceremony is carefully put away and used only for burial. It is considered a sign of very hard times if a woman wears this huipil except perhaps for some great ceremony. It is quite unthinkable to sell it.

GUATEMALA CITY

Combinations of Glyphs G and F in the Supplementary Series

Sylvanus G. Morley

The two glyphs known as G and F were once believed to have formed part of the Lunar or Supplementary Series. In the past ten years Thompson (1935:84–85; 1940; 1944) and Beyer (1935a–b; 1939) have called attention to occurrences with Calendar Round dates of either Glyph G alone or, less frequently, of Glyphs G and F together. In such cases they stand between day and month signs, and are completely dissociated from any Lunar Series.

The purpose of this paper is to bring together further evidence that Glyph F is not a part of the Lunar Series.

In 1931 I noticed on Stela 52, Calakmul, an unusual combination of Glyphs G and F of the Supplementary Series (Fig. 49.1i), in which the essential element of Glyph G9 (Fig. 49.1n), the kin sign, appears incorporated with the affixial elements of Glyph F, specifically the latter's diagnostic superfix and suffix (Fig. 40.1m). This intermingling of elements from the two glyphs would indicate some close relationship between them, at least that they are members of the same group. Since Glyph G has been surely shown by Thompson to belong with the Initial Series, it follows that Glyph F also probably belongs with the same count and not with the Supplementary Series, as I originally believed.

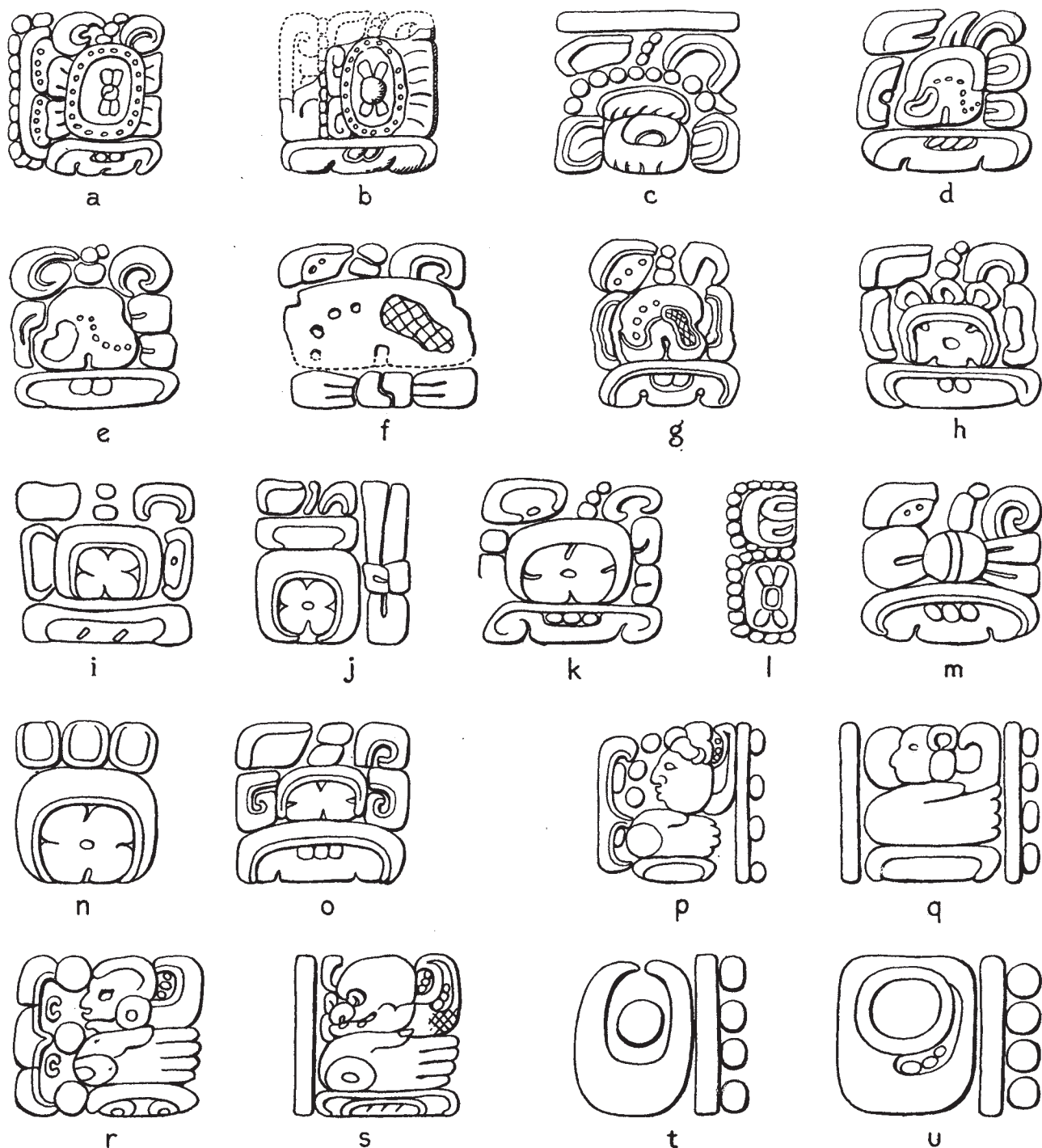
The commonest form of Glyph F is composed of three elements: a highly distinctive superfix, itself divided into three parts; a central element which is clearly a knotted band; and a suffix which is as characteristic as the other two elements (Fig. 49.1m). We shall see that when Glyphs G and F are combined, it

is usually the first and third elements of Glyph F that are retained in the combined FG forms, the second (the knotted band) element being eliminated.

In 1936 Hermann Beyer (1936b) cited four cases of Glyphs G8 and F combined: two from Palenque, one from Yaxchilan, and one from Copan (Fig. 49.1d–g). It will be noted that in three examples the superfix and suffix of Glyph F have been retained in the combined forms; the central element only having been replaced by G8. In the fourth example, from Yaxchilan, the knotted middle element replaces the usual suffix. The association of the essential elements of these two glyphs in a combined form indicates a correspondingly close relationship between them.

Recently Heinrich Berlin (1943) has published a new Palenque text in stucco showing Glyph G3 combined with Glyph F (Fig. 49.1b). In spite of the fact that the F superfix is on a still missing fragment, there can be little doubt that it was originally present. Berlin calls attention to another GAF combined form at Palenque, also from the same building, the Temple of the Sun (Fig. 49.1a). There is a third example of Glyph G3 at Palenque, but not combined with Glyph F (Fig. 49.1l). A comparison of this last glyph with figures 1a and 1b will show how, the superfix and suffix of Glyph F (Fig. 49.1m) have been retained in the combined glyph, and the knotted band central element eliminated.

The above six examples are those of Glyphs G and F of the Supplementary Series combined in a single glyph in each case: two examples of Glyph G3



49.1. Glyphs G, F, C, and A of the Supplementary Series. Glyphs G3 and F combined: **(a and b)** Palenque, Temple of the Sun. Glyphs G5 and F combined: **(c)** Calakmul, Stela 89. Glyphs G8 and F combined: **(d)** Palenque, Temple of the Cross; **(e)** Palenque, Temple of the Foliated Cross; **(f)** Yaxchilan, Lintel 21; **(g)** Copan, Stela 10. Glyphs G9 and F combined: **(h)** Naranjo, Stela 30; **(i)** Calakmul, Stela 52; **(l)** Piedras Negras, Stela 10; **(k)** Copan, Temple 11; **(o)** Yaxchilan, Stela 11. Glyph G3: **(l)** Copan, Hieroglyphic Stairway, Date 24. Glyph F: **(m)** Piedras Negras, Stela 25. Glyph G9: **(n)** Naranjo, Stela 13. Glyphs C and A combined: **(p and a)** Piedras Negras, Stelae 25 and 26. Glyph 3C: **(r)** Tikal, Stela 3. Glyph 5C: **(s)** Piedras Negras, Lintel 2. Glyph A9: **(t)** Tikal, Stela 3; **(u)** Piedras Negras, Lintel 2.

and F (Fig. 49.1a, b) and four examples of Glyphs G8 and F (Fig. 49.1d–g).

Recently I have re-examined all the known Supplementary Series, 296 in number, and find six other examples of these combined forms of Glyphs G and F: one of G5 and F (Fig. 49.1c) and five of G9 and F (Fig. 49.1h–k, o). In the latter combined forms (G9 and F) the three shells usually found as the superfix of the kin sign in G9 (Fig. 49.1n) are suppressed in four cases but are present in the fifth.

In the twelve known cases of these combined GF glyphs noted, there are two examples of combined forms of G3 and F, one of G5 and F, four of G8 and F, and five of G9 and F. These are distributed as follows: four at Palenque (Temples of the Sun [twice], Cross, and Foliated Cross), two at Copan (Stela 10 and Temple 11), two at Calakmul (Stelae 52 and 89), two at Yaxchilan (Stela 11 and Lintel 21), and one each at Piedras Negras (Stela 10) and Naranjo (Stela 30). The heaviest concentration is in the Usumacinta Valley, where Palenque, Piedras Negras, and Yaxchilan have seven of the twelve examples found.

The earliest occurrence of a combined G and F is in the Supplementary Series of the Temple of the Sun, Palenque, dedicated in 9.10.10.0.0, where Glyph G3 is combined with Glyph F (Fig. 49.1a).

Of the 79 certain, simultaneous occurrences of Glyphs G and F in the Supplementary Series, there are twelve examples of these combined forms. However, if all the probable simultaneous occurrences of these two glyphs are included, the percentage of the combined GF forms would be less.

This combination of two different glyphs of the Supplementary Series has a precedent in the case of two other glyphs of the same count: Glyphs A and C. Two combined forms of these signs have been found at Piedras Negras (Stela 25 dedicated in 9.8.15.0.0 and Stela 26 dedicated in 9.9.15.0.0).

On Stela 25 Glyph 3C (Fig. 49.1r) is combined with Glyph 9A (Fig. 49.1t) in such a way that the moon sign in Glyph 9A is suppressed; its coefficient of 9 being attached as a postfix directly to Glyph 3C (Fig. 49.1p). In the case of Stela 26 Glyph 5C (Fig. 49.1s) is combined with Glyph 9A in such a way that the moon sign in Glyph 9A is suppressed, its coefficient of 9 being attached as a postfix to Glyph 5C (Fig. 49.1a). The meaning of these two glyphs clearly establishes their close connection as belonging to the same count, i.e. the Supplementary Series.

The association of Glyph F with the Initial Series rather than with the Supplementary Series is further demonstrated by its position. In the 79 cases when Glyphs G and F both surely occur, Glyph F always immediately follows Glyph G with no other glyph

standing between them, whereas in four of these cases, two at Palenque (Temple of Sun), and on Temple 11, Copan, and Stela 12, Altar de Sacrificios, the month of the Initial Series terminal date immediately follows Glyph F, thus bringing together in uninterrupted sequence all ten glyphs of the Initial Series, followed by the six glyphs of the Supplementary Series, also in uninterrupted sequence.

Why the six glyphs of the Supplementary Series should stand between the last two glyphs of the Initial Series, i.e. Glyph F and the month of the Initial Series terminal date in the majority of cases, instead of immediately following the latter as in the cases of the four examples just cited, is perhaps due to the desire to have the month of the Initial Series terminal date stand as close as possible to the current lunar month of 29 or 30 days, i.e. immediately following it, and perhaps even more, to indicate by thus enclosing the Supplementary Series within the Initial Series that, as Bowditch originally suggested, it “supplements” the Initial Series. This indeed it does, giving the lunar date corresponding to the Initial Series date in each case.

This elimination of Glyphs G and F from the Supplementary Series reduces the standard Supplementary Series to six glyphs, E, D, C, X, B, and A. Of these, E, D, C, and A incorporate the moon sign. Glyph X occasionally has a moon sign in one of its six variants (Form 4); Glyph B has the head of a rodent as its principal element, an animal clearly associated with the moon in the sculptures of a number of cities. Thus the internal evidence presented by the six glyphs of the Supplementary Series, to say nothing of the mathematical proof thereof, strongly suggests that this is a lunar count.

Teeple (1931:63) has suggested that in view of the fact that Glyph B of the Supplementary Series never has a numerical coefficient of any kind but frequently has an “ending” prefix or superfix, its meaning is general and does not specifically affect the lunar count presented by the other five glyphs of the Supplementary Series.

I believe that since Glyph F of the Initial Series never has a numerical coefficient, its meaning, too, is general, and in no way affects the diurnal count presented by the other nine glyphs of the Initial Series, of which it is the penultimate glyph. Although Glyph F has no “ending” superfix or prefix like Glyph B of the Supplementary Series, its central element is a knotted band (Fig. 49.1m) or, more rarely, the kin sign itself (Fig. 49.1c). And as used in Glyph F this knotted band perhaps signifies it is “tied up,” or “closed,” or more generally “here ends the day count” (i.e. the Initial Series).

Moon Age Tables

Lawrence Roys

Following Goodman's idea of giving Maya dates in tabular form, I present here two charts which link the age of the moon to a series of Maya dates.

The first, and simpler of the two, needs little explanation beyond the legend. The dates shown in the chart are of conjunctions five lunar years apart. Intermediate conjunctions, or new-moon dates, can be determined by interpolation. It is suited to problems handled best with our decimal system, and demands the preliminary step of converting Maya vesical dates into decimal counting, conveniently defined as Maya Day dates by R. W. Willson (1924:17). This table is convenient for such problems as checking time intervals from the inscriptions against intervals between new moons, and for general use where it is easier to think in terms of our modern arithmetic. Of course, the moon age for any Maya date can be easily found with its aid.

The second and more extensive table provides a quick method for obtaining the desired moon age for a given Maya date without converting it into Arabic notation. It is a series of Long Count dates, each accompanied by its moon age. They are close enough together to yield a date of known moon age conveniently near any given date of which the moon age is unknown. Further columns are added so that the chart may be used for other general work.

The detailed steps for finding the moon age for a given date, e.g. 9.5.6.14.3, are as follows:

1. Take from the 5-tun chart the Long Count date immediately preceding the given date, and trans-

fer this with its moon age to a work sheet. E.g. 9.5.5.0.0, moon age 5 2/10.

2. Find the distance between these two dates by subtraction. E.g. 9.5.6.14.3 minus 9.5.5.0.0 equals 1.14.3.
3. Referring to the multiplication table at the side of the pages, select the highest multiple that does not exceed the remainder just found in Step 2. E.g. select 1.13.0 1/10 which is less than 1.14.3.
4. This highest multiple should be subtracted from the remainder found in Step 2. E.g. 1.14.3 minus 1.13.0 1/10 equals 1.2 9/10 (22 9/10 days). (This fourth step is a condensation of two arithmetical operations, and in effect gives us the distance that our given date lies beyond an intermediate date whose moon age is 5 2/10. With such a distance reduced to less than a month, it becomes hardly more than a matter of inspection finally to determine the moon age for our given date. The actual figure for the intermediate date does not appear in this solution as it has canceled itself out.)
5. To the remainder just obtained in Step 4 should be added the moon age from the 5-tun chart obtained in Step 1. E.g. 1.2 9/10 plus 5 2/10 equals 1.8 1/10 (28 1/10 days). This gives the unknown moon age desired for our given date. If this final answer exceeds 29 1/2 days, it can be corrected by the simple expedient of subtracting 29 5/10 days.

The computation on the work sheet appears as follows:

Given Date	9.5.6.14.3	
1. 5-tun chart date	9.5.5.0.0	. . . of moon age 5 2/10
2. Remainder	1.14.3	
3. Highest multiple	1.13.0	1/10
4. 2d remainder	1.2 9/10	(or 22.9 days)
5. Moon age from (1)	5 2/10	(or 5.2 days)
5. Desired moon age	1.8 1/10	(or 28.1 days)

After a little practice, only the last five lines need be written down as the first simple subtraction can be solved by inspection.

Hyphens are used here before the kin and the uinal so that tenths of days can be written decimally without causing confusion. This is after the manner of Teeple, but adopted solely for convenience in figuring and not as an interpretation of Maya thought as Teeple has used them. In the preceding explanation, I have used vulgar fractions to show tenths, but only for purposes of clarity. The user of these tables will almost certainly prefer to shift to decimals, and the use of hyphens will aid this.

A word should be added to explain the need of tenths of days in these computations, a seeming over-refinement where the probable error often exceeds a full day. For comparative work, this is necessary in order to avoid absurd results. For example, 1,294,106, minus 1,294,104.6 gives an interval of 1.8 days which is practically two days. If the decimal were ignored, we would round out the numbers to 1,294,106 minus 1,294,105 and obtain a difference of only one day.

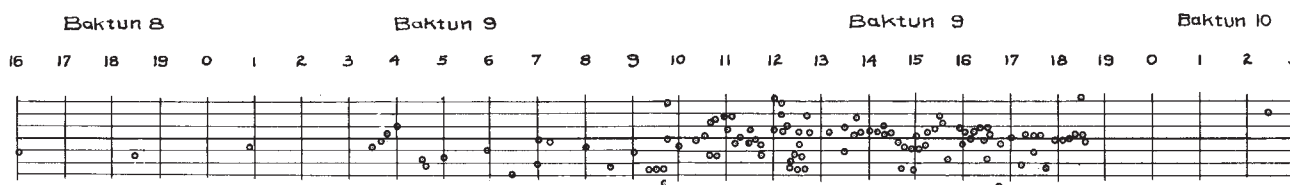
In planning these charts, I had a serious problem properly to correlate a series of new-moon dates 1771.836 days apart with the new-moon dates indicated by moon ages recorded in the inscriptions. The latter agree in only a general way with the results produced by an exact lunar calendar, sometimes varying three days or more either way from a table based on their average positions. Teeple attacked this problem from more than one angle, first favoring 9.16.4.10.9 as a new-moon date (1925a:114). At another time he favored 9.16.4.10.7 (1925b:549), but his final judgment was midway between these two and he gives 9.17.0.0.0 as his preference (1931:53). This last is practically the same as a new moon at 9.16.4.10.8, the date which is thought to introduce the remarkable eclipse calendar of the Dresden Codex.

At present we can only guess at the reasons for the wide variations. Teeple reasoned that the records in the inscriptions were observational, and affected not only by cloudy weather but even by the pos-

sibility that the observing priest's mind may have been clouded at times. Granting the plausibility of this, one cannot help wondering how to account for a spread as great as five or six days in recording as conspicuous a phenomenon as the first appearance of the new moon. When actual lunar conjunctions are compared with a table of average conjunctions exactly 29.5306 days apart, they are found to swing over a range of plus or minus 6/10 days from average. To this swing should be added any lag due to conjunction hour preceding sunset hour by part of a day (Teeple mentions both items). By combining extreme positions for both of these factors, a maximum range of about 2.2 days can be obtained; and other astronomical variations and weather could probably increase it to three days. However, this is far short of the range of about five days necessary to include the bulk of the data that need to be accounted for. Teeple's explanation looks probable, but does not dispel all doubts. However, no better hypothesis has yet been advanced.

Although the situation is puzzling and somewhat unsatisfactory, we must decide upon a definite base for these charts. With this purpose in view, we graphically plot the swing in new-moon positions for practically all of the published inscriptions where the Long Count dates have been determined with a fair degree of certainty, and are accompanied by Lunar Series giving the moon age. Teeple (1931) and Morley (1938) supply 108 such dates. We tentatively assume with Teeple that 9.17.0.0.0 was a new-moon date. We have 108 new-moon dates shown by Glyphs D and E in the inscriptions, and we can obtain from this Teeple formula a corresponding expected new-moon position for each of them, i.e., an ideal new-moon position that is distant from 9.17.0.0.0 by an even multiple of 29,5306. Obviously the deviations of the new-moon dates shown by Glyphs D and E from the expected new-moon positions give us the needed data. The data were plotted some years ago. More recently four or five of the readings in the lists have been shown to be erroneous. The rectification of those few errors would not materially affect the conclusions, and the chart has, accordingly, been allowed to stand as it is.

Examination of Figure 50.1 is interesting. Commencing with 9.9.15.0.0, we have 86 recorded new moons and find that the arithmetical average of their deviations from Teeple's formula is exactly zero. However, we get quite a different picture when we work backward from 9.9.15.0.0. We have only 22 recorded new moons, but their arithmetical average deviation is 1.4 days below our Teeple formula; and their range is narrower than that of the larger group. In spite of our limited number of cases, we have a



50.1. Deviations of recorded new-moon positions. These are shown vertically, each space representing a day. The Maya date is plotted horizontally. Here recorded are 108 cases beginning with 8.16.0.0.0 and ending with 10.2.9.1.9.

consistency which casts a doubt on the Teeple formula that we have tentatively selected.

If we wish, we can average the deviation for our entire 108 cases and revise our tables to fit this average, making a change of $3/10$ of a day all along the line. This does not greatly affect the later period, but still leaves a serious inconsistency in the earlier group. It therefore seems the wiser and possibly more conservative course to maintain Teeple's 9.17.0.0.0 formula throughout, with the reservation that previous to 9.9.15.0.0, Glyphs D and E are likely to show recorded moon ages about a day or more less than expected. The tables in this report are accordingly computed on this basis. This decision has the added advantage of conforming with Teeple's "Maya Astronomy" (1931), the accepted textbook on the subject. Of course this average new-moon position is tentative, and subject to correction by further data. However, I incline to the belief that the 9.17.0.0.0 formula will be serviceable for some time to come, particularly for dates subsequent to 9.9.15.0.0. It has the convenience of being a round number, and its closeness to the Dresden Codex Eclipse Calendar date, 9.16.4.10.8, makes it useful in working with that important document.

Interpretation of this plotted graph is not certain. It is possible that the lower average for the earlier period is basically in error and will ultimately be corrected upward by further extensive data for that period. However, our present data give little promise of such a correction. Considering the plot alone, the mathematical conclusion would favor the idea that about 9.9.15.0.0 there occurred a shift in the method of computing moon ages. Such mathematical reasoning alone is not convincing, but in this case it is supported by our knowledge that the Maya lunar calendar was in a state of flux not long afterward. Teeple's Period of Uniformity commenced about 9.12.15.0.0, only three katuns after the change here in our graph. In view of the mutual support of these two developments, it would seem that we should lean toward the idea that about 9.9.15.0.0, there was

a movement among the Maya priest-astronomers to shift their new moon dates to an earlier position, i.e., to bring them nearer to actual astronomical conjunction on the average.

Needless to say, this shift applied only to an average of positions, and was not accompanied by any reduction in the deviation of recorded new-moon dates from the average. In fact; the swing was even greater during the second half of Baktun 9, end remains an unsolved puzzle. I am far from being convinced that Teeple's explanation is correct, viz., that the new-moon dates were determined by actual first sight of the new moon. Although possible, it seems inadequate. Could not the matter be explained with equal probability by the suggestion that certain days were taboo as new-moon dates, and alternatives had to be found? I present this speculation largely as a warning against too complete acceptance of Teeple's plausible theory that actual first sight of the new moon was the complete answer. Naturally, the sole purpose of presenting these tables is to supply a ready reckoner. So far as their use is concerned, it is immaterial whether the Maya reckoned their moons from disappearance, conjunction, or appearance.

In closing, I should explain that I prepared the first of these tables in 1931. At that time I believed that 9.16.4.10.9 was very close to a new-moon date, and I computed the table showing new-moon dates a day later than are shown here. The table of 1931 proved to be very workable and convenient and seemed to require no correction up to the present investigation. A number of copies were given to friends and consequently it should be noted here that computations made with the 1931 table will vary 1.0 day from those made with the accompanying tables. This is not a matter of importance except where comparative work is being done. It should, however, be noted that all the lunar computations published by Morley (1920) were based on my old tables, and are therefore a day off those which would be obtained with the present tables.

Table 50.1. Table of New Moon Days, and Lunar Half Year Beginnings By “Maya Day” Reckoning

The Maya Day number is given for the beginning of every tenth lunar half year. By means of the tables at the right, the values for the individual half year beginnings may be obtained, and likewise those for individual new moon dates. The method is ordinary interpolation by arithmetical series. The interval for the main table is 1771.836 days.

1,253,353.5	1,325,998.7	1,398,644.0
255,125.3	327,770.6	400,415.9
256,897.1	329,542.4	402,187.7
258,669.0	331,314.3	403,959.6
260,440.8	333,086.1	405,731.4
262,212.7	334,857.9	407,503.2
263,984.5	336,629.8	409,275.0
265,756.3	338,401.6	411,046.9
267,528.2	340,173.4	412,818.7
269,300.0	341,945.3	414,590.5
271,071.8	343,717.1	416,362.4
272,843.7	345,488.9	418,134.2
274,615.5	347,260.8	419,906.1
276,387.3	349,032.6	421,677.9
278,159.2	350,804.5	423,449.7
279,931.0	352,576.3	425,221.6
281,702.8	354,348.1	426,993.4
283,474.7	356,120.0	428,765.2
285,246.5	357,891.8	430,537.1
287,018.4	359,663.7	432,308.9
288,790.2	361,435.5	434,080.7
290,562.0	363,207.3	435,852.6
292,333.9	364,979.1	437,624.4
294,105.7	366,751.0	439,396.3
295,877.5	368,522.8	441,168.1
297,649.4	370,294.7	442,939.9
299,421.2	372,066.5	444,711.8
301,193.0	373,838.3	446,483.6
302,964.9	375,610.2	448,255.4
304,736.7	377,382.0	450,027.3
306,508.6	379,153.8	451,799.1
308,280.4	380,925.7	453,570.9
310,052.2	382,697.5	455,342.8
311,824.1	384,469.3	457,114.6
313,595.9	386,241.2	458,886.4
315,367.7	388,013.0	460,658.3
317,139.5	389,784.8	462,430.1
318,911.4	391,556.7	464,202.0
320,683.2	393,328.5	465,973.8
322,455.1	395,100.4	467,745.6
324,226.9	396,872.2	469,517.5

Multiplication Table of Lunar Months

1	29.5
2	59.1
3	88.6
4	118.1
5	147.6
6	177.2

Multiplication Table of Lunar Half Years

1	177.2
2	354.4
3	531.5
4	708.7
5	885.9
6	1,063.1
7	1,240.3
8	1,417.5
9	1,594.6
10	1,771.8

Table 50.2. Table of Moon Ages at 5 Tun Intervals.

<i>Long Count Date</i>	<i>Day Count</i>	<i>Day and Month</i>	<i>Maya Day Number 7 Ahau 3 Xul 1,252,800 7.6</i>	<i>Moon Age</i>
8.14.0.0.0	7 Ahau	3 Xul	1,252,800	7.6
5.0.0	13 Ahau	18 Zotz	1,254,600	6.3
10.0.0	6 Ahau	13 Zip	1,256,400	4.9
15.0.0	12 Ahau	8 Uo	1,258,200	3.5
8.15.0.0.0	5 Ahau	3 Pop	1,260,000	2.2
5.0.0	11 Ahau	3 Cumhu	1,261,800	0.8
10.0.0	4 Ahau	18 Pax	1,263,600	29.0
15.0.0	10 Ahau	13 Muan	1,265,400	27.6
8.16.0.0.0	3 Ahau	8 Kankin	1,267,200	26.2
5.0.0	9 Ahau	3 Mac	1,269,000	24.9
10.0.0	2 Ahau	18 Zac	1,270,800	23.5
15.0.0	8 Ahau	13 Yax	1,272,600	22.1
8.17.0.0.0	1 Ahau	8 Chen	1,274,400	20.8
5.0.0	7 Ahau	3 Mol	1,276,200	19.4
10.0.0	13 Ahau	18 Xul	1,278,000	18.0
15.0.0	6 Ahau	13 Tzec	1,279,800	16.7
8.18.0.0.0	12 Ahau	8 Zotz	1,281,600	15.3
5.0.0	5 Ahau	3 Zip	1,283,400	13.9
10.0.0	11 Ahau	18 Pop	1,285,200	12.6
15.0.0	4 Ahau	18 Cumhu	1,287,000	11.2
8.19.0.0.0	10 Ahau	13 Kayab	1,288,800	9.8
5.0.0	3 Ahau	8 Pax	1,290,600	8.5
10.0.0	9 Ahau	3 Muan	1,292,400	7.1
15.0.0	2 Ahau	18 Mac	1,294,200	5.7
9.0.0.0.0	8 Ahau	13 Ceh	1,296,000	4.4
5.0.0	1 Ahau	8 Zac	1,297,800	3.0
10.0.0	7 Ahau	3 Yax	1,299,600	1.6

Table 50.2—continued

<i>Long Count Date</i>	<i>Day Count</i>	<i>Day and Month</i>	<i>Maya Day Number 7 Ahau 3 Xul 1,252,800 7.6</i>	<i>Moon Age</i>
15.0.0	13 Ahau	18 Mol	1,301,400	0.3
9.1.0.0.0	6 Ahau	13 Yaxkin	1,303,200	28.4
5.0.0	12 Ahau	8 Xul	1,305,000	27.1
10.0.0	5 Ahau	3 Tzec	1,306,800	25.7
15.0.0	11 Ahau	18 Zip	1,308,600	24.3
9.2.0.0.0	4 Ahau	13 Uo	1,310,400	23.0
5.0.0	10 Ahau	8 Pop	1,312,200	21.6
10.0.0	3 Ahau	8 Cumhu	1,314,000	20.2
15.0.0	9 Ahau	3 Kayab	1,315,800	18.9
9.3.0.0.0	2 Ahau	18 Muan	1,317,600	17.5
5.0.0	8 Ahau	13 Kankin	1,319,400	16.1
10.0.0	1 Ahau	8 Mac	1,321,200	14.8
15.0.0	7 Ahau	3 Ceh	1,323,000	13.4
9.4.0.0.0	13 Ahau	18 Yax	1,324,800	12.0
5.0.0	6 Ahau	13 Chen	1,326,600	10.7
10.0.0	12 Ahau	8 Mol	1,328,400	9.3
15.0.0	5 Ahau	3 Yaxkin	1,330,200	7.9
9.5.0.0.0	11 Ahau	18 Tzec	1,332,000	6.6
5.0.0	4 Ahau	13 Zotz	1,333,800	5.2
10.0.0	10 Ahau	8 Zip	1,335,600	3.8
15.0.0	3 Ahau	3 Uo	1,337,400	2.5
9.6.0.0.0	9 Ahau	3 Uayeb	1,339,200	1.1
5.0.0	2 Ahau	18 Kayab	1,341,000	29.2
10.0.0	8 Ahau	13 Pax	1,342,800	27.9
15.0.0	1 Ahau	8 Muan	1,344,600	26.5
9.7.0.0.0	7 Ahau	3 Kankin	1,346,400	25.1
5.0.0	13 Ahau	18 Ceh	1,348,200	23.8
10.0.0	6 Ahau	13 Zac	1,350,000	22.4
15.0.0	12 Ahau	8 Yax	1,351,800	21.0
9.8.0.0.0	5 Ahau	3 Chen	1,353,600	19.7
5.0.0	11 Ahau	18 Yaxkin	1,355,400	18.3
10.0.0	4 Ahau	13 Xul	1,357,200	16.9
15.0.0	10 Ahau	8 Tzec	1,359,000	15.6
9.9.0.0.0	3 Ahau	3 Zotz	1,360,800	14.2
5.0.0	9 Ahau	18 Uo	1,362,600	12.8
10.0.0	2 Ahau	13 Pop	1,364,400	11.5
15.0.0	8 Ahau	13 Cumhu	1,366,200	10.1
9.10.0.0.0	1 Ahau	8 Kayab	1,368,000	8.7
5.0.0	7 Ahau	3 Pax	1,369,800	7.4
10.0.0	13 Ahau	18 Kankin	1,371,600	6.0
15.0.0	6 Ahau	13 Mac	1,373,400	4.6

Table 50.2—continued

<i>Long Count Date</i>	<i>Day Count</i>	<i>Day and Month</i>	<i>Maya Day Number 7 Ahau 3 Xul 1,252,800 7.6</i>	<i>Moon Age</i>
9.11.0.0.0	12 Ahau	8 Ceh	1,375,200	3.3
5.0.0	5 Ahau	3 Zac	1,377,000	1.9
10.0.0	11 Ahau	18 Chen	1,378,800	0.6
15.0.0	4 Ahau	13 Mol	1,380,600	28.7
9.12.0.0.0	10 Ahau	8 Yaxkin	1,382,400	27.3
5.0.0	3 Ahau	3 Xul	1,384,200	26.0
10.0.0	9 Ahau	18 Zotz	1,386,000	24.6
15.0.0	2 Ahau	13 Zip	1,387,800	23.2
9.13.0.0.0	8 Ahau	8 Uo	1,389,600	21.9
5.0.0	1 Ahau	3 Pop	1,391,400	20.5
10.0.0	7 Ahau	3 Cumhu	1,393,200	19.1
15.0.0	13 Ahau	18 Pax	1,395,000	17.8
9.14.0.0.0	6 Ahau	13 Muan	1,396,800	16.4
5.0.0	12 Ahau	8 Kankin	1,398,600	15.0
10.0.0	5 Ahau	3 Mac	1,400,400	13.7
15.0.0	11 Ahau	18 Zac	1,402,200	12.3
9.15.0.0.0	4 Ahau	13 Yax	1,404,000	10.9
5.0.0	10 Ahau	8 Chen	1,405,800	9.6
10.0.0	3 Ahau	3 Mol	1,407,600	8.2
15.0.0	9 Ahau	18 Xul	1,409,400	6.8
9.16.0.0.0	2 Ahau	13 Tzec	1,411,200	5.5
5.0.0	8 Ahau	8 Zotz	1,413,000	4.1
10.0.0	1 Ahau	3 Zip	1,414,800	2.7
15.0.0	7 Ahau	18 Pop	1,416,600	1.4
9.17.0.0.0	13 Ahau	18 Cumhu	1,418,400	0.0
5.0.0	6 Ahau	13 Kayab	1,420,200	28.2
10.0.0	12 Ahau	8 Pax	1,422,000	26.8
15.0.0	5 Ahau	3 Muan	1,423,800	25.4
9.18.0.0.0	11 Ahau	18 Mac	1,425,600	24.1
5.0.0	4 Ahau	13 Ceh	1,427,400	22.7
10.0.0	10 Ahau	8 Zac	1,429,200	21.3
15.0.0	3 Ahau	3 Yax	1,431,000	20.0
9.19.0.0.0	9 Ahau	18 Mol	1,432,800	18.6
5.0.0	2 Ahau	13 Yaxkin	1,434,600	17.2
10.0.0	8 Ahau	8 Xul	1,436,400	15.9
15.0.0	1 Ahau	3 Tzec	1,438,200	14.5
10.0.0.0.0	7 Ahau	18 Zip	1,440,000	13.1
5.0.0	13 Ahau	13 Uo	1,441,800	11.8
10.0.0	6 Ahau	8 Pop	1,443,600	10.4
15.0.0	12 Ahau	8 Cumhu	1,445,400	9.0
10.1.0.0.0	5 Ahau	3 Kayab	1,447,200	7.7

Table 50.2—continued

<i>Long Count Date</i>	<i>Day Count</i>	<i>Day and Month</i>	<i>Maya Day Number 7 Ahau 3 Xul 1,252,800 7.6</i>	<i>Moon Age</i>
5.0.0	11 Ahau	18 Muan	1,449,000	6.3
10.0.0	4 Ahau	13 Kankin	1,450,800	4.9
15.0.0	10 Ahau	8 Mac	1,452,600	3.6
10.2.0.0.0	3 Ahau	3 Ceh	1,454,400	2.2
5.0.0	9 Ahau	18 Yax	1,456,200	0.9
10.0.0	2 Ahau	13 Chen	1,458,000	29.0
15.0.0	8 Ahau	8 Mol	1,459,800	27.6
10.3.0.0.0	1 Ahau	3 Yaxkin	1,461,600	28.3
5.0.0	7 Ahau	18 Tzec	1,463,400	24.9
10.0.0	13 Ahau	13 Zotz	1,465,200	23.5
15.0.0	6 Ahau	8 Zip	1,467,000	22.2

Multiplication Table of Lunar Months

Maya Numeration. Digits in column [below] are tenths of days (decimals, non-Maya)

1-9	5	1-14-9	7	3-8-0	3
2-19	1	1-15-19	2	3-9-9	8
4-8	6	1-17-8	7	3-10-19	3
5-18	1	2-0-18	3	3-12-8	9
7-7	6	2-2-7	8	3-13-18	4
8-17	2	2-3-17	3	3-15-7	9
10-6	7	2-5-6	8	3-16-17	5
11-16	2	2-6-16	4	4-0-7	0
13-5	8	2-8-5	9	4-1-16	5
14-15	3	2-9-15	4	4-3-6	1
16-4	8	2-11-5	0	4-4-15	6
17-14	4	2-12-14	5	4-6-5	1
1-1-3	9	2-14-4	0	4-7-14	6
1-2-13	4	2-15-13	6	4-9-4	2
1-4-3	0	2-17-3	1	4-10-13	7
1-5-12	5	3-0-12	6	4-12-3	2
1-7-2	0	3-2-2	2	4-13-12	8
1-8-11	5	3-3-11	7	4-15-2	3
1-10-1	1	3-5-1	2	4-16-11	8
1-11-10	6	3-6-10	7	5-0-1	4
1-13-0	1				

A Second Tlaloc Gold Plaque from Guatemala

Karl-Heinz Nottebohm

It has been supposed until recently that one of the Zacualpa gold disks (Fig. 51.1a) originated in Peru and was of Chavin workmanship. Lately, however, the disk was said to represent the Mexican rain god Tlaloc, a claim which seems to be confirmed by a second and similar disk hitherto unreported (Fig. 51.1b).

Unfortunately the exact provenience of this new disk is not known, although it is believed to have come from the western part of Guatemala near the Mexican border. Probably it comes from a burial, as it shows a light red patina and traces of soil in some parts. The plaque is gold, circular, and, in contrast to the convex shape of the Zacualpa disk, flat. The diameter is about 11 cm compared to 12 cm for the Zacualpa specimen. Above the headdress can be seen two holes, the rims of which are carefully smoothed on the reverse side indicating that the new disk had been intended for an appendage just like the Zacualpa disk, which has similar holes at about the same place.

Both disks show the same treatment of the rim as well as similar kind of technique and artistic feeling in the repousse design. Irregular rays emanate from a line of dots paralleling the circumference. The subject depicted on the new plaque seems to be the same as that on the Zacualpa disk, which has been identified as the rain god Tlaloc. Characteristic

of the Tlaloc on the new disk are the orbital circles as well as the lip.



51.1. Gold disks from Guatemala: (a) Zacualpa region, after Lothrop; (b) attributed to western Guatemala.

Rock Paintings at Texcalpintado, Morelos, Mexico

M. A. Espejo

At the end of September 1943 some people from Hueyapan, Morelos, reported to the Mexican National Museum of Anthropology the discovery of a great number of figures painted on a rock at a place called Texcalpintado in the state of Morelos. With the permission of the director of the museum I went to see these paintings with Mr. R. H. Barlow and seven other persons.

The site is situated about 7 km south of Hueyapan. The River Amatzinac at that point is bounded on its left bank by a very high cliff. About 8 m above the stream there projects a small terrace, some 10 m long by 2 m wide. The pictographs cover the vertical face of the cliff immediately above this terrace, occupying an area 20 m long by 5 m high.

The figures are drawn in white against the slightly reddish background of the rock. In many places this white paint has aged to a yellowish tone. The average height of the figures is 40 cm. There are also numerous dots carved in very irregular horizontal lines. Some of these have been painted white. Apparently the paintings were made in strips at sundry levels, advantage being taken of the irregularities in the rock. There are, however, many isolated and unrelated figures.

Because of the narrowness of the platform it was impossible to copy all the designs, but all those of most importance are shown. A few of the reproductions reveal some distortion because of the angle from which they were copied.

The first group at the bottom of the left end consists of dots which, because of their crudity and

much weathering, appear to be the oldest. They occupy an area about 3 m by 3 m.

Above this band of dots there are, two heads, that to the right clearly being a representation of Tlaloc.

To the left and above there is an important group of three persons representing a scene. A man, wearing a low headdress like an *amacalli* (bark-cloth hat) with two quetzal feathers, carries the ceremonial rattle in one hand. A woman is seated before him with two spots on her cheek, clearly facial decoration. Below her is the third figure with face painted with a vertical line behind his eye.

This scene appears to continue in another group which is not in line, owing to the irregular surface of the rock. There are three principal figures here. The first and second carry an *amapamitl* (stick with two strips of paper), the first wearing a sort of three-pointed crown very similar to that, which Tlaloc sometimes wears. He has a crescentic mark on his face. The third figure is a man wearing the mask of a bird.

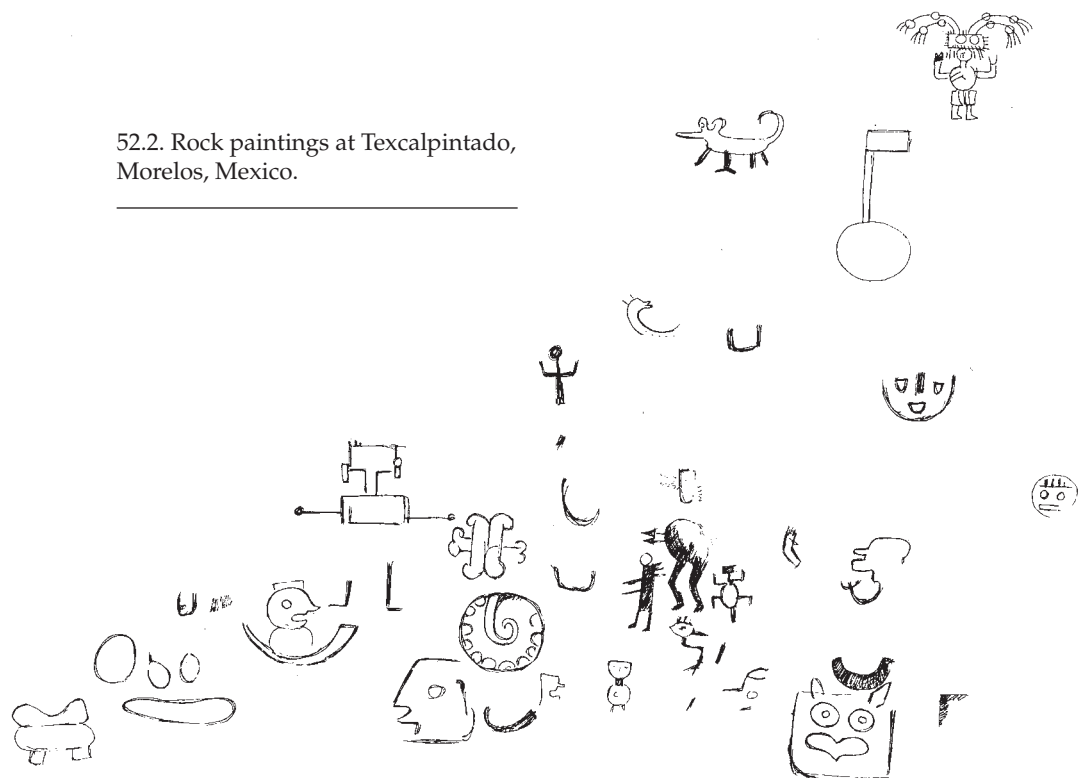
Higher still (and there is consequent distortion in the copy) there is a man wearing the mask of some wild animal. At his feet is a small human figure carrying a jar on his head.

In the center of the area there are a number of figures, of which the most important is that of a man carrying a rattle and wearing a headdress which also is probably an *amacalli*. South of this are to be seen crossed bones very similar to those in Mixtec codices, the head of an owl reminiscent of those on the stelae of Monte Alban, a warrior with a shield and



52.1. Rock paintings at Texcalpintado, Morelos, Mexico.

52.2. Rock paintings at Texcalpintado, Morelos, Mexico.



two arrows, and another face which might represent Ehecatl.

The last group, at the top of the south end, appears to be the most recent because the white paint is brighter. It consists of a circle with a banner on top, an animal, and a woman. The animal, which is to the left, has a very long snout; the woman, to the right, has a very elaborate headdress, and carries in her right hand two objects like ears of corn.

A circle with a banner above it is the glyph for Hueyapan in the Mendoza and other codices.

Because of the sundry styles, from the simplest and most conventionalized to those close to realism, it is probable that these pictures are the products of diverse groups which utilized this rock at different periods.

The crossed bones and the owl represent southern influences, Mixtec and Zapotec respectively. There are several Tlaloc heads and Tlaloc symbols and paraphernalia, such as the jug and the *amapamitl*. The figure wearing the mask of the wild animal might represent Tepeyolotli or Huehucoyotl, since both are shown in the codices seated and with a little man at their feet, as in the petroglyphs. The rattles suggest the Xipe cult, although these are also carried by various deities of the soil. The last figure described might be the goddess of maize. There is also a glyph of Venus, and numerous symbols of sacrifice, such as banners and crossed bones.

The drawing was made by Mr. Barlow, whose advice I have also sought on the interpretation of some of the figures.

INSTITUTO NACIONAL DE ANTROPOLOGIA
MEXICO, D. F.

A Pyrite Mirror from Queretaro, Mexico

Gordon F. Ekholm

The pyrite mirror described herein holds considerable interest because of the technique of manufacture and the nature of the carved design on its reverse side (Fig. 53.1). It was acquired by the American Museum of Natural History (Cat. no. 30.1-618) in 1931 along with a small collection of other objects. Information as to its exact place of origin is lacking, but we can rely with some certainty on the testimony of the collector that it was found in an excavation at an archaeological site near the town of Tequiacuapan in the southeastern portion of the state of Queretaro.

The mirror is a round plaque, 15 cm in diameter and 7 mm in thickness at the center. The reflecting surface is a consolidated mass of small pyrite crystals approximately 1 mm in size, whereas the back is a hard and fine-grained black slate that bears a carved design. A particularly interesting feature is the fact that, contrary to most disc mirrors from the New World, the pyrite surface is not composed of a mosaic cemented on a stone base. The entire object is cut from a single piece of material, the slate and the pyrite being naturally juxtaposed layers. Supposedly a block of material was found which was composed in part of slate and in part of pyrite, and this was cut to form a disc with the different substances on its two sides.

The slate and pyrite layers are quite distinctive materials, differing in color and texture, and are divided sharply in a generally straight line to be seen running around the edge of the plaques. The two substances adhere tightly except at one place on the edge where they have become slightly separated.

The whole gives the appearance of two separate plaques skillfully smoothed and cemented together, but such would have been an almost impossible feat without the use of modern tools. That this could not have been the method of manufacture is further confirmed by the fact that the line of puncture is slightly wavy, indicating, apparently, that such was the surface of the original slate mass before the pyrite was deposited against it. The slate layer varies from 2 to 3 mm in thickness; the pyrite layer from 3 to 5 mm.

The principal features of the disc can be seen in the illustration. There are twenty holes near the periphery, which, on the mirror side, are definitely triangular but on the reverse side approach circular form. There are also two pairs of biconically drilled holes, supposedly for the attachment of the mirror by the use of cords. They are strangely placed diagonally to the axes of the design. The edge of the reverse or decorated side is evenly beveled; there is a lesser notched beveling as the mirror side. The pyrite surface is slightly convex, with most of the curvature near the edges, the central area being relatively flat. The central area has a higher polish than have the portions near the edge, but this seems to be largely a matter of better preservation. Because of its slight disintegration and because it is partially covered with a brown stain, the mirror gives no reflection at the present time.

The reverse or slate surface, which is flat and smooth, bears an incised design. The carving is somewhat crude, done by a hand not entirely under control, as seen in the irregular curves and the places



53.1. Pyrite mirror from Queretaro, Mexico: (a) reverse or slate side; (b) pyrite or mirror surface.

where the tool has slipped. There is a lack of finish, for the tool-marks in the cut-away areas have not been smoothed down. It will be noted also that the design is not well adjusted to the circle of perfora-

tions, which were probably made after the carving of the surface had been completed.

The design shows two individuals, apparently male and female, facing each other and standing on a decorated platform. They are holding between them what appears to be a pottery vessel from which either a plant or conventionalized smoke emerges. Both figures have elaborate headdresses. Between and beside the two figures, as though forming a background, are two double scrolls characteristic of the design called "Totonac." It is the kind of scroll-work that is common, for instance, to many of the decorated stone yokes and is used profusely on the walls of the ball court at Tajin.

Our mirror, having been found in the state of Queretaro, is an interesting occurrence of this "Totonac" element farther to the northwest than any previously noted, but another comparison may be mentioned. The carved design on our disc closely resembles that on another mirror found by A. V. Kidder in a tomb of the Esperanza phase at Kaminaljuyu in highland Guatemala. Illustrations of it will appear in his forthcoming report on this site, wherein the similarity of its design to that on our piece from Queretaro may be observed. For the time being, however, I wish to point out that the carving on the Kaminaljuyu mirror also has two facing figures with a "plant" emerging from a jar between them and with elaborate ornamentation in the so-called "Totonac" motif. The carving is likewise done in a black slate, but the mirror surface is formed in the more usual manner by a mosaic incrustation of pyrite.

Among the other objects in the collection to which the Queretaro mirror belongs is a cylindrical tripod vessel of the form common to Period III at Teotihuacan. We have no information as to the possible association of these two pieces, but supposedly they came from the same site. They certainly could have been associated because the similar mirror from Kaminaljuyu is from the Esperanza phase, definitely contemporary with the Teotihuacan III horizon.

As far as I am aware, mirrors of this kind, formed from naturally cemented layers of slate and pyrite, have not been described heretofore, although Dr. Kidder informs me that there are others in existence in the Museo Nacional of Mexico. They are interesting technologically, indicating an unusual cleverness in the selection and use of materials.

AMERICAN MUSEUM OF NATURAL HISTORY
NEW YORK

Informe sobre la existencia de jugadores de pelota mayas en la cerámica escultórica de Jaina

Salvador Toscano

Durante la última visita que J. Eric S. Thompson realizara a México, tuve oportunidad de informarle de la existencia de dos figurillas de barro, procedentes de la Isla de Jaina, Campeche, representado jugadores de pelota, informe que venía a completar su noticia sobre un jugador de pelota maya modelado en un silbato encontrado en Quintana Roo. Como al Sr. Thompson le pareciera de interés un informe de esta naturaleza para las *Notes on Middle American Archaeology and Ethnology* de la Institución Carnegie, me invitó a que las describiera y reprodujera en las mencionadas *Notes*.

En efecto, la presencia de jugadores de pelota en relieves mayas fué por vez primera advertida por Blom. El tema ha sido más tarde suficientemente esalarecido por Thompson, quien llegó hasta a describir las famosas estelas pipiles de Santa María Cotzumalhuapa, Guatemala, como, escenas religiosas en conexión con el juego y el frontón al que debieron exornar. Igualmente el Sr. Mario Mariscal ha tocado el tema de las representaciones en bajorrelieves de jugadores de pelota. Ahora, por lo mismo, no sólo conocemos las representaciones pictográficas (aztecas y mixtecas) de los códices, sino lápidas, altares marcadores, etc., con representaciones en bajorrelieve de jugadores, tanto en el área maya como en Tula. Más aún, la descripción de lee estelas pipiles como pertenecientes a un frontón y por lo mismo en conexión con las creencias religiosas en relación con el juego de pelota, puede ampliarse hasta la zona arqueológica de El Tajín, Veracruz, donde las esquinas del juego de pelota se esculpi-

eron con ritos fúnebres relacionados con el culto del juego, ya que como sabemos por el *Popol Vuh*, aquél aparece en conexión con el dios de las subsuelos y de la muerte.

Ahora bien, nuestro radio de conocimientos en relación con el juego de pelota vino a aumentarlo la presencia de jugadores de pelota modelados en arcilla (Thompson, Note 25). Como quien esto escribe tenía ya noticia de otras dos piezas, el Sr. Thompson juzgó de interés se les conociera y reprodujera.

La primera figurilla precede de uno de los entierros de Jaina, Campeche, y se encuentra en el Museo Arqueológico de aquella ciudad. Fué descubierta por Miguel Ángel Fernández, sin que hasta ahora este arqueólogo mexicano nos haya descrito las condiciones del hallazgo. Sin embargo, el hecho de que en aquel santuario sembrado de sepulcros, aparezcan con tal abundancia las más preciosas representaciones escultóricas naturalistas, no sólo nos revela la importancia artística de su alfarería sino el que dichas representaciones realistas, con rasgos de individualización, pueden representar en las tumbas la réplica del muerto (sacerdote, cacique, jugador de pelota, guerrero, mujer noble, etc.) como un acompañante mágico. La figura de jugador a la que venimos refiriendo (Fig. 54.1a) no se encuentra, desgraciadamente, completa; está modelada en la arcilla arenosa y blanquizca de Jaina, sin bruñido, pero acabada con pintura aplicada al temple, como se observa en la rodillera que está coloreada de un precioso azul turquesa; el personaje lleva la



a



b

54.1. Figurilla maya de un jugador de pelota, Jaina, Campeche: **(a)** figurilla maya de un jugador de pelota, Jaina, Campeche; Museo Arqueológico, Etnográfico e Histórico de Campeche; **(b)** figurilla maya de un a jugador de pelota, Jaina, Campeche; Colección particular del Lic. Benito Coquet, México, D.F.

clásica deformación craneana de los mayas y viste los elementos distintivos de los jugadores, como el pesado cinturón sobre los que Thompson (1941b) ha llamado recientemente la atención.

La otra figurilla maya de un jugador de pelota (Fig. 54.1b) se encuentra en una colección particular de la ciudad de México, la del Lic. Benito Coquet, quien la adquirió en Mérida, donde se le informó su lugar de procedencia, la tantas veces mencionada Jaina, en Campeche. El jugador en este caso fué modelado en la posición clásica que vemos en

los relieves, por ejemplo, el del altar de Chinkultik, Chiapas, del Museo Nacional de México, ya que aparece arrondillado y llevando una pelota en la mano que, como en las estelas de Cotzumalhuapa, está grabada con un rostro humano. Como el ejemplar anteriormente descrito, pertenece indudablemente al período cerámico *Tepeu*. Lleva el clásico corselete, rodilleras, cinturón y guanteletes, pero el barro con que fué modelado se diferencia del ejemplar descrito en su color anaranjado y en la superior calidad del trabajo escultórico.

INSTITUTO DE INVESTIGACIONES ESTÉTICAS
MEXICO, D.F.

Un sello cilíndrico con barras y puntos

José García Payón

Encontrándome de paso en la ciudad de Jalapa, Veracruz, aproveché mi corta estancia para efectuar una visita a mi buen amigo al Sr. Ingeniero Cástulo Villaseñor, gran amigo de los arqueólogos y entusiasta coleccionador de nuestras antigüedades, que son la misma atención de siempre me mostró ufano sus últimas adquisiciones de piezas arqueológicas. Dicho señor es propietario de una bonita colección, de la que algunas piezas, las principales, son bien conocidas por los arqueólogos y del público amante de esta ciencia, por haber sido expuesta por mí, con la anuencia de su dueño, en el provisional Museo Arqueológico Veracruzano que con motivo de la reunión del VI Congreso Nacional de Historia se verificó en Jalapa durante el mes de septiembre de 1943, en el edificio de la Escuela Preparatoria.

Después de mostrarme varias piezas interesantes, especialmente figuritas sonrientes y otras, atraído mi atención un sello cilíndrico de barro rojo templado con arena de un tipo de decorado desconocido, y recordando el especial interés que el compañero y amigo Sr. Jorge Enciso tiene por estos artefactos, por estar preparando una monografía sobre los sellos de México prehispánica, pedí al Sr. Ingeniero me facilitara la pieza para obtener un dibujo; satisfecha mi petición, traje la pieza a mi oficina donde sin mayor atención la entregué al dibujante para que me sacara una copia exacta con el desarrollo completo del motivo ornamental.

Al recibir el dibujo y fijarme en él, me llamó la atención la singularidad de la pieza que claramente demuestra que se trata de un sello cilíndrico cuyo

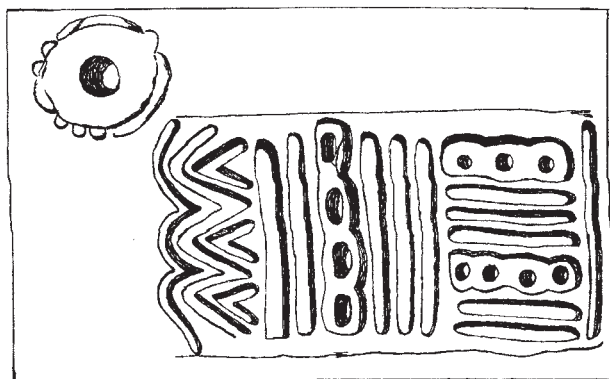
motivo ornamental parece representar una fecha maya de la cultura de La Venta.

Suponiendo que se trata de una fecha maya, no se podía emprender el cálculo del mismo por otro número que no fuera el 10° baktun y girando la pieza se obtenía la siguiente correlación baktun 10; katun 19, tun 18, uinal 14 y kin 5, que según la correlación Goodman, Martínez Hernández, Thompson, corresponde a 13 Chicchan, 18 chen y al año de 1225.

Según los datos que tuvo la bondad de proporcionarme el Ing. Cástulo Villaseñor al obsequiarme la pieza, que a mi vez gustosamente cedo al Museo del Estado, fué encontrada en el patio de una casa de San Andrés Tuxtla, Veracruz.

Bajo el punto de vista arqueológico, esta pieza viene a demostrarnos que el uso de sellos tanto cilíndricos como planos era una costumbre bastante antigua y sostiene lo que pude corroborar en mis exploraciones en Zempoala, Veracruz, que el principio del empleo de estos artefactos fué anterior a la fundación de esta población arqueológica, que, como dije en otro escrito "Estado actual de las exploraciones de la Zona Arqueológica de Zempoala, Ver.," Archivo del I.N.A.H.) es contemporánea del primer período cholulteco.

Este hallazgo nos lleva a preguntar ¿por qué los indígenas pusieron esta fecha en un sello cilíndrico? Sabemos que éstos eran utilizados para estampar telas y posiblemente cerámicas, por lo tanto sirvió para recordar y conmemorar una fecha de significación por lo que parece que no fuera olvidada, fué



a



b

55.1. Sello cilíndrico con barras y puntos: (a) corte y desarrollo del sello cilíndrico; (b) fotografía en tamaño natural del sello cilíndrico con fecha maya.

posiblemente empleada en gran escala, estampándola en telas qua usaban.

Es de desearse que en futuros trabajos arqueológicos en la región de San Andrés Tuxtla, pudieran encontrarse mayores datos acerca de esta serie inicial.

Jalapa-Enríquez
Veracruz

[The possibility should not be overlooked that the designer of this seal borrowed the motif of bars and dots, as represented on stelae of La Venta culture in this area, purely as a decorative element. In that case the arrangement would have no chronological value. The general resemblance to an Initial Series is enhanced in the vertical position, but such an arrangement places the dots to the right of the bars, a practice taboo in Maya writing. On the other hand, far greater latitude was permitted in recording numbers in Zapotec writing, and the same may well be true of the inscriptions of La Venta style. It should also be remembered that by 10.19.18.14.5 the Maya no longer used the Initial Series. Editor.]

The Inscription on the Altar of Zoomorph O, Quirigua

J. Eric S. Thompson

The inscription on the altar of Zoomorph O, Quirigua, is very hard to decipher because of erosion, but also because of other difficulties. Carelessness on the part of the composers of the original text as well as unwonted urge for brevity, manifested in the suppression of month signs, make the translation far from easy. Morley (1938:5:185–196) has offered an interpretation, in which for the most part he expresses little confidence.

Messrs. Morris and Strömsvik made of this monument a cast which was subsequently presented by Carnegie Institution of Washington to the United States National Museum. Recently, through the kindness of Dr. Frank Setzler, photographs of the text were specially made from this cast, and presented to Carnegie Institution of Washington. These photographs, made in artificial light, a few blocks of glyphs to each plate, bring out many details (Figs. 56.1–5).

It is now abundantly clear that L4 is the month glyph. The coefficient is not a bar, as Morley had supposed, but a finger, as used occasionally by the Maya to express the number one. The nail of the finger is very clear. The month sign is the head variant of Kankin with the well-known *te* element above it. It is therefore clear that the Initial Series is 9.17.14.16.18 9 Etz'nab 1 Kankin. Morley had suspected that this was the date actually recorded, but because of his failure to identify the month sign, sad for other reasons, he placed three query marks after the reading.

Morley reads J1 as recording a moon age of 5 days. The photograph shows clearly that the element

which Morley took to be a numerical bar is a reversed count bracket. There is no coefficient. The moon age of this date is, therefore, 50 OD. Zoomorph G gives the moon age of 9.17.15.0.0 as 5C 23D. As the latter date is 22 days later than the former, the agreement is close. In fact, the combination of glyphs on Altar O may possibly mean 1D (just as C without coefficient is to be read as 1C). In that case the interval between the two lunar dates would be precisely 22 days.

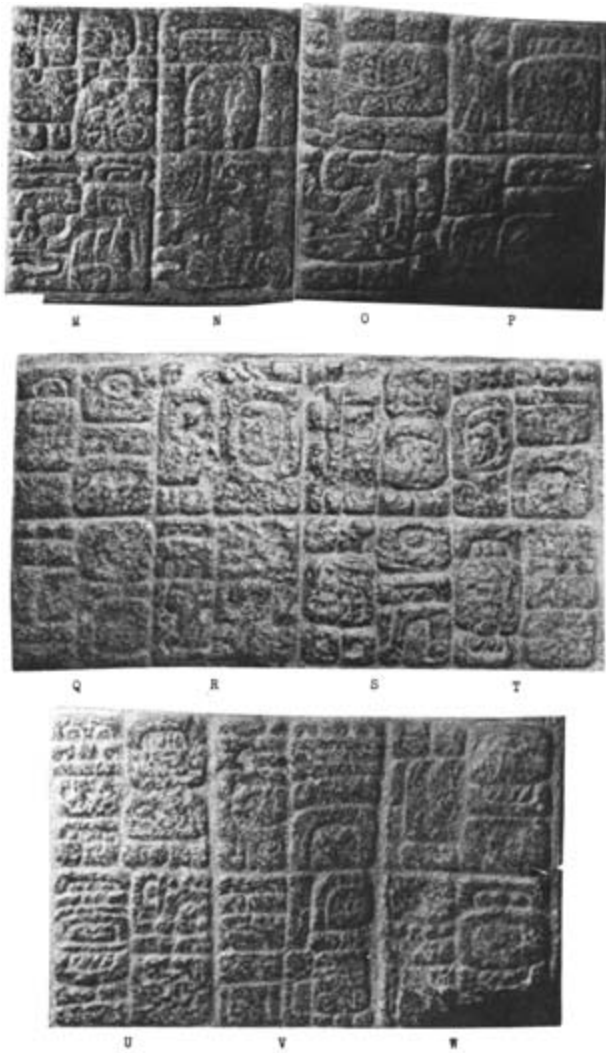
In R1a there is a moon sign with a coefficient of 2. There is ample precedent at Yaxchilan, Piedras Negras, Balakbal, and Palenque for reading this as a distance number of 22 days. At R1b-Q2 there is recorded "5 Ahau 3 Muan, count of 5 tuns lacking," the only questionable matter being the glyph for Muan. Morley reads the first glyph as 5 Chuen and what I take to be 3 Muan, as 13 baktuns. This disagreement well illustrates the difficulties of this text. The arrangement is:

I.S.	9.17.14.16.16	9 Etz'nab 1 Kankin
R1a	1.2	Moon sign with coefficient of 2. Add
R1-Q2	9.17.15.0.0	5 Ahau 3 Muan. Count of 5 tuns lacking

There is a Secondary Series at S1a which appears to read 11–13 uinals, 7–9 kins. It may be followed at S1b by the posterior date indicator. At T1a there is a date 4 Chicchan or 4 Oc, 8 Uo or 8 Zip. Morley reads this as 4 Ahau 8 Cumku. For reasons which



56.1. Altar of Zoomorph O, Quirigua, text blocks A to L. (Courtesy of the U.S. National Museum.)



56.2. Altar of Zoomorph O, Quirigua, text blocks M to W. (Courtesy of the U.S. National Museum.)

will appear, I interpret this Calendar Round date as 4 Chicchan 8 Zip.

At U1a there is a glyph which Morley translates as "End of Katun 6," but which is surely the form of the kin sign consisting of a count bracket over one or two inverted Ahau's, and with the earth symbol at the bottom (cf. Glyph I1 on Stela C, Quirigua). This identification is confirmed by the presence in the adjacent block of the posterior date indicator. This misidentification leads Morley to place the subsequent dates some 200 years in the past. The coefficient looks best as 6, but must be 8, as we shall see.

At V1 there is a date 11-13 ? 16 Zip (conceivably Uo). This part of the text can best be rendered as follows:

R-1-Q2	9.17.15.0.0	5 Ahau 3 Muan. Count of 5 tuns lacking.
S1	11.7	Posterior date indicator. Should be anterior
	(9.17.14.6.13	12 Ben 16 Zip
T1	9.17.14.6.5	4 Chicchan 8 Zip
U1	8	Posterior date indicator
V1	9.17.14.6.13	12 Ben 16 Zip

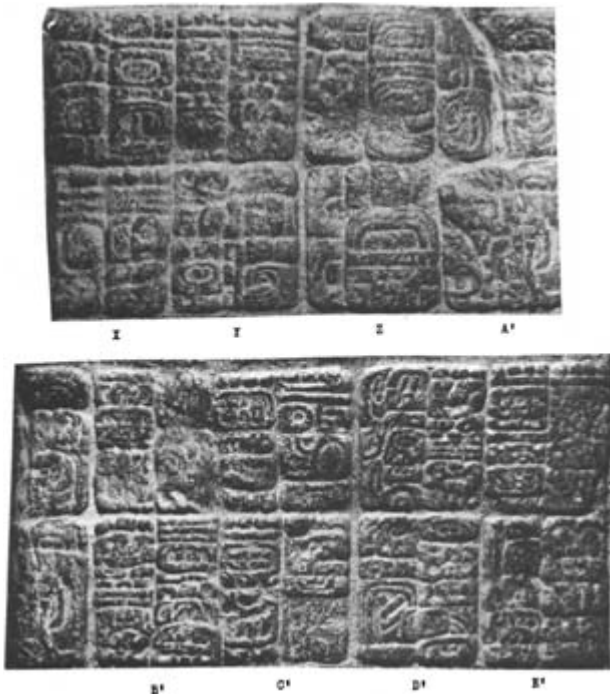
At X1 5 Ahau is repeated, this time with the *ti* prefix, and is followed by what is probably a record of 5 tuns. A Secondary Series of 1 or 2 katuns, 9 or 7 tuns (7 is expressed as a bar, 2 dots and 2 crescents at S1), 6–8 uinals, and 7 kins occupies Y1, and is followed in X2 by an obliterated day sign with a coefficient which looks best as 11. At B'1a u.h. there is a katun sign with a coefficient which, at first glance, looks like a bar, but which is almost surely the finger representing the number one, for the indentation representing the second joint is visible on the lower edge. This must represent a distance number, for it is followed by the posterior date indicator. At C'1a u.h. there is a day sign with a coefficient of 4. It is a head in profile with a large round eye, and might be Cimi or Eb.

At B'2 there is another Secondary Series, and this seems to record 1 katun, 15 tuns, 11–13 uinals, and 1–2 kins. This, in turn, is followed in C'2 by a date which is almost without doubt 9 Lamat 1 Zec, as Morley has demonstrated. There is another distance number of 9.17.1 at D'b 1.h. and E'a u.h. and at E'1b u.h. and E'1a u.h. 9 Manik 5 Yaxkin stands forth with unexpected clarity.

This conglomeration of numbers and glyphs can best be arranged as follows:

V1	9.17.14.6.13	12 Ben 16 Zip
Y1	2.7.10.7	(written 2.7.8.7?)
X2	9.15.6.14.6	6 CimiB'1 (4 Zec)
B'1	1.(0.0.0)	Posterior date indicator
C'1a u.h.	9.16.6.14.6	4 Cimi (9 Cumhu)
C'1a 1.h.		Count of a katun?
B'2	1.5.11.2	(written 1.15.11 2 or 1)
C'2a	9.17.12.7.8	9 Lamat 1 Zec
D'1b-E'1a u.h.	4.17.1	(written 9.17.1)
E'1b u.h., a 1.h	9.17.7.8.7	9 Manik 5 Yaxkin

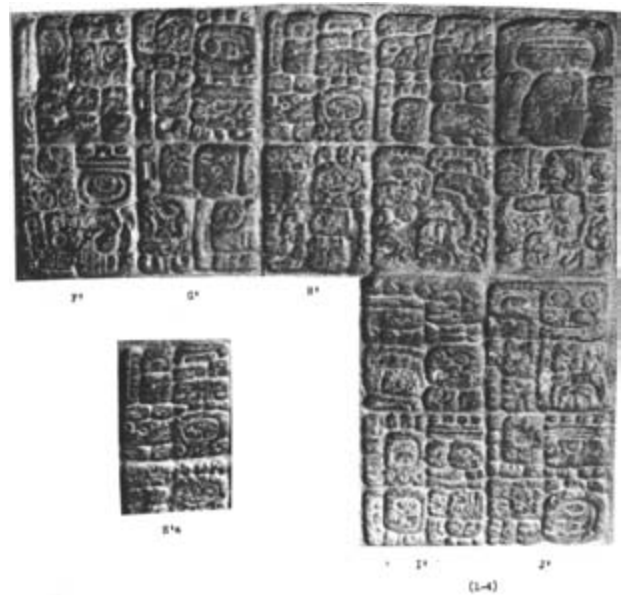
Unfortunately the distance numbers are such that whatever reconstruction is made, there must be errors. In that suggested above, one must assume the following mistakes: 8 uinals instead of 10 at Y1;



56.3. Altar of Zoomorph O, Quirigua, text blocks X to E'.
(Courtesy of the U.S. National Museum.)

15 tuns instead of 5 at B'2, and 9 tuns instead of 4 at E'1a (this last error is accepted also by Morley). One must, of course, avoid attributing errors to the Maya astronomer or sculptor until all possibilities have been exhausted along other lines. In this case, I think, there can be little doubt that the text has been correctly transcribed for the following reasons:

1. 6 Cimi 4 Zec was of great importance at Quirigua, and is repeated on several monuments, including Zoomorph G and the altar of Zoomorph P, the texts of which closely parallel that of the monument under discussion.
2. The glyph with coefficient of 19 which follows the assumed 6 Cimi 4 Zec at X2b, and which reappears immediately after the katun anniversary at C'1a, seems to be peculiarly associated with 6 Cimi 4 Zec. It is in all probability the same as that which follows that Calendar Round date at A13 on Stela E and at B12a on Stela F. Maudslay in both cases shows the coefficient as 18, but on the cast of Stela 8 there seem to be four dots and three bars. The prefix also is incorrectly drawn. On Stela F, on the other hand, the coefficient is clearly 18.
3. The recording of the katun anniversary of a date of the importance of 6 Cimi 4 Zec is in complete accord with Maya practice.
4. The texts at Quirigua, particularly of those monuments erected after 9.17.10.0.0, are carelessly written and abound with errors.



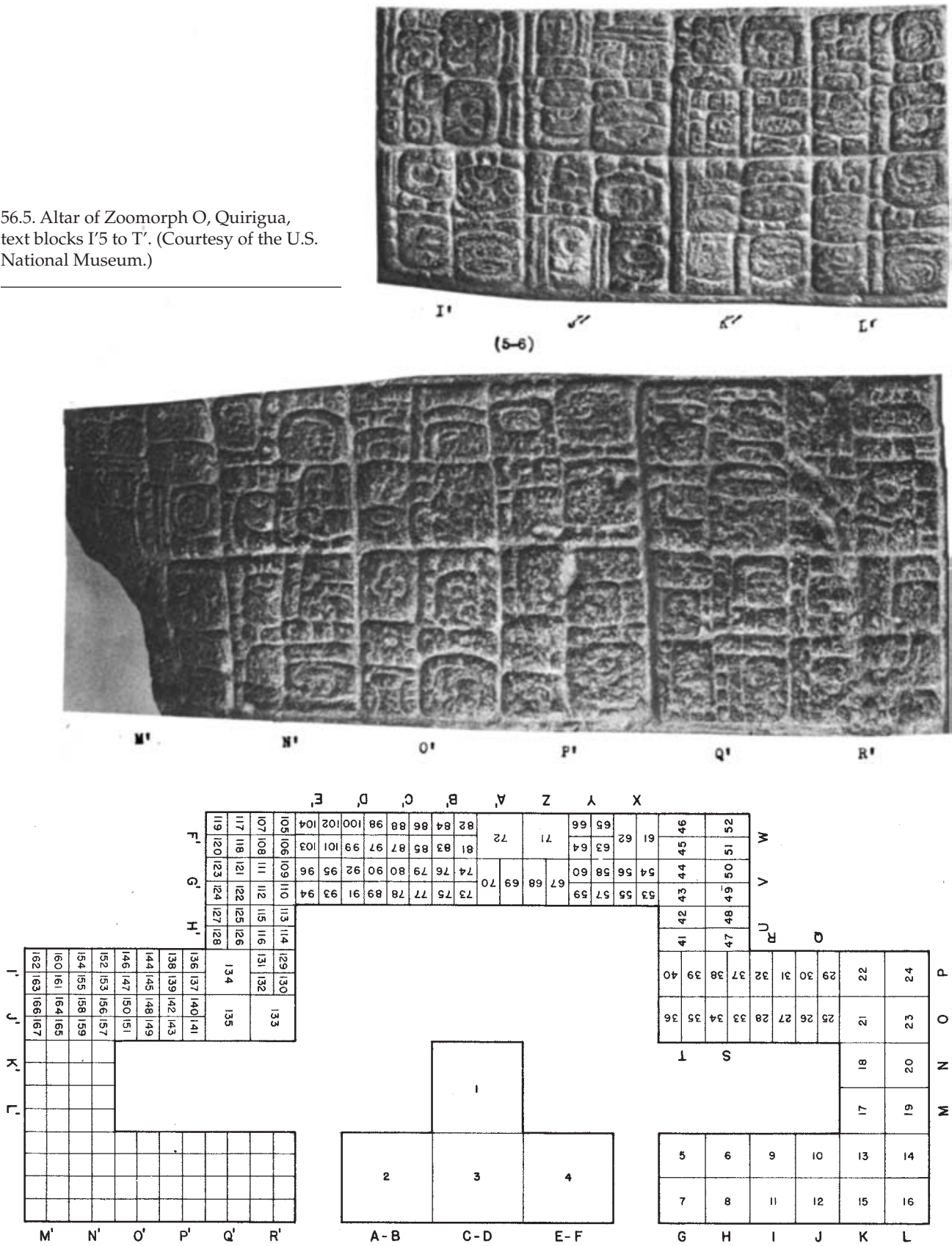
56.4. Altar of Zoomorph O, Quirigua, text blocks F' to J'4.
(Courtesy of the U.S. National Museum.)

It is impossible to connect the dates without making corrections. The above arrangement combines the most logical interpretation of the text with a minimal number of changes.

The most serious objection to the reading is that the coefficient of the day sign read as 6 Cimi looks very much like 11, and also looks like 11 on the Altar of Zoomorph P.

At the remaining dates on the monument I can only guess. At G'1b there appears to be a record of 4 Muluc, and the following distance number would take the count forward to 4 Cib, the details of which are fairly clear in the extra photo. After this may follow 12 Kan and at H'2 u.h. a distance number of 2 days, expressed by an inverted Ahau with coefficient of 2 and the terminal date 1 Cimi (interior resembles Cimi, an identification confirmed by calculation). At J'3a u.h. there appears to be a distance number of 14 kins. This is followed at J'4a u.h. by 3 or 2 *Ahau*. Calculation indicates that the coefficient should be 2. Next there comes a distance number written as 19 uinals 4 kins. As Morley has pointed out, 19 uinals is an impossibility. He suggests changing it to read 14 uinals; I take it as 18 uinals. At J'4b l.h. there is a very clear 2 Kan (Morley reads it as 1 Kan). The next recognizable glyphs form a distance number of 4 tuns, 2 uinals, and 15 kips. This is immediately followed by 1 or 2 Ahau, then what is apparently the posterior date indicator, and then a day sign with a coefficient of 2 and what is presumably a month sign (best as Muan or Xul) with a coefficient of 8. From somewhat similar examples on other monuments,

56.5. Altar of Zoomorph O, Quirigua,
text blocks I'5 to T'. (Courtesy of the U.S.
National Museum.)



56.6. Altar of Zoomorph O, Quirigua. Arrangement of text and suggested order of reading as far as J'6.

one can suppose that the distance number connects the two day signs.

There are a number of other glyphs with coefficients. Most of them are too eroded to decipher, but they might read 5 Ahau, 11 Ahau, 3 Ahau, and correspond to 9.17.15.0.0, 9.18.0.0.0, and 9.18.5.0.0.

The whole text, as far as it can be deciphered, appears to read as follows:

A1-L4	9.17.14.16.18	9 Etz'nab 1 Kankin. Moon 5C OD.
R1a	1.2	Moon sign
R1-Q2	9.17.15.0.0	5 Ahau 3 Muan. Count of 5 tuns lacking
S1	11.7	Posterior (for anterior) date indicator
	(9.17.14.6.13)	12 Ben 16 Zip
T1	9.17.14.6.5	4 Chicchan 8 Zip
U1	8	Inverted Ahau variant. Posterior D.I.
V1	9.17.14.6.13	12 Ben 16 Zip
Y1	2.7.10.7	(written 2.7.8.7?)
X2	9.15.6.14.6	6 Cimi (4 Zec). Day coef- ficient best as 11
B'1	1.(0.0.0)	Posterior D.I.
C'1a u.h.	9.16.6.14.6	4 Cimi (9 Cumhu)
C'1a l.h.		Count of a katun?
B'2	1.5.11.2	(written 1.15.11.2 or 1)
C'2a	9.17.12.7.8	9 Lamat 1 Zec
D'1b-E'1a u.h.	4.17.1	(written 9.17.1)
E'1b u.h.-a l.h.	9.17.7.8.7	9 Manik 5 Yaxkin
	(12.2)	
G'1b u.h.	(9.17.8.2.9)	4 Muluc (2 Pop)?
G'1 l.h.	12.7	
H'1b l.h.	(9.17.8.14.16)	4 Cib (9 Mac)?
	(8)	
F'2b u.h.	(9.17.8.15.4)	12 Kan (17 Mac)?
H'2a u.h.	2	
H'2b u.h.	(9.17.8.15.6)	1 Cimi (19 Mac)?
I'3a u.h.	14	?
I'4a u.h.	(9.17.8.16.0)	2 Ahau (13 Kankin)?
J'4	1.0.4	(written 19.4) Posterior D.I.
J'4 l.h.	(9.17.9.16.4)	2 Kan (12 Kankin)?
I'6b l.h.	(9.17.8.16.0)	2 Ahau (13 Kankin)?
I'6a, b, u.h.	4.2.15	
J'6a u.h.		Posterior D.I.
J'6b u.h.	(9.17.13.0.15)	2 Men (8 Ceh)?
K'2b l.h.	(9.17.15.0.0)	2 Ahau (3 Muan)?
M'1b l.h.	(9.18.0.0.0)	11 Ahau (18 Mac)?

May I again emphasize that the positions suggested for the dates from G'1 to the end of the text are no more than guesses. They are given principally as suggestions for future attempts to decipher this part of the text.

The decipherments of the first half of the text bring out a number of interesting points:

1. A head variant of the Initial Series Introductory Glyph corresponding to Kankin.
2. Afresh example of the use of the moon glyph with the value of 20.
3. One certain and one possible use of the inverted Ahau variant of the kin sign.
4. One certain and one probable use of the finger as a symbol for one.
5. Another example of the head variant for Kankin.
6. Two indubitable errors (wrong form of Glyph G; record of 19 uinals), and several probable errors in coefficients.
7. Strong evidence for another record of the important date 6 Cimi 4 Zec.
8. An almost certain katun anniversary of 6 Cimi 4 Zec.
9. A new moon age for a certain date.

Archaeological Discovery at Finca Arizona, Guatemala

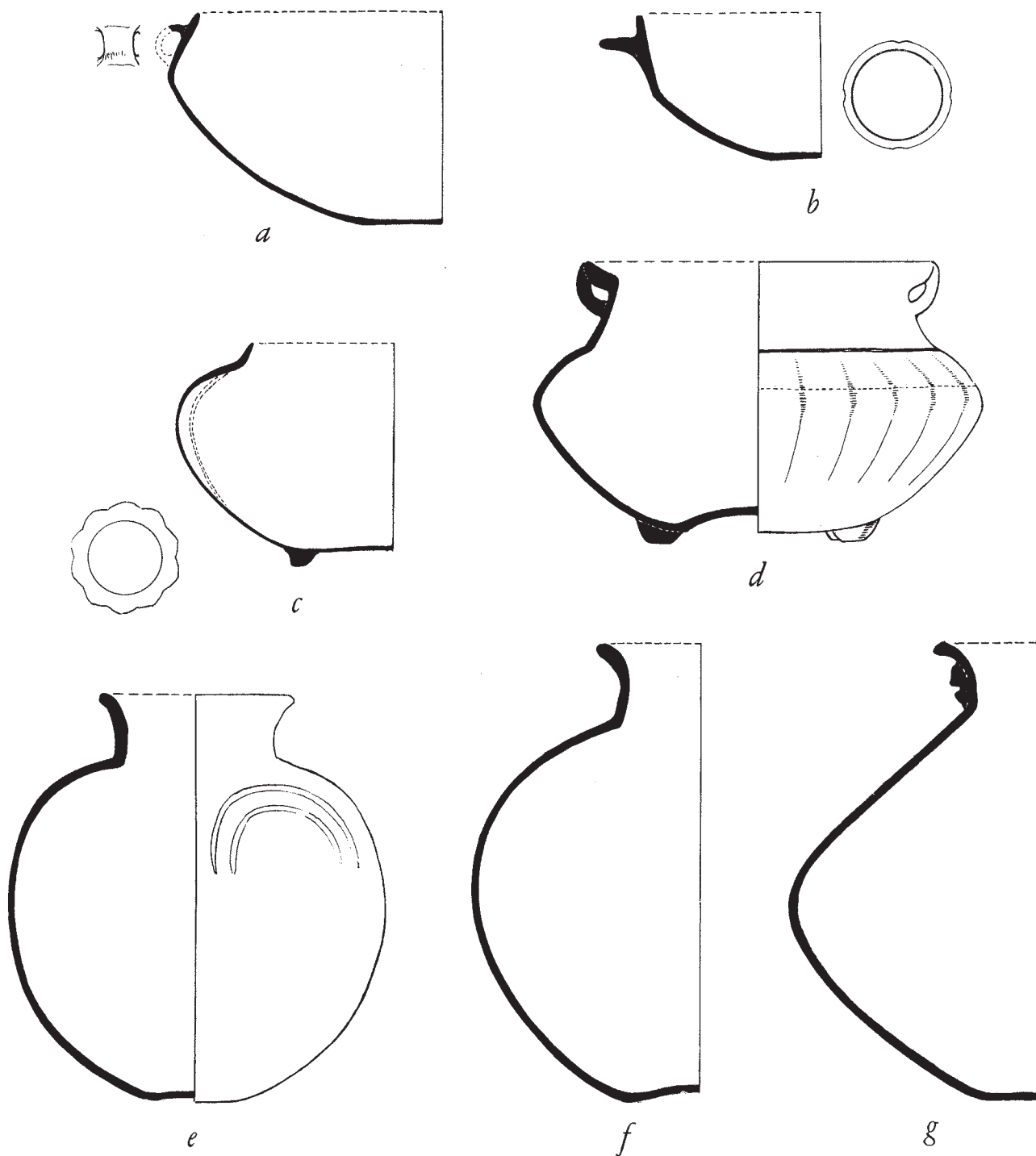
Edwin M. Shook

Many important discoveries in the field of archaeology as well as in other sciences are made by nonprofessionals. So significant are some of these that one often hears wailing and gnashing of teeth by professionals who were not present for the unveiling and therefore were unable to record the exact circumstances surrounding the find. The excavations here reported were made by a layman, Sr. Juan Petrilli, but he, having kept in touch with the work of Carnegie Institution at Kaminaljuyu, realized the importance of careful observation. He had fortunately also been stimulated sufficiently to experiment in his own backyard. In fact, he almost destroyed his own house by excavating the mound supporting it. Archaeology is greatly in debt to Sr. Petrilli, his mother Sra. Rosa V. de Petrilli, and his sister Sra. Martha K. V. de Calvo for the care they exercised in the excavations at Finca Arizona, the preservation of the finds, and their generosity in making the entire collection of specimens available to the Carnegie Institution for study and publication.

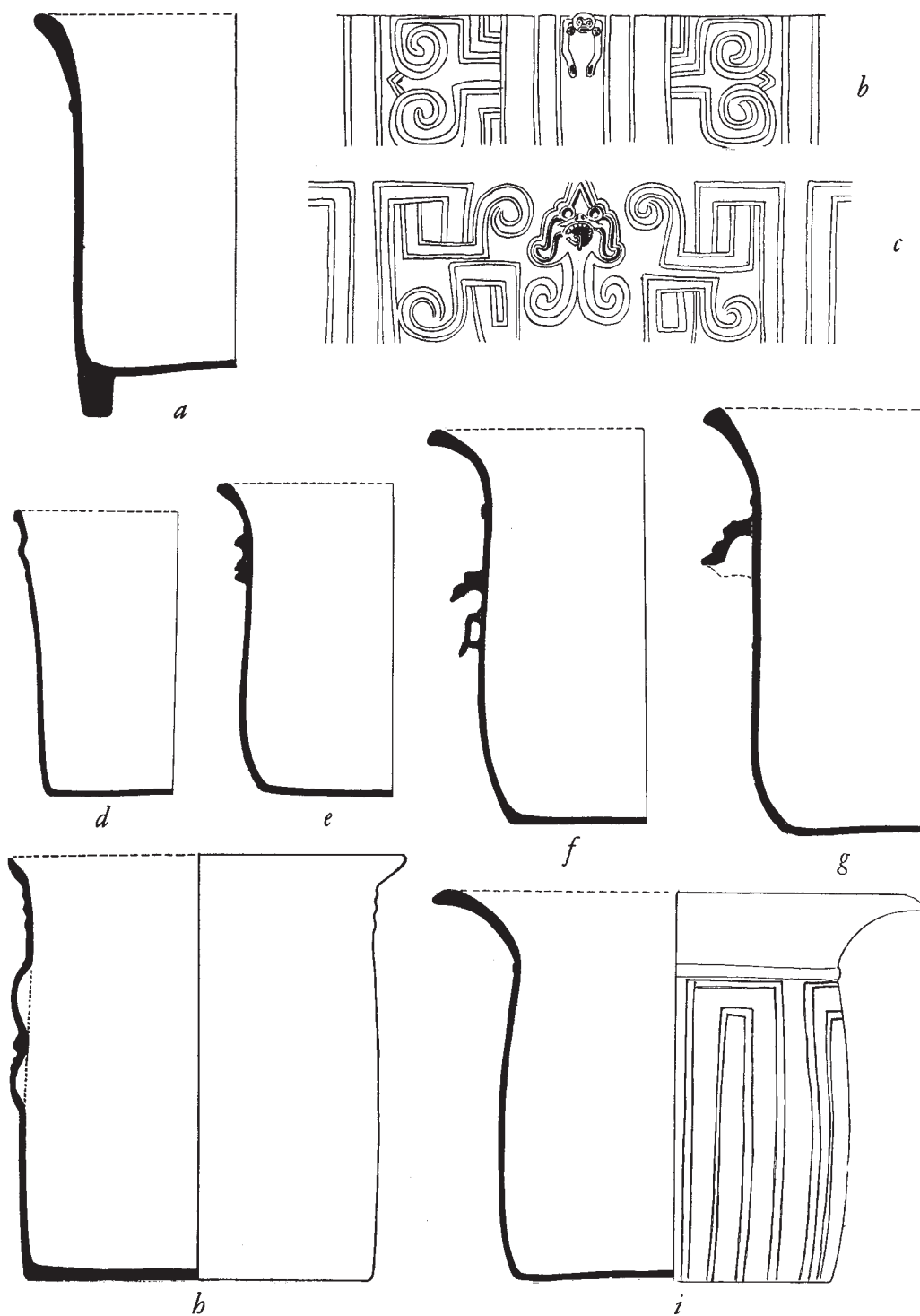
Finca Arizona is a farm on the southern coastal plain of Guatemala, in the Department of Escuintla. It is 5 km north of the port of San Jose, and lies along the east side of the railroad from the port to Guatemala City. The altitude above sea level is 6.70 m. The flat terrain is broken only here and there by washes and streambeds. The nearest permanent river is the large Rio Maria Linda, 10 km to the east, although the bed of an intermittent stream passes through the farm. Freshwater may be obtained from wells no more than 5–6 m deep, even during the driest months.

The Pacific coastal plain of Guatemala, like most of Central America, has two distinct seasons: six months of severely dry weather from about October 15 to May 15, the remaining six months with considerable rainfall. The water table rises during the latter period, and sections of Finca Arizona become swampy. The heaviest precipitation occurs in September, and the farm and much of the coastal plain near the ocean is inundated. The 1942 records of nearby Port San Jose show a rainfall in that year of 78.3 inches, with 76.5 inches in the May 15–October 15 period, and only 1.8 inches during the entire dry season. The heaviest precipitation occurred in September with 22.0 inches or 28 percent of the year's total. Temperature is relatively high throughout the year, the hottest months being March, April, and May. The zone is subject to occasional high wind storms.

The soil in the neighborhood of San Jose is a fertile sandy loam formed from volcanic detritus which formerly supported a heavy growth of tropical timber, such as mahogany, Spanish cedar, balsam, and wild rubber. A large portion of the plain has now been deforested to permit extensive plantings of grass for cattle grazing. This is locally believed to have caused a change of climate, possibly in the past century, with increased temperatures and less rainfall. The shoreline was once much nearer the ancient settlement on Finca Arizona than it is today. In the memory, indeed, of the present inhabitants it has moved outward, because of the huge volume of sediment carried down from the steep slopes of the



57.1. Pottery from Finca Arizona, Guatemala: (a) brown-black bowl, strap handles (painting and description, Fig. 57.4a); (b) black bowl, labial flange with four scallops (painting and description, Fig. 57.4c); (c) Usulután tripod vessel with constricted orifice, gadrooned; base very slightly recurved (painting and description, Fig. 57.4b); (d) Usulután tetrapod vessel with constricted orifice, wide strap handles (painting and description, Fig. 57.4d); very faint gadrooning; base strongly recurved; (e) buff jar; slightly cracked buff slip with orange flushes, from interior base of neck over whole exterior; marks of finishing tool on slip very obvious; polishing cursorily done, leaving long, horizontal dull streaks where tool failed to touch; three sets of two preslip, shallowly grooved, concentric crescents; slightly recurved base unworn; (f) red-on-brown jar, recurved base (painting and description, Fig. 57.4f); (g) orange jar, anthropomorphic; base not successfully flattened as jar sets out of plumb where placed on an even surface (painting and description, Fig. 57.4g). (Scale = 1/4.)



57.2. Pottery from Finca Arizona, Guatemala: (a) black tetrapod cylindrical vessel; base very slightly recurved; feet oval in section (painting and description, Fig. 57.4e); (b) incised and relief decoration of *a* (see also Fig. 57.6b); (c) incised and relief decoration of *f* (see also Fig. 57.6d); (d) orange cylindrical vessel (painting and description, Fig. 57.6a); shallow grooved line on averted rim; upper part of wall pushed out to form a broad, rounded, horizontal molding with appliquéd elements (see painting); (e) dark red-on-red cylindrical vessel (painting and description, Fig. 57.6b; incised and relief decoration, *b* of this figure); (f) dark red-on-red cylindrical vessel (painting and description, Fig. 57.6d; incised and relief decoration, *c* of this figure); (g) dark red-on-red cylindrical vessel (painting and description, Fig. 57.6c); (h) Usulután cylindrical vessel, stuccoed (painting and description, Fig. 57.6e); (i) dark red-on-red cylindrical vessel; the only one of the dark red-on-red pieces without relief decoration (for description, see caption of Fig. 57.6b). (Scale = 1/4.)

57.3 (*facing page*). Pottery from Finca Arizona, Guatemala: (a) Usulután bowl (painting and description, Fig. 57.5a); (b) orange bowl; two shallow, preslip, encircling grooves on exterior below rim; fairly well-polished, uncracked, brownish orange, all over slip; horizontal strokes of tool used in preliminary smoothing left shallow, elongated, depressions which were passed over by the polishing tool and remain as narrow, dull streaks; buff cloud on exterior (Usulután?); base unworn; (c) Usulután vessel, small (painting and description, Fig. 57.5c); base slightly recurved; (d) Usulután bowl; base thickened to produce flat bearing surface; two shallow, preslip, encircling grooves under outcurve of rim; well-polished, very slightly cracked, orange slip over interior and halfway down on exterior; lower part of exterior and base, orange with black fire clouds; finishing-tool marks visible; sets of four vertical, parallel straight lines on interior and exterior walls (cf. Fig. 57.5a); wavy, and therefore more typical of Usulután technique, lines on interior bottom; base unworn; (e) Usulután bowl (painting and description, Fig. 57.5b); two preslip, shallow, encircling grooves on exterior of standing part of wall; (f) Usulután bowl; grooving, as in *e*, is polished; cracked, orange, all-over slip; marks of finishing tool visible; eight sets of five parallel, vertical, straight buff lines on exterior; apparently same on interior, but almost invisible; base very little worn; (g) Usulután bowl; shallow, preslip encircling groove and eleven crescentic grooves on thickened and flatly everted rim (see reduced top view); note annular indentation near outer edge of base; well-polished, considerably cracked, orange, allover slip; sets of four parallel, vertical, straight buff lines on interior and exterior wall (cf. Fig. 5a), wavy lines on interior bottom; buff blotches on exterior (cf. Fig. 5a); base unworn; (h) black bowl; broad labial flange with four equally spaced scallops; upper surface with encircling line and looping line coarsely incised after slipping (see reduced top view); polishing of the uncracked chocolate-brown to black slip, which covers all surfaces, done after incising; black parts of slip iridescent in places; traces of red in incising may be remains of a sizing coat under a now vanished coat of stucco (see captions of Figs. 57.4, 2; 57.6e), but probably pigment rubbed into incising (see caption of Fig. 57.4e); base unworn; (i) buff bowl with restricted orifice; encircling preslip groove just below orifice on exterior; three appliquéd crescentic fillets and a boss on shoulder (see reduced top view); indifferently polished, very slightly cracked, buff slip covers entire vessel except appliquéd elements; periphery of a dark fire-cloud on exterior wall is flushed to orange; recurved base worn; (j) Usulután vessel with restricted orifice; exterior encircled by two preslip, shallow grooves and a broad shallow undulant groove; in the spaces formed by the latter are four bosses and four U-shaped appliquéd fillets in alternating order; cracked, orange, all-over slip, polished on exterior and just over lip on interior; buff blotches on exterior and six sets of five parallel buff lines running from lip to edge of base; interior buff with orange blotches; slightly recurved base a little worn. k. Usulután whistling vessel (painting and description, Fig. 57.5a). (Scale = 1/4.)

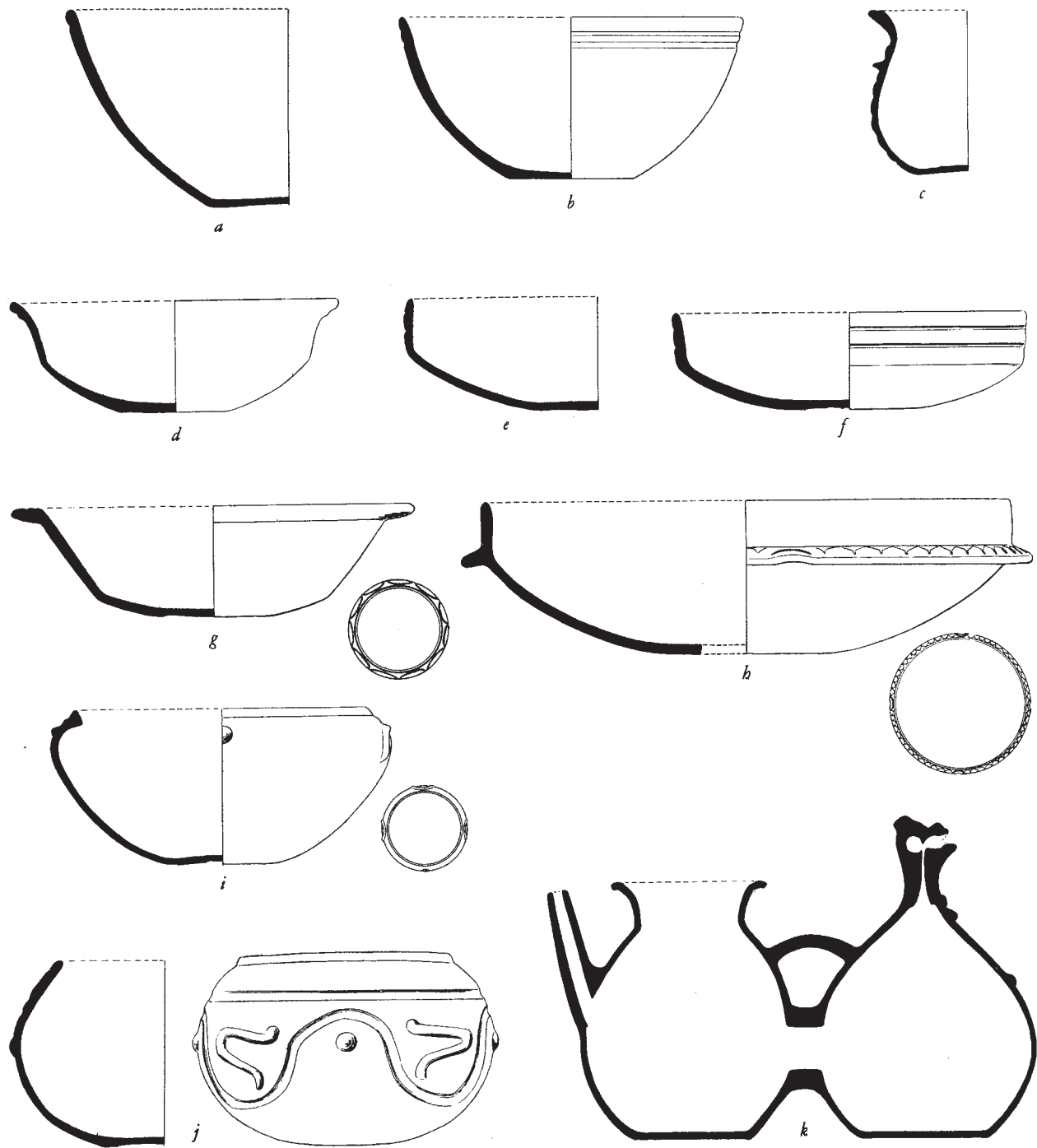
volcanic chain about 60 km inland. Evidence that this has been going on for a long time was recently brought to light near San Jose when, during leveling for an airport, an old beach was found to lie about 1 km inland. Abundant archaeological remains were encountered, indicating a village site of a cultural horizon postdating that of the specimens described in this report. Thus it seems probable that in this vicinity the most ancient sites will be found 3 or more kilometers back from the coast, and more recent remains as one moves towards the sea within the 3 km zone. There are also many very large archaeological sites on the broad plain stretching back to the foothills of the volcanoes, giving evidence that the area was heavily populated in aboriginal times.

A. V. Kidder and I visited Finca Arizona in company with Sr. Juan Petrilli on April 12, 1944, and inspected the mound from which came the majority of the material here reported. We examined two groups of mounds and Sr. Petrilli reports others. One group lies in and around the Petrilli residence on both sides of the railroad tracks, the main house atop a large mound. Part of the latter was cut off to form the house foundation; later Sr. Petrilli made a large pit under his dining room (more or less in the mounds center) and found, about 1.25 m below the house floor, a fine figurine head (Fig. 57.4n). The fill

of the mound consists of homogeneous loamy brown earth without stones and with very few potsherds.

Another larger and more compact group lies 2 km southeast of the finca house on the east side of the dry streambed passing through the farm about 4 km inland. It consists of at least four mounds irregularly placed around a plaza. The south unit, Mound I, is the largest, roughly 40 m square at the base and, before excavation, about 10 m in height. Sr. Petrilli began his excavations with a trench from the east towards the mound center about 3 m below the top. Nothing was encountered in the outer layer except featureless fine brown soil containing a few pottery fragments and two "Archaic" type figurines (Fig. 57.7l). This was undoubtedly the weathered remnant of the latest increment of the pyramid, which may have supported a structure of perishable material. Near the mound's center and 2 m below its top there was found a wide, well-preserved floor supporting a small double platform. In order to expose this, Sr. Petrilli removed most of the overlying earth. Skeletons of two young children, perhaps babies, lay on the floor outside the northwest and southwest corners of the platform. No mortuary furniture accompanied these burials.

Further excavation disclosed three stages of structural activity. The broad floor had formed the



top of the pyramid on which later was built a rectangular platform, and still later a smaller platform was superimposed on the first.

In the primary stage, the floor forming the pyramid top had been well tamped and surfaced with a thin layer of clay painted red. On this was erected a plain rectangular platform with vertical sides, 65 cm in height. Several extended burials of adults

with many pottery vessels were placed within the platform. The latter was made of well-packed, fine brown sandy soil; and plastered with a thin coat of clay painted yellow on the sides and red on top. A smaller platform of the same material was built on the one just described, leaving a narrow 4.5 cm wide terrace. This upper platform, 90 cm in height, was also surfaced with clay and also painted yellow on

57.4. Pottery from Finca Arizona, Guatemala: **(a)** brown-black bowl, strap handles (silhouette, Fig. 57.1, a); well-polished, uncracked, all-over slip; color ranges from reddish brown through chocolate-brown to deep black; postslip thin-line incising; base considerably worn; **(b)** Usulután tripod vessel with constricted orifice, gadrooned (silhouette and reduced top view showing angularity of gadroons, Fig. 57.1c); polished, uncracked, all-over, orange slip; curvilinear decoration of interior and exterior in buff to buff-brown; feet slightly worn; traces of yellow buff stucco below orifice; possibly once covered whole exterior except base; **(c)** black bowl, labial flange (silhouette and reduced top view showing scalloping of flange, Fig. 57.1b); well-polished, uncracked, deep black, all-over slip; stucco from 1 cm within orifice to and over edge of flange; stucco decoration involved three operations: (1) application of thin, brownish red sizing coat; (2) laying-on of relatively thick coat of white stucco; (3) application of bright rose-red paint or very thin stucco; base unworn; **(d)** Usulután tetrapod vessel with constricted orifice (silhouette and half-drawing to show very faint gadrooning (Fig. 57.1d); highly polished, uncracked, all-over, orange slip; decoration in yellowish buff; traces of stucco that apparently extended from just within orifice to point of greatest diameter: thin, dull purple sizing coat; thicker layer of white stucco; medium thin outer coat of brilliant pink; feet moderately worn; **(e)** black tetrapod cylindrical vessel (silhouette, Fig. 57.2a); brownish black, considerably crackled, all-over slip; well-polished even on interior and base; rounded molding encircles top of wall; two deeply grooved, preslip lines at base of wall; coarse, post-slip incising: single line just below molding and two opposed panels; incising tool left broad, V-shaped lines with very ragged edges; work apparently done at leather-hard stage; red pigment subsequently rubbed into lines; **(f)** red-on-brown jar (silhouette, Fig. 57.1f); fairly well-polished (but with elongated dull streaks missed by finishing tool), slightly crackled slip from interior base of neck over entire exterior; dark red painted decoration on upper body and base of neck outlined by thin; postslip lines incised with round-pointed tool, apparently at leather-hard stage; in places, pressure of the tool not sufficient to cut through slip, merely pressing it into the shallow line; base unworn; **(g)** orange jar, anthropomorphic (silhouette, Fig. 57.1e); conventional human face on neck, plain fillets representing arms on upper part of vessel's body, farther down two bosses indicating legs or feet; the nose-mouth element and ear bosses appliquéd; eyes punched into vessel's neck with flat, blunt-ended tool producing, in each eye, two rectangular, horizontal depressions; face area painted black; fairly well-polished, orange or orange-brown, uncracked slip from interior base of neck over whole (?) exterior; certain lighter orange areas may indicate use of Usulután technique, but there are no definite lines; stucco from a little below point of greatest diameter to and over lip: thin, dark red sizing coat; relatively thick background layer of blue-gray stucco over which was applied a geometric decoration in turquoise blue, yellow, and possibly other colored stuccos, each color having been laid on as a separate operation and sections of the blue-gray background having been left exposed to form part of the now badly damaged design, which is accordingly both in relief and color (cf. Kidder and Shepard, note 35); the black-painted face area appears not to have been stuccoed. (Scale = 1/4.)

the sides and red on top. Within it were interred the skeletons of six adults with a wealth of pottery vessels and jade ornaments.

Twenty-five complete pottery vessels, one marble bowl, and 34 fine jade specimens were found in the two platforms. All are described in the captions of the illustrations. No separation of the material from the two levels was made in the field, and no attempt has been made to do so in the report. The pottery obviously belongs to a single ceramic phase, and it is doubtful if much time elapsed between the construction of the two platforms.

The specimens were in unusually excellent condition. Many vessels were unbroken; others although broken were repairable. Sr. Cesar Tejeda F. performed this tedious task; his brother, Sr. Antonio Tejeda F. made the drawings and paintings here reproduced. The latter, which like all Sr. Tejeda's work, are both beautiful and meticulously accurate, unfortunately cannot be shown in color. They have been deposited, with all his other paintings of Mesoamerican pottery, in the Peabody Museum of Harvard University.

DISCUSSION

In the nature of wares, vessel shapes, finish, and methods of decoration, the pottery recovered by Sr. Petrilli on Finca Arizona is closely akin to that of the Miraflores phase, the oldest ceramic complex thus far recognized at the archaeological site of Kaminaljuyu in the outskirts of Guatemala City or, for that matter, anywhere in the highlands. This statement will have, for the present, to be taken on-trust, for until the Miraflores material has been published it would be useless to detail the many resemblances between the two groups. The only striking difference lies in the greater elaborateness of certain of the Finca Arizona pieces, a difference probably to be explained by the fact that they formed part of the grave furniture of persons who, because of their burial in specially constructed platforms at the summit of a large mound, and, because of the number and richness of the offerings of pottery and jade that accompanied them, were obviously persons of high standing, whereas the Miraflores mortuary pottery of Kaminaljuyu is represented



a



b



c



d



e



f



g

57.5 (*facing page, top*). Pottery from Finca Arizona, Guatemala: **(a)** Usulután bowl (silhouette, Fig. 57.3a); deep, preslip, encircling groove on exterior just below lip; polished, slightly crackled, all-over orange slip; four sets of four parallel, vertical, straight, buff lines running downward from lip on exterior and interior; lighter buff clouds on exterior; base worn; **(b)** Usulután bowl (silhouette, Fig. 57.3e); two preslip encircling grooves on exterior of standing part of wall; well-polished, crackled, all-over orange slip; sets of four very faint, parallel, vertical, straight lines on exterior and interior; base unworn; **(c)** Usulután vessel, small (silhouette, Fig. 57.3c); shallow encircling groove on lip and a series of broader grooves encircling body from outcurve of rim to edge of flat base, all preslip; two small, flat, opposite lugs; uncrackled, all-over, orange slip, polished over entire exterior and on interior to base of rim; inner surface of rim and whole interior buff; on exterior narrow buff lines and splotches; base slightly worn; **(d)** Usulután whistling vessel (silhouette, Fig. 57.3k); heavy strap-handle; monkey head and neck, which contain whistle, made separately and welded into top of forward jar; arms, neckband, and biblike ornament appliquéd; interior of neck of rear vessel and whole exterior of specimen except under side of handle and the monkey head covered with slightly crackled, highly polished orange slip; decoration in narrow buff lines; several buff clouds; base worn. (Scale = 1/2.)

57.6 (*facing page, bottom*). Pottery from Finca Arizona, Guatemala: **(a)** orange cylindrical vessel (silhouette, Fig. 57.2d); upper part of wall pushed out to form a broad, rounded, horizontal molding; somewhat crackled, all-over orange slip, puffy clouds on interior (Usulután?); slip on exterior, rim, and interior to upper edge of molding well-polished; interior unpolished; two preslip encircling grooves below molding and two at base of wall; on molding, two opposite bosses and two opposite pairs of crescents, appliquéd before slipping; traces of plaster-like material suggest that vessel may have been stuccoed; base unworn; **(b)** dark red-on-red cylindrical vessel (silhouette, Fig. 57.2e); incised and relief decoration, Fig. 57.2b); this and the three vessels shown at *c* and *d* of this figure and *i* of Figure 57.2 have the following features in common: large size; averted rim with thickened lip; vertical wall curving gently to flat base, the latter, in *c* and Figure 57.2l, very faintly recurved, perhaps due to warping; single rounded, horizontal molding just below outcurve of rim (for remarkable uniformity of shape, see silhouettes, Fig. 57.2e–g, i); all four were completely covered with somewhat crackled red slip; then a secondary coat of darker shade was applied to the interior and exterior of the averted rim above the level of the molding, the same color being used to produce bold designs on the exterior below the molding; the exterior of the vessels, except the base, was well-polished, as was the interior of the rim; a few cursive strokes of the polishing tool were sometimes given to the interior wall and base; finally, the darker red designs were outlined by fine, shallow, post slip, groove-incised lines done with a round pointed tool; the base of this and the three other pieces in the same category are slightly worn; **(c)** dark red-on-red cylindrical vessel, the largest of the group (silhouette, Fig. 57.2g); the decoration in darker red appears most plainly on this specimen; the conventional monkey figure, like that of *b*, was modeled from appliquéd lumps and fillets of clay before the vessels were slipped; the figures themselves were neither slipped nor polished; **(d)** dark red-on-red cylindrical vessel the finest of this series (silhouette, Fig. 57.2f); incised and relief decoration, Fig. 57.2c); the stylized face strongly suggests that of the rain god Tlaloc; if correctly identified, this would appear to be the earliest known representation of that deity; the outer half of the appliquéd fillets forming the two drooping curved elements and the inverted V over the eyes was slipped and polished; their inner half and the area they enclose were left unclipped and unpolished; **(e)** Usulután cylindrical vessel, polychrome stucco (silhouette, Fig. 57.2h); set of three rounded moldings below averted rim emphasized by four grooved lines (concealed by stucco in the painting); the faces, forehead, puffed-out cheeks, and chin were given high, rounded relief by pressing out the wall from the interior (see silhouette); the ears, coffee-bean eyes, nose, and mouth were appliquéd; the exterior of the wall was worked into twenty-two vertical, flat-surfaced panels; well-polished, uncrackled orange slip, over exterior of wall, rim, and part way down on interior; decoration, largely covered by stucco, in buff to brown crosshatching; exterior base and lower part of interior, buff unpolished; secondary decoration in colored stucco in vertical bands corresponding to the twenty-two vertical panels; apparently, the entire surface to be stuccoed was given a thin sizing coat, and then all but four panels received a thick layer of stucco mixed to the desired color; the four exceptional panels, the area surrounding the face and covering the moldings, and the exterior and edge of the rim were nest of precooked stucco but were treated with white stucco and then painted bright red; order of colors, beginning with the light panel below the faces left side and continuing clockwise: yellow, deep red, bright red, turquoise, greenish buff (probably originally green), purple, yellow, bright red, turquoise, greenish buff, purple, yellow, bright red, turquoise, greenish buff, purple, yellow, bright red, turquoise, greenish buff, deep red, purple; the sequence of application could be made out from overlapping of the stucco: first the four purple panels, then four greenish buff, four yellow, four white (afterward painted bright red), four turquoise, lastly the deep reds, which, it will be noticed, were the two short panels below either side of the face; the final operation was the coating of the central part of the face with yellow and of the surrounding area and the rim with white stucco painted bright red; a face of this peculiar puffy-cheeked, slant-eyed type appears in a squat Usulután jar, probably from Kaminaljuyu, in the Guatemala National Museum, and another on a brown-black specimen from near San Cristobal, Dept. of Totonicapan. (Scale = 1/4.)



a



b



c



d



a



b



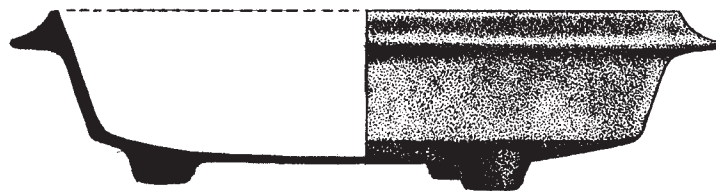
c



d



e



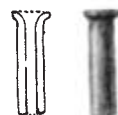
a



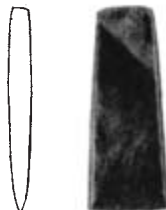
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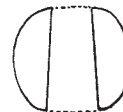
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e



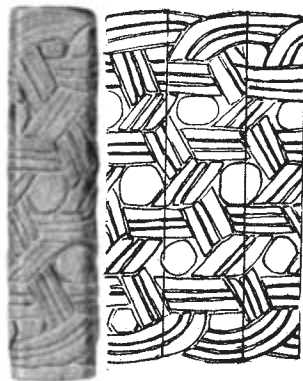
f



g



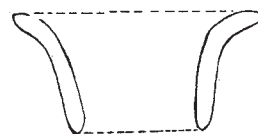
h



i



j



k



l

m

n

57.7 (*facing page*). Pottery from Finca Arizona, Guatemala: **(a)** marble tripod bowl; expertly wrought, contours true, very thin wall (3 mm) and base (2 mm); corrosion has rendered granular the doubtless originally smooth surfaces, leaving coarse crystals in relief; examples of similar labial-flanged form have been found at Kaminaljuyu in Miraflores deposits but of other sorts of stone; this seems to be the earliest example of such work in marble so far discovered; small double-cups of alabaster occur at Kaminaljuyu in tombs of the post-Miraflores Esperanza phase; **(b)** tubular jade bead; fine-quality, brilliant dark-green stone with white streaks; **(c)** jade pendant, one of an identical pair, evidently cut from the same piece of deep green, white-mottled stone; **(d)** tubular jade bead, flaring end, one of a pair; dark green, white mottling; **(e)** celt-shaped object, jade (?); highly polished, edge sharp; dark blue-green stone similar to that of a small anthropomorphic figure from an Esperanza phase tomb at Kaminaljuyu and of certain La Venta specimens; **(f, g)** jade beads, two of four; poor quality, light-colored stone. Specimen *e* is one of three that were perforated from one side, apparently with the same hollow drill, as their slightly conical bores are identical in shape and size. The fourth, *f*, was similarly drilled, but with a larger tool that did not quite penetrate the bead. The remaining section was broken through, leaving an irregular edge about the opening (see its section). **(h)** Rectangular jade pendant of pale blue-green stone; symmetrical in form and highly polished; two pairs of small biconical perforations for suspension; **(i)** large tubular, carved jade bead; in section, rectangular with rounded corners; opaque gray-green; not highly polished; red pigment rubbed into lines of decoration; **(j)** jade earplug flare, one of an identical pair; opaque gray white to green, mottled with brighter green; medium polish; obvious marks of sawing tool on exterior of stem; this specimen and its mate evidently cut from the same piece of stone; **(k)** jade earplug flare, one of an identical pair; opaque gray white mottled with clear dark green, well-polished; this pair also from a single piece of stone. All four of these flares are of a type found in Esperanza phase tombs at Kaminaljuyu; the latter, however, usually have one or two perforations in the side of the stem. Note: of the above jades, *c* and *e* were found with one of the burials; all the others with another. In the latter lot were also (1) 16 small highly polished beads of bright green stone, 1 cm in average diameter, 0.5–0.9 cm thick, 12 biconically perforated, 4 from one side only; (2) a tubular, dull green jade bead, 2.7 cm long, 0.8 cm in diameter, highly polished, biconical perforation; (3) a tubular bead of highly polished, micaceous, blue-green stone, 1.9 cm long, 0.5 cm in diameter, perforation from one end, a tiny red stone bead, lodged in the base at one end. **(l)** Head of pottery figurine, unslipped, gray with orange flushes; hollow, hand-modeled; animal head; eye represented, as was that of the face on the anthropomorphic jar (Fig. 57. 4g), by two rectangular, horizontal depressions made with a flat, blunt-pointed tool, but in this case the pupil, not rendered on the jar, was indicated by a single gash made with a sharp tool; from fill above burials in Mound I; **(m)** head of pottery figurine, unslipped brown ware; solid, hand-modeled; triple-punch eye made with wedge-shaped, sharp pointed tool; fill of Mound I; **(n)** head of pottery figurine, cinnamon, apparently slipped; solid, hand-modeled; eye formed in appliqué filled by two lateral applications on the side and one central punch with the end of a tapering, round-shafted, blunt, pointed tool; from mound under Sr. Petrilli's residence. (Scale = 1/4.)

by no more than a half-dozen very ordinary pieces from two simple, open-earth interments, evidently of commoners.

I am convinced that the Finca Arizona pottery is of Miraflores date. The Miraflores phase of Kaminaljuyu is unquestionably a manifestation of the so-called Archaic stage of Mesoamerican development. It has for some time been realized that, ceramically at least, the Archaic cultures were far from primitive and now the Finca Arizona mounds supplement the

evidence of the pyramid at Cuicuilco in the Valley of Mexico that the Archaic peoples were not only sophisticated potters, but that they had already achieved governmental and religious organizations sufficiently mature to render them capable of producing large ceremonial structures. This adds to the certainty that the Archaic must be the result of a long period of development and renders it even more puzzling that no pre-Archaic remains have yet been identified in Mesoamerica.

The Initial and Supplementary Series of Stela 5 at Altar de Sacrificios, Guatemala

Sylvanus G. Morley

I first saw Stela 5 at Altar de Sacrificios in the spring of 1914, when the drawing of its corresponding Initial Series shown in Figure 58.1 was made. Beyer had not then discovered the meaning of the variable central element of the Initial Series introducing glyph, and there was no reason for doubting the reading that I then suggested: 9.10.1.13.18 6 Eznab 16 Ceh.

In 1931 Beyer (1931) announced his decipherment of the variable central element of the Initial Series introducing glyph as "the month-sign indicator." This formula, the accuracy of which is now universally recognized by Maya epigraphers, showed that the above reading was incorrect. The terminal date is Ceh, whereas the variable central element of the Initial Series introducing glyph (Fig. 58.1a) is very clearly the moon sign, which corresponds to the month Chen.

In the spring of 1944 I visited Altar de Sacrificios a second time and obtained a photograph of this inscription (Fig. 58.1b). This appears to warrant the following identifications:

A1-B2. The variable central element of the Initial Series introducing glyph is surely, as originally drawn by me in 1914, the moon sign, thus indicating that the corresponding month in the Initial Series terminal date must be Chen.

A3. 9 *baktuns*. The coefficient is certain as 9, although a fracture line runs vertically through the four dots.

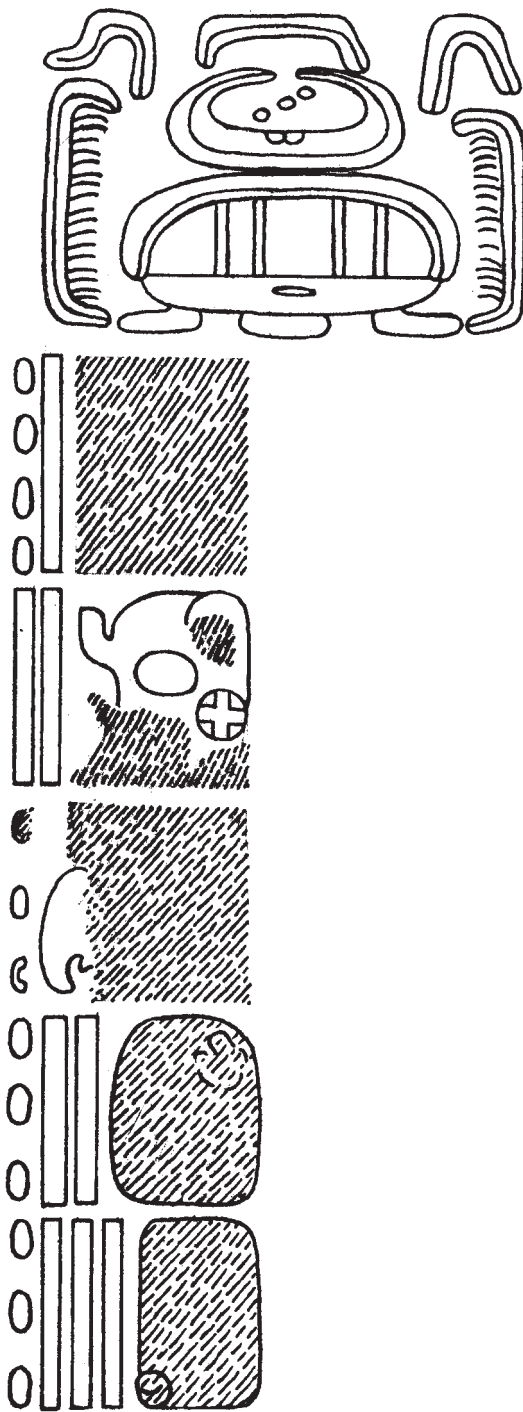
A4. 10 *katuns*. The coefficient is certain as 10, although the same fracture line continues down between the upper halves of the two bars before turning off toward the right.

A5. 11 *tuns*. The single numerical dot and the lower of the two non-numerical, flanking crescents show clearly. Furthermore there is dust-enough space between the foregoing and the badly eroded period glyph to the right for two thin numerical bars of exactly the same width as those in the uinal coefficient immediately below. Indeed the uinal coefficient, which is surely 12, is of exactly the same width, i.e., that of a line of dots and two bars, as the tun coefficient of 11, i.e., one dot flanked by two crescents and followed by two bars. It was my original misreading of the tun coefficient as 1 which led to my error in deciphering this date.

A6. 12 *uinals*. The coefficient is certain as 12, although the corresponding period glyph is effaced.

A7. 17 *kins*. The coefficient is practically certain as 17, the only alternative being 18.

A8. 6, 7, 8, 9, or 10 *Caban*, or *Eznab*. The coefficient here is surely over 5 and under 11. As the kin coefficient is 17 or 18 the day sign must have been Caban or Eznab. In 1914 I observed in my notes: "the coefficient of the day (A8), or what I believe to be the day here, is surely between 6 and 10 (inclusive)."



58.1. Stela 5, Altar de Sacrificios: (a) drawing of the Initial Series made in 1914; (b) photograph of front taken in 1944.

A9. Effaced. Probably Glyph G5 or G6 of the Supplementary Series, depending on the kin coefficient, but more probably the former than the latter.

A10. Glyph F of the Supplementary Series. Identification is certain.

A11. Glyph 3D of the Supplementary Series. The coefficient here is best as 3, although 1 and 2 are possible readings. The corresponding moon age recorded is either 3, 2, or 1 day in that order of probability.

A12. Glyph 5C of the Supplementary Series. Coefficient and C variant of the moon sign are certain.

B3. Not clear, but probably not Glyph X5 or X6 of the Supplementary Series, one or other of the two forms of Glyph X required by a coefficient of 5 in Glyph C.

C3. Not clear, but probably not Glyph B of the Supplementary Series.

B4. Not clear, but probably not Glyph A9 or A10 of the Supplementary Series.

Gathering these data together, we have the following reading of this Initial and Supplementary Series by inspection: 9.10.11.121? 6 Caban (5 Chen) G5. F.—. 3D. 5C.—.—.—. in which the first dash indicates that Glyph E of the Supplementary Series is not required here and the second, third, and fourth dashes that Glyphs X5 or X6, B and Ag or A10 apparently are suppressed in this particular inscription. It should be noted in passing that out of the eight other Supplementary Series known here at Altar de Sacrificios, Glyph B is suppressed in all eight of them and Glyph X in all but one; but that Glyph A, on the other hand appears in all eight.

According to Roys’s revised table of lunar ages, the moon age corresponding to the Initial Series 9.10.11.12.17 is 2.9 days, a very close agreement with the moon age actually recorded at A11, i.e. 1, 2, or 3 days.

The moon ages of all dates in Baktun 9 with a katin coefficient of 10, and tun coefficients of 1, 6, 11, and 16, which also fall in the month Chen, were calculated. Of these 80 dates, 78 were eliminated because of disagreement with the recorded moon age or because they fell outside the limits set for the coefficients of the kin or day signs. The two dates which alone survived the test are those already reached:

Initial Series		
9.10.11.12.17	6 Caban 5 Chen	G5?
9.10.11.12.18	7 Eznab 6 Chen	G6

Supplementary Series		
F.—3D.5C.—.—.—		
F.—3D.5C.—.—.—		

There are many points of agreement in both of the above readings and not a single disagreement.

Analyzing these two dates with their corresponding moon ages, we find that:

1. Both fall in the month Chen as required by the Initial Series introducing glyph.
2. Both have tun coefficients of 11, the best provisional reading of the tun coefficient in A5, by inspection.
3. Both have uinal coefficients of 12, by far the best provisional reading of the uinal coefficient in AE, by inspection.
4. The first has a kin coefficient of 17, by far the best provisional reading of the kin coefficient in A7, by inspection, and the second has a kin coefficient of 18, the only other possible value of the kin coefficient in A7.
5. Both have day coefficients, 6 and 7 respectively, which fall within the range of the five possible day coefficients, 6, 7, 8, 9 or 10, as fixed by the day in A8, by inspection.
6. The first has a calculated moon age of 2.9 days, only one tenth of a day earlier than the recorded moon age of 3 days in all, and the second has a calculated moon age of 3.9 days, only nine-tenths of a day later than the recorded moon age of 3 days in A11.

As between these two possibilities the first is much the more probable: first, because the kin coefficient in A7 is much better as 17 than 18; and second, because the calculated moon age of no. 6 (2.9 days) is nearly a day nearer the recorded moon age (3 days) in All than the calculated moon age (3.9 days) of no. 7.

It is unfortunate that A9 is too far gone to identify, for it occupies the position of Glyph G of the Supplementary Series and had it been preserved, it would have confirmed either of the above readings; i.e. G5 if the kin coefficient had been 17, or G6 if it had been 18.

Concerning the contemporaneous date of Stela 5 at Altar de Sacrificios it would seem to have been either 9.10.10.0.0 13 Ahau 18 Kankin or 9.10.15.0.0 6 Ahau 13 Mac. In favor of the later date is the fact that this monument formerly stood on the north side of the plaza of Group I in line with, and some 20 m east of, Stela 4, the dedicatory date of which is surely 9.10.10.0.0 13 Ahau 18 Kankin. Stela 5, like Stela 4, is carved on its front only, the sculptured panel being all glyphic, that is, having no figures.

Stela 6, on the other hand, stood a little behind and between Stelae 4 and 5, at a slightly higher level. Maler (1901–1903) reports it as unsculptured and I was unable to find any traces of former carving on it, either in 1914 or 1944, although he regards it as not at

all improbable that originally it may have been sculptured. If so, because of its more important position in having stood, not only at a higher level but also between the other two flanking stelae, it may well have been dedicated on the relatively more important period ending 9.11.0.0.0 12 Ahau 8Ceh, Stela 4 standing below and to its left having been dedicated in 9.10.10.0.0 13 Ahau 18 Kankin and Stela 5 below and in a balancing position to its right having been dedicated in 9.10.15.0.0 6 Ahau 13 Mac. If this arrangement and these decipherments are correct, these three monuments would have commemorated three successive hotuns of the Long Count: 9.10.10.0.0 13 Ahau 18 Kankin (Stela 4), 9.10.15.0.0 6 Ahau 13 Mac (Stela 5), and 9.11.0.0.0 12 Ahau 8Ceh (Stela 6). If this interpretation of its contemporaneous date should

be correct, then the Initial Series of Stela 5 is only 3.5.3 (463 days) earlier than its dedicatory date.

On the other hand, if Stela 6 always had been unsculptured, then it seems more probable that Stela 5 originally had the same dedicatory date as Stela 4, i.e. 9.10.10.0.0 13 Ahau 18 Kankin.

Against this latter hypothesis is the fact that its corresponding Initial Series, 9.10.11.12.17 6 Caban 5 Chen, would then be 1.12.17 (617 days) later than its corresponding dedicatory date, a very rare condition indeed in the *Corpus Inscriptionum Mayarum*, though not unique. In favor of this second hypothesis as to the contemporaneous date is the fact that the day 13 Ahau seems to be recorded at C7, though whether the corresponding month part "18 Kankin" was formerly to be found at B8 cannot now be determined.

Mausolea in Central Veracruz

Jose García Payón

For some time I have been interested in some curious small structures, first reported by Isidro A. Gondra (1836). Sr. Gondra's account was based on some clippings from newspapers of Veracruz which described the discovery of some pre-Colombian ruins in the Mizantla region, and on a verbal account by Sr. Mariano Jaimes who visited the nearby Ranchos de Monte Real that same year.

In 1844 Col. Ignacio Iberri published in *Museo Mexicano* (3:21–24) a report on these ruins, together with a map. In 1864 Sr. Gondra, having obtained fuller details and utilizing the colonel's report, published a second article (1836). He added the information that "el nicho era abovedado y en el hallaron esqueletos humanos en postura agachada," Various contradictions in these accounts caused much confusion as noted by Bancroft (1874–1876:4:449).

In 1889 Herman Strebel (1885–1889:2:15–16) noted that in the middle of the virgin forest in the archaeological zone of Tacahuite, near Vega de la Torre, he found numerous structures of stone and mortar. They resembled houses, were a yard long at the base, had a step, a niche in the middle, and a sloping roof (Fig. 59.4b). He adds that below one of these structures were human remains. After discussing whether these buildings could be of Spanish origin, he concludes by supposing that they were chapels for saints or sepulchral monuments, and are in every way similar to those reported by Sr. Gondra at Monte Real.

It is strange that these two students who wrote on the same subject, but twenty-five years apart, had not actually seen the structures they describe. In my

unpublished work "El Templo de las Caritas de la zona arqueologica de Zempoala" I said that Strebel's lack of veracity in certain parts of his study is explicable if one takes into account the fact that he was never in Mexico, but obtained most of his information from the Mexican conchologist, Sra. Estefania Sales de Broner, who made numerous discoveries in the area between the Actopan and Nautla rivers. She also placed him in contact with Señores Ramon Fuentes and Mardonio Yañez, who supplied him with the information he required and at his written behest made several archaeological trips in that region, then largely uninhabited. Later Dr. Strebel was efficiently aided by Dr. Rudolf Krause who came to Mexico to collaborate in this study, and who was a guest of Sra. Sales de Broner at her various haciendas in Veracruz.

The Comisión Científica Exploradora de Zempoala de 1893 found numerous small constructions which they called *boveditas* on the hill named Maria Andrea near the sea, and in the direction of Laguna Verde. Francisco del Paso y Troncoso (1897:2:282–283) describes them in the following words: "Todas tienen la apariencia de casas aztecas, estan edificadas con laminas de laja y blanqueadas con argamasa . . . todas tienen la particularidad comun de ester vueltas con las puertas hacia el mar, estando por este motivo orientadas hacia el Oriente. Estan cerradas por todos lados y solamente tienen una entrada . . . que las da la apariencia de nachos."

The author considers them to be prehispanic and supposes that there were idols in the niches.



59.1. Tombs at Quiahuixtlan.

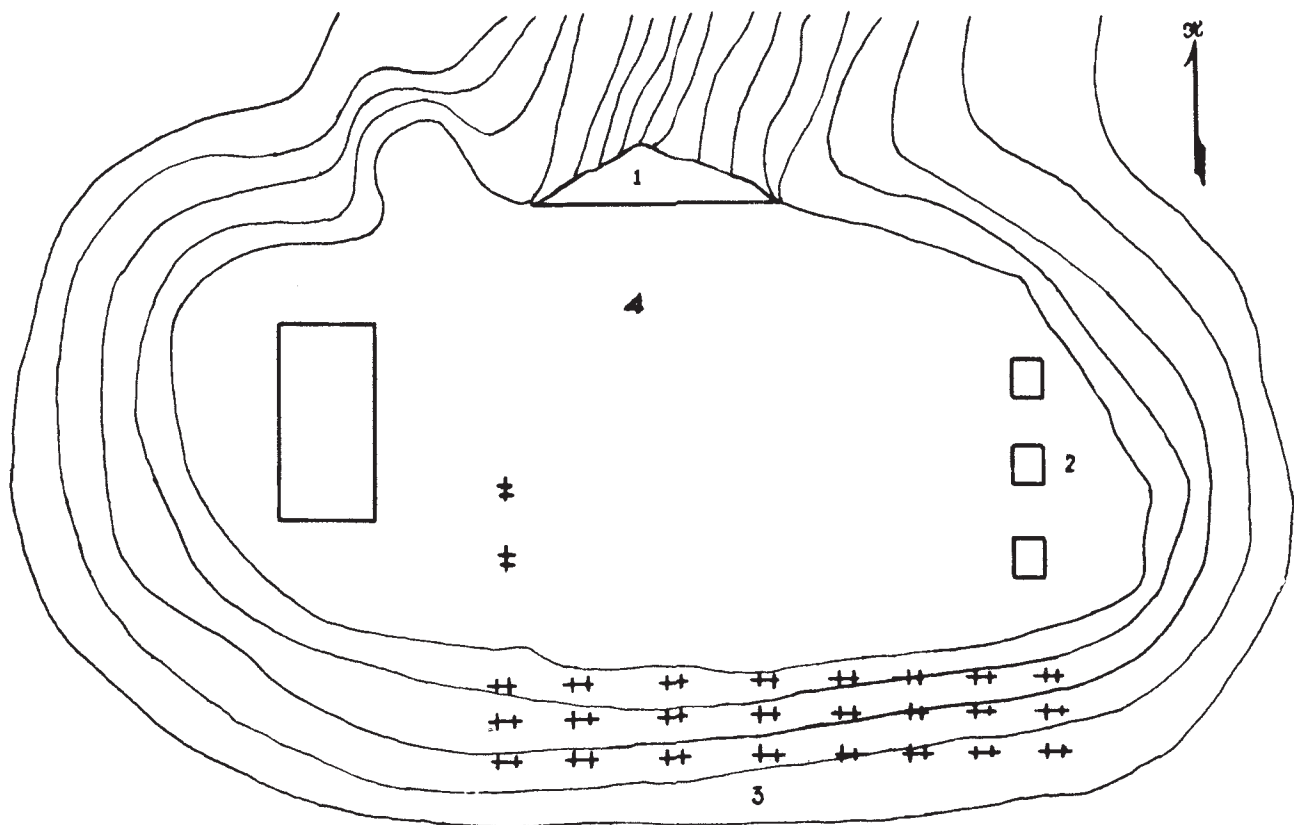
He suggests that they were shrines where the rising sun, as it emerged from the sea, was worshipped, or where the remains of children sacrificed to the rain gods were placed (Galindo y Villa 1912). Dr. Walter Krickberg (1933) considered these reports to be too conflicting and vague to be utilized.

During my last season's work at Zempoala my attention was particularly attracted by a small circular construction with a rectangular front (Fig. 59.3a). There are remains of the upright surface on the north side. The whole is very similar to the Ehec atl building at that site.

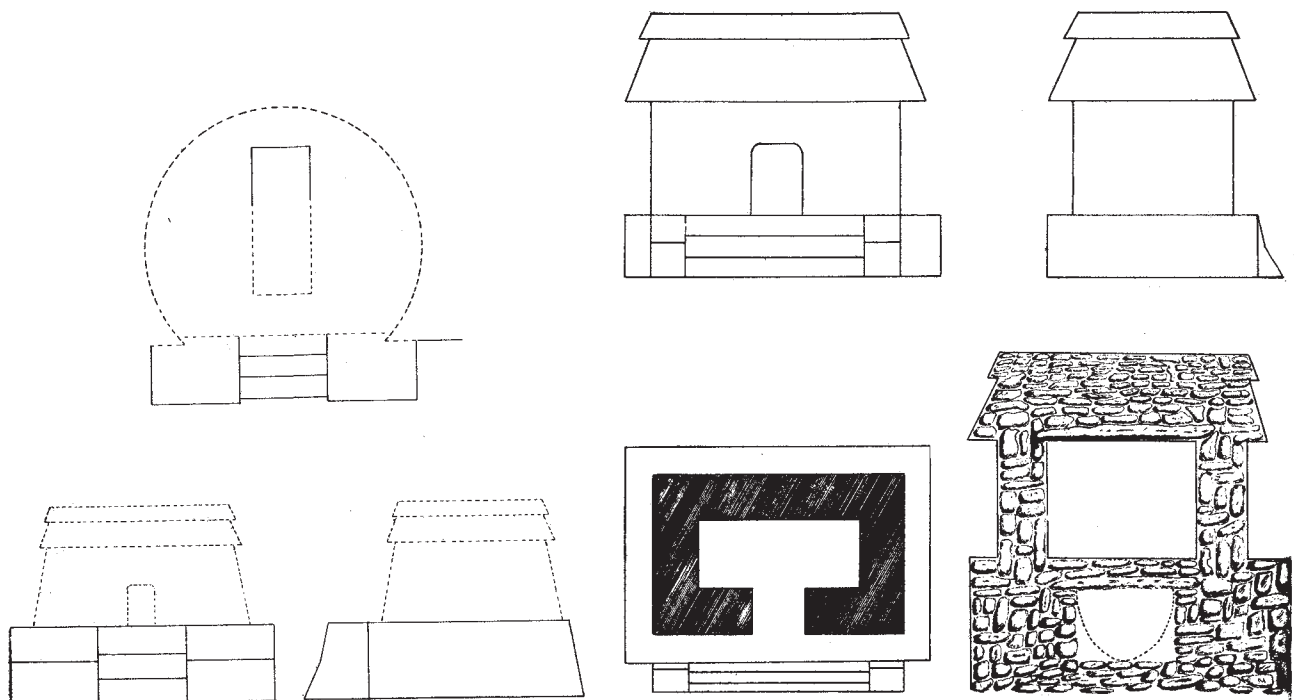
After a careful investigation I was able to corroborate that this was a tomb, for I found that the center was hollow, and originally had been covered with a floor. There were lateral walls covered with mortar. The remains of these pointed to the existence of a small rectangular enclosure with north-south axis. The floor had been broken by grave-looters some years ago.

With this discovery in mind, I decided to seek some of these small structures in the area from which they were reported by the earlier writers. Accordingly Professor Jose Luis Melgarejo Vivanco, who refers to these structures in his work *Totonacapan* (1943:119), his brother, and I visited the old center of Quiahuixtlan. This city, to which Cortes and his men passed after their brief stay in Zempoala, and which is described by Bernal Diaz del Castillo, is situated in the woods around the slopes of the Cerro de Quiahuixtlan. On the summit of the hill, which serves as a lookout point, are the remains of stucco floors and a cistern shaped like a half-egg,

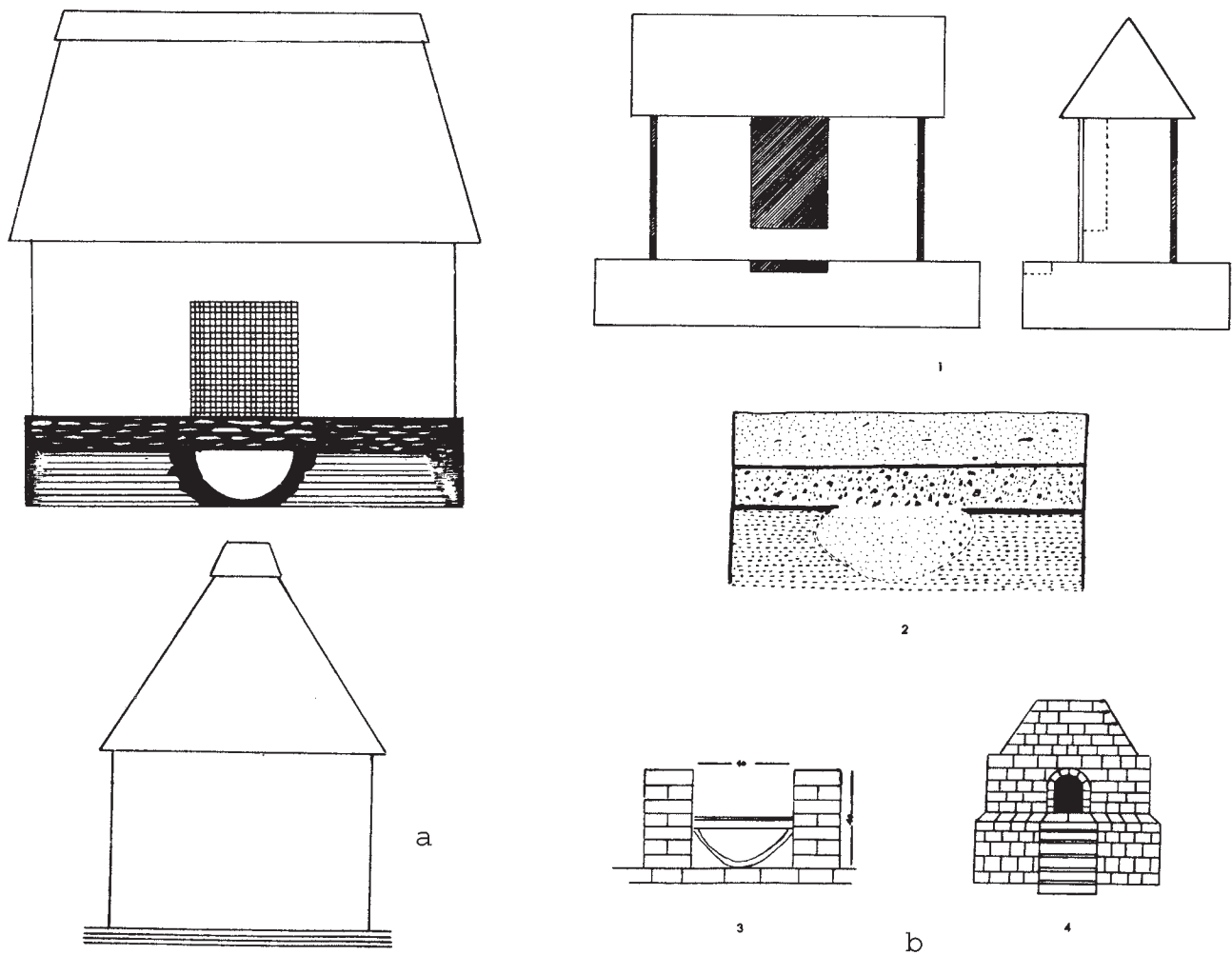




59.2. Map of small plaza at Quiahuixtlan: (1) buttress-like support; (2) large tombs; (3) lines of tombs; (4) artificial fill.



59.3. Plans and sections of tombs: (a) circular tomb, Zempoala, 1:50; (b) Tomb of Quiahuixtlan, 1:20.



59.4. Various structures: (a) Tomb at Texuc (drawn by J. L. Melgarejo V.); (b) plans of various structures after (1) Strebel; (2) Hrdlicka; (3) Toledano; and (4) Gondra.

and stuccoed on the interior. In the northeast side of the hill, and almost at the foot of the rocky summit, is what I call the cemetery of Quiahuixtlan (Fig. 59.2). It is formed of various lines of mausolea, all looted and all black with smoke (the land had been burned for milpa a few days before). These are in the shape of small temples varying in height from 1 m to 1.6 m (Figs. 59.1; 59.3b). Each one contains a small chamber which I believe served as a depository for offerings by relatives of the deceased. Below the floor is an area which held the body of the deceased in flexed position. This was square and 55 cm across, or circular with variable dimensions.

Before each mausoleum at Quiahuixtlan there stands a statue in the round which represents an animal. The material is mortar and the subjects embrace turtle, monkey, jaguar, frog, serpent, etc. This find suggests the possibility of a form of totemic.

The lines of mausolea are stepped owing to the fact that they are situated on the south side of the little plaza which in turn merges with the slope of the hill. The north side of this plaza is built up with a buttress-like support of rough stone which extends across a small valley. On the east side of the small plaza there are three somewhat larger structures, 2.75–3.24 m across the front and with narrow passages between. Heights can not at present be estimated, for only the bases remain. All are in bad shape, the southernmost being the least damaged. The center one alone may not have been looted. The bases are similar to more of the religious structures of Temporal, except that southeast of the structure of Ehecatl.

On the west of the little plaza there are traces of a rectangular construction about 10 m wide across the front. To the east of this, but on a lower level, there are slight traces of another line of small mausoleum

facing the three large ones. Dominating the whole, on the highest part of the slope of the hill, there is another line of mausoleum with the façades on the north side. It would seem that there is no definite scheme of orientation. The majority, like that of Temporal, are oriented to the north (Mictlampa, region of the dead), but the three largest face west, and others the east.

In the course of our short visit it was impossible to determine whether these mausolea are pre-Colombian or date from the earliest years of the conquest, as Strebel believed. In favor of the second theory is the proximity of this site to the early Spanish port and garrison town of Villa Rica. The natives may have seen Spanish mausolea there (the commandant of the garrison lost his life) and adapted them to their own use.

Professor Melgarejo V. found at Texuc (El Bernalillo) one of these small structures in the form of a native hut (Fig. 59.4a). The cavity below the floor was circular.

The known distribution of this type of structure appears to be confined to central Veracruz from Zempoala north to Tacahuite, near Vega de la Torre. The western boundary is at present in the Mizantla region. The actual sites from which they have been reported are: Zempoala, San Isidro, Cerro Tres Picos, Arroyo Mariano, Bernalillo (Texuc), Quiahuixtlan, Cerro Cercado, Boca Andrea (Paso y Troncoso calls this Maria Andrea), Moro, Tacahuite, and Monte Real.

Professor Melgarejo found seven floors in the mausoleum of Texuc; six in one at Quiahuixtlan. They vary in thickness from 1 to 9 cm. He believes that each new level represents a period of fifty-

two years. Counting backwards from the new fire ceremony of 1519, he reaches A.D. 1155 and A.D. 1207 as the respective dates for the erection of these two structures. I am not inclined to accept this interpretation.

Excavation of the structure at Zempoala produced only one sherd. This is of colonial manufacture and is a fragment of a tripod bowl with small solid feet of teat shape. The bottom was striated before firing. It is made of a reddish sandy clay, well baked, and covered with a dark yellow glaze. This detail which demonstrates the postconquest origin of these tombs, must be accepted with caution. One cannot overlook the possibility that the sherd accidentally fell in when the floor was broken by grave-robbers.

With regard to comparative data, I would call attention to the report of Ales Hrdlicka (1912) in which the sections of a tomb at Teotihuacan are illustrated (Fig. 59.4b). Hrdlicka says the cavity was shaped like a large broad jar. The superposition of cement floors led him to conjecture that there had been a structure above.

At Poza Larga, in the former district of Tetela, Lic. Vicente Lombardo Toledano (1931) found at the foot of a pyramid a tomb made of clay blocks. Inside was a vessel containing human bones. The section which he publishes (Fig. 59.4b) resembles strikingly the lower part of the Quiahuixtlan tombs, although the upper part is missing. In the archaeological zone of Paxilila-Morelos, in the Mizantla region, I have found many tomes, all looted, but none resembles the type under discussion.

The definite resolution of the question of the age of these mausolea must await their careful excavation.

JALAPA ENRIQUEZ
VERACRUZ

Archaeological Material from the Club Internacional, El Salvador

Stanley H. Boggs

In 1939, during construction of the present building of the Club Internacional in the center of the city of San Salvador, workmen excavating the basement discovered a deposit of prehistoric objects associated with a stratum of volcanic ash. This material, according to Sr. Don Jose Maria Duran, architect and building contractor in charge of the work, was found mixed together in a very small area. No burials or structures of pre-Columbian age have been reported within at least 1 km of the finds.

Many visitors to San Salvador have viewed some of the specimens discussed in the present *Note*, and several of the polychrome bowls have been commented upon by Longyear and others. The following account is the first, I believe, to attempt a fairly detailed annotation of all the finds together with their place of discovery. The importance of the Club collection arises from the facts that one specific stratum of volcanic ash contained all the specimens, and that a number of easily recognizable, possibly datable, pottery wares were represented.

STRATIGRAPHY

Sr. Duran has informed me that the layers of soil penetrated by his workmen at the point of discovery of the archaeological objects, a spot approximately 20 m north of the 2a Calle Oriente and 35 m east of the 2a Avenida Sur, were as follows: (1) 2.5 m of volcanic ash with much loose (recent?) humus mixed especially into the upper portion, overlying (2) alternating thin layers of sand and gravel totaling 0.75 m

in thickness, which rested on (3) hard, white volcanic ash of unknown depth.

The specimens hereinafter described, now on exhibition at the Club (except for one shown in Figs. 60.2g, 60.3k, owned by Sr. Duran), were found at the base of, but clearly within, the uppermost stratum.

SPECIMENS

MONOCHROMES

Coarse gray clay, unpainted and unslipped

Figs. 60.1 a, 60.3e. Jug or jar with two vertical loop handles, ovate body and rounded base. Surface rough and light gray. Black firing clouds.

Fig. 60.3p. Half of a small bowl with thickened rim and flattened base. Surface: interior polished with clear striations (of stone polishing?); exterior smoothed but unpolished. Very dark gray.

DICHROMES

a. Red-on-gray cantaros or jars

Figs. 60.1b; 60.3b. Compressed-globular body with rounded base. Flaring neck connected to upper curve of body by two vertical loop handles. Lip thinned and sharp. Surface unslipped, light gray, and well smoothed. Red painted design is confined to the upper half of body curve, between handles, and to one side of the neck. Broad-outlined areas between the handles with fineline filling-elements are characteristic of design. On neck of vessel appears a schematic (anthropomorphic?) face, formed by appliqued bits of clay.

Figs. 60.1c; 60.3a. In nearly all respects, this is simply a larger version of the foregoing specimen. The loop handles, however, are confined entirely to the upper curve of the body, the painted lines are not sharply defined (smoothed before paint was dry?), and apparently no filling design was painted in the trapezoidally outlined area between the handles. The stylized face on the neck of the jar is painted red, its ear elements are pierced and the eyes are separated from the muzzle. The polished surface is considerably darker than that of the vessel last described.

Fig. 60.3g. Neck only of a jar almost certainly of the same style as the above. The polished surface bears three red squares painted on dark, unslipped gray clay.

b. Ring-and-dot jars.

Figs. 60.1e; 60.3l. Globular body with marked shoulder, rounded base, flaring rim with characteristic profile. Smooth surface. Lower half of body covered with smeared, whitish wash. Upper half, including neck and rim, painted with thick, dark red, typically crackled in firing. On the red areas are painted rows of, and groups of, three white circles. This white circle motif is repeated on the flat portion of the rim. Paste is rather coarse, reddish brown, friable.

Figs. 60.1f; 60.3c. Globular body with vertically flattened side walls, pronounced shoulder, rounded base. Rim resembles that of foregoing. Surface lightly polished. Except for the unpainted, unslipped basal area, surface is painted with a simple design in red on buff slip. Paste rather coarse, red, friable.

c. Light red-on-orange-buff.

Figs. 60.1d; 60.3j. Sherd of simple silhouette bowl with round lip. Extending a short distance below rim on exterior is a slightly concave band, apparently caused by a special thinning of the bowl walls as rim was approached. Possibly original bowl possessed restricted orifice. Surface polished lightly and slipped light orange-buff, both interior and exterior. On upper third of exterior, a light red design involving simple geometric elements, some possibly derived from glyphs.

POLYCHROMES

a. Red, black and orange "glyphic" bowls.

Figs. 60.2a; 60.3o. Simple silhouette, sharp rim, rounded base. Surface badly eroded. Red, black and orange design painted on exterior only. Decoration is, characteristically, in two horizontal bands. This specimen shows two types of "glyphs" outlined in red and orange filled, repeated twice, the pairs

alternating. In lower band appear four black, linear monkeys in profile, separated one from the other by crosshatched red lines.

Figs. 60.2e; 60.3g. Double curve profile, flat base and sharp lip. The well-smoothed surface is orange slipped, interior and exterior. Red and black painted design appears on exterior only in two horizontal bands which are separated one from the other by broad red and thin black lines. Upper band bears four black outlined "glyph" elements with red filling separated by black X's; the lower band shows a black scalloped or wave motif.

b. "Copador" bowls.

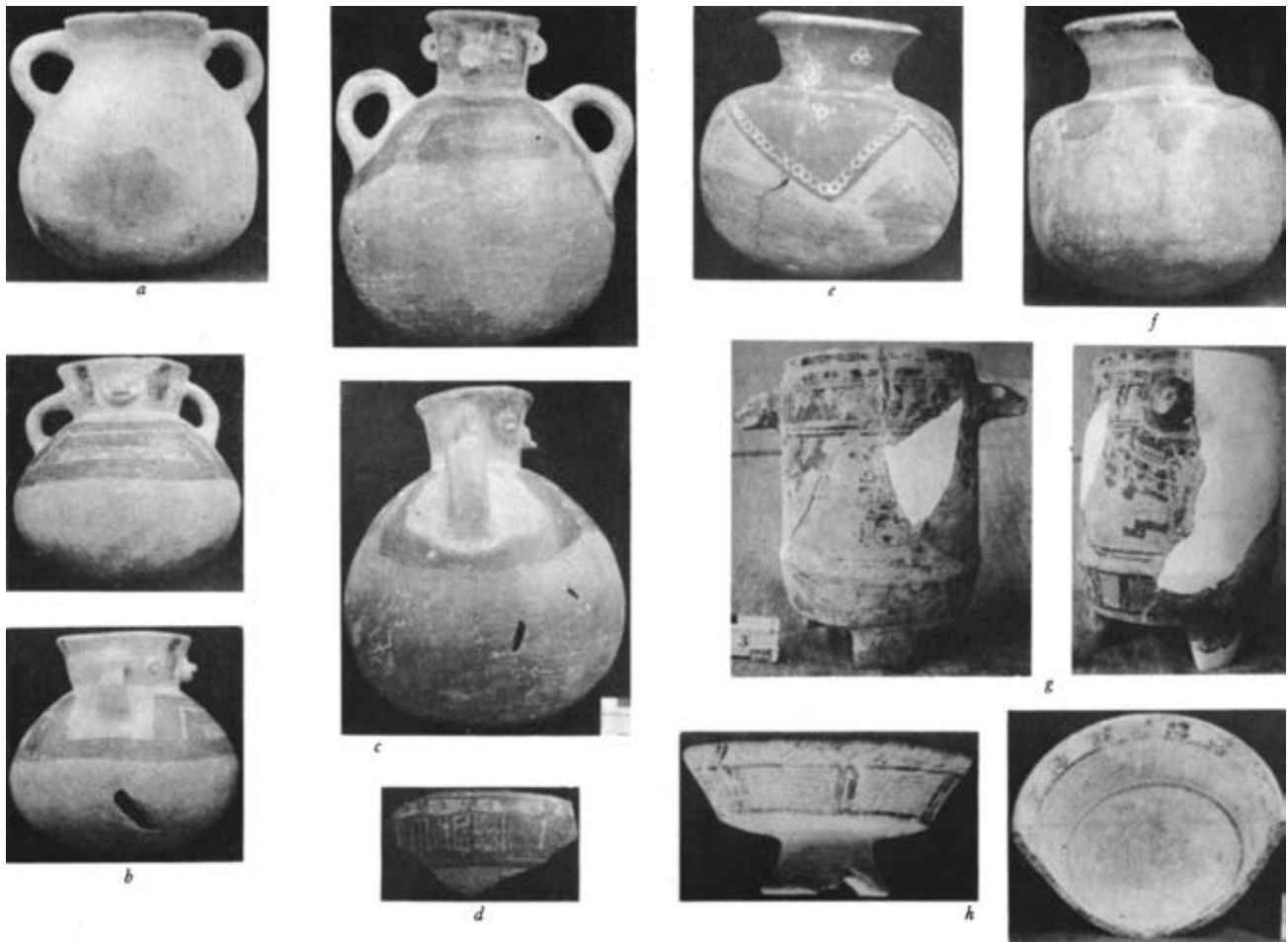
Figs. 60.2j; 60.3f. Fragmentary simple silhouette bowl with flat base, round lip. Highly polished surface with specular hematite red and black on orange slip design, interior and exterior. Horizontal red lines divide exterior decoration into two horizontal bands which cover the entire surface. Characteristically, in this specimen, the upper band contains a pair of "glyphs" repeated three times, red outlined and orange filled. Lower band shows a ceremonially dressed human figure (probably two on complete vessel), semi-reclining on knees and elbows, his upraised hands and feet apparently supporting the upper, "glyphic" band. Figure outlined in black and filled with red. Interior of bowl dominated by an unusual, possibly "glyphic," figure (Fig. 60.21), red outlined, repeated three times. Paste very fine. Paste color shades from light buff at surface to dark gray in center.

Figs. 60.2d, n; 60.3h. Fragmentary simple silhouette bowl very similar in form, color, and design to the foregoing, but slightly larger. Chief difference between the two is that interior and exterior upper-band decorative motifs of the present vessel are similar, whereas those of that described above differ from each other.

Fig. 60.3i. One shred of bowl with slight double curve and low-round lip. Surface badly eroded. Very little of the painted decoration remains. Apparently vessel was orange slipped, polished, and bore a "glyphic" design in secular hematite red and black, on exterior only, in the upper band. Lower band design too fragmentary to permit determination of motifs.

c. "Copador" vase

Figs. 60.2k; 60.3m. Fragmentary flat-based with slightly flaring rim and low-round lip. Surface very smooth, and slipped orange on exterior only. Decoration consists of two, black painted, horizontal bands showing, as principal features, ceremonially dressed, seated human figures. Some "glyphic" ele-



60.1. Pottery from the Club Internacional, San Salvador.

ments seem to have been included in the lower band, to judge from the fragment remaining. Rest of surface painted with specular hematite red. Paste appears untempered, white, and has chalky feel.

d. Rapid or "shorthand" style

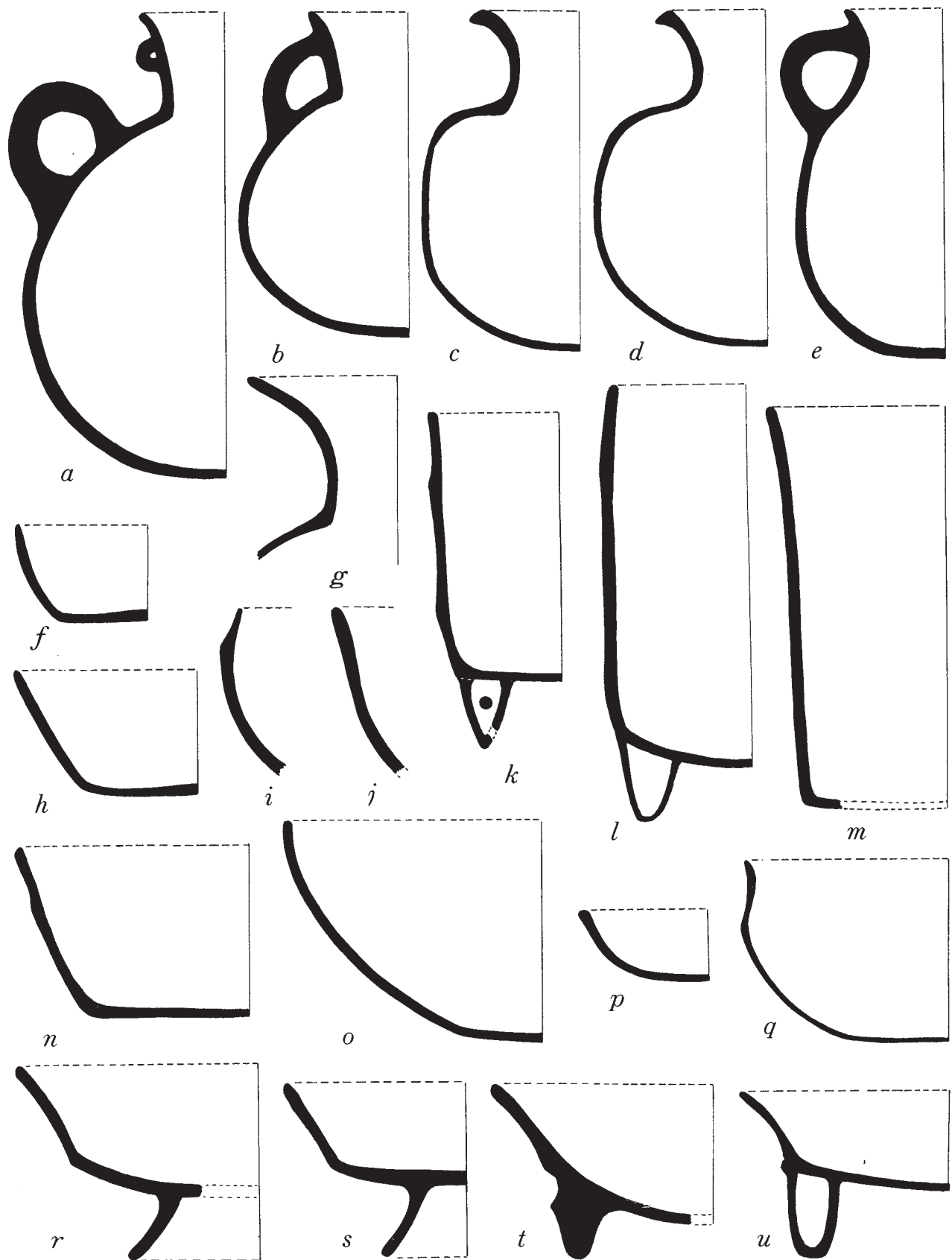
Figs. 60.2h; 60.3n. Flat-based, simple silhouette bowl with nearly flat lip and slight bulge on exterior below rim. Smooth surface slipped light buff. Exterior design consists of poorly, perhaps hastily, painted motifs in red, black and orange in three horizontal bands. Characteristically, red and black were employed to outline the figures, orange to fill them. In this example, the decorative elements are unusually difficult to determine, but on the basis of comparisons with better painted specimens, it seems likely to me that the uppermost band bears highly stylized feathers, the lowermost band, geometrized animal heads (pisotes?), repeated four times. Interior design destroyed almost completely. Paste rather coarse, well fired, but surface soft.

Figs. 60.1h; 60.3s. Bowl with annular base, flaring rim, sharp lip, and nearly flat bottom. Surface is polished and, for this style of pottery, hard. Decoration consists of black and dark orange motifs painted on light orange slip, interior and exterior. Exterior design includes simple geometric, orange figures in rectangular areas outlined in black. Interior design badly stained, but side walls seem to have carried geometric elements similar to those of the exterior, whereas the bottom was decorated with an anthropomorphic figure dressed in ceremonial attire. Paste coarse and well fired.

Figs. 60.2f; 60.3u. Tetrapod bowl with shallow-rounded bottom, sharp basal flange, flaring rim, and round lip. The round peg-feet contain rattles. Surface almost powder soft at the present time, but on the few parts retaining original finish it appears to have been polished. The all-over slip seems to have been light orange over white. Black and orange-red decoration was painted on both interior and exterior of the bowl but is now almost entirely gone. Remaining



60.2. Objects from the Club Internacional, San Salvador: (a, d–k) pottery vessels and fragments (approximately 1/3); (b) peccary (?) tusk; (c) figurine head (approximately 1/3); (l) design element from interior of *j* (approximately 1/2), specular hematite red outline, orange filling; (m) design element from exterior of *f* (1/1), black (solid) and red-orange (hachured); (n) design elements from exterior of *d* (approximately 1/2), black (solid) and specular hematite red (fine stippling) outlines, orange (open stippling) filling.



60.3. Profiles of pottery vessels. (Scale = 1/3.)

designs include black out-lined geometric figures filled with orange-red. Paste dark red, fine-grained, and hard-fired.

Figs. 60.1g; 60.3l. Tripod vase with two bat-head lugs, shallow-rounded base and flat rim. Hollow slab feet with very thin side walls. Vessel walls very uneven in thickness but surface is well smoothed and slipped with orange-over-white. Red, orange and black design on exterior consists of stylized bats with outstretched wings, separated by two complex, badly eroded figures. Framing these major elements are horizontal bands about the base and upper quarter of the vessel. Figures are generally outlined in black, with red or orange filling. Although the surface is soft and easily eroded, the paste is fine, red, and well fired.

Figs. 60.2g; 60.3k. Tripod vase with flat base and rim, hollow slab feet, and two low, horizontal ridges on exterior surface which break decoration into three bands. Surface fairly soft but well finished and in fine condition. Painted designs of the uppermost and lowermost horizontal bands include following colors based on Ridgway's nomenclature: red (Morocco Red to Mahogany Red), brown (Mars Brown), black, and orange (Mars Orange to Flesh Ocher) on light orange slip (Pinkish Buff to Pale Ochraceous Salmon). Between these painted areas occurs an encircling, incised textile design, covered with white paint after incising. Interior of vessel bears one dark red, solid, horizontal band near rim and, below, orange color painted almost to the base to cover a broad-line, lost-color design in the original light orange slip. Paste rather coarse, reddish, hard-fired.

e. Purple polychrome

Figs. 60.2i; 60.3. Tetrapod bowl with rounded base, flaring rim, round lip, and solid feet. Surface hard and polished. Painted decoration consists of simple geometric figures in red and dark purple on cream slip. The rather peculiar but characteristic form of the supports is derived from animal-effigy heads, generally pisotes, to judge from comparable vessels of this style found at other sites. Paste coarse, well fired, dark red.

Fig. 60.3r. Two fragments of a bowl, very similar in most respects to the foregoing but with annular base. A fragment of design on the interior bottom of this bowl shows stylized feather motifs.

FIGURINE HEAD

Fig. 60.2c. Crudely finished, solid pottery head, broken from some larger object. Modeled from coarse, gray clay. Face painted red.

ANIMAL TUSK

Fig. 60.2b. Probably the tusk of a *tunco de monte* or a peccary.

COMMENTS

The area of San Salvador has been blanketed periodically in the past by successive falls of white volcanic ash, and various collections of prehistoric objects have been recovered from what is apparently the most recent of these strata. Certain materials were undoubtedly intrusive and refer to a later date than the ash fall (Boggs 1944). Others, such as those now being considered, must refer to the time of the fall itself.

Inasmuch as postconquest alterations of the latest ash layer by man, animals, erosion, and the like invite confusion in determining stratigraphical position of finds said to be from that level, it is best to consider only those deposits known, or believed, to be undisturbed.

Nonintrusive, undisturbed deposits are characterized by lack of association with mounds or burials, by the facts that many of the objects are fragmentary and that no apparent care was taken in arranging them. Those known to me occurred near the base of the latest ash, whereas intrusive deposits were found at almost any elevation in that stratum. It does not seem likely that such nonintrusive deposits represent formal caches. Many individual specimens from different finds of this category are closely comparable to one another, and the combinations of types within such groupings of objects are sufficiently similar that one may believe their deposition to have occurred at approximately the same time.

Obviously, the importance of relating easily identifiable pottery types to distinctive strata of volcanic ash derives from the possibility of dating both pottery and ash; so that whenever, in other parts of the geographical zone investigated, previously unidentified and undated human remains are brought to light from the same ash layers, or accompanying the known, dated pottery, some chronology at least may be set up. Up to the present time, no thorough investigation has been conducted of the extent or composition of any ash layer in El Salvador, although recent studies by the Salvadoran Instituto Tecnológico emphasize the value of such research to archaeologists.

The chief aids to dating the latest central Salvadoran ash horizon have been prehistoric pottery objects from the Club Internacional; Tazumal, Campana-San Andres and Hacienda Tula, some of which are relatable to various dated wares from Copan and Guatemala.

At Tazumal, the grave complex represented by Tombs 1-4 and included ring-and-dot jars, copador, rapid or shorthand, and purple polychromes. Both purple polychrome and red-on-gray cantaro sherds were discovered to be associated in a late ash stratum of the Hacienda Tula, probably having been deposited at the same time as the Club specimens (Longyear 1944). At Campana-San Andres, copador, rapid or shorthand, and red, black and orange "glyphic" polychrome sherds are found together in the same building level. Therefore, we have some reason to believe that the Club association of pottery types is more or less typical of a central and western Salvadoran ceramic complex at a certain period of prehistory.

Copador polychromes, when present among the finds, furnish the most reliable assistance in dating western Salvadoran pottery of late 9th cycle Maya styles, for their position in time of 9.12.5.0.0 to/or 9.16.5.0.0 is fairly well assured by the fact that they were found in caches below Stelae I and J and under the altar of Stela J at Copan. The term copador, suggested to me by A. V. Kidder, implies briefly what is now thought to be the principal area of distribution of the style, that is, the Copan region, southwestern Honduras, and El Salvador west of the lower Lempa River. Not enough is yet known about this polychrome to define even a majority of its stylistic peculiarities, to say nothing of the variety of forms and, probably, pastes. To date, copador refers mainly to a distinctive style of painted pottery on which human figures and stylized Maya glyphs or glyph elements are very commonly depicted, as well as to the use of specular hematite paint in the decoration. The usual color combination is red and black on orange slip, but at times vessels decorated in the style are unslipped, at others five or more colors are employed.

Whether the rapid or shorthand polychrome style is Maya, or is the handiwork of some other

ethnic group, cannot yet be proved, though available evidence tends to support a Maya relationship. Stylistically, examples from the Club Internacional and from Tazumal tombs show some resemblances to vessels described and figured by Strong, Kidder, and Paul (1938), especially to "Upper Ulua" and "Upper Yojoa" types. As is the case with most varieties of southern Maya pottery, rapid or shorthand polychromes cannot yet be satisfactorily defined; they thus remain no more than easily recognizable styles, or a complex of styles, in which the painting was done with a very distinctive combination of colors.

Red, black, and orange "glyphic" bowls may be slightly earlier in time of development than either copador or rapid or shorthand styles, to judge from discoveries at Copan (Longyear 1952) and Tazumal. In neither site; however, can they have much antedated the latter types and may have been more or less parallel developments. It is worthwhile to note that 3.n many "glyphic" designs, specular hematite red paint was employed, and the color combinations are similar to those of copador.

Very little information exists regarding distribution or stylistic range of either ring-and-dot jars or purple polychrome. Lothrop (1927:192), notes discovery of an example of the former in Mound 36 at Copan, but aside from this I am unaware of its discovery outside El Salvador. The easy identification of this dichrome, as well as of purple polychrome, should make both styles of considerable value in dating future finds with which they are unearthed.

In summary, the Club Internacional pottery, from comparisons with groupings of vessels brought to light at nearby sites, may be considered one fairly typical ceramic association in western El Salvador of the late 9th cycle. Therefore, the volcanic ash in which these specimens were discovered probably refers to the same period of time.

Drawings and painting are by Antonio Tejeda F.

Some Uses of Tobacco among the Maya

J. Eric S. Thompson

These scant jottings on "the weed" have lain among my notes for many years. I have not attempted to improve the mixture by seeking more gleanings to blend with it, but offer it more or less as garnered without any pretense that it adequately covers the subject. Information on the use of tobacco among the Maya of the sixteenth century is extraordinarily scarce. Bishop Landa has a single and rather obscure reference to ceremonial blowing of smoke in an initiation ceremony for children, but it is not even certain that that was tobacco smoke.

The chaplain, Juan Diaz, of the Grijalva expedition writes that at Cozumel the natives presented Grijalva and some of his men with "some canes about a palm long which, on being burnt, gave off a delicate odor." Cane (*cana*) is the term generally used by early chroniclers to describe the aromatic cigars used by the Mexicans.

A much later, but very interesting, account of cigars and their manufacture appears in the *Registro Yucateco* (1:349–350). The article is entitled "Cocom" and is signed "un curioso." *Cocom* is the name of an unidentified tuberous plant with yellow flowers. The tubers of this were cut in narrow strips, which were carbonized on a very hot *comal* (griddle). The material was then pulverized, and placed in a gourd or vessel. *Atole de camote* (sweet potato gruel) and a little honey were added, so that the mixture formed a thick paste. The maker of the cigar then took leaves of the zapote (*Achras zapota* L.), or, were he a resident of Chichanha, leaves of the allspice (*Pimenta officinalis* Lindl.), and split them lengthwise. Each

half-leaf was next rolled on a small, spindle-shaped stick, about as thick as a turkey quill, and tied with henequen thread. The surface was then coated with the cocom paste, except for about an inch at the thinner end, which was to serve as the mouthpiece. The stick was pulled out, after the whole had been dried in the sun, and tobacco, of the kind regularly used in making cigars, was inserted in its place. The end was doubled over to prevent the tobacco spilling, and the cigar was then ready for enjoyment.

One is reminded by this description of the perfumed canes of tobacco and liquidambar, smoked by the Aztec. In the highlands of Guatemala, according to Fuentes y Guzman (1932–1933), guayava leaves were used to wrap cigars. On the other hand, the Lacandons used cigarros of pottery which were curiously painted (Villagutierre y Sotomayor 1933, Bk. 5, Ch. 6). From the use of the word *cigarro* one can perhaps infer that these were tubular pipes.

Cigars are mentioned in the *Popol Vuh*. Xbalamque and Hun Ahpu are required to pass a night in the cave of darkness, and to emerge next morning with their cigars and pine torches still alight, after having kept them burning all night. The young men extinguish their cigars and put fireflies on the ends so as to make the people of Xibalba believe that they are still alight. This incident must have formed part of the body of holy tradition shared by all Maya groups, for there is an indirect reference to it in Yucatecan literature. Among the riddles put to candidates for chieftainship, as preserved in the Book of Chilam Balam of Chumayel (Roys 1933:97), occurs the fol-

lowing: "Son, bring me the firefly of the night. Its odor shall pass to the north and to the west . . . What he asks for is a smoking tube filled with tobacco," As Roys has suggested, these riddles were designed to elicit information as to whether a candidate had a sufficient fund of the esoteric knowledge necessary for his future office. A thorough acquaintance with Maya tradition and mythology clearly was one of the required subjects.

Among the present-day Yucatec the Chacs (rain gods) are said to be very fond of smoking, and comets are said to be their glowing cigars (Tozzer 1907:155, 156). One sincerely hopes that the Maya informant meant to tell Dr. Tozzer that shooting stars represented the cigars, for had they smoked only on those rare occasions when a comet is visible, they would have been very far from chain smokers.

Snuff mixed with lime was, and still is, favored by some Maya groups. Frederick Starr (1902) reports that the Tzeltal chew powdered green tobacco mixed with lime and chili. The mixture is dipped from a calabash with a little sticklike spatula) and is chewed or sucked "to strengthen the teeth." Starr illustrates the long tapering gourd which serves as the receptacle. In his book *In Indian Mexico* he adds the information that the mixture was called *mai*. *Mai* is a general word for tobacco in several Maya languages and dialects. It is defined in the Motul dictionary as tobacco powder, made by rubbing tobacco leaves between the fingers. In Kekchi the word is applied to the leaf. It has been suggested that the synonymous term *mai*, twenty, originated from the custom of tying tobacco leaves in bundles of twenty. The Motul dictionary also lists the word *bux* with the meaning of gourds used for holding tobacco.

This habit of chewing lime and tobacco is prevalent also among the Tzotzil, according to information given me by the schoolmaster of Zinacantan, Chiapas, and formerly existed among the Jacalteca (La Farge and Byers 1931:123). Indeed, the custom is widespread in Middle America. It has been reported from Oaxaca and from the region of Texcoco (*Pomar relación*; see also Ruiz de Alarcon 1900, Trat. 1, ch. 4). The custom was also prevalent among the Jicaque of Honduras. According to Ramon de Anguiano (1798) green tobacco leaves and lime, obtained from the small fresh-water shells commonly called *hutes*, were chewed by the Jicaque as a malaria preventative.

It seems highly probable that the chewing of tobacco and lime in Middle America is a transmutation of the Andean custom of chewing coca leaves with lime. The latter practice extended as far north as Nicaragua (Oviedo y Valdes 1851-1855, Bk. 6, Ch. 20). Thence it is but a short step to Honduras. In both

cases the lime, I believe, has a chemical effect on the stimulant. In both cases the mixture is stored in a narrow-necked gourds and dipped by means of a spatula.

A quite different use of tobacco is reported by that charming fraud, Thomas Gage (1677). He describes the making of *chicha* (beverage of fermented cane syrup) by highland Maya, presumably Pokoman, and imparts the information that tobacco leaves and roots were added to strengthen the brew. He notes that sometimes a toad was inserted for the same purpose.

Green tobacco is an element in many Maya remedies (Roys 1931), but I know of no use by the lowland Maya of tobacco-chewing or swallowing to produce the right conditions for divination. This is perhaps because I have not combed the literature with sufficient diligence, for it is highly probable that the custom was prevalent among them, as among the highland Maya (Fuentes y Guzman 1932-1933, Pt. 1, Bk. 12, Ch. 3), the Mexicans to the north, and in Colombia. Tobacco is used, however, by Chorti medicine men in a form of divination (Wisdom 1940:344). The diviner chews tobacco, and rubs the saliva on his right leg. In answer to questions the spirit dwelling in the calf of his right leg gives a twitch of the calf muscles as an affirmative answer; no twitching is a negative reply.

Archaeological evidence for the use of tobacco among the Maya is somewhat unsatisfactory. The personage sculptured on the right of the entrance to the sanctuary of the Temple of the Cross, Palenque, appears to be smoking a tubular pipe, perhaps in a ceremony analogous to the blowing of tobacco smoke to the four world directions by North American Indians. On page 79b of the Madrid Codex a *tonalpoualli* (260-day sacred almanac) is divided into fifths, and each of these has three subdivisions. These three subdivisions are illustrated by pictures of Gods B, A, and E. Each god lies on his back on the earth (indicated by Caban symbols), and has what appears to be a cigar in his mouth. These are tubular but taper somewhat toward the end held in the mouth. Each has a black rim at the other end. A cascade of black dots, which might well represent smoke or sparks, is just beyond the end. Our present understanding of the accompanying glyphs gives no clue as to the meaning of the scenes.

Excavations have produced a few pottery fragments which might have formed parts of pipes, but in some cases there is a strong possibility that they are parts of brazier handles. An elbow pipe, said to have come from Palenque, is discussed by Douglass (1889), but one must accept that attribution with the greatest reserve. Elbow pipes of that general type are

common enough in the Valley of Mexico, but, so far as I know, none has ever been found under archaeological conditions in the Maya area. Elbow pipes are used, however; by the present-day Chorti, together with tubular pipes. They are of wood.

The negative evidence of archaeology and the positive evidence of literature suggest that in pre-Colombian times the Maya made little use of pottery pipes (the Lacandon pipes may be exceptional),

but smoked their cigars wrapped in leaves or used containers of perishable materials. The tobacco and lime chewing quite possibly reached the Maya as an attenuated substitute for coca and lime, perhaps not long before the conquest. It might have been one of those elements, such as the hammock, bitter manioc, and the pineapple, which appear to have reached the borders of the Maya realm shortly before the Spanish conquest.

Observations on Altar Sites in the Quiche Region, Guatemala

Elsie McDougall

In February 1928, while a guest in the Protestant mission house in Santo Tomas Chichicastenango, I was told of a *brujeria* where Indians worshipped. A group of town picnickers had discovered it on the wooded summit of a hill, about 1 km west of the town. Starting before midmorning of March 1, Harry Grainger, the missionary, a young townswoman, and I visited the hilltop. We took the road west from the convent part of the imposing sixteenth-century Catholic church, where Indians were praying and burning incense in a forge like altar at the foot of the steps and on the terrace at the threshold of the church. The road passes the accumulation of adobe brick, white-washed houses owned by rural Indians. These houses, with rooms opening on an inner court, are occupied only when members of the family unit are in town for trade, for duties related to civil administration and to the maintenance of the two churches (the second is that of El Calvario, on the west side of the plaza, fronting the larger "parochial"), and for religious ceremonies, including those conducted by the resident "foreign" (Catholic) priest. We ascended the hill by a branch footpath through cleared land, partly under cultivation. A few unkempt young Indian girls, pasturing all black as well as white sheep, ran away swiftly at sight of strangers.

Locating the place of worship in the woods, largely of pines, was facilitated by the sound of fervent prayer. An Indian was praying on behalf of a seated man (Fig. 62.2). The former was recognizable as a professional officiant, one or more of whom

are commonly to be seen in the two churches, performing the required ceremonies at floor altars of temporary construction. On these are placed cloth-wrapped bundles containing seeds, coins, candles, copal incense, quantities of flower petals, and aguardiente. This last is poured around the candles by the professional prayer man. There is a close relationship between the floor altars in the churches and the altar on the hilltop.

The holy place in the woods actually consists of two altars. The main stone of the larger altar is an image, undoubtedly pre-Spanish, and at the time I first saw it, was recumbent and lacking the head. The arms are folded across its breast, and a trophy head, with hair pendant, is attached to the front of a wide-fold girdle (Fig. 62.1a). There are also crosses, in both low and full relief, one or two old mortars, club heads, a large ball or sphere incised and painted with irregularly crossing lines, chipped and broken manos, and flat-based boulders with holes in the center. All these are of stone. Old stone boulders with holes are placed in front of side altars in the town churches to hold the ceremonial staves of *cofradia alcaldes* while the *cofrades* are engaged elsewhere. Except for the crosses the stones are probably of pre-Colombian manufacture.

Maize cob husks, the discarded wrappings of four or five small cakes of copal incense, littered the foreground. In front, the ground was carpeted with pine needles: Some newly cut boughs of pine, similar to the ones partly covering the smaller altar (Fig. 62.3a), were at the foot of a tree. Copal incense,

arranged in small piles as it is unwrapped, was first burned, and as it smoked, a row of small candles before the altar were lighted. The well-articulated, fervent prayers were in Quiche; the word "Señor" in pleading tone was frequently interpolated. The informant, a young townswoman familiar with Quiche, told me that the prayers were for good crops, the health of the family, and malediction of enemies. As foreign intruders, we were specifically mentioned. Scowled glances on the part of the seated man also made us aware that we were unwelcome, and so our stay was brief.

Visiting the place of worship two days later, again in midmorning, I found that pine boughs lightly covered the altar. Hot ash of copal and the warmth of the stone image on removal of the covering testified to a recent ceremony. On chalking the incised lines of the stone figure to bring out the relief, I was handicapped by the constant slipping of the chalk on the surface, made sticky by what was probably a combination of carbon grease and *aguardiente*.

I returned to Chichicastenango late in the afternoon of December 19 of the same year. The town was already thronged for the fiesta of the patron saint, officially commencing the following day. I had promised Franz Termer, who had already arrived in Chichicastenango for the celebrations, to show him the altar, and as I was not too certain of the path, I decided to try and find the altar that evening so as not to fail as a guide the next day. As I approached the woods at dusk, I saw a column of smoke rising above the treetops, evidence that a ceremony was in progress. The cracking of twigs, as I cautiously approached, caused the three men, engrossed in fervent recitation of prayers before the image, to turn their heads momentarily toward the tree partly screening me. A fierce fire of pine boughs illuminated the scene, especially the image, which with head once more complete was now in standing position, its face glistening with the libations poured upon it in the course of the prayers. Three women, kneeling back on their heels, were a short distance to the left of the men. During the brief period of observation of the scene, a gourd bowl containing liquid was taken by one of the men to the women who, in turn, appeared to sip from it, before it was taken to the idol and poured upon its face. By their costumes the six participants were probably from the Quezaltenango region, although they may have been Cakchiquel, from the east. I returned to the town in semi-darkness.

Next morning, Dr. Termer and his friend, laden with cameras, and I found the place of worship unoccupied. Embers of the fire smoldered; the

stones were still hot. Some charred remains, possibly of food, in the ancient mortar or stone bowl, and pine tips or needles tied in bundles had evidently been among the offerings. Reconstruction of the altar place between March and December had evidently included skilled mending of the broken image and construction of a terrace on platform of masonry for the larger altar. In this the image had been firmly set in upright position (Fig. 62.1,b). The smaller altar had been separated from the other. Stones which appeared to have been added since my previous visit included the well-shaped *mano*, prominent on the larger altar. The crudely shaped head with a pad like headdress, placed on top of the central cross of the smaller altar (Fig. 62.3,a), is reminiscent of that of an image on horseback. Possibly it is a representation of the patron saint of the town, Santo Tomas, for it resembles a painted wooden image, which, under the name of Tz'ijolaj, has a prominent part in the festival of the saint. The photograph of the larger altar, taken by Termer (1930b, Fig. 17), has previously been published by him.

In the course of subsequent periods spent in Guatemala during 1930 and 1931 I made several more visits to the altar. The ceremonies appeared to be confined to morning and night. Sometimes the prayer makers were alone, sometimes with supplicants. Bundles, probably with maize and other seed ready for planting, were put at the altar while prayers were recited. Among the offerings were little bundles of pine tips and flower petals. In the town churches, too, flower petals often cover the floor altars. The women pluck the petals; the men offer them. Dorothy Reynolds (1946) has a picture of this hilltop altar strewn with petals.

Mr. and Mrs. Treichler, Protestant missionaries in Huehuetenango, who had previously served in Chichicastenango, told me that sometime in 1923 they had happened to be in the shop of Cobar, the druggist of Chichicastenango, when a fellow missionary, Furman, purchased for 25 pesos a number of small objects of jade said to have been the contents of a cache recently uncovered at the place of worship on the hilltop. Sometime later I questioned Manuel Cobar in Guatemala, and he verified the story, telling me that there were 23 pieces, mainly amulets. He had retained three; a large jadeite bead with a crudely incised head, and two amulets, one of which was broken. These I purchased. The large bead, now in Peabody Museum, Harvard University, is crudely incised possibly in representation of the orbital rings and oral ornament of Tlaloc.

The large stone figure with the crossed arms is of a type fairly common in the Guatemalan highlands, and is without doubt of pre-Colombian origin.



62.1. Hilltop altar at Chichicastenango: (a) photograph taken March, 1928, showing statue recumbent and lacking top of head; (b) photograph taken December 1930, showing statue mended and in upright position. (Courtesy of Franz Termer.)



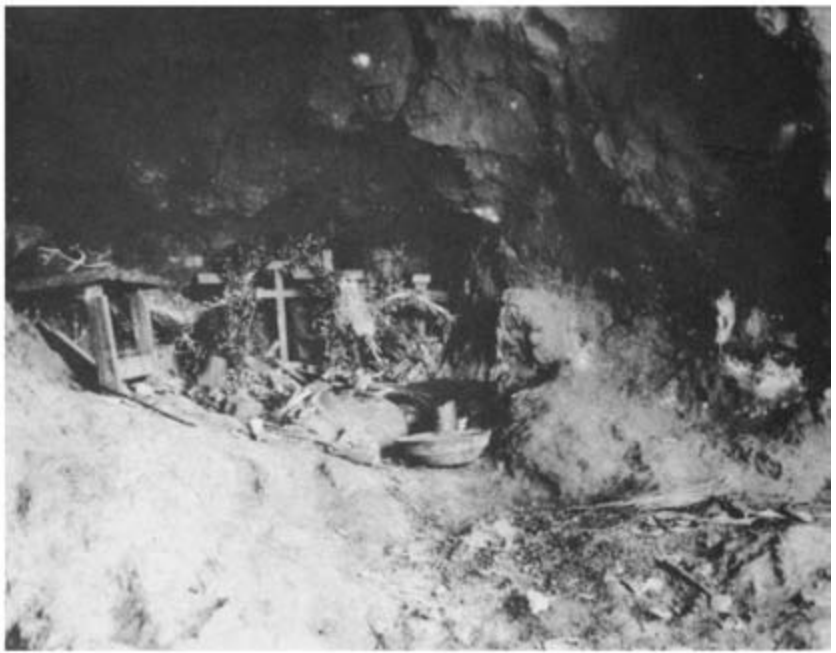
62.2. Ceremonies at the hilltop altar, Chichicastenango: (a) prayer maker at larger altar; small altar beyond; (b) prayer maker reciting prayers with suppliant seated; both photographs taken March 1, 1928.



a



b



c

62.3. Hilltop shrines: (a) smaller altar, Chichicastenango; note head on top of cross (courtesy of Franz Termer); (b) petroglyphs at shrine, Cerro Quemado, Quezaltenango; (c) unidentified shrine near Quezaltenango (courtesy of Gustav Reuthe).



62.4. Shrines near Quezaltenango: (a) cross near cleft with stone heads; (b) cleft with stone heads, apparently of horses; pottery head broken from vessel on ledge above; copal on calabash disks not visible in photograph.

Several statues of that type were in the Kanter collection (Burkitt 1924:138); some have trophy heads, but pendant from the neck, not the waist.

A townsman of Chichicastenango and Mr. Treichler gave the name of this statue as Pascual Abaj or Pascuala Abaj. In that connection one might call attention to a Quiche prayer published in Milla y Vidaurre (1937:1:41), and of which Brigham (1887) gives a translation. This is addressed to "Thou Lord and King Pascual." *Abaj* means 'stone' in Quiche and Cakchiquel (Brinton 1885).

Flavio Rodas and Ovidio Rodas (1938:6, 18–19, 128) illustrate the hilltop altar, and describe a ceremony. The photograph on p. 6 is of interest because it emphasizes the widespread fame of this shrine. The Quiche prayer maker swings his censer as he intercedes for a man identified as a Cakchiquel, although by his dress he appears to be a Tzutuhil

from the vicinity of Lake Atitlan. The authors identify the figure as Turcay, "which the ladinos ordinarily call Pascuala Abaj."

Chichicastenango, alas, is now on an established tourist route. In the luxurious hotel the servants are Indian youths, dressed in the characteristic Chichicastenango attire, including the tasseled headcloth, traditionally distinguishing costume of specific officials, both religious and civil. Worse still, at the Tzanjuyu hotel on the shore of Lake Atitlan, in the Tzutuhil region distant from the Quiche town of Chichicastenango, young Quiche servants also wear the costume of Chichicastenango. This sacrifice of beauty and dignity to the tourist trade has affected even the little place of worship on the hilltop. Termer, in a letter written at the end of 1938, remarks: "Our old friend Pascual Abaj is now the object of tourist excursions. They have rooted out all

the fine trees of pine and *pinabete* which surrounded the place of worship, and this is now in the open air. A broad path has been constructed from the pueblo to the site. Yet Indians celebrate always their customs there."

The more important of two sites near Quezaltenango where ceremonies are held is on the wooded slope of Cerro Quemado, which rises steeply on one side of the road between Quezaltenango and Almolonga. The protruding rock stands like a profile against the dense green of the long hill. Actually, there are two rocks, more than 7 m high, each with a group of incised figures: a lower figure on the larger rock near the cleft between the two, more or less uniting the two groups. Dr. Termer and I visited this site on the afternoon of January 12, 1929. Evidence of a recent ceremony included the head and some viscous organs of a recently killed fowl on a ledge, just below one group of incised figures, and white feathers stuck in groups in the ground below the offerings in front of the stones. Below the lowest figure, that of a woman in squatting position with legs apart (Fig. 62.3b), a fire had been made. The small dishes of hard calabash rind, each about 5 cm in diameter, on which the cakes of copal had been burned, were still around the fireplace. Candles had been placed on juts below the incised figures. Plucked feathers, concealed in bushes in the vicinity, suggested that sacrificial birds might be cooked and eaten at the ceremonial place. On a subsequent visit, in April 1930, I found evidence that candles had recently been burned below the figure of the woman, and there were calabash dishes for incense around the fireplace. A photograph by Gustav Reuthe in my possession shows the head of a sacrificed fowl on the summit of the rock. Termer, in the work cited, gives a vivid account of a scene at this site.

The second site in the neighborhood of Quezaltenango visited by me in 1929 is reached by a foot-

path which led through a maize field to an outcrop of rock. A stone cross was at the foot of the rocks (Fig. 62.4a). In a nearby cleft in the rock were two crude heads in stone, seemingly of horses, and, on a ledge immediately above, a pottery head broken from a pottery vessel (Fig. 62.4b). Nearby were the feet of a pottery vessel, shaped as animal heads, hollow and containing rattle pellets. There were also some offerings of copal on calabash disks.

The owner of the field, an Indian of some education, approached on seeing visitors. He stated that the two stone heads had been found when the excavations were made for the foundations of the cotton mill at Almolonga. The pottery pieces had been found in the neighborhood. He added that he had other recovered "idolos," which he would place there. This information suggested that he was constructing a *brujeria*, possibly exploiting local beliefs and practices. Whether he had placed the cross was not determined. He said, however, that many Indians came to the place.

I include a photograph by Gustav Reuthe of another altar site in the neighborhood of Quezaltenango. Three wooden crosses, a dish to hold offerings; and numerous boughs can be recognized.

WOODSTOCK, ULSTER COUNTY, N. Y.

[The correspondences in the Quiche calendar are: March 1, 1928—7 Kat; March 3, 1928—9 Kame; December 19, 1928—1 Noh; January 12, 1929—12 Imox. Of these 1 Noh alone is important. It is a dominical day. The year-bearer system has largely fallen into desuetude in Chichicastenango, but if the year is the same as that of Ixil, 7 Noh would have been the year bearer for 1928–29. On the other hand, the ceremony on 1 Noh was in all probability connected primarily with the feast of Santo Tomas. The information is not sufficient to say how much the luck of the day affects attendance at these shrines.—Editor.]

Tattooing and Scarification among the Maya

J. Eric S. Thompson

There is a considerable body of material, both in the literature and in archaeological collections, on the practices of tattooing and scarification among the Maya. In view of the world-wide interest in the subject, it has seemed advisable to bring together in print such items as have come to my attention. I would emphasize that these notes, jotted down at random over the past two decades, almost certainly do not exhaust the subject.

Conforming to well-established tradition, we shall refer first to that *vade mecum* of all students in the Maya field, the venerated writings of Bishop Landa. The prelate has this to say on the subject: "They tattooed their bodies [*labravanse los cuerpos*, literally, they decorated their bodies], and the more they do this, the more brave and valiant are they considered, as tattooing is accompanied with great suffering, and is done in this way. The professional workers first painted the part which they wished with color, and afterwards they delicately cut in the paintings, and so with the blood and coloring matter the marks remained in the body. This work is done a little at a time on account of the extreme pain, and afterwards, also, they were quite sick with it, since the designs festered and matter formed. On account of all this they mocked those who were not tattooed" (Landa 1941:91 with slight changes). Elsewhere Landa (1941:125-26) adds that the young men tattooed themselves only to a slight degree before marriage, and that the women tattooed their bodies from the waist up, except for the breasts, and that the designs were more delicate and beautiful than those of the men.

Although tattooing was clearly a mark of valor among the young men, and perhaps was a privilege of persons of noble blood, we find that it was also a punishment, for Landa (1941:121) tells us that if a person of rank was found guilty of theft, his face was tattooed (*labrar*) on both sides from chin to forehead, and this punishment was regarded as a very great disgrace. One must conclude that a special pattern was employed to designate thieves of high birth.

In one passage Landa speaks of scarification (*sajarse*), but the context suggests that he refers to the wounds inflicted to draw blood for sacrifice. The use of the reflexive indicates that the wounds were self-inflicted, whereas scarification for adornment, like tattooing, would doubtlessly have been the work of professionals.

Sanchez de Aguilar (1892:96) gives some interesting details: "For display of grandeur or for attractive appearance they used to cut themselves [*se sajan*] with certain stone lancets which they use on the breasts, arms, and thighs till they drew blood. In the wounds they placed a certain black earth or ground-up carbon. When they were healed, the cicatrices remained with the figures of serpents and eagles which they had made with the lancets. This was a common practice among the Cupuls of Valladolid, my home, where as a child I managed to see some of these tattooed [*labrados*] chiefs. The first friars forbade this old custom, and nowadays [1613] it is not followed."

The author of the *Relacion de Motul*, who was assisted by various Maya, states that tattooing (*labrarse*)

of men took place at the age of twenty-five or over. The men were decorated on the arms, legs, and face; the women, on the breasts and arms.

One of the reasons said to have influenced the renegade Gonzalo Guerrero not to abandon the Maya and rejoin his fellow countrymen was that he had had his face painted and his hands tattooed (*labradas*) according to the Maya custom (Cervantes de Salazar 1914, Bk. 2, Ch. 27). The writer adds that the tattooing of the hands was a privilege conceded only to those who had shown valor.

The book of Chilam Balam of Chumayel (Roys 1933:68) says of a certain Uooh Puc, "There was a glyph *uoh* written on the palm of his hand. Then a glyph was written below his throat, was also written on the sole of his foot and written within the ball of the thumb of Ah Uooh-puc." Similarly, Landa (1941:40) notes of Ah Xupan Xiu that "he wrote on the fleshy part of his left arm certain letters which were of great importance and such as to be respected, they say." The Maya word used for 'written' is *dz'ibtabi*. *Dz'ib* implies the use of a brush to paint glyphs; yet, I think, tattooing is implied, for a glyph painted on the sole of the foot or even within the ball of the thumb would hardly endure half a day.

Thus, for Yucatan we have information on tattooing of the breast, thighs, arms, and hands, and perhaps below the throat, the sole of the foot, and the ball of the thumb. Information on designs is confined to serpents, eagles, and perhaps hieroglyphs.

More to the south, among the Mopan Maya and the Itza, both of which groups were, culturally and linguistically, very close to the Yucatec, body decoration appears to have been more developed.

Francisco Ximenez (1929–1931, Bk. 5, Ch. 58) quotes Friar Agustin Cano concerning one of the Mopan Maya caciques: "He had all his chin, breast, and stomach worked with iron [*labrado á hierro*] with good paintings." Here, *labrado á hierro* must surely refer to the tattooing process, although, naturally, there is no reason to suppose any implement of iron was used. Villagutierrez y Sotomayor (1933, Bk. 8, Ch. 12) writes that the Itza had fine bodies and faces, although some made lines on them [*se los rayaban*] as a sign of valor. Here the Spanish term might refer to either paint or tattoo. However, in another passage, again taken from the diary of Friar Agustin Cano, Ximenez (1929–1931, Bk. 5, Ch. 65) says of an Itza prisoner from Tayasal: "All his breast, stomach and thighs were completely tattooed [*labrados*]. His penis was a monstrosity with very large ears or horns made by hand." Whether this last refers to tattoo or scarification is uncertain. It might result from blood-letting (cf. Gann 1918, Pls. 8, 9; Figs. 15–17). Ximenez (1929–1931, Bk. 5, Ch. 58), again quoting

Cano, says of one Mopan taken prisoner: "His penis resembled a bat with its two wings, and they make it that way and sacrifice to the demon." It is evident, therefore, that this practice was not uncommon in the area. Whether this was a form of scarification or tattoo or a form of mutilation, it is evident from the description of the Itza prisoner, and that of the Chol, given below, that in the Peten the tattooed area of the body was more extensive than in sixteenth-century Yucatan.

Friar Andres Avendaño y Loyola (1696:42v; I quote from a ms. translation of this by C. P. Bowditch and G. Rivera in Peabody Museum, Harvard University) makes a most interesting contribution to the subject in a passage not included in the copious extracts from the manuscript published by Philip A. Means (1917). The friar writes, "Most of them [the Itza of Tayasal] have their faces cut and rubbed with black, and some streaked like black negroes . . . Painting themselves or cutting on their faces the form of the animal which they have as a charm . . ." One can only conclude that the animal depicted was something in the nature of the man's totem or, perhaps, his nagual (familiar spirit). The cuts rubbed with black must surely refer to tattoo rather than scarification since Avendano is speaking of the appearance, not the process.

Ximenez (1929–1931, Bk. 5, Ch. 45), again quoting Friar Cano, writes of one Chol prisoner: "He was painted all over with lines worked with iron [*que se hacen á hierro*], and near his breast he had a chain painted, in the way they paint that of the *Toison*. Furthermore, in the middle of the stomach, in place of the lamb, he had painted a most ugly devil." *Toison* is an order of knighthood, the symbol of which is a wreath of alternating flint and steel. Again the use of the expression *que se hacen á hierro* implies that the work was true tattoo, or perhaps scarification, but definitely not painting.

Ximenez (1929–1931, Bk. 1, Ch. 36) also states that tattooing was common in the highlands of Guatemala: "The most that they had for adornment was to decorate all the body and paint it with a thousand figures. These they made with the very sharp point of a lancet or flint, and, putting on carbon, just as the Moors do, all painted themselves."

Bishop Landa, in the passage first cited, speaks of professional tattooers (*oficiales*). Ximenez (1929–1931, Bk. 5, Ch. 66), again quoting Cano, states that among the Itza of Tayasal the man who painted them was called *Chiquinuitz*, and he was paid in mantles. As we have seen the word *pintar* used where tattooing was meant, it is not improbable that this passage, also, refers to tattoo. *Chikinuitz* would mean 'west hill.'

The tattooers obviously formed a kind of guild. They had their particular deity, Acat (Lopez de Cogolludo 1867–1868, Bk. 4, Ch. 8). *Acat* is translated as inkstand in the Pio Perez dictionary; as a doctor's instrument case or a scribe's pen case in the Motul dictionary. It is evident, therefore, that this deity was closely associated with the tools of the trade. Lopez de Cogolludo makes a statement which unfortunately is somewhat vague, but which implies that the tattooing of a body was regarded as converting it into flowers: "Idolos tambien de los que labran los cuerpos á los indios, que decían se convertían en flores, llamados Acat."

Archaeological specimens show abundant evidence of tattooing or scarification. Designs run from the simplest to the most elaborate. The simplest design is quite prevalent. It consists of a line of dots along the side of the chin: A good example is to be seen on prisoners depicted on Stela 11, Yaxchilan. A somewhat more elaborate decoration is depicted on Stela 12, Piedras Negras. The chin, the corners of the mouth, and apparently the area around the ear are treated. A use of spirals and curves around the mouth and on the side of the chin occurs on Lintels 24 and 26, Yaxchilan. A still more complicated design is to be seen on a pottery figurine from the Usumacinta Valley now in the American Museum of Natural History which was exhibited in "Twenty Centuries of Mexican Art." This has tattooing or scarification on both cheeks, around one eye, and on the chin. In fact, many pottery figurines from the lower Usumacinta River northward across the coastal parts of Tabasco and Chiapas show tattooing in various amounts. Blom and La Farge (1926–1927:1:99) note that it is almost always present on figurines from Jonuta. Figurines from the island of Jaina occasionally show rather elaborate tattoo or scarification (Ruz 1942, 1945a, Fig. 340), but only in Yucatan is the art fully developed. One of the finest examples is on a head in the mouth of a serpent, a facade ornament, from Uxmal (Seler 1917:90). The decoration covers the chin, and continues around the corners of the mouth and across the cheeks. There are some interesting examples of facial decoration at nearby Kabah, on door jambs and at least two stone jars. One of the designs encircles the eye, makes a loop around the cheek, and ends at the chin, forming a cursive G. Schellhas (1904:600–601) discusses and illustrates examples of tattooing or scarification on figurines attributed to Yucatan in the Völkerkunde Museum, Berlin. One is particularly interesting in that the design around the chin represents the fleshless jawbone, a Maya symbol of death.

As an example of well-executed tattooing in the Guatemalan highlands, one might call attention

to the right-hand figure on the Fenton vase from Nebaj (Joyce 1914, Pl. 24). This consists of an oval around the mouth with short spirals at each end. A pottery figure which shows definite scarification, as opposed to tattoo, is illustrated by Villacorta (1938:95). This is the figure of a woman holding a pot, and is attributed to Finca el Mixqueño, near Patulul, in the department of Suchitepequez. In all probability it belongs to the class with rectangular bases. Each arm is decorated with about half a dozen "coffee beans" in low relief, and there are several shallow disks on the breasts. It is probable, however, that this finely modeled figurine is the product of Pipil, not Maya, hands. Another portrait of a woman with what may be scarification marks on the arms is illustrated by Dieseldorff (1926, Fig. 53). The figure is of the same general type as that just cited, and is said to have been found at Santa Ana Mixtan, in the department of Escuintla. This was almost certainly Pipil territory in the fifteenth century. The marks are similarly arranged in vertical rows, but consist of disks with an inner circle, perhaps made with a tubular drill.

Disks appear on the bodies of a few Itza personages depicted in the temples of Chacmool and the Warriors at Chichen Itza (Morris, Charlot, and Morris 1931: 243, 244). In one case the disk is painted red and outlined with black, leading Charlot to suppose this represents genuine tattooing. In view of the disks on the figure from Finca el Mixqueño, which, as noted, may well be of Pipil manufacture, it is interesting to find this same design on the bodies of the Mexican or Mexicanized Itza. The Pipil and Itza share quite a few distinguishing traits, and it is not improbable, therefore, that this design is Mexican, and was carried by both groups of immigrants to their new homes.

Mention should also be made of one other characteristic decoration, although this possibly is neither tattooing nor scarification, but disks stuck on the skin. This occurs on many figurines, particularly those found near Lubaantun, in southern British Honduras (Joyce 1933, Pl. 1), along the upper Usumacinta and the area immediately to the south extending toward Alta Verapaz, and also in the coastal area around the mouth of the Usumacinta. The decoration consists of one or more plain disks set in a vertical line down the center of the forehead, like the caste marks of India. Most usually there are three of these disks in a row. They are frequently worn by women, and, in fact, may only have been worn by women. They can hardly be ornamental, but might, perhaps, denote rank, group, or status.

One has the impression that the more complex forms of tattoo and scarification occur in the western

and northern parts of the Maya area, and, in view of the prevalence of the custom among non-Maya peoples in southeastern Veracruz, it is not impossible that this custom was borrowed by the Maya from their western neighbors. The finest tattooing appears to date from the eighth to the tenth century. Scarification, on the other hand, certainly has a much earlier development, since it is to be seen on figurines of the Mamom phase at Uaxactun (Ricketson and Ricketson 1937, Pl. 70e, f).

The archaeological catalogue of examples of tattooing or scarification could be greatly extended. My intent, however, is merely to show that the archaeo-

logical evidence supports the accounts of the early writers, and also to indicate that the custom has a respectable antiquity. Unfortunately, so far as I am aware, archaeology has produced no examples of the pictorial decoration described by Sanchez de Aguilar and Avendaño. All designs appear to be geometric. In the various accounts of the practice there is no mention of any color in addition to black, although, as we have seen, red and black tattoo marks may occur in the Temple of the Chacmool, Chichen Itza. It is very much to be doubted that Maya tattooing ever approached the high levels reached in eastern Asia and Polynesia.

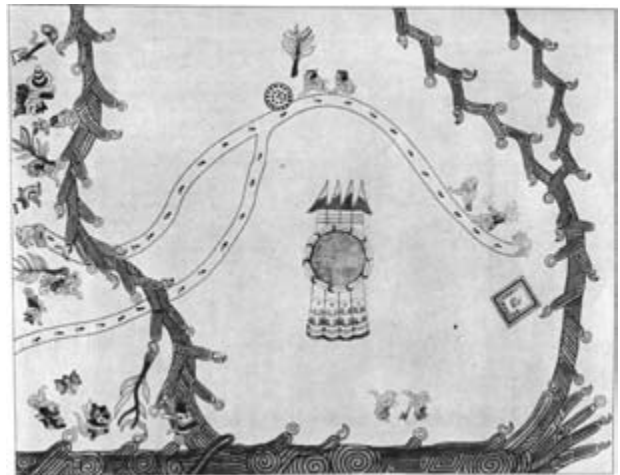
The Tamiahua Codices

R. H. Barlow

Three lithographed maps, tinted in bright water-color, were given me for publication in 1944 by Sr. Guillermo Echaniz, who retained duplicates. Another collection was shown me later by Sr. Pompa y Pompa, in the library of the Alzate Society. Obviously intended for publication in the nineteenth century, they bear no identification other than the phrases "Tip. y lit. Correo Mayor 410, Mex.," "Lam. 2" and "Lamina 3a," the remaining map obviously representing Lamina 1. Each drawing measures 28.5 by 36 cm, exclusive of the legends.

Though abounding in hieroglyphics, only the third bears inscriptions in the Roman alphabet. This identifies such town as Tamiahua (Chamiagua Vieja?), Tamapach (anciently Tamapatsco, now Temapache) and Tepecintlan (Tepetzintla), all of which lie to the north of Tuxpan, Veracruz. Other place names (Guauchinango, Pantepetl) may be located east of Tuxpan, so it is clear that Lamina 3, at least, refers to the Huasteca Veracruzana. I have called the group the "Tamiahua Codices" for lack of any precedent.

Sr. Pompa y Pompa accurately observed that all three maps seem to refer to the same place, perhaps in different periods. This is supported by the presence of the same shoreline featuring a promontory between two rivers, the northernmost or right-hand one shaped like a Y, in all three maps. One likewise observes that in Maps 2 and 3 the southern bank of the left-hand river bears the hieroglyph of Tlazolteotl; and that the roads leading inland begin at a place bearing an animal name and end at another somewhat resembling the first. Maps 1 and



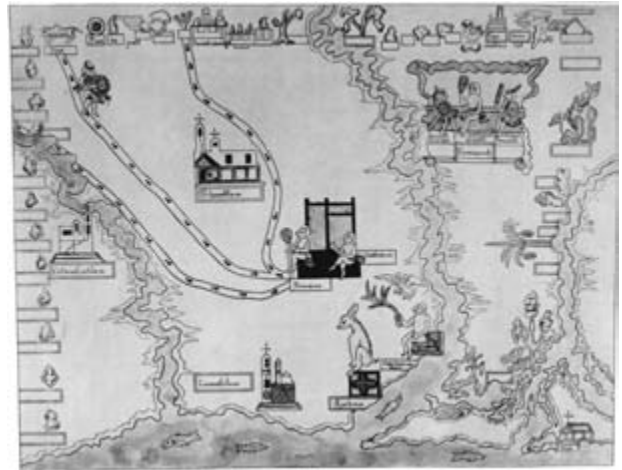
64.1. Tamiahua codex.

2 abound in drawings of native gods, Tlazolteotl, Ehecatl, Tlaloc (near the fork of the Y, Map 2), and cult objects (pantli and tzompantli), whereas Map 3 features Christian churches.

These pagan gods, known to be associated with the Huasteca, together with the nose plugs, shields, and expertly stylized hieroglyphs, incline me to accept the maps as authentic copies of some (to me) unknown originals, which a nineteenth-century student intended to publish, or perhaps actually did publish. If they are fakes, they are brilliant fakes. What is decipherable in them makes sense. Map 1 seems to hint at a local peregrination, at a date when



64.2. Tamiahua codex.



64.3. Tamiahua codex.

there were few settlements in the area. Perhaps the dot numbers 3, 4, 7, and 13 Tecpatl explain the tribal sojourn at various points. The itinerary seems to lead south from the land between the rivers, during wartime (cf. shield and arrow symbols). Map 2 is the most complex and handsome, presenting half a hundred place names for future decipherment, and showing no trace of European influence as yet. Map

3 is the usual story of a collapsing graphic tradition depicting colonial events.

From the northern Veracruz area we have little similar material. The codex of Huachinango, found in a box in a ruined city during the French intervention and published by Zelia Nuttall in *Man* a quarter of a century ago, is the only specimen that occurs to me.

ESCUELA NACIONAL DE ANTROPOLOGIA
MEXICO, D.F.

The Malinche of Acacingo, Estado de Mexico

R. H. Barlow

Below Tenancingo (Estado de Mexico) lie the small settlement of Acacingo and, to the west of this, the Cerro de la Malinche. On the latter exist various carvings, or remains of carvings, for in one place an outcropping of petroglyphs has recently been blasted with dynamite by someone eager to detach salable portions. Elsewhere appear fortifications, sentry posts (reminiscent of Nezahualcoyotl's Bath), and a shrine. These are on the west side of the hill, commanding an ample view of Tecualoyan, Zumpahuacan, Iztapan de la Sal, and other towns in the southern part of the state.

During a brief visit to the Cerro I was able to make a drawing of the shrine, which somehow missed the vigilance of the early church and has not yet been mutilated by the traffickers in antiquities. The simplicity of the monument, a single stone, perhaps 1.5 m tall and 1.9 wide, is balanced by the magnificence of the setting, a cliff-wall facing towns and rivers and cloud-filled space to the west and south.

This carving, "la Malinche," guards a trickle of water, and from her two bunches of plumes one recognizes Xochiquetzal, the first woman to bear twins and a popular goddess in nearby Morelos. At the nape she wears the water-goddess fans, *tlaquechpanyotl*; her face is framed in a serpent helmet with stylized eyes.

Whether the object in her clasped hands be the pendant of her necklace, another object appropriate to fertility goddesses, a heart, or something else, I do not know, but I guarantee the accuracy of my drawing. At the meeting point of her index fingers appears a shallow hole where some precious stone perhaps was embedded.



65.1. The Malinche of Acacingo.

The date, 2 Acatl 1 Tochtli, I relinquish to the reader of these notes. The year 2 Acatl is, of course, that of the New Fire ceremony, and the whole style of the monument looks to me immediately pre-Hispanic.

ESCUELA NACIONAL DE ANTROPOLOGIA
MEXICO, D.F.

Three Zapotec Stones

Heinrich Berlin

When I was at San Miguel Sola, Oaxaca, at the beginning of this year, my attention was called to three archaeological stories in the neighboring village of San Juan Sola. Father Jose Aurelio Garcia, the Catholic priest of San Miguel, gave me the information about their discovery.

Some time ago when visiting San Juan he happened to stroll around the small jail, at the back of which he found the three stones built into the wall. He had them removed to the small plaza of the village. It is supposed that they came from the neighboring hills, which apparently hold further archaeological remains.

Stones 1 and 2 (Fig. 66.1b, c) are very much alike, the measurements of both differing only slightly.

	Stone 1	Stone 2
Height of visible part	1.40 m	1.50 m
Width of front	0.35 m	0.50 m
Thickness front to back	0.50 m	0.35 m

I have not yet found a satisfactory explanation of the use of these stones, but since they are so similar it is highly probable that they were both used for the same purpose. One is tempted to associate them with a ball court where rings were used, as both stones show the typical double T with attached circle. The same double T and circle are on the opposite side of the stones (not visible in the pictures).

The third stone (Fig. 66.1a) clearly is Zapotec, since it is a stela with Zapotec hieroglyphs written



66.1. Zapotec carved stones: (a) Stone 3, stela with glyphs; (b) Stone 1; (c) Stone 2.

on it (Length 1.35 m width of front 0.33 m, thickness front to back 0.30 m).

I offer some suggestions which may help in the decipherment, under the assumption that the four main hieroglyphs are calendrical and that the additional elements represent numbers connected with them.

The inscription, reading from below upwards, starts apparently with a bar, which is to be read as 5. Then follows a hieroglyph which I am inclined to identify with Caso's (1928) Glyph J. Between the two portions of this glyph are inserted two circles which do not seem to belong to the glyph itself. One can interpret them as 2, add them to the mentioned bar, and then read the whole as 7 J.

Above this hieroglyph is Caso's Glyph D, combined with two circles, thus reading 2 D.

Then follows Caso's Glyph L, also with two circles, but on both sides of the upper scrolls of the hieroglyph are two hooks Caso (1938) interpreted similar hooks on a painting of Tomb 105 at Monte Alban as the outer ends of a 5-bar. Applying the same interpretation here, we would have to read 7 L.

Finally the inscription ends with Glyph D once more. As there are two circles, the whole reads 2 D as before. A little above these two numerical circles are two other smaller dots, differing from the circles in size and having no inner circles. Therefore it is likely that they are not numerical but rather ornamental space fillers.

MEXICO, D.F.

Blowguns in Guatemala

Edwin M. Shook

The blowgun is in use today among the Mam Indians of western Guatemala and their neighbors on the east, north, and west. These are the Quiche, Cakchiquel, Tzutuhil, Ixil, Kekchi, Chuj, Jacalteca, and several Indian groups to the west of the Mam in the highlands of Chiapas, Mexico.

In an effort to protect small game and particularly the quetzal bird, the Guatemalan national symbol of freedom, a law was passed about 15 years ago prohibiting the use of the blowgun. In areas where administration of the law was possible it was so rigorously enforced that the blowgun as a hunting weapon has been abandoned. Its use persists, however, in the more remote settlements.

Two blowguns have been purchased at Finca El Porvenir. The first was bought from the farm administrator in August 1942, the second in February 1916 from a Mam Indian, who had brought it from his home village of San Ildefonso Ixtahuacan in the southern part of the Department of Huehuetenango.

Finca El Porvenir is a huge farm situated approximately in the center of San Marcos, the westernmost department in the Republic of Guatemala. It occupies most of the southern slope of the Volcano of Tajumulco and overlooks a portion of the Soconusco region of the Pacific coastal plain. The Pacific Ocean, 60 km to the southwest, is visible from Porvenir. The farm lands range from 600 to 3,150 m elevation and contain large plantings of coffee and cinchona as well as subsistence crops of corn, beans, chile, bananas, and plantains. The maintenance of cinchona and coffee requires a considerable amount of resident labor,

and during harvest the number of workmen is more than trebled. The additional labor comes from all over the Departments of San Marcos and Huehuetenango, and in exceptional instances has been recruited from even as far as Chiquimula in eastern Guatemala and all intervening departments. The finca offers an unusual opportunity, therefore, for study of the customs of Indians from many sections of the country.

Indians speaking the Mam language of the Maya stock predominate among both the resident and transient labor forces at Porvenir. The blowgun is used by them there and in their villages for hunting birds, rabbits, squirrels, and other small game. They are proficient in its use, and the hunter is jeered by his companions if a hit is not scored on a small bird at a 20 m distance. Accuracy becomes progressively less up to 50 m, which appears to be the maximum effective range.

La Farge and Byers (1931:64) in their study of the Jacalteca of northern Huehuetenango gave the following description and use of the blowgun. "The blow-guns are hollow tubes of some light wood which grows in the Cold Country around San Miguel and Santa Eulalia, where there are people who specialize in making them. The gun is usually about 50 cm longer than the individual who uses it. The longest seen was 192 cm long (a little over six feet). On one side of the gun is placed a lump of beeswax which serves as a sight. Pellets of clay are used for bullets, *spa-up:al*. These are rolled into approximate size in the hands and carried dried in a small pouch. The ones for immediate use are worked down to the



67.1. Mam Indian using blowgun, Finca El Porvenir.

exact size between pieces of bark or by rotating them in the mouth of a brass rifle shell, *kaski'ya* (Spanish). The shots that have been thus prepared are carried in a small pocket on the outside of the pouch, ready to hand. According to statements made to us, a rabbit can be brought down with this weapon at a distance of fifty yards."

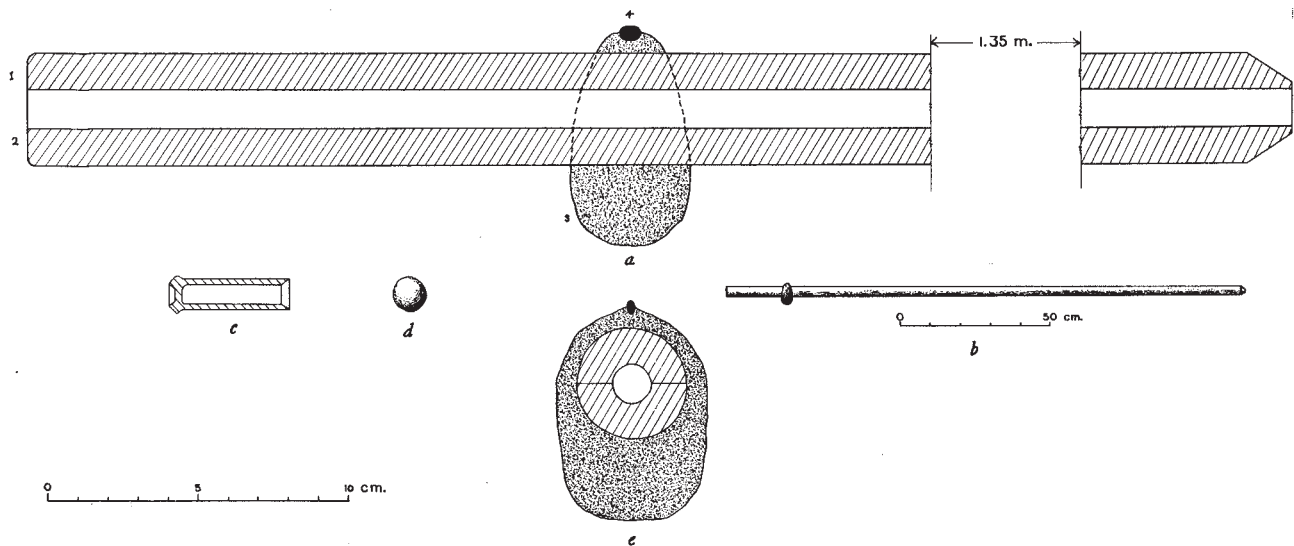
The blowguns purchased in Porvenir are identical in workmanship and differ only in details of measurements. The barrels, made of well-dried white pine or cypress, consist of two halves glued and nailed together, the work being done by hand with such infinite care that an almost perfect bore results. One blowgun measures 148 cm long, 1.3 cm diameter of bore, 3.1–3.8 cm outside diameter. The second measures 172 cm long, 1.21–1.28 cm diameter of bore, 3.2–3.7 cm outside diameter. In outside diameter each barrel tapers slightly from the muzzle to the mouth end, which is beveled to fit the mouth (Fig. 67.2a).

A Mam Indian informant from Concepcion Tutiapa, Department of San Marcos, reports two small trees much sought after for making blowguns. These are the "moquio" found in the Porvenir forest, and the "ixkepatze" which grows in the region of Concepcion Tutiapa. Both have straight branchless trunks with soft pithy hearts. They are carefully

selected for diameter and straightness, cut, and the bark removed. Then, some makers of blowguns will allow the pole to dry for five or more days before removing the soft heart; others will bury the pole in mud or under water for five days allowing the pith to rot before removing it. My informant claims that the blowguns from the moquio and ixkepatze are the finest and most accurate. He emphasized his statement by quoting the price of these guns at double the price of those made in two pieces, because the latter are likely to open at the seams, causing a loss of air pressure and thus decreasing their effectiveness.

The gun barrels, when thoroughly dried and the bore cleared, are treated on the exterior with several applications of beef tallow to prevent further drying, or shrinking and cracking of the wood. The tallow and continued usage give the gun barrel the rich color of dark stained mahogany.

Finally a gun sight, consisting of a single brilliant red bean impressed in a lump of beeswax, is placed on the barrel 20 cm from the muzzle end. The beeswax encircles the barrel and forms a large lump directly below the gun sight (Fig. 67.2a, e). This acts as a balance to keep the sight upright. The wax is obtained from the hives of a small wild bee, locally called "congo."



67.2. Details of blowgun: (a) longitudinal section of blowgun: 1, 2, two halves of barrel, glued and nailed together; 3, beeswax; 4, red bean (gunsight); (b) side view of blowgun; (c) bamboo polishing tool; (d) clay pellet, 1.8 cm diameter; (e) cross section of gun, sight, and beeswax balance.

I received about 50 unfired clay pellets with the blowgun from San Ildefonso Ixtahuacan, and a small bamboo tool for wearing down and polishing the pellets. Only a few of the clay pellets were of a size to fit the gun, the remainder being roughed out marbles of clay slightly larger than the gun's bore. The finished pellets averaged 1.18 cm diameter, ranging from 1.10 to 1.20 cm; they averaged 1.74 grams in weight and varied from 1.62 to 1.81 grams. Unfinished pellets were all greater than 1.21 cm in diameter and averaged in weight 2.38 grams. The lightest pellet weighed 1.96 grams and the heaviest, 2.92 grams. The size of the blowgun necessitates the pellets being less than 1.21 cm diameter to be successfully fired through the barrel. Best firing results are obtained with a pellet as close to the bore diameter as possible without jamming. The vendor stated that the pellets were obtained from natural clay found in the vicinity of his village. The clay was finely ground between stones, then enough water added to make the clay malleable, and pellets rolled out by hand as youngsters everywhere make clay marbles. These are allowed to dry thoroughly and, if the diameter is correct, are ready for use in the blowgun. The tubular bamboo tool (Fig. 67.2c) is used to wear down the pellets to size, round, and polish them. A more successful tool, when obtainable, is the metal shell of a .44 caliber cartridge. Thompson (1930:88) has noted the use of a section of bone for the same purpose among the Mopan Maya, and he informs me that a bone shaper is used also by the Kekchi of the Alta Verapaz.

The age of the blowgun in Guatemala is probably considerable. In Porvenir I have found unfired clay pellets among surface sherds of plumbate ware. This cannot be assurance of the preconquest usage of the blowgun, but better evidence of its age was apparently obtained by Bertha P. Dutton and Hulda R. Hobbs (1943:62). They found spheres, cane of plumbate ware, in the ruins of Tajumulco, a site approximately 20 km due north of Porvenir. These they believe to have been blowgun pellets. Also they refer to the present day use of the blowgun by the Mam Indians of that region. Linné (1939) recovered in his archaeological excavations at Teotihuacan and Culpulalpan in Mexico a number of clay pellets of a size suitable for blowguns, and a carved pottery fragment depicting a hunter with a blowgun. These finds probably belong to the Middle Culture of Central Mexico. Thompson (1930:88) has collected a number of references to the blowgun in early literature. He also notes that among the Kekchi and Mopan Maya the blowgun tubes are prepared by submergence in water to rot the pith.

As yet, I have been unable to find a Mam name for the blowgun or pellets. The Mam use the Spanish words "cerbatana" for blowgun, and "bodoque" for the clay pellets. The Chuj of northern Huehuetenango and the Quiche use "pub" for the blowgun. Stoll in 1883 listed names for the blowgun among the Peten Maya, Kekchi, Pocomchi, Pokoman, Cakchiquel, Uspantec, Ixil, and Quiche (Stoll 1883).

FINCA EL PORVENIR
GUATEMALA

A Reconnaissance of El Rincon del Jicaque, Honduras

Gustav Strömsvik and John M. Longyear III

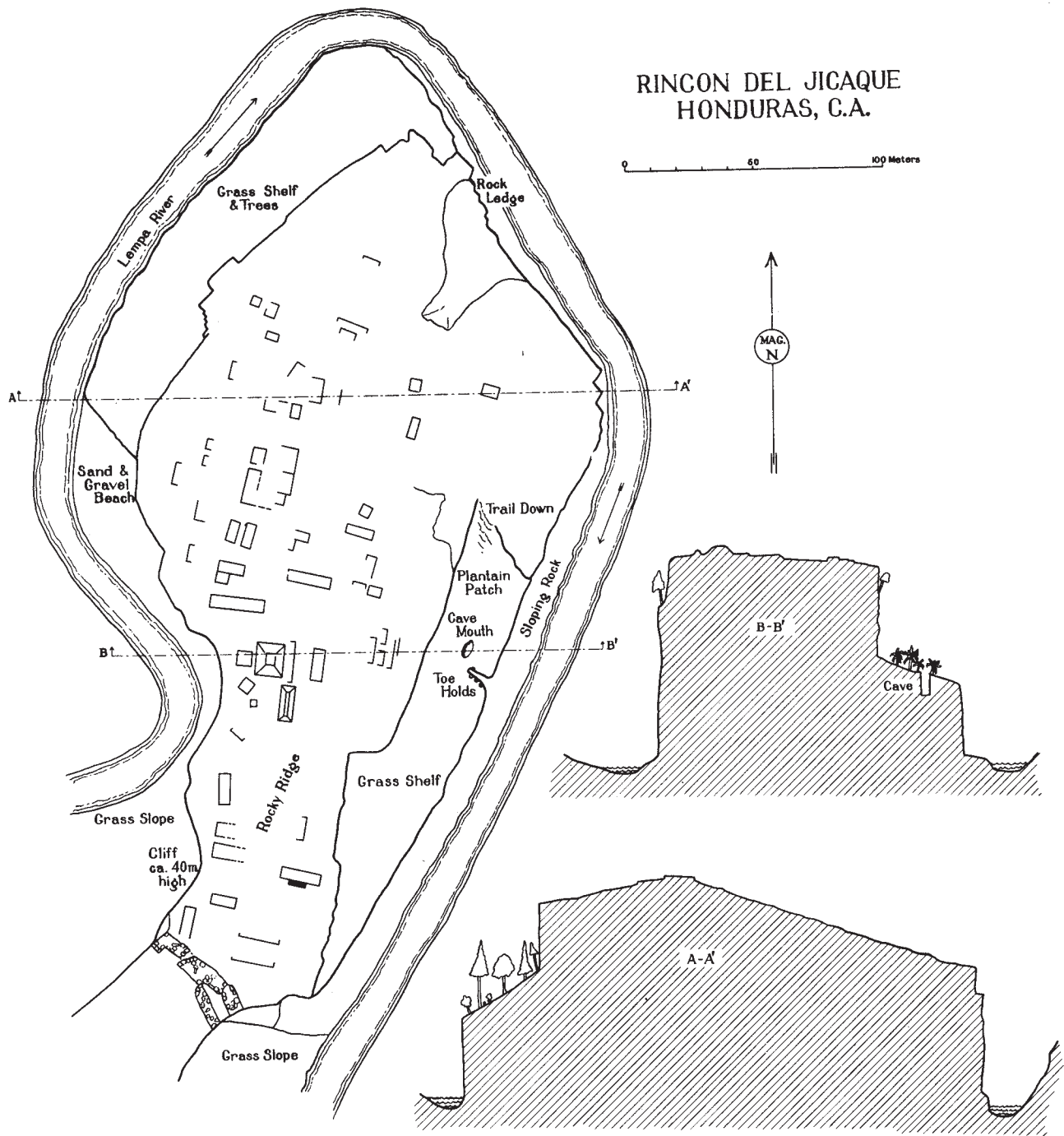
The backbone of organized resistance offered by the Indians of western Honduras to Spanish rule was finally broken in April 1530, when Hernando Chaves besieged and conquered the stronghold of the Maya chieftain, Copan Cael. The story of this siege, told by Francisco Antonio Fuentes y Guzman in 1689 (Morley 1920, App. V), is well known to all students of the literature concerning Copan. In recent years, coincident with the revival of archaeological activity at Copan, much thought has been directed toward locating this conquest site. It would be almost impossible today, however, to find the spot described by Guzman: a site "defended to the south by the extended mountain range of Chiquimula de la Sierra, to the north by that of Gracias a Dios, to the west by a ravine running north and south and filled with the waters of the famous Copan river" (Morley 1920:543). From this it would appear that the stronghold lay in some intermontane basin bordering on the Copan River, but the description is hardly explicit enough for a search, 400 years later, without a great deal of luck, not to mention imagination. Furthermore, Guzman's account of the ruins of Copan, included in the same document, is so fanciful that doubt must also be cast on his accuracy respecting the site of Chaves' successful campaign.

In 1834, Juan Galindo included in his report (Morley 1920, App. XI) on Copan to the Guatemalan government a brief paragraph describing some ruins known to the natives of this district as "Conquest." That Galindo, 300 years after the event, had hit upon the location of the fortress besieged by Chaves must

also be open to doubt, but at least his description was sufficiently confining to encourage a Honduran archaeologist, Sr. Rafael Girard, to search for the site. In 1944, Girard came upon a place near Esquipulas called "El Rincon del Jicaque," which not only conformed with Galindo's (1836) description in almost every respect, but also contained mounds, pottery, and other evidences of previous human occupation. The finding of one, at least, of the "conquest" sites in the literature had thus been established, and the way was open for further investigation. In March 1946, Professor Jesus Nuñez, Director of the Archaeological Museum at Copan, paid a short visit to El Rincon del Jicaque, and a few weeks later Gustav Strömsvik and Prof. Nuñez spent a week at the ruins, making a plane-table survey of the mounds (Map 68.1) and sinking several test pits for pottery. The present report is based on the findings of this last expedition.

DESCRIPTION OF THE SITE

Thanks to the airplane, the site of El Rincon del Jicaque is today readily accessible. The town of Ocotepeque, Honduras, is a 15 minute flight from either the ruins of Copan or the city of San Salvador; and from here mules can be taken to the ruins, which are a four hour ride distant, the road following the left bank of the Lempa River, in the direction of Esquipulas. At the settlement of Piñuelas, about an hour's ride from the ruins, guides and workmen can be obtained, and it is here that anyone wishing



68.1. Rincon del Jicaque, Honduras.

to spend more than one day at the site must stay, for camping at the ruins is precluded by the difficulty of obtaining water there.

The town of Piñuelas, itself, is of interest to the imaginative historian. The date of its settlement is far in the past, well beyond the memory or knowledge of even the oldest inhabitants. The people of

this little valley are light colored, with little Indian admixture apparent, and most of the families bear the name of Polanco. Can it be only coincidence that one of Hernando Chaves most trusted captains was named Gaspar de Polanco, or are these settlers the present day descendants resulting from some of that doughty warrior's less military conquests?

El Rincon del Jicaque, the name given the ruins by the people of Piñuelas and surrounding villages, has no connection with the conquest or with the ancient Indian population. We were told that, many years ago, a Jicaque Indian was brought up in one of the nearby settlements. He repaid his adopters by running away with one of the village maidens, the couple choosing the peninsula bearing the ruins as a hide-out. A considerable posse had to be employed in order to capture the Indian and bring him to justice and, ever since that occasion, the ruins have been known as El Rincon del Jicaque, or "refuge of the Jicaque."

Galindo's description of this site runs as follows: "Four or five leagues from Esquipulas is the place popularly called 'Conquest'. It is a peninsula formed by the Lempa River, and in part by a brook which unites with that river to the south, the waters running through a very deep canyon in the vicinity, leaving to the south a single narrow entrance. After traveling some distance through it, a stone trench is encountered, with many quarried stones, which crosses the isthmus where it is not wider than 20 yards. After passing the trench, a plain of about 200 yards in diameter is found, surrounded by the river and elevated above it by perpendicular precipices more than 100 yards. The side opposite the peninsula is level with it, but at the distance of a rifle shot. As a point of defense it was excellent, the besieged having supplies of provisions and the means of drawing up water from the surrounding abyss."¹

Our present expedition found this description accurate in most respects. As we approached the ruins from the south we circled a large hill near the peninsula and then noted a depressed area in the ground, 2–3 m wide and about 0.25 m deep, running straight to the narrow entrance of the site. This depression may be the remains of some kind of road, but no pavement or flooring of any kind could be found. A stout wall of stone, completely shutting off the narrow neck of the peninsula, was next encountered (Fig. 68.11.). The wall at present is about 2 m high, of medium-sized uncut tuff boulders, and built in four sections, this seemingly the result of patchwork and not of rational planning. A break in the wall, probably of fairly recent date, affords passage to the site. Although Galindo wrote of a trench crossing the entrance, no trace of one was found, nor were any cut stones seen, either here or elsewhere in the ruins. Since, however, Galindo made no mention of the wall, certainly the most prominent feature of this neck of land, it is possible that he interpreted the word "trinchera" to mean a fortification in general, rather than an intrenchment. There have been more confusing errors made by persons writing in a foreign language.

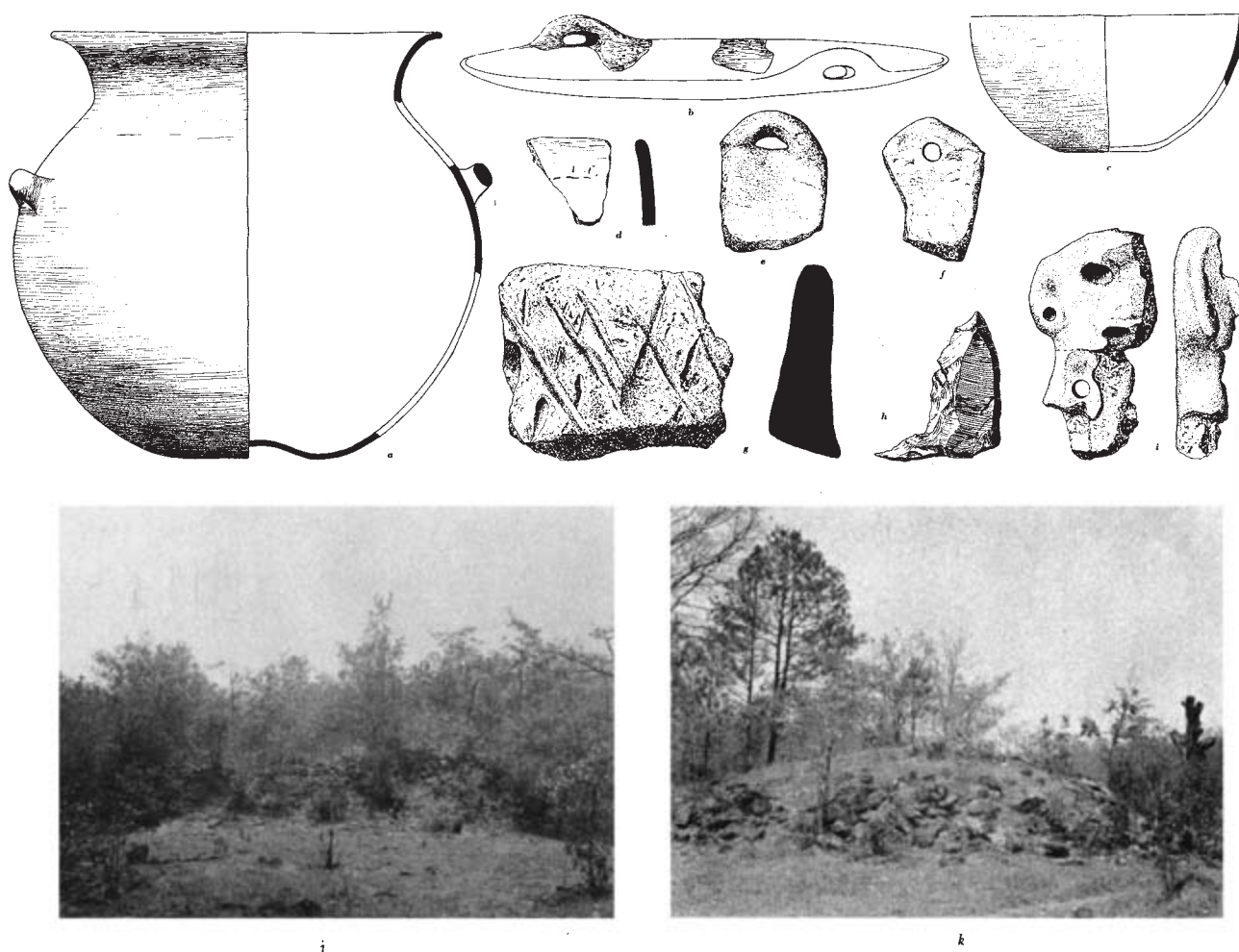
Once inside the wall, one sees an arid plain, its flat surface broken only by a few pines and scrub oaks. A thin layer of humus lies directly on the soft tuff which forms the bedrock of the peninsula. The Lempa River, some 80 m below the plain, is the sole source of water, and it can be reached from within the wall only by climbing down a set of toe holds cut into the rock on the east side of the mesa. These toe holds descend an almost perpendicular cliff, 4 m in height. None of the expedition attempted the climb, but a couple of boys from a nearby settlement demonstrated that it could be done. On the mesa top, no construction or natural formation was noticed that could possibly have served as water storage tanks.

Although foundation walls of house sites appear all over the plain, only one is of vaguely pyramidal form, justifying the title "mounds" (Fig. 68.1k). This last may well have been the location of a shrine or altar. The great majority of walls consist of only one course of stone; one foundation has three crude stone steps on its south side. As noted above, no squared or cut stones were seen. Most of the house sites are oriented with their long axes about 20 degrees east of north (magnetic). A trench was dug through one of these foundations to determine the construction of the shelter once erected upon it. The very small amount of debris would seem to indicate it had wattle-and-daub walls and a thatch roof, with a floor of hard tamped clay or disintegrated tuff. Artifacts were very scarce. A few broken manos, with two grinding surfaces, were recovered, together with a couple of small greenstone celts and several obsidian flakes and cores. No other specimens, aside from pottery, were found.

ARTIFACTS

Although the equivalent of ten man-work-days were spent in trenching at various spots in the ruins, only a small, amount of pottery was recovered, all of it from deposits located west of the western row of house mounds. The sherds can be classified into two wares, brown and red, the former having a numerical advantage over the latter of about 4 to 1. All specimens were more or less badly weathered, since they lay close to the surface in the thin stratum of soil covering the bedrock.

Brown ware sherds have a stick-smoothed surface, light sandy brown in color. The paste matches this surface color, with a darker core (dark brown to black) being almost invariably present. Paste and temper both are coarse in texture. Red ware is similar to the above in both surface and paste, the distinguishing feature being a thick, soft slip of hematite



68.2. Rincon del Jicaque, Honduras.

red. All red ware sherds found were slipped on both surfaces.

Vessel forms are few and simple. One of the two most common is, as one might expect, the storage jar. This has a globular body with dimpled base, the neck being somewhat constricted and then outcurving to the lip (Fig. 68.1a). Diameters at the lip run 24–28 cm at the point of greatest neck constriction, 18–22 cm. This form occurs in both brown and red ware, the only difference in the two being in the use of handles and, possibly, decoration. Judging by the number of handles recovered, brown ware storage jars must have borne at least two, and perhaps three, horizontally placed on the body of the vessel. The handles are simple loops, with a span ranging between 5 and 6.5 cm. Red ware handles, on the other hand, are very scarce, and none of the specimens give any indication of their location on the jar. Decoration is simply disposed of. No brown ware sherds bear any trace of design, painted or incised. A

single red ware rim sherd, however, has a fragmentary linear pattern painted in black on the exterior, just below the rim (Fig. 68.1d), so we may assume that some, at least, of the red ware jars bore painted decoration.

The other common vessel shape is the comal, a large shallow plate used today, as presumably in the past, for cooking tortillas. The Rincon del Jicaque specimens measure 25–35 cm in diameter, and bear horizontal loop handles on the rim (Fig. 68.1b). Judging by more complete comales found at other sites, these handles are two in number, opposing each other. The handles on the largest comales found at El Rincon del Jicaque are flattened in section and have a span of about 7 cm. On smaller plates, the handles measure 3.5 cm in span (Fig. 68.1e). A number of comal rim sherds have merely perforated “ears,” possibly for string suspension (Fig. 68.1f). All of the comal sherds are of brown ware, and none of them are decorated in any way.

The only other recognizable vessel form represented by the sherds is an undecorated hemispherical red ware bowl, with a mouth diameter of 15–25 cm (Fig. 68.1c). This shape is somewhat less common than those described above.

There is one example of incised decoration among the Rincon del Jicaque sherds. A single coarse brown ware fragment, with very thick walls and unsmoothed surfaces, bears a crude incised hachure design on one surface (Fig. 68.1g). Vessel form cannot be distinguished.

Fragments of three crude, handmade figurines were found. Two are legs, one bearing a foot with toes indicated by gashes of irregular length and spacing. The third fragment is of a head and torso (Fig. 68.1i). Eyes and mouth are indicated by deep gouges, the former single and the latter double. The nose is pinched up, with a dishd-out area above, representing the forehead. At the sides of the head, ears are faintly represented by pinching, with a hole at the base indicating the earplug. On the torso, two holes pierce the body from front to back in the places usually occupied by the breasts.

The stone industry of El Rincon del Jicaque is as poor as the ceramic. Long obsidian flakes, undoubtedly used for knives, are fairly common. Most of them have been secondarily flaked along the edges, probably through use. One irregularly shaped flake may have been employed both as a drill and as a dartshaft scraper (Fig. 68.1h). Polished greenstone celts are represented by one complete and two fragmentary specimens, the former measuring 14.3 cm long and 2.9 cm wide at the cutting edge. These celts were probably hafted in wooden handles similar to the one found by Gordon (1898) in a cave at Copan. Since no cut stone was found at El Rincon del Jicaque, these celts could not have been used for that purpose, but were probably employed in cutting wood and, possibly, as war hatchets.

Not a single artifact of Spanish or colonial origin was recovered, either on the surface or in any of the test trenches.

SUMMARY AND CONCLUSIONS

El Rincon del Jicaque is a fortress situated on an isolated peninsula formed by a bend of the Lempa River and cut off from the "mainland" by a strong artificial wall. The ruins consist of a number of low foundations, built of uncut tuff boulders, and one higher mound, which may have supported a shrine. Toe holds cut into the cliff afford precarious access to the Lempa River below, but no water storage facilities, natural or artificial, exist on the surface of the plateau.

The ceramic industry is poor, both in quantity and variety. The only vessels represented by the sherds are storage jars, in brown arid red ware, brown ware comales, and red ware bowls. Decoration is virtually nonexistent. A few crude handmade figurines complete the pottery tally. Stone work is represented by a few obsidian knives and greenstone celts.

The above evidence makes it quite clear that El Rincon del Jicaque was not a permanent occupation site but rather a place of refuge, to which the inhabitants of the surrounding region retired in times of stress. There is no stratigraphy in the thin layer of soil overlying the bedrock, but the occurrence of storage jars in two different wares may be evidence that the site was used over a considerable period of time. On the other hand, this might also be an indication that two different peoples visited the place on various occasions.

The age of the ruins is difficult to determine, since the pottery cannot be compared with that of any of the better-known sites in the area, such as Copan, nor do the figurines resemble any previously reported upon, except in a very general way. The complex as a whole, however, is late rather than early in appearance. The obsidian flakes and greenstone celts are indistinguishable from those found all over the region, but, since these appear to have been extremely stable and long-enduring cultural traits, they cannot be used in dating. We think it safe to say, however, that El Rincon del Jicaque is late, probably falling in the period of unrest immediately preceding and contemporaneous with the Spanish conquest. The very nature of the site suggests this and, while the presence of Spanish artifacts would confirm this dating, their absence, in view of our very limited excavation, is not conclusive.

There can be little doubt that this is the place described by Galindo in 1834. Whether it is the site of Hernando Chaves' victory over Copan Cael is, however, another matter. Galindo did not so commit himself in his account; and we here follow his cautious example. If Fuentes y Guzman, departing from the extravagances of his description of Copan, gave us a true report on the conquest site, we must look elsewhere for the location of his tale of deep intrigue and high courage.

NOTES

1. "Cuatro o cinco leguas de Esquipulas se halla el parage llamado vulgarmente 'la Conquista' (vea el No. 26) es peninsula formada por el rio de Lempa i en parte por un arroyo que se le une del Sur, corriendo las aguas en una barranca hondisima [sic] a su derredor, dejando del lado del Mediodia, una sola i estrecha entrada; cami-

nando por esta algun espacio se encuentra una trinchera de piedras, muchas de ellas canteadas, que atraviesa el istmo [istmo] donde no tiene este mas de veinte varas de ancho; pasada la trinchera se halla un plan, como de doscientas varas de diametro, rodeado del rio i elevado de el mas de cien varas por precipicios perpendiculares. El lado

opuesto a la península esta a su nivel pero a distancia de taro de fusil largo. Como punto de defensa era este excelente, teniendo los sitiados acopias de viveres i modo de subir el agua desde el abismo circunvecino." (Copied from the Peabody Museum of Harvard's photostat copy of the original manuscript.)

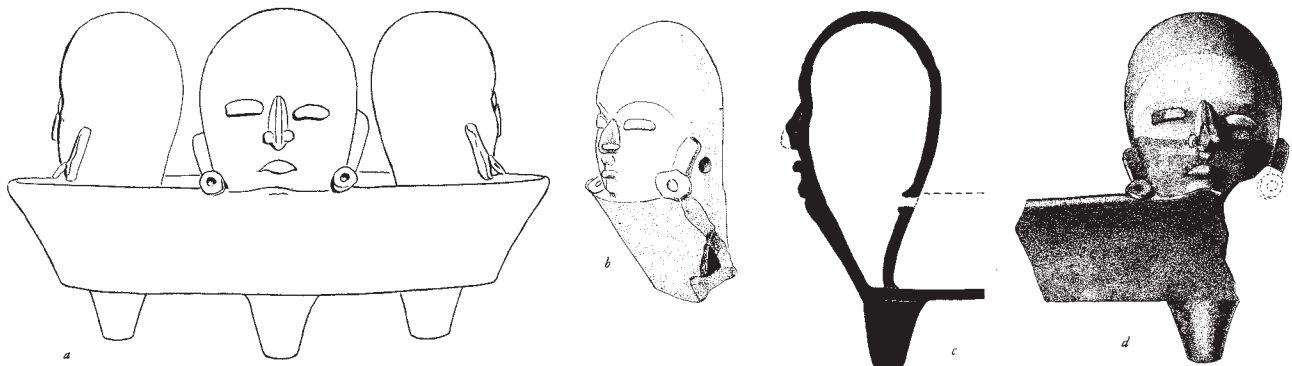
"Rim-Head" Vessels from Kaminaljuyu, Guatemala

A. V. Kidder and E. M. Shook

From time to time there have turned up at the great archaeological site of Kaminaljuyu, in the northwestern outskirts of Guatemala City, fragments of an interesting type of presumably ceremonial vessel, whose rim bore large human heads. Some of these were brought in for sale by people living in the vicinity, others were found by us among sherds of the Miraflores phase thrown out from road cuts and adobe makers' pits. We therefore believed the vessels to have formed part of the Miraflores complex, the earliest so far surely identified at Kaminaljuyu and thought, because of the nature of its hand modeled clay figurines, to belong to the group of "archaic" Mesoamerican cultures. We could not, however, be certain of this assignment until a small but unmistakable piece of one of the characteristic heads came to light in checking other material from a pure Miraflores deposit in a stratigraphic test made by R. E. Smith in 1938 on Finca Miraflores, a part of the Kaminaljuyu site.

The vessels are of course, unslipped, reddish brown ware; the surfaces, particularly the heads, are well smoothed but unpolished; the paste is a warmer brown thickly sown with particles of white temper, presumably volcanic ash. They were almost surely tripods, probably with a head set above each of the solid, truncated conical feet (Fig. 69.1a). Although no piece is sufficiently large for accurate measurement, the lip diameter of the flat bottomed bowls evidently ranged from about 45 to 55 cm. Thickness of walls and base, 1-1.4 cm; of the heads, slightly less.

69.1. "Rim-head" vessels, Kaminaljuyu: (a) restoration based on fragment shown in *d*; (b) three-quarter view of head shown in Fig. 69.2a, lower left; (c, d) section and front view of head in Fig. 69.2a, second from left, upper row; the vent, shown in section as at back of head, is actually toward left side (cf. Fig. 69.1b); total height of *d*, 29 cm.





69.2. "Rim-heads" and fragments, Kaminaljuyu: (a) all examples of this type found to date; for drawings of second head from left, upper row, see Fig. 69.1c, d; of head at lower left, Fig. 69.1b; (b, c) front and side views of head shown in a, second from left, lower row; total height of b, c, 25 cm.

The hollow heads are remarkably uniform. Looking outward, they rise, at the back, from the floor of the bowl; the chin rests on the straight, somewhat flaring wall. They are high, round topped, and above the level of the eyes almost perfectly circular in section. A single round vent, 1.2–2 cm in diameter, has in each case been punched through the wall toward the left side, usually below the level of the ear. Of the two specimens sufficiently complete to have retained such an object, one (Fig. 69.2b) contains a single clay rattle pellet, the other does not.

There is no representation of hair or headdress. The eyes, two flat and more or less elliptical pellets of clay, are set in shallow horizontal depressions pushed inward while the head was in the leather hard stage. The upper edges of these depressions form rather realistic, but otherwise unmarked, eyebrows. The cheeks were slightly swelled outward by pressure from within. The prominent nose was modeled on, but, unlike the eyes and the round buttons on the sides of the nose, the lines of its junction with the surface have been obliterated; whether these depict ornaments or the sides of the nostrils is uncertain. Most characteristic is the out-thrust, pouting lower lip that rises from the small chin. The ears are short flanges set at right angles to the head; at their lower ends are round carp lugs with central depression. One face (Fig. 69.1d) bears thin

white paint from the line of the nostrils to well up on the forehead; the ears, cheeks and mouth, thin red. Another (Fig. 69.2c, d) shows traces of the same treatment and there are slight evidences of white on still others. The interiors of the bowls are not fire blackened. Such was the standard type, of which we have six heads, all evidently from different vessels, and several fragments; there is one piece from a very much smaller example (Fig. 69.2a, lower right).

If we are correct in believing that the above described vessels bore three heads, there can be little doubt that they are related in some way to, and probably exercised the same function as those with three similarly placed, but smaller, heads that have been found on the south coast of Guatemala, in Mexico, Salvador, and Honduras (see Note 15). There is no evidence, however, that our specimens possessed the scoop in the rim that appears between two of the heads of those from the Rio Coyolate, Guatemala (Note 15) and from Teotihuacan (Linné 1934, Figs. 155, 156); nor do our heads have an opening to the outside. The Kaminaljuyu "rim-head" vessels are certainly older than most of the above and may, indeed, be the oldest of all.

In closing, attention may be called to the resemblance of these high, bald heads with their upturned lower lips to representations of the human head in Olmec art.

Some Mexican Figurines of the Colonial Period

R. H. Barlow

The manufacture of "*idolitos*" did not, of course, stop with the conquest, though there must have been some shift in their function. Sr. Miguel Covarrubias, who owns ten of the eleven figurines depicted in the accompanying illustration, observes that all sorts of little clay figures are sold in the markets today, for various occasions or merely as toys. In any case, it seems worthwhile publishing specimens of transitional ceramic figures as documents for the history of Mexican art and as a reminder that native civilization did not collapse operatically as the curtain closed on Cuauhtemoc.

No. 1 was purchased by Sr. Miguel Barrios Espinosa in San Pedro Tlahuac; the others are all from the Covarrubias collection and come from unascertained points in the Valley of Mexico. Permission to publish is gratefully acknowledged.

No. 1 is a feminine figure, flat in back, from a one-piece mold. She wears colonial garb and feeds a shapeless little animal with a longish tail and paws (a cat?) from a bottle (?) in her left hand. No. 2 is a male head, broken from some very similar figure. Nos. 3 and 4 are women wearing shawls. The latter is cast in the round and may be stood on its base in a kneeling position. Nos. 5 and 6 are also feminine figures from two-piece molds, hollow below so that they stand. No. 7 is flat-backed, like Nos. 1 and 2, and less Indian in style. Except for her antiquated

clothing she might seem merely a broken doll, like the exquisite little heads Nos. 8 and 9. Nos. 6 and 7 have their eyes shut, as if praying.

The remaining two figures are more problematic. No. 10 is from two molds and may be set up, but whether it represents a sinner in the stocks or a child in a high chair is not clear. In either case, the expression is one of appropriate resignation.

No. 11, made of red clay from a two-piece mold, may not even be colonial. Covarrubias has so classified it, on stylistic grounds, but if we compare it with a stone drum reproduced by Keleman (1943, Pl. 292. a) and preserved in the Museo Nacional, it is clear that the hairy face with protruding, rabbit-like teeth is the same. Furthermore, the grec about the eyes of our figure is seen in the drum to be a hand, and a hand is symbolic of the pleasure gods whose names begin with the number five, such as Macuilxochitl and Macuilpiili. The headdress of our piece resembles an inverted flower, which again connects the wearer with the gods mentioned. Whatever its purpose or period of manufacture, the figurine is unusual.

Other colonial figurines are exhibited in Copilco, and a clay head wearing a ruff was recently obtained in Ecatepec by Mr. Irving Bullock of the University of Cambridge. It is to be hoped that these and other pieces may soon be published, so as to afford a wide sampling of the style.



70.1. Mexican figurines of the Colonial period.

The Dating of Structure 44, Yaxchilan, and Its Bearing on the Sequence of Texts at That Site

J. Eric S. Thompson

The hieroglyphic texts at Yaxchilan are the most tantalizing of all Maya inscriptions. Most of them, despite their generally fine state of preservation, cannot be used with assurance, for the Calendar Round dates, fully rigged with explanatory dates, are in general adrift, bereft of the anchors of Initial Series or the fair havens of Period Endings. Until the bearings of such dates are known, the investigation of the explanatory glyphs of unknown meaning which accompany them can have but meager results.

The longest text in a reasonable state of preservation at Yaxchilan is situated in Structure 44, where it occupies three lintels and six doorsteps, and reaches a total, according to Morley, of 174 glyph blocks. Morley (1938:2:440-60) discusses this inscription at length. He expresses his certainty that it dates from the Middle Period, and states his belief that it was dedicated in 9.13.0.0.0. The decipherments which I propose differ radically from those which are published by my colleague in epigraphy and to which the reader is referred.

This spring Mr. Giles G. Healey paid a visit to Yaxchilan, largely to comply with my request for photographs of several sculptures at that site. Among them were splendid photographs of the upper step of the southeast doorway of Structure 44; these, with his wonted spirit of disinterested generosity, he placed at my disposal (Fig. 71.1).

It was immediately clear that there were serious errors in Money's decipherments of the dates on this step. Furthermore, the photographs supplied confirmation of a belief I had long held that the month

sign of the Initial Series of Lintel 46 was Kankin, not Mac. Below are given the decipherments as I see them. Those that are new readings are marked with an asterisk; the others are according to prior decipherments by Morley or Bowditch. I have omitted divisions of glyph blocks.

MIDDLE DOORWAY

Upper step A	A1-D2	9.12.8.14.1	12 Imix 4 Pop I.S.
	D8-C9	12.0	
B	C10	9.12.9.8.1	5 Imix 4 Mac
Lower step C	M1-N1	9.11.18.15.1	7 Imix 14 Zotz'
Lintel 45 D	R1-S1	9.12.8.14.1	12 Imix 4 Pop

SOUTHEAST DOORWAY

Lower step E	F'1-G'1	*9.11.3.8.1	5 Imix 9 Pop?
Upper step F	V1-W1	*9.6.10.14.15	4 Men 3 Mac
	V5-W5	*7.11.2.19	
G		(*9.14.1.17.14	5 Ix 17 Kankin) see L.46
	Y4-X5	15.15.17	
H	Y5-X6	*9.14.16.15.11	2 Chuen 14 Mol
Lintel 44 I	L'1-L'2	9.12.17.12.0	13 Ahau 3 Muan?

NORTHWEST DOORWAY

Lower step J	W'1-X'1	*9.8.0.15.11	4 Chuen 9 Xul
	X'4-Y'4	12.2.9	
K	W'6-X'6	*9.8.13.0.0	5 Ahau 18 Zec
Upper step L	M'1-N'1	*9.10.14.11.8	8 Lamat 1 Mol?
	O'2	6.12	
M		(*9.10.15.0.0	6 Ahau 13 Mac)
	P'3-O'4	*4.5.12.0	
N	O'4	*9.15.0.12.0	10 Ahau 18 Zotz'
O	O'7-P'7	*9.14.19.14.18	7 Etz'nab 11 Yaxkin
	O'6-P'6	3.2	
P	P'8	*9.15.0.0.0	4 Ahau 13 Yax
		12.0	
		(*9.15.0.12.0	10 Ahau 18 Zotz'
			Not repeated
Lintel 46	GA''1-G''2	*9.14.1.17.14	5 Ix 17 Kankin I.S.

These dates will be discussed in order, although I am not sure that the sequence as given above is necessarily correct. I have started with one Initial Series and finished with the other. Attention is called to the relationship with the dates of Structure 23 (Lintels 24, 25, 26, and Altar 7), the dedicatory date of which has been firmly placed by Morley at 9.14.15. 0.0 11 Ahau 18 Zac.

Dates A and B. Decipherments as first made by Bowditch. They are perfectly straightforward save that the coefficient of Mac looks like 9 instead of the required 4. Date B is found also on Lintel 25 of Structure 23. The Lunar Series with Date A does not conform to the requirements of the period of lunar uniformity, for the coefficient of Glyph C is 4, whereas in the period of uniformity it should have been 6.

Date C. The date 9.14.11.15.1 3 Imix 14 Ch'en, exactly 2 katuns and 13 tuns later, appears on Lintel 25.

Date D. Morley's restoration of this date seems perfectly acceptable.

Date E. A dubious reading. What may be the strokes at the bottom of Imix are perhaps recognizable. This date is 1 katun 6 tuns; that is, twice 13 tuns earlier than Date B.

Date F. Morley reads the day as 4 Ahau and changes the distance number, which is either 7.11.2.19 or 7.11.1.19, to 6.16.1.19 to connect with Date H, which he reads as 2 Imix 14 Mol. However, such drastic alterations of the original are not necessary. The day sign at V1 is almost certainly Men, not Ahau. The beaked nose, squarish eye, peculiar cap, and lines around the mouth, all features of Men, are quite clear. The distance number leads forward to Date G.

Date G. This does not appear here but occurs on Lintel 46 in the form of an Initial Series, all the periods of which, except the kins, are missing. The terminal date is 5 Ix and a head variant of a month sign which has a coefficient of 17. Bowditch identified the sign as that of Mac; Morley first plumbed for Muan, but later accepted Bowditch's identification. For several years I have felt that both decipherments were wrong, and that the month sign was in reality the head variant of Kankin. This identification has the following points in its favor: Firstly, the postfix is of the type found with Kankin but never with Mac. Secondly, the prefix nearly always a part of Mac in the inscriptions (but not in Codex Dresden) is absent. Thirdly, the animal's head has a pointed ear, which is typical of the head variant of Kankin but not of that of Mac. Fourthly, what remains of the Initial Series introductory glyph seems to show the two arches of the form corresponding to Kankin. The distance numbers prove the identification.

Similarly, the month part of the date on Stela 20 must be Kankin, not Mac.

Unfortunately, both the moon age (14D) and the form of Glyph G (apparently G3) cannot be reconciled with an Initial Series corresponding to 5 Ix 17 Mac. One has two choices within the possible range of acceptable dates:

G	9.14. 1.17.14	5 Ix 17 Kankin	Glyph G3	Moon age approx. 22d
G'	9.16.14.12.14	5 Ix 17 Kankin	Glyph G2	Moon age approx. 14d

The lunar data are somewhat confused. Glyph C has a coefficient of 2, for the top dot is obviously the eye so frequently placed before the forehead of the death god, yet Glyph X is the crossed-legs variant found only with Glyphs C3 and C4, so far as we presently know. Furthermore, the coefficient of Glyph D is an irregularly constructed 14, for the space which it is assumed that the bottom dot occupies is practically equal to that of two of the others. Nonetheless, there can be little doubt that 14D is carved (the moon

glyph is not Glyph E, but Beyer's shining moon variant with the eye, not a dot, in the center).

In 1937 I (Thompson 1937:72) favored the second reading, but now I am forced to conclude that the agreement thereby reached with the moon age must be discarded in favor of the first reading, one Calendar Round earlier. Whether the correct form of Glyph G or the correct moon age was of more importance to the Maya we have no means of knowing, but the earlier date fits better in the pattern of the whole text. The choice of the second would produce a reading for Date H of 9.17.10.10.11 2 Chuen 14 Mol, which would fall some time after 9.15.0.0.0, which, I believe, was the dedicatory date of this text.

Date G is 29 tuns before the date 9.15.10.17.14 6 Ix 12 Yaxkin, which appears on Stela 12, where it is safely anchored, and on Lintel 27 of Structure 24. The interval is not one generally recognized as significant, and its occurrence may be fortuitous.

Date H. Morley reads this as 2 Imix 14 Mol, but the curving strokes of Chuen are as clear as day in the photographs. Furthermore, Morley is forced to change the distance number from 15.15.17 to 15.15.6 in order to use this reading. The date as freshly deciphered fits very nicely.

Date I. I have some misgivings about the identification of the month sign as Muan. There is an eroded superfix, whereas Muan never has that detail. Furthermore, the features of the head are somewhat unlike those of the standard variations of that month sign. Nevertheless, it is probable that Morley's identification is correct. The date is 2 katuns 3 tuns before Date N.

Date J. The position here chosen is one Calendar Round earlier than that favored by Morley. The date falls 5 katuns before the Initial Series on Stela 5.

Date K. Joined to Date K by a distance number. It marks the end of 13 tuns. The same date occurs on the Tablet of the Inscriptions at Palenque, where it also was far in the past when recorded.

Date L. The reading is shaky. The month sign is 1401; the day may be Lamat. The absence of good photographs makes this decipherment uncertain. It can, however, be connected by distance numbers with surely deciphered dates.

Date M. This date does not appear but may occupy glyph blocks 0'1, P11, at present covered

with masonry. That it was intended is, I think, fairly evident from the distance numbers.

Date N. This is reached by a distance number of 4.5.12.0, which Morley changes to 4.5.17.0 so that it will fit his scheme. The date is 2 katuns 3 tuns after Date I.

Date O. This is safely tied by distance numbers to the sequence.

Date P. The very important katun ending 9.15.0.0.0 4 Ahau 13 Yax. The declaration that it marks the completion of 15 katuns is not on the visible parts of the text, but glyph blocks O'9 and P'9, where such a record would normally occur, are covered with masonry added to support the door jamb. The various katun glyphs with coefficients of 4 and 5, to the presence of which on the riser of the step Morley calls attention, might well have some connection with this celebrated date. Except for the slight overlap of Date N (cf. that of Los Higos, Stela 1), 9.15.0.0.0 is apparently the latest date in the inscription and therefore presumably the date of the monuments dedication. It will be remembered that this text shares Date B with Structure 23 and has another date (Date C), which has an anniversary, 2 katuns 13 tuns later, also on Structure 23. That building, however, has been safely dated by Morley as 9.11.15.0.0, just 5 tuns earlier than the assumed dedicatory date of Structure 44.

All in all, I deem the Calendar Round positions now assigned the dates in this text fairly secure, and certainly more logical than those proposed by my colleague. I regard it as reasonably certain that Structure 44 bears the dedicatory date 9.15.0.0.0.

In passing, I have noted various anniversaries as they may be of help in anchoring the dates of Yaxchilan. These were:

- Date J. The Initial Series of Stela 5 is 5 katuns later.
- Date N. This falls 2 katuns 3 tuns after Date I.
- Date C. The date 9.14.11.15.1 3 Imix 14 Ch'en on Lintel 25 is 2 katuns 13 tuns later.
- Date E. This is 1 katun 6 tuns (2x13 tuns) later than Date B. But the reading of Date E is not certain.
- Date G. The date 9.15.10.17.14 6 Ix 14 Yaxkin is 1 katun 9 tuns later.

Below are listed additional anniversaries at Yaxchilan, but Calendar Round positions are not certain in all cases. I give the positions I think most acceptable in parentheses but have no marked confidence in the correctness of my choices:

A	Lintel 1, etc.	9.16.1.0.0	11 Ahau 8 Zec
A'	Lintel 2, Str. 33	9.16.6.0.0	4 Ahau 3 Zotz' 5 tuns
5 tun anniversary			
B	Stela 11	(9.15.19.1.1)	1 Imix 19 Xul
B'	Strs. 1 and 42	(9.16.4.1.1)	7 Imix 14 Zec
5 tun anniversary			
C	Lintel 27, Str. 24	9.13.13.12.5	6 Chicchan 8 Zac
C'	Lintel 26, Str. 23	9.14.8.12.5	11 Chicchan 13 Yaxkin
15 tun anniversary			
D	Lintel 26, Str. 23	(9.14.12.6.12)	12 Eb 0 Pop
D'	Lintel 9, Str. 2	(9.16.17.6.12)	1 Eb, end of Yaxkin
2 katun 5 tun anniversary			
E	Lintel 40	(9.14.15.9.3)	12 Akbal 16 Uo?
E'	Altar 3	9.16.1.9.3	12 Akbal 11 Kankin
26 tun anniversary			

Dates A and A' and C and C' require no comment. They are firmly tied to the Long Count. The Initial Series corresponding to Date C' I published in 1937. Morley reached the same conclusion independently. In view of this agreement, I think the decipherment may be accepted as correct.

Date B occurs on Stela 11 but is not tied to the other dates on that monument. On the whole, Morley's placement appears the best choice. However, if that is accepted, Structures 1 and 42 were erected at 9.16.5.0.0 or even later. I see no valid reason why that should not be the case. It can hardly be coincidence that Date B' is exactly 5 tuns after Date B. Concerning the positions of Dates D and D' there is still less certainty, but I see nothing against the proposed placements. Date E Bowditch reads as 12 Ben 16 Uo; Morley, as 12 Ahau 18 Uo. The month coefficient is surely 16, the two ornamental crescents being quite plain. The transversal line of Akbal is reasonably clear in Maler's photograph, and the two circles at the top are prominent. I think the reading 12 Akbal 16 Uo can be accepted without undue reserve. Date E' is an Initial Series. Morley's painstaking decipherment of it is certain. We have already encountered a 26 tun anniversary in Structure 44. Anniversaries involving 13 tuns appear to have



71.1. Upper step, southeast doorway, Structure 44, Yaxchilan, showing dates F and H. (Courtesy of Giles G. Healey.)

been favored at Yaxchilan, presumably because they are valid not only in terms of the Long Count, but also are anniversaries in the 260 day cycle.

In suggesting amendments to a few of Morley's readings and interpretations, I may, perhaps, appear to be in disagreement with much that he has written. That, of course, is not the case. The ninety-nine sheep lie unnoted in the fold of safe decipherment, while I pursue, over the hills and dales of somewhat polemical writing, the one ewe lamb that has strayed. I would feel justifiably proud had I as large a flock safely bedded in that fold.

Morley has, perhaps, been unduly influenced by his scheme of artistic development. Dates are placed in accordance with his analysis of Yaxchilan art. He postulates an unbroken advance in artistic achievement, followed by a swift retreat. Each artist is

assumed to be somewhat better than his predecessor. Such is not, alas, the course of sculpture or of any other art, so far as I know, anywhere in the world. Did such a law exist, it would greatly simplify the work of art historians. First-rate artists tend to cluster at peaks of cultural achievement, as Kroeber has shown, but there is no evidence for a law of gradual improvement in style (assuming such a thing can be gauged), for techniques hardly enter the picture so far as Yaxchilan is concerned. Such a uniform and undeviating advance may have occurred at Yaxchilan, but it can hardly be postulated.

The same sets of Calendar Round dates occur on two different groups of lintels, one of which, Morley notes, is markedly inferior in style to the other. Consequently, he places the dates involved one Calendar Round apart, holding the interval of 52 years to account for the advance in presentation. Nevertheless, there is no authenticated case in the whole body of Maya inscriptional texts of a date being commemorated by its Calendar Round anniversary. Anniversaries in terms of the Long Count (5 tuns, 10 tuns, 13 tuns, 1 katun, etc.) are plentiful, and, so far as we know, represent the usual method of marking anniversaries in terms of the calendar. That method was followed at Yaxchilan and was common at most Maya cities (e.g., the anniversaries of 6 Caban 10 Mol at Copan). Authentic examples of Calendar Round anniversaries should surely be demonstrated before the practice can be assumed to have existed. Furthermore, Long Count anniversaries of single dates were the practice, not linked anniversaries of several dates, as are assumed for these Yaxchilan texts.

Important dates were often repeated on monuments, the dedicatory dates of which are several decades apart, but their Long Count positions remain unchanged. The same probably was the case at Yaxchilan, but the same sequence of dates would hardly be repeated five decades later without any additional dates. Therefore, from the epigraphic point of view, I think we must assume, in the absence of evidence to the contrary, that the dates repeated on these lintels at Yaxchilan occupy the same positions in the Long Count, and have approximately the same dedicatory dates. As a corollary, we can be reasonably certain that artists of the first rank and those not out of the top drawer were near contemporaries.

There appears to be no evidence that at Yaxchilan the ratio of probability of correct decipherment rises with the proximity of a date to another in the same inscription or to the dedicatory date. As we have noted, there is one distance number of over 7 1/2 katuns and another of over 4 katuns in Structure 44: in Structure 10 there is a distance number of 2.3.5.10,

and others carry the count forward another 19 tuns. On Lintel 21 there is a distance number of over 15 katuns.

It would appear probable that the positions of Calendar Round dates in relation to the dedicatory date depend largely on the functions they perform. Thus a date which serves as a determinant of the dedicatory date will almost certainly fall in the same katun; another which, let us assume, served to mark some method of lunar reckoning might well be placed several katuns in the past in order to demonstrate with more clarity the equation employed. Generally speaking, dates at some cities tend to be in the katun on which a monument was dedicated, but we have no reason to suppose that the same is true of Yaxchilan, where a different method of recording dates was generally employed, and where, as yet, few dedicatory dates have been identified. However, even if it is assumed that the people of Yaxchilan were interested in placing dates within a katun of the dedicatory date, it by no means follows that a date 2 tuns from the dedicatory date is more likely to be correct than a date or 5 tuns removed therefrom.

I think, then, that the placement of Yaxchilan dates should, for the present, be made independently of sculptural variations. Later, when more is known concerning the development of that art, it may be possible to arrange the texts at Yaxchilan accordingly. It is to be doubted that a stage will ever be reached, at which sculptures can be arranged one by one in precise order.

Anniversaries should be helpful in placing some texts, and the presence of the same or related dates in different texts should be of value in arranging a general sequence. For example, the fact that Structures 23 and 44 share a date (far in the past when each was dedicated) and one has a date that is an anniversary of a date in the other (both dates, in turn, are probably anniversaries of a yet earlier date which has not survived) hints that the two structures are of approximately the same date. The new decipherments of the text of Structure 44 indicate that this building was dedicated 5 tuns after Structure 23. Similarly, Structures 1 and 42 were probably dedicated at approximately the same time as Stela 11, with a fair, perhaps good, probability that they date from 9.16.5.0.0.

A feature of Yaxchilan texts is not only the scarcity of Period Ending dates but the even greater rarity of designations of dates as such. I have not lost hope that eventually it will be found that the priests of that city had a method of placing Calendar Rounds in the Long Count, although we have not yet perceived it. Possibly the "Ben-Ik" katuns in some way had that function.

Unfortunately, the name Yaxchilan has now gained rather general preference over that of Menche. It might be of interest to outline briefly the somewhat unsavory story of how this came about.

The modern discoverer of the ruins was Professor Edwin Rockstroh, of the Instituto Nacional, who was responsible for a deal of exploratory work along the Usumacinta, as well as in other regions of Guatemala. In 1881 Rockstroh visited Yaxchilan and named the site Menche or Menche Tinamit in honor of Bol Menche, the mythical ancestor of the group of Lacandon living in the vicinity. Rockstroh's name, therefore, had an association with the Lacandon and was supported by the general custom that the discoverer has the right to name his discovery. *Tinamit* is the general term in highland Maya for town or city. It derives from the Nahuatl but is a thoroughly naturalized Maya word.

Maudslay, who visited Yaxchilan on the recommendation of Professor Rockstroh, naturally followed the latter's designation and published his descriptions of the site under the name Menche. Charnay, who reached the ruins a few days after Maudslay, gave the horrendous name of La Ville Lorillard to the site. Mercifully, that has not survived. With the exception of Charnay, all Americanists referred to the site as Menche for the next twenty years.

Fourteen years after Rockstroh's visit, Maler first reached Yaxchilan and gave the site its present name. Maler had a pernicious habit of rectifying geographical names to conform to his very crude ideas on the Maya language. He disapproved of the name Menche, supplying it with a perfectly incorrect deri-

vation, which he then proceeded to condemn. He decided to name the ruins after a small tributary which enters the Usumacinta a few kilometers above the ruins. This stream was known as Yalchilan, and is thus given by Charnay and Maudslay, and thus appears on several maps. Yalchilan proved a hard linguistic nut for Maler to crack, even with the peculiar crackers he was wont to employ. From the Pio Perez dictionary, apparently, he learned that *chilan* was the past participle of a word meaning to lie down or stretch oneself full length. *Yal* seems to have stumped him, so he changed it to *yax*, green. Thereby he obtained the fantastic meaning 'green stones,' a reference to the color of the stones, he thought. In his own words: "Green stones. *Yax*, green; *chilan*, that which lies or is scattered about; by extension in this particular case, stones." Quite apart from the fact that *chilan* could not have the meaning he gives it, and that *yal* can hardly be changed to *yax*, the construction he proposes is impossible in Maya.

Having coined an ungrammatical and meaningless name and having unethically substituted it for that given to the site by its discoverer, Maler indulged in a few ponderous jests at the expense of the learned men who were using Rockstroh's name. Yaxchilan, misbegotten of ignorant tampering with the Maya language and an ungentlemanly disregard of the rights of the discoverer, was quickly adopted by such writers as Bowditch, Spinden, and Morley, who for the most part completely ignored the name Menche. With such honored godparents, the illegitimate word soon attained respectability; the usurper succeeded in ousting his legitimate half-brother.

The Codex of the Derrumbe del Templo Mayor

R. H. Barlow

According to the text of 1553, *Costumbres de Nueva España* (1943:1, 57) "... llegado que fue el marqués del prendimiento de naruaez a su jente le halló herido a moteçuma y mandó el marques dar fuego a todos los cues y altares que tenían y como se quemauan se caían y al caer vn cu grande hizo gran ruido y preguntando moteçuma que ruido era aquel le dixerón que auia caído el cu y de este enojo murió . . ."

In the accompanying plate we have a portrayal of the blowing up of the Temple of Huitzilopochtli, in a codex which I have provisionally baptized with a name derived from the event. The Nahuatl text refers to the Year 1 Acatl 1519, and beginning at the side of the uppermost building reads "ytecpanchan moteuczoma uei tecpa mexico tenochtitlan" ("Moctezuma's government house. The great government house of Tenochtitlan"). Below this first inscription is added "occecca yn ipilchan y moteucçoma tlacateuctli" ("elsewhere, the princely house of Moctezuma the tlacatecuhtli").

Above the second building, the one intended to represent a pyramid with steps, appears the news that it is "ycal diablo quitteq . . . q qlatique yn españoles oca mexico" ("the Devils House which the Spaniards burned here in Mexico"). At the foot of this temple we read the principal inscription: "ypan ni ce Acatl xiuitl in vallaque in españoles yn marques y uel achto ocan calaquico in texcalan yn oqu iuh mitouaya. in ya uecauh in ualnauatlatotia ciuatzintli cempoualtecatl uel chane teticpac. ynic ome ytoca tlacochcalcatl. no achto canaco iniquac yancuican quittaco tlalli yn españolesme in çan ococan mocue-

paco in uey atempa yua in uel iquac machiyaco in oyttaloque aqui que yn oquiçaco yn oyttoque nima yquac quicac yn inteyo yn moteuczoma in tlacateuctli yuan tlanauati in chialo(z)q yn ompa auh in oyaque quiçaco yciuhca (q)ualtotocaque in cenpoualteca yn aquin tlaqual [sic] yn aoquin cochiz ynic qcaquitico yn moteuczoma. otlattoq inixpa in teteuctin in tlacatecatl atliacatzin tlacochcalcatl tepeuatzin yua tlatilolco quauhtemoctzin." This may be translated: "In the year 1 Acatl the Spaniards arrived, the Marquis. Before anything else, they entered Texcalan [Tlaxcala]; at once, it was said. For some time a woman of Cempoalla, and resident of Teticpac, had come interpreting. The second [nahuatlato] was called Tlacochcalcatl; likewise from the first the Spaniards had him, when they first saw the land, when they had just come back there to the shore [following the Grijalva and Córdoba expeditions]. It was just then that it came to be known that they had been seen by those who came out [to spy], that they were spoken to. The tlacatecuhtli Moctezuma heard the news about them immediately and ordered that they be awaited there, and they [the messengers] departed, they went rapidly. They followed the people of Cempoalla, without food, without sleep so that Moctezuma might come to know. They spoke before the lords Atlixcatzin the tlacatecatl, Tepeuatzin the tlacochcalcatl, and Quauhtemoctzin of Tlatelolco . . ."

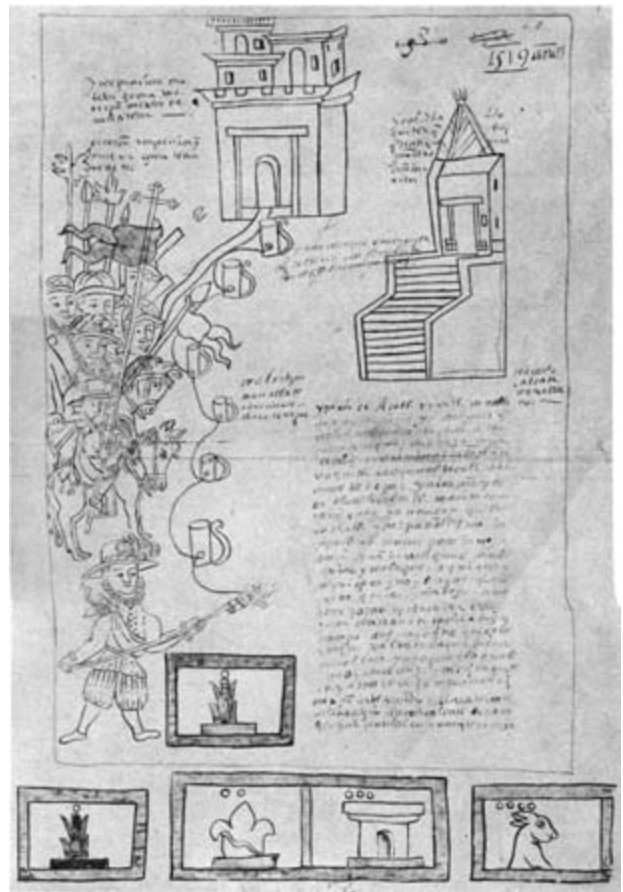
Short inscriptions occur at either side of the temple stair. On the left we read "malintzin nauatlato teucciuatl chane teticpac" ("Maliache, nahuatlato, princess, inhabitant of Teticpac"), which agrees with

Cristobal del Castillo, who states that Malinche was of Mexican parents, and had been sold by them in Teticpac, a town of Coatzacoalcos. On the right of the stair figures the name of the other interpreter mentioned in the long text: "tlacochcalcatl nahuatlato." No drawings of these interpreters appear, however; and a brief note in Spanish concludes the collection of texts which Mr. Byron McAfee has helped me to translate: "Este año començo la conquista de la tierra don fernando cortes y sus compañeros."

Another drawing of Moctezuma's government palace (Tecpan) appears in the Mendocino. The present version is rather fantastic, although the Mendocino agrees in giving the edifice two stories.

The tracing from which the plate is published was lent by Sr. Guillermo Echaniz. It will be noted that besides the page which the artist traced in toto, specimens of other year glyphs appear on the bottom margin of the tracing. At the extreme top margin appears the number 1250340 (the acquisition number of some library?), and the tracing seems to have been made years ago. Has any reader of these *Notes* further information on this codex, which remains otherwise unknown to me?

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72.1. Codex Derrumbe del Templo Mayor.

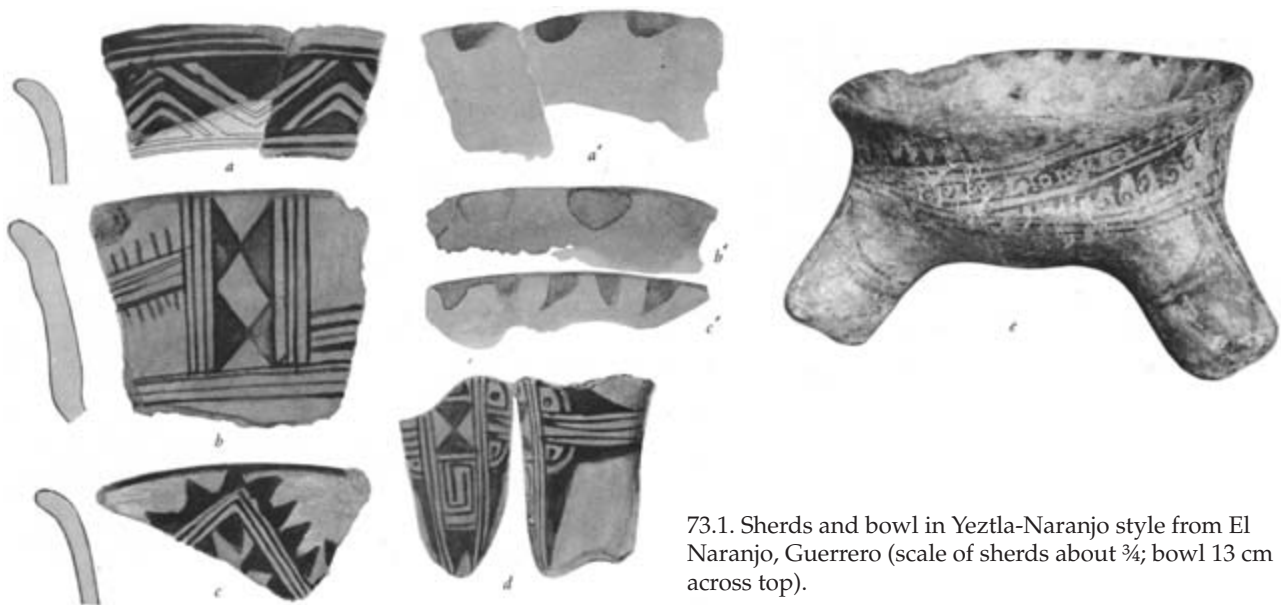
Some Examples of Yeztla-Naranjo Geometric Ware

R. H. Barlow

A new type of painted pottery, corresponding closely to that from the old Tepuzteco area, was found by Mr. R. J. Weitlaner and myself in the southern drainage of the upper Balsas River (Rio de las Truchas). We published two complete pieces in *Tlalocan* (1944:1, Pl. 4) and Hendrichs published a third, from Ichcatepec, north of Balsas, in *Tierras Ignotas* (1945-1946:1, Fig. 106). To this scanty record of illustration it seems appropriate to add my drawing of four sherds which we acquired for the Instituto

Nacional de Antropología in 1944 (Fig. 73.1a-d) and a photograph of a vessel examined in Naranjo (Fig. 73.1e).

From these pieces a typology of the style may be undertaken. Decoration consists of geometric painting on a white or cream slip, and is either chocolate or red-and-black. The major design area is exterior, but the inside rim bears a simple pattern. Two forms of tripod bowls appear: those with hollow legs resembling the end of a broom handle, and those with ring-



73.1. Sherds and bowl in Yeztla-Naranjo style from El Naranjo, Guerrero (scale of sherds about $\frac{3}{4}$; bowl 13 cm across top).

shaped legs. The former are decorated with designs somewhat like exaggerated cigar-bands. In the few pieces available, certain elements are repeated: a diamond pattern (Fig. 73.1b, d), a boxlike maze (Fig. 73.1d; Hendrichs 1945–1946:1, Fig. 106; *Tlalocan*, Pl. 4, upper left), and a spiral (Fig. 73.1e; *Tlalocan*, Pl. 4, upper left). Dots are used singly or in rows (Fig. 73.1d, e; *Tlalocan*, Pl. 4, upper right).

Ring-shaped supports or variants thereof are found in Nicoya black-line ware and in red-lip ware and Curridabat ware from Las Mercedes, Costa Rica (Lothrop 1926:1:224, 2:clxvii, clxxiii); in Estanzuelas red-on-buff in eastern Salvador (Longyear 1944, Pl. VIII, 31); and in the Soncautla complex, Tres Zapotes (Drucker 1943b, Pl. 24). Additional data on distribution would be welcome.

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The Treble Scroll Symbol in the Teotihuacan and Zapotec Cultures

Horace Neys and Hasso von Winning

There exists in the art of Teotihuacan an ornament consisting of three simple scrolls, which form a whorl. This design has also been used by other peoples, especially the Zapotec, and by all of them in such a particular way that it must be taken not as a mere decoration but as a symbol.

The simple scroll usually is repeated in a horizontal band or as a frame and represents water. We think that this trilobe derives from the horizontal scroll band and is also a sign relating to water.

Various appearances of the treble scroll will be described. All, if not stated otherwise, were purchased in Azcapotzalco, and are in private collections. They appear, therefore, to belong to the Teotihuacan culture.

The first example shows the treble scroll incised on both sides of two shoe-shaped vessels (Fig. 74.1a). On a third shoe-shaped vessel of the same size we find on the point of the shoe not the scroll but a sign representing four drops of water, arranged at right angles and painted in red. As no other symbols of this particular type or any other are known to us on vessels of this specific shape, we take it that the four drops and the treble scroll are somehow related.

The fact that these water symbols appear on shoe-shaped vessels which are unusual at Teotihuacan but frequent in the Zapotec culture might point to their having been used for the same religious ceremonies, imploring rain.

The treble scroll occurs also on a fragment of a well polished, red incised bowl (Fig. 74.1c). Unfortunately the design is not complete and the meaning

of the three lines emerging on the right side of the cartouche is not clear. The scroll band on the top is frequently found on this type of vessel and represents water.

Our surmise gains in certainty with a brown vessel in the museum at Teotihuacan, where the same treble scroll motif is incised, but this time raindrops are pendent from it, the whole design being framed with fades (Fig. 74.1b).

Figure 74.1e shows another typical Teotihuacan vessel. On both sides there is a treble scroll decoration as the center of a dagger-shaped instrument which is slightly curved at one end. The straight end is decorated with close-set, parallel lines; the curved end is decorated with irregularly placed finer lines, which might represent water flowing outwards from the whorl. This vessel has broad lines of stick decoration on the neck.

Yet again we find the same design on potsherds of a spherical jar, depicted in red-brown-on-black, outlined by incision (Fig. 74.1d). The middle whorl, however, is larger, the straight end has the same vertical lines, but the fine lines on the other end are missing, showing instead one drop falling from its curved point and three more drops falling from the center whorl. This design and the one described before give the impression of being representations of a ritual object in which the three scrolls are incorporated, used in ceremonies having to do with witchcraft for obtaining abundant rain.

On the mural paintings at Teotihuacan (Gamio 1922:1, Pl. 29) we see a row of similar objects (Fig.

74.1. (a) Shoe-shaped vessel, dark brown, polished; incised before firing (scale = 2/3; Coll. H. Neys); (b) treble scroll design incised on brown jar (scale = 2/3; Museo Regional de Teotihuacan); (c) fragment of a cylindrical bowl, polished red; incised white clay was soft (scale = 2/3; Coll. H. Neys); (d) design in red-brown-on-black, outlined by incision, on fragments of a spherically shaped vessel (scale = 1/3; Coll. H. Neys); (e) yellow jar of typical Teotihuacan shape; design incised (scale = 2/3; Coll. H. Neys).

74.2a), which after comparison with the above mentioned signs we also consider as instruments for witchcraft. Although somewhat different in shape, the drops fall from their points, which with the channel leading out from the center leave little doubt as to their identity with the objects in Figure 74.1d, e. Curiously enough, the drops are painted red. We do not know what is meant by the design divided in five parts, which seem to hang from the square-shaped center, but possibly it might represent a current of water as appears in front of the mouths of serpents, tigers, and birds in Teotihuacan. These bands with rounded ends do not resemble feathers.

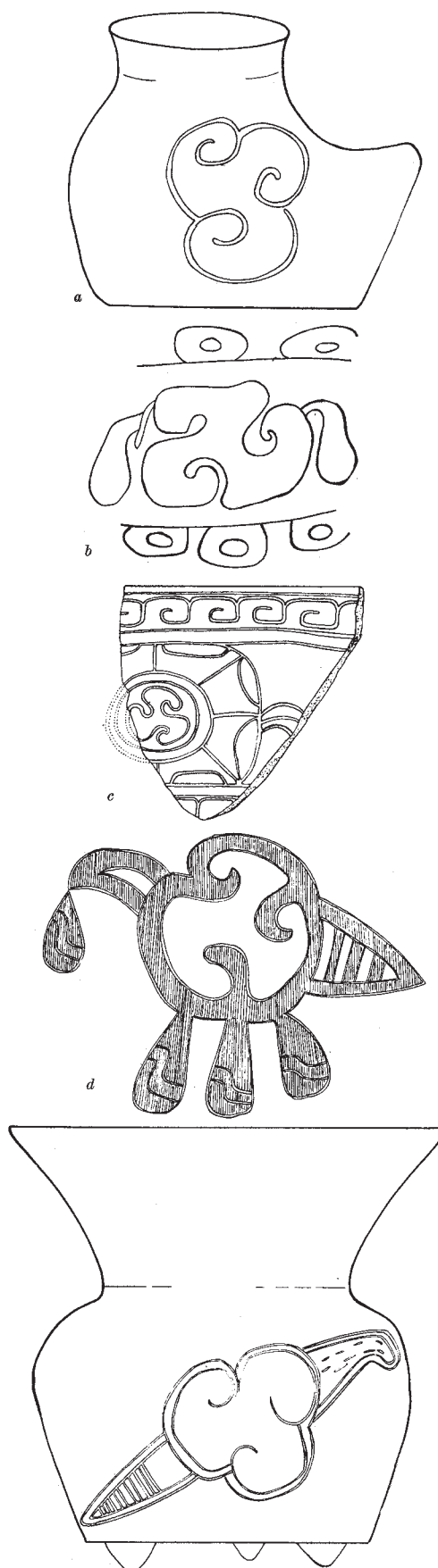
Our assumption that these instruments for witchcraft were actually held in a hand is confirmed by a similar object depicted on the newly discovered wall paintings at Tepantitla, Teotihuacan (Fig. 74.2d). The human hand is clearly distinguishable and the falling drops again indicate a relation to water.

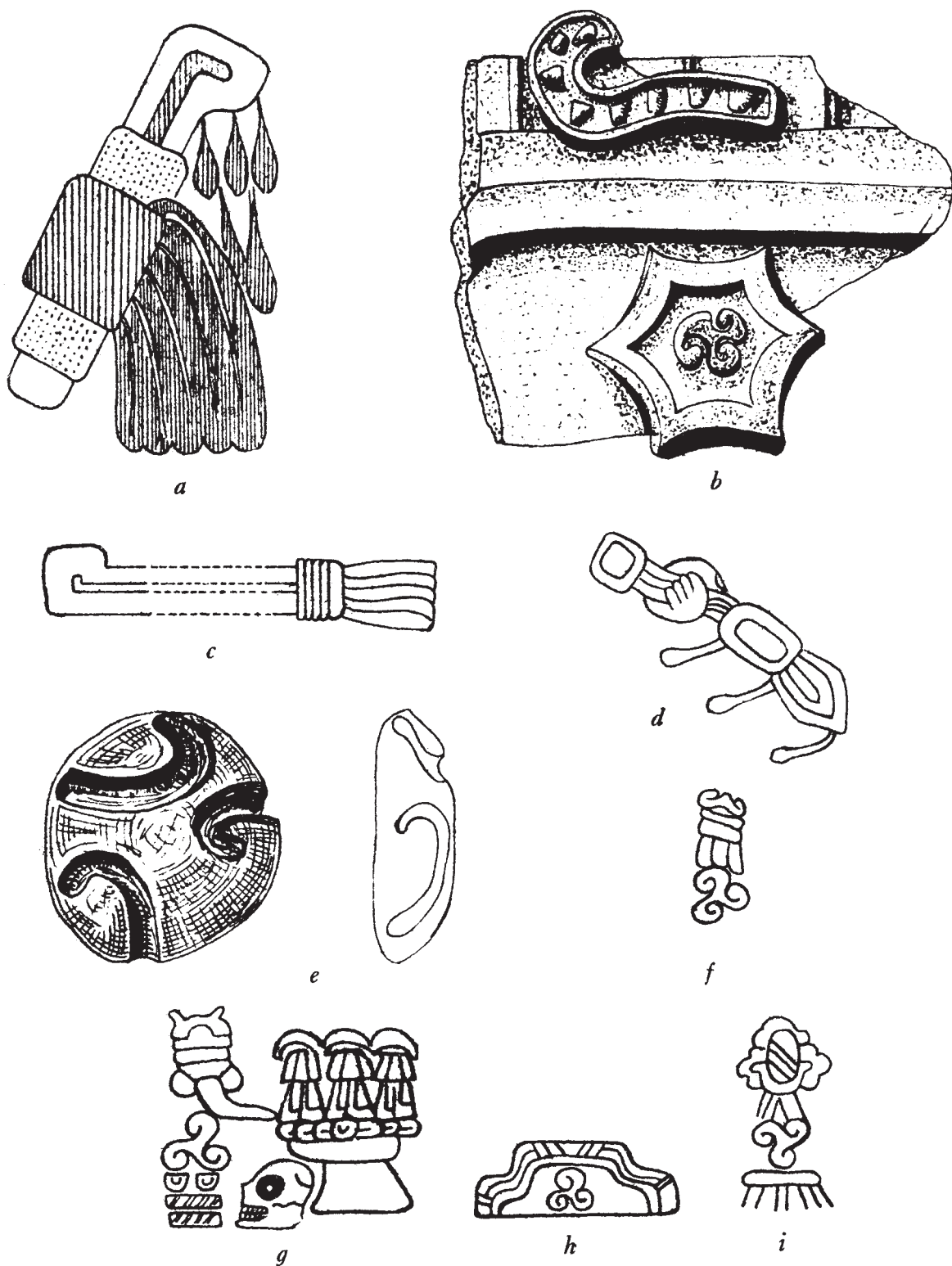
The general impression one receives is that these objects were used in a ceremony rather like the present-day holy-water sprinklers in Roman Catholic ritual.

This leads us to assume the sculptured ornament in Figure 74.2c to be an instrument of the same kind. It appears behind the headdress of the stylized Tlaloc faces on the Quetzalcoatl pyramid at Teotihuacan. (The reproductions in vol. 1 of *La Poblacion del Valle de Teotihuacan* do not show this detail. We have therefore used the photograph on p. 72 of *L'art vivant au Mexique*. What might be the handle of the instrument is hidden by the headdress, but something like a knob is shown on the left side. The right end appears wavy and might represent feathers tied to the handle. In this case it is not clear what function this instrument might have had, although its presence together with a serpent and a Tlaloc-like head suggests a relation to water.

Since the treble scroll symbol is rare and is even less frequent in Teotihuacan than in Azcapotzalco, a few more examples will be described.

Linné (1934:125) depicts a small collection of clay stamps from Teotihuacan, one of them showing





74.2. (a) Detail from a fragment of a mural painting in the Museo Regional de Teotihuacan (after Gamio, *La Poblacion del Valle de Teotihuacan*); (b) fragment of an adorno that had been attached to a vessel; inside the six-pointed star, a treble scroll motif in relife; natural size (Coll. H. Neys); (c) detail of the masked heads of the Quetzalcoatl pyramid at Teotihuacan; (d) detail from the frescoes at Tepantitla, Teotihuacan; (e) relief plaque with three scrolls, previously used as an applied motif; natural size (Coll. H. Neys); (f) detail of Stela 7, Monte Alban (after Caso); (g-i) details of Stela 8, Monte Alban (after Caso).

a treble scroll. Their smallness makes it possible that they had been fastened to a piece of wood to make them handier. The use of these small round clay stamps, which Linné reproduced in his Figures 221, 225, and 227, is not clear. They might have been employed for decorating tiny loaves of bread in ritual ceremonies, for which in this case a wooden handle would not have been necessary. Remarkable, however, is the great variety of representations on the stamps or seals: heads of Xipe Totec, Tlaloc symbols, animal heads (eagle, deer, and rabbit), human figures holding a scepter or covered with an animal mask, representations of the Fat God, flowers, etc., some of them resembling the designs on spindle whorls, suggesting that the clay stamps too might have been given to the dead as an indication of their membership in a certain clan.

Again, the treble scroll appears in the center, of a star, together with a curved object, molded on a motif applied on a fragment of a brownish red vessel (Fig. 74.2b). Both the six-pointed star and the curved object are not typical in Teotihuacan, but we find the latter in connection with a flower on a slab with a Tlaloc face (Gamio 1922, Pl. 131b, upper right and left sides).

In relief, the treble scroll is found deeply incised on small round plaques which are slightly hemispherical and which have been used as applied motifs. The scrolls, however, do not begin in the center of the circle but start from the circumference (Fig. 74.2e).

The Aztec did not adopt the treble scroll symbol, but it is found in the Zapotec culture. One of the so-called funerary urns shows these round, incised plaques on the shoulders of a seated figure, probably representing the God of the Harvest (Linné 1938:121, Pl. 13).

Stela 7 of Monte Alban shows the symbol in question as the lower part of a glyph (Fig. 74.2f.). On top of this glyph appears another glyph expressing a date; both are placed in front of a priest (Caso 1928:86, 145).

Our symbol appears three times on Stela 8 (Caso 1928:88). Once it forms the center of a hieroglyphic expression, the top of which is clearly the day sign J (Fig. 74.2i). Caso refers to it as a "triple espiral." The second representation is on the side of the same monument, interpreted by Caso as "... hay sobre un cerro una figura sentada. Del cerro sale una voluta,

quizá una planta, y en medio lleva su nombre jeroglífico expresado por tres espirales que se juntan por sus extremos" (Fig. 74.2h). In the third representation the treble scroll again seems to be connected with two more glyphs (Fig. 74.2g).

Also, a carved stone plate on Montículo J at Monte Alban depicts the treble scroll in connection with other glyphs, and the symbol in question is further to be seen on the base of a Zapotec urn, surrounded by the stylized *sign* for mountain (Linné 1938:136, Pl. 19).

On the mural paintings in Tomb 104, Monte Alban, the treble scroll appears to be decorated with the typical Zapotec jaw-like adornments. Compare Glyph A (Caso 1928, Fig. 3, I-III) and Glyph J (Caso 1928, Fig. 13, I-IV bis). Two tied objects are depicted a little higher on both sides. It seems that the priest to the left, whose attitude indicates the performance of a ritual action, has to do with the arrangement of signs in front of him, mentioned before.

That our symbol appears on a vessel found as far as Chiapas is shown by Blom and La Farge (1926-1927:232), who depict a bowl on which it appears in black as a single motif, on what seems a basket-weave background.

We cannot prove, however, that these representations of the treble scroll in Zapotec art have been used to express the same symbol we think they did among the Teotihuacan people. The examples of the treble scroll in Teotihuacan art point to a connection with water, thus implying an intimate relation to this element. (It might be the symbol for "rain-bringing wind" or "cloud.") Whereas the appearance of the same symbol among the Zapotec is related to chronological glyphs, to the stylized sign for mountain, and to other glyphs which have not yet been deciphered. Considering the exchange of cultural elements between the peoples of Teotihuacan and Azcapotzalco and the Zapotec, it is not surprising that they should have used this particular symbol contemporaneously, but it is difficult to determine where it originated.

It is interesting, however, to note that we find the treble scroll symbol on the Montículo J at Monte Alban and that Caso (1938:11) attributes it to the epoch of the Danzantes, or the one immediately following, thus showing its extreme antiquity and possible origin.

The Book of Chilam Balam of Ixil

Ralph L. Roys

Most of the so-called Books of Chilam Balam are essentially almanacs. They are written in the Maya language of Yucatan and in the European script adapted by the missionaries to express the sounds not found in Spanish. Brinton (1890:257) tells us that "in whatever village it was written, or by whatever hand, it always was, and to-day [1890] still is, called The Book of Chilam Balam." Crescencio Carrillo y Ancona (1937:12) had already made a similar statement, so no doubt this was true during the middle years of the nineteenth century.

At the present time the term appears to be little known. Indians and village schoolteachers, whom I have asked, said they were unfamiliar with it; and one schoolmaster stated that manuscripts of this character are called *lunarios* ("almanacs"). At Mani the name of the prophet Chilam Balam is still remembered, and I was shown the alleged site of his home near Cabalch'en cenote.

How extensively such manuscripts were called Books of Chilam Balam in colonial times seems uncertain. During the first half of the nineteenth century Pio Perez compiled a book of extracts from manuscripts of this sort, most of which he found at Mani. The title, which is "Chilam Balam," would seem to indicate that this was the general name of the larger number of his sources, but it is doubtful whether he wrote this title himself. One of the subtitles is "Código Perez; Extractos de varios ejemplares del 'Chilam Balam'" and this is certainly written in the hand of Bishop Carrillo, who had the book for a time in his possession. Nevertheless, there was

evidently at least one old manuscript at Mani which bore this title. On page 137 of the Codex Perez we read "Fin del libro," after which Carrillo has interpolated the words "de Chilam Balam." The passage continues in Pio Perez's writing: "Hasta aquí termina el libro titulado de Chilambalam que se conserva en el pueblo de Mani en poder del maestro de Capilla y yo pongo las notas a los sucesos que refiere." This was probably the original title of this eighteenth-century manuscript, but the document itself has disappeared.

The Tizimin manuscript, which Carrillo named the Código anónimo, bears the title "Chilam Balam, Codice Tizimin, and the Chumayel, Codice Chumayel, but both of these designations are in Bishop Carrillo's hand. The Kaua manuscript is entitled "Chilam Balam. Lunario ó Winalté," but I do not know whether or not this is in the same hand as the body of the book. "Winalté," or *uinalte*, is probably the Maya equivalent of *lunario*.

In the Tizimin and Chumayel we read of a certain holy book of katun prophecies which existed in very early colonial times in the Bacalar region. This is variously called an *anahte* and a *reportorio* (another word for almanac). Since reliable sources elsewhere explain the *anahte* as a hieroglyphic book of prophecies, these references suggest that the colonial Maya sometimes designated certain hieroglyphic manuscripts as *reportorios* (Avendaño y Loyola 1696:67; Chilam Balam of Tizimin 1870:29; Roys 1933:147).

The Book of Chilam Balam of Ixil does not mention the name of the Maya prophet for whom it has

been named, but other similar Maya manuscripts include prophecies ascribed to this famous seer, who lived in pre-Spanish times and was believed to have foretold the coming of the Spaniards. The Ixil manuscript contains little of the old native lore that is not more completely covered in some of the other Books of Chilam Balam. It is chiefly valuable as evidence of the acculturation of the Maya during the eighteenth century. This in itself is important in any appraisal which we make of the historical information that has come down to us in other native sources which were compiled and edited during the same period, although much of it was no doubt taken from earlier manuscripts.

Tozzer (1921b:190, 218–19, 258) has described parts of the Ixil; and Juan Pio Perez (Codex Perez 1837:171–72, 171–76) has copied a few pages of the manuscript, which he describes as follows:

“The following wheels and explanations are copied, from an old memorandum-book found in the town of Ixil with part of an almanac in the same style as the preceding ones, and the predictions for the months are likewise similar to the first ones copied in this book [Codex Perez]. [There are also] a collection of medical prescriptions (*recetario*) for the plants of the country and some translations from the Bible about the creation of the world and the history of Abraham. The collection of prescriptions is not worthy of credit, since among its many false statements is one to the effect that it was written by a Moorish slave of the Cid. Its language is a mixture of Maya and Spanish (*amestizado*).”

Immediately preceding this description are some Maya prophecies which Perez copied at Ticul in 1837, so it seems possible that his extract from the Ixil manuscript was also made about this time.

Until recent years the Ixil has been available only through extracts. Besides that made by Pio Perez, other portions extracted by C. H. Berendt are in the Library of the Museum of the University of Pennsylvania, and still another partial copy has been reproduced by William Gates. For the present study I am indebted to Dr. S. G. Morley, who obtained a photostatic reproduction of the original now in the National Museum of Anthropology at Mexico City.

On the second page of the Ixil, 1701 is given as the current year (“Hele tu habil 1701”), so at first sight this would appear to be the date of the manuscript. The chronological errors, however, which occur on this page are such as to suggest that a later native scribe copied the passage from an older book without fully understanding the subject matter. Moreover, the character of the work as a whole is so similar to that of the Book of Chilam Balam of Kaua,

which dates from the last decade of the eighteenth century, that I believe the Ixil was compiled about the same time.

The first four pages of the manuscript (photos, 1b–3a) are devoted to Maya chronology. On the first of these are the two so-called wheels, each accompanied by an explanation, which have been reproduced by Bowditch (1910:328). The larger circle is stated to represent a katun of thirteen years. This is something very different from the usual meaning of the term, which ordinarily indicates a period of 7200 days, or approximately twenty years. Several of the colonial Maya writers, however, have explained it as a twenty-four year period, thereby causing considerable confusion in the minds of later investigators. The smaller wheel shows the order of the four year bearers and ascribes each to one of the cardinal points.

On the second and third pages are discussions of the bearers of the uinal (a twenty-day period) and the year, as well as an explanation of the alleged thirteen-year katun. These are followed by lists of the uinal names and day names. Each of the latter is accompanied by a face, suggesting that the days are personified. Over that for the day Ahau is a crown, since the name means “ruler,” and over those for Kan, Muluc, Ix, and Edznab are crosses. The first three are year bearers, so presumably the fourth cross should be over the remaining year bearer, which is Cauac and not Edznab.

On the fourth page is a garbled account of the “Burners.” These have been discussed for the past century, but their significance has not yet been satisfactorily explained (Stephens 1843:1:448–49; Bowditch 1910:218; Roys 1933:118). A more accurate account of the days on which these phenomena occurred is to be found in the Book of Chilam Balam of Tizimin on page 38.

The only other passage in the Ixil that is purely Maya in character is a paragraph (photo 17b) devoted to the native astrology and calendrical divination, of which we know so little. Sahagun (1938:1:372) condemns severely the Mexican system of divining by days, claiming that it is not based on natural phenomena like European astrology. Among the Maya, however, it seems evident that this manner of divination was sometimes related to the heavenly bodies.

In the Ixil manuscript the day 1 Kan is associated with *ah yzam ti can* (“Ah Itzam in the sky”), a bird called *ix kokta*, and a tree named *chac imix che*. *Itzam* means a lizard; possibly the sky lizard portrayed in the Maya picture manuscripts is meant. *Ix kokta* is probably intended for the *ix kokobta*, or thrush; and apparently the *chac imix* the is a mythical tree (cf. Roys, *Chilam Balam of Chumayel*, pp.

64, 100). The day 2 Chicchan is similarly associated with the *tzab ti can*, or “rattles of the snake constellation in the sky,” which has been identified as the Pleiades and a part of one of the thirteen signs of the native Maya zodiac (Motul Dictionary; Spinden 1924:55). It is further explained that “this planeta” is the mutil for people according to the day of the uinal on which they were born. In a Chumayel prophecy of the coming of Christianity we read: “You shall see the mut surmounting the raised wooden standard (cross).” In the dictionaries mut is defined as “news, information, reputation, rumor” and also as a certain bird. In the Book of Chilam Balam of Kaua, what appears to be either a scroll, or possibly a highly conventionalized bird, surmounts the cross over a katun wheel immediately preceding a passage similar to the one under discussion. To the Maya the cross was a conventionalized tree, and the bird surmounting a stylized tree is a feature common to both Maya and Mexican art (Roys 1933:167, 170; Kaua MS., p. 10; Tozzer 1921b:123). It seems evident that *mut* means augury or portent here, and I surmise that it was symbolized by the figure of a bird. Similar auguries for Kan and Chicchan, as well as for the remaining eighteen days, are recorded in the Kaua MS. (pp. 11–12, 14, 21–22) and Codex Perez (p. 94) and have been published and translated by A. Barrera Vasquez (1943).

A very considerable portion of the Ixil manuscript contains material which is essentially Maya but is modified by European ideas. Here we find a feature common to most of the Books of Chilam Balam, although it does not occur in the Chumayel. It is a correlation of the European and native calendars during nine months from January 1 to September 30. This includes the native ritual period of 260 days, which covers every possible combination of the twenty Maya day names with their thirteen coefficients.

For each day of the European month the number and dominical letter are given together with the corresponding Maya day name and its coefficient. Sunday, January 1, is the Maya day 10 Oc. Nearly every day is characterized as *utz* (“good”) or *lob* (“bad”), and in many cases other observations follow. Quite a number of these are recognizable as weather predictions, prognostics of sickness or death, or indications whether the day is a favorable one for various activities such as beekeeping, planting, hunting, etc. Others, however, are difficult to translate. Sometimes apparently they refer in obscure language to certain omens. Then there is also an attempt to fit the “Burner” items into this calendar, but it betrays a lack of understanding of the chronological pattern indicated in the Book of

Chilam Balam of Tizimin, written possibly half a century before.

In the Ixil, as in Landa’s calendar, the Maya year commences on July 16, and certain days are designated as beginning the uinals, or Maya months, of twenty days each; but the uinal bearers for these portions of two Maya years fall on Imix and Cimi instead of Kan, Muluc, Ix, or Cauac, which are the regular gear and uinal bearers, as shown on photo, 1b. It is difficult to account for this apparent error, which occurs in the similar calendars of other Books of Chilam Balam, since it is plain from other passages in the same manuscripts that the eighteenth-century Indians were still well aware of the correct year and uinal bearers.

Few saints’ days or Church festivals are noted in this calendar, and aside from its value as a correlation, it seems obvious that its main purpose was to record the prognostics and other comments which we have discussed. Although the Ixil correlation includes only nine European months, in other calendars of the same sort covering the entire year we find the same comment recurring on the same Maya day of the following series. Consequently it is evident that these observations are based on the day name with its coefficient, which determines its position in the 260-day cycle.

It is of interest to note that the late colonial Maya were still so concerned with the old ritual period at a time when they were becoming confused over their annual calendar. It is perhaps as though Japanese conquerors had imposed their own calendar upon us for a long time, but we should probably still think of current time in terms of the European week days.

Another feature, which represents a mixture of Maya and European ideas, is the medical treatise entitled “*U libroil dzaaccob*” (“book of remedies”), which fills the last twenty-seven pages of the manuscript (Photos 31a–44): These prescriptions are ascribed to a Moorish physician who had been a captive of Ruy Díaz de Bivar, the Cid Campeador, in spite of the fact that they are largely Maya in content. They do, however, contain a considerable number of European remedies, and a good many names of plants and diseases are given in both Spanish and Maya. Some European remedies are prescribed in most of the Maya medical manuscripts that have come down to us (Roys 1931), but in the Ixil, Spanish influence is especially strong. Besides the cures for diseases and other complaints, there are receipts for treating wasp and scorpion stings, blisters, hiccough, and falling hair, determining sex before birth, killing lice, cleaning grease spots, and preserving lard.

The remainder of the Ixil manuscript, comprising over half of its eighty-eight pages, is filled with

Maya translations of European material, some of it evidently taken from the Spanish almanacs of the time. On two pages (Photos 3b–4e) are diagrams of eclipses of the sun and moon followed by an explanation of the latter from the European point of view and contradicting the Maya belief that the moon was bitten or eaten (cf. Roys 1933:86–88).

The next twenty-four pages (photos 4b–16a) contain a European almanac, although all the narrative material is translated into the Maya language. On alternate pages we find a Catholic calendar and the twelve signs of the zodiac with explanations. In the former a page is devoted to each month, giving the epacts, dominical letters, and numbers of the days. Except for a few Church festivals, the saint for each day is named. This was obviously useful in selecting names for children as well as for religious observances. This calendar begins with November and ends with October.

The treatise on the zodiac is not correlated with the calendar, for it begins with Aquarius and ends with Capricorn. On each page are the picture and name of the sign and the name of the corresponding month. For Aquarius the discussion is somewhat as follows:

- The number of stars in the sign (42).
- The number of days in January.
- The number of hours of the day (9) and of the night (15).
- The day of the month when the sun enters the "house of the sign" (January 20).
- The parts of the body which are under the "lordship" of the sign.
- A characterization of the person born under the lordship of the sign.
- Activities recommended during this period.

The number of hours given for the day and night suggests a somewhat higher latitude than that of Yucatan, where the time between sunrise and sunset in January ranges from 10 h. 51 m. to 11 h. 9 m. (Espinosa and Espinosa 1928). For the days when the sun enters the first six signs recorded, which are given as January 20, February 19, March 11, April 11, May 21, and June 21, the Ixil wavers between the customary dates and the system employed in the Book of Chilam Balam of Kaua. In the latter they are given as January 11, February 13, March 11, April 11, May 12, and June 12.

Following the last page of the Catholic calendar we find (Photo. 16b) a diagram of the mediaeval conception of the cosmos: Here is a series of concentric circles showing *luum* ("the earth") in the

center and around it the crystal spheres. In the Maya explanation the latter are called the "eleven layers of the sky." In order from the center they are named Luna, Mercurio, Venus, Sol, Marte, Iupiter, Saturno, Firmamento, Christalino, Primer mobil, and Cielo empireo.

Overleaf (Photo 17a) is a correlation of the months with the signs of the zodiac and an explanation involving the use of the golden number. The chart is stated to be for the use of physicians. Some pages farther on (Photos 24b–26) are a number of tables, principally intended for the purpose of correlating the moon with the signs of the zodiac. The writer was evidently concerned with zodiacal anatomy, for on the last of these four pages is a chart or table ascribing each sign to a part of the human body and followed by this notation in Maya: "A record of where the sign is seated in the human body. It is dangerous to bleed it, if the moon is in the house of the sign which is seated in a man's body." This, of course, is the ancient warning against surgical treatment of any part of the body while the moon is passing through the corresponding sign.

So far as the colonial Maya were concerned, surgery probably meant bloodletting in most cases. This was practiced by the Maya in pre-Spanish times. Landa (1941:112) tells us: "The sorcerers and physicians performed their cures by bleedings of the parts which gave pain to the sick man." We know little of the technique of this practice in the sixteenth century. The Maya verb "to bleed" is derived from the word for flint (*tok*), but the lancet itself was called *ta*. In one of the colonial Maya medical manuscripts we find details of which parts of the body to bleed for certain complaints, but it is hard to tell how much of this information was drawn from European sources (Roys 1933:29–30). For bleeding in modern times the native medicine men employ a fragment of glass, flint, or obsidian attached to a small stick, and sometimes the fang of a rattlesnake. One patient has reported that during his illness 250 punctures were made in his legs alone (Redfield and Villa Rojas 1934:172–173, 233). In pagan times bloodletting was possibly as much of a religious rite as it was a therapeutic practice, even in case of illness. People frequently drew blood from themselves, especially from the ear, tongue, and virile organ, for sacrifice to the gods.

The Book of Chilam Balam of Ixil contains no Maya chronicles or historical narratives such as we find in the Mani, Tizimin, and Chumayel manuscripts, and the katun prophecies with their wealth of historical allusion are also missing; but in the place of these features we find two chapters of Sacred History. The first (Photos 22b–24a) begins with the

rule of Nimrod in Shinar and the building of the tower of Babel, and it ends with Abraham's sacrifice of the ram in place of his son Isaac. Some attention is paid to Biblical chronology, and Berossus is cited in connection with the age of the world at the time of these events. A number of the details, which are not in Genesis, appear in Josephus; but others, like Abraham's refusal to worship the Chaldean gods, are to be found in neither. I surmise that the narrative was taken from one of the early Church writers, possibly Eusebius. In the Ixil manuscript this account is evidently presented as a separate narrative, for a short concluding paragraph connects Abraham with the rulers of Jerusalem, and the episode of Isaac and the ram is compared with the Crucifixion. I surmise that the translation was made by a Spanish missionary, who was well versed in the Maya language.

The second Biblical narrative (Photos 27a–30b) begins with the burial of Jacob. It tells of the flight from Egypt, the journey to Sinai, the death of Moses, and the fall of Jericho. The concluding paragraph contains a brief summary of Jewish history down to the birth of Christ. Here, as in the preceding narrative, are chronological data and other details that are not in the Old Testament. One example of the latter is the story of the angel Michael, who appeared, sword in hand, to Joshua with instructions how to accomplish the destruction of Jericho.

From the photographs the Ixil manuscript would appear to consist of two different brochures, but in both the handwriting is either the same or very similar. The second part (photos 22a–44) contains only the second Biblical narrative and the "Book of Remedies."

I have already remarked on the similar character of the Books of Chilam Balam of Ixil and Kaua. Both, on the whole, pay more attention to European than to Maya ideas; but the latter is much more voluminous, since it consists of 282 pages and is wider in scope. It contains more information from European sources than the Ixil, but the same is true of its content of Maya lore, as we shall see.

The material on European astrology is more complete in the Kaua. Whereas the Ixil deals principally with the zodiac, the Kaua includes discussions of the planets and their relation to diseases, medicine, and surgery. Here also is an illustrated Maya translation of a part of the Spanish romance of the Doncella Teodora, consisting largely of dialogues on astrology. There are treatises on the proper European months for bleeding and purging, propitious days for merchants, and predictions for the years according to the days of the week on which they begin. Among the many other passages written in Maya but relating to European culture are prayers, a discourse

on the Mass service, and an account of the creation of the world. We find a few Latin prayers, and several passages are written in Spanish. One of the latter is a dissertation on astronomy; another, strangely enough, is an explanation of Maya chronology.

Most of the native lore in the Ixil is also to be found in the Kaua manuscript. The latter, however, contains several complete accounts of the omens associated with the twenty Maya day names, the Maya dates on which the *tuns* (360-day periods) would fall during the years 1797–1824, a part of a farmer's almanac, and a series of thirteen *katun* prophecies (cf. Roys 1933:183–185). More than a third of the Kaua is devoted to medicine, but, as in the Ixil, this includes a number of European remedies. The precise date of the Kaua is hard to determine. I have placed it in the last decade of the eighteenth century, because the dates 1789 and 1793 are associated with quotations from Spanish almanacs apparently of recent date. On the last page the writing is faint, but the names of two men and the town of Kaua appear to be associated with the years 1823 and 1830, and I take these men to be later owners of the book.

It seems obvious that the compiler of the Ixil manuscript was more concerned with European lore of the sort found in the contemporary Spanish almanacs than with the older native traditions and customs. His treatment of the latter indicates that many people by this time were losing interest in Maya science and chronology and forgetting things that previously had been more generally known.

Such forgetfulness, however, was not everywhere the case. The Book of Chilam Balam of Chumayel, which was compiled as late as 1782, shows that there was still a class of people who were interested in the old traditions and prophecies and a native writer who had some understanding of his subject, since we do not find in his book the theory of a twenty-four year *katun* so prevalent in most of the other Books of Chilam Balam that have come down to us. Here, it is true, there is a certain amount of European material, but by far the greater part of the book is composed of rituals, catechisms, historical narratives, and some prophecies which are essentially Maya in character, although some of these passages contain an admixture of European ideas. This does not necessarily mean that Don Juan Josef Hoil, the compiler, was not a good Christian. There is some evidence that his son became a Catholic priest and was curate of an important Indian parish in a suburb of Merida (J. Martinez Hernandez, *apud* Roys 1933:8). A still sharper contrast to the Ixil is offered by the book of medical incantations known as the Ritual of the Bacabs. The last page is written on the back of a printed indulgence dated 1779; but in spite of this

late date the manuscript is almost entirely pagan in character. From its language it would appear to be a careful copy of a much older book.

That part of the native culture which is represented by the colonial Books of Chilam Balam appears to have declined seriously after the end of the eighteenth century, with the exception perhaps of some of the medical literature. The Book of Chilam Balam of Tekax, which bears the date 1833, much resembles the Ixil manuscript. Here, however, Thompson has called my attention to the circumstance that in the correlation of the Christian and native calendars only the names of the Maya dates are given, and their coefficients, which had formerly been considered so important, are omitted. The days are characterized as "good" or "bad," but the other Maya prognostics and observations are no longer recorded. The Book of Chilam Balam of Nah, dated 1857, seems to be a copy of the Tekax manuscript, although a careful comparison might disclose some differences.

Except perhaps for the medical prescriptions, among the modern Indians of Yucatan much of the Spanish and most of the Maya lore recorded in the Books of Chilam Balam are either of little interest or have been forgotten, although some of the school-teachers say that a number of manuscripts of this character are still preserved in the Indian towns and villages. Some of these apparently contain katun prophecies, for, one informant, who seemed unfamiliar with the modern literature on the subject, said he had seen lunarios which contained a passage about the *jefes* ("chiefs"), probably referring to the name of the day Ahau, with which such a prophecy usually begins. The reference could apply equally well to the native chronicles, it is true, but these are much rarer in Maya literature than the prophecies.

The native religion has not, however, fallen into oblivion to the extent that the decay of the Chilam Balam material would seem to indicate. Prayers and offerings are still made to the bee gods, the patrons of the hunt, the rain and wind gods, and the other protective deities of forest and field. These ceremonies are essentially pagan, but they are affected by the Spanish influence to which the Maya have been subject for the past four centuries. God and the Trinity are frequently invoked, and some of the native deities have taken on the names of Christian saints. Actual idolatry has almost completely disappeared, but in the independent villages of Quintana Roo the

cross is personified and has become an oracle (Villa Rojas 1945:20–22). Gann (1918:46–47) and Thompson (1930:115–118) have published prayers from British Honduras; and Redfield and Villa (1934:339–56) have furnished us with a considerable body of ritual material from Chan Kom in northern Yucatan.

None of these ceremonies has as yet been found recorded in the colonial Maya literature, although it is possible that some of this material was put into writing and has been kept concealed. It may be only by a fortunate accident that the still more pagan Ritual of the Bacabs has come to light. I have found people very reticent about the comparatively innocent *lunarios*.

It is difficult to account for the disappearance of the culture recorded in the Books of Chilam Balam, while the old religion was still flourishing. Any satisfactory explanation would require a fuller knowledge of colonial Maya society than we now have.

The Quetzalcoatl-Kukulcan cult of the ruling class had been introduced from Mexico some centuries before the arrival of the Spaniards, but it disappeared soon after the conquest. Idolatry, which according to native legend was also a Mexican importation, persisted stubbornly for a long time in spite of unremitting efforts by the missionaries to extirpate it (cf. Thompson 1938:593–594). After the end of the seventeenth century, however, we find few, if indeed any, complaints of this practice. The katun prophecies evidently continued to be considered of importance, not only by the limited number of literate natives who made new copies of them from generation to generation, but also by many other people, for in 1668 the flight of numerous Indian families to the forests was ascribed partly to a prophecy resembling one of those in the Books of Chilam Balam (Scholes and Roys 1948).

The numerous copies of these prophecies and the prognostics associated with the Maya day names would indicate that both were regarded seriously until the end of the eighteenth century. Possibly they lost their popularity because of a growing interest in European astrology; but except for the Maya manuscripts, we have no information about the spread of this lore among the Indians generally.

What seems fairly obvious is that the native medicine and the worship of the patron deities of rural activities were the two features of Maya culture which were most firmly rooted in the native consciousness.

The "Tortuga" of Coatlan del Rio, Morelos

R. H. Barlow

The accompanying figure represents a monolith which stands in the plaza of Coatlan del Rio, Morelos. I am obliged to Dr. Robert West of the Smithsonian Institution for the photographs and the opportunity to visit the monument.

In Coatlan, which lies on the edge of the Chontal de Guerrero zone, the monument is assumed to be a turtle, but it seems more likely to be a composite of giant phallus and articulated animal. In the upper figure what appears to be the prepuce is on the right and the animal's claws are at the left. Below, the monster is clearer: it seems to rest on its back, with two claws reaching up and grasping two discs which at first glance seem to be eyes. The real eyes of the animal, as well as its beak, are visible in the lower left-hand quarter. An X or cross appears on the belly of the animal.

Neither the subject nor the style is readily identifiable. Because of its size, it could not easily be turned over, and if we judge by the supposed phallic part, it seems to rest in its original position.

Various versions were given of its origin. An ex-Presidente Municipal, however, assured us that he had brought it himself, about 1933, from "la capilla" in the "llano de Michapa," by truck.

The people of Coatlan have likewise restored (with cement) an indifferent sculpture of a serpent and set it up in the plaza as a sort of guardian spirit.



76.1. The "Tortuga" of Coatlan del Rio, Morelos

FELLOW OF THE JOHN SIMON GUGGENHEIM
MEMORIAL FOUNDATION AZCAPOTZALCO, D.F.

Drawings of Tajumulco Sculptures

Antonio Tejeda

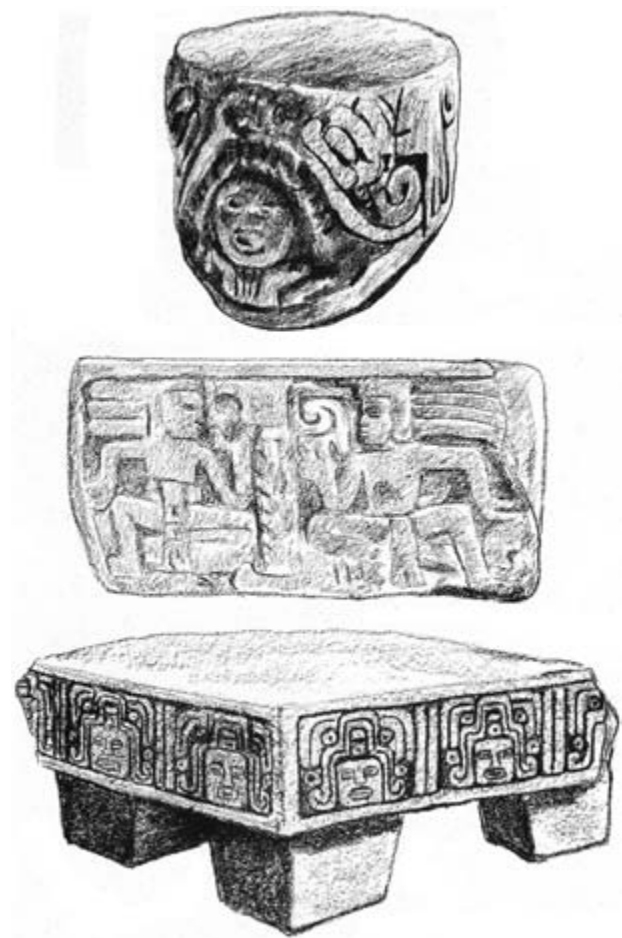
Illustrated supplement to *Excavations at Tajumulco, Guatemala*, by Bertha P. Dutton and Hulda R. Hobb (1943).

During the winter of 1938–39, the School of American Research and the Museum of New Mexico carried on archaeological excavations at the small ruin site of Tajumulco, Department of San Marcos, Guatemala. A report on that work, *Excavations at Tajumulco, Guatemala*, was published as Monograph 9 of the School of American Research, November 1, 1943.

On seeing some of the cultural material and photographs sculptures, Dr. A. V. Kidder deemed the stone carvings of sufficient importance to merit sending the staff artist of the Carnegie Institution's Guatemala Office to the site to make detailed drawings of them. We were glad to accept this cooperation and the services of Sr. Antonio Tejeda.

Owing to unavoidable circumstances, the drawings did not arrive in time for inclusion in the monograph, and we therefore stated that they would appear in *El Palacio*. It was found, however, that the reduction necessary for that format would cause too much loss of detail. Consequently, they are being issued in this form so that they may reach students of Middle American archaeology without further delay. A full discussion of the drawings is given on pages 33–45 of the original report, to which readers are referred.

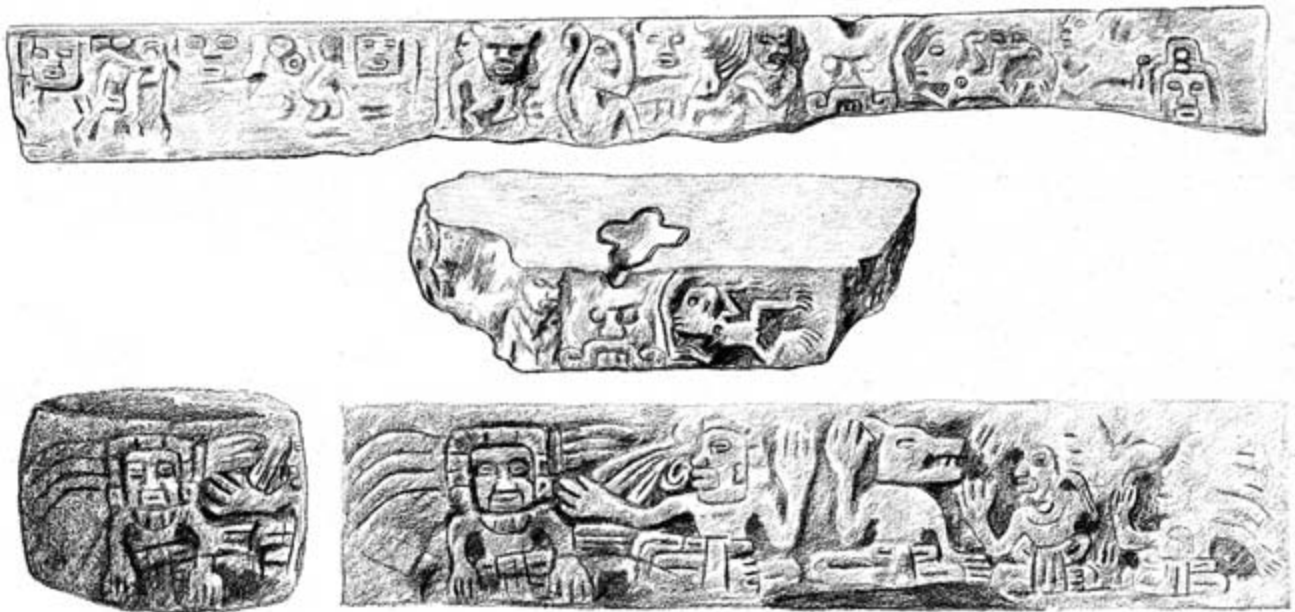
B.P.D.
H.R.H.



77.1. Sculpture B (p. 40, Fig. 20f), Sculpture D (p. 40, Fig. 20j), Sculpture F (p. 43, Fig. 20k), Tajumulco.



77.2. Sculpture C (p. 40, Fig. 20a, d), Tajumulco.



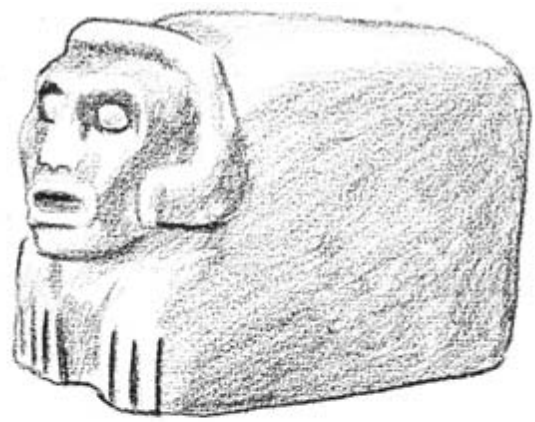
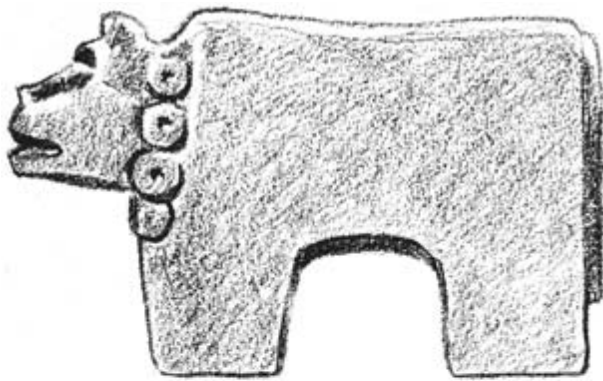
77.3. Sculpture G (p. 42, Fig. 20e, g, h), Tajumulco.



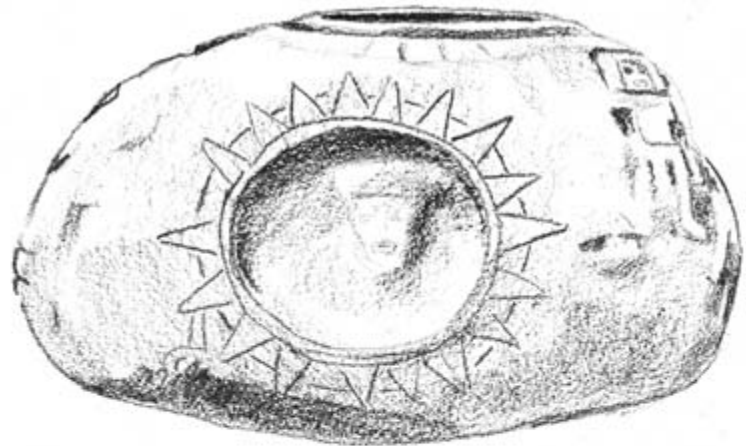
77.4. Sculptures J and O (pp. 42–44, Fig. 21), Tajumulco.



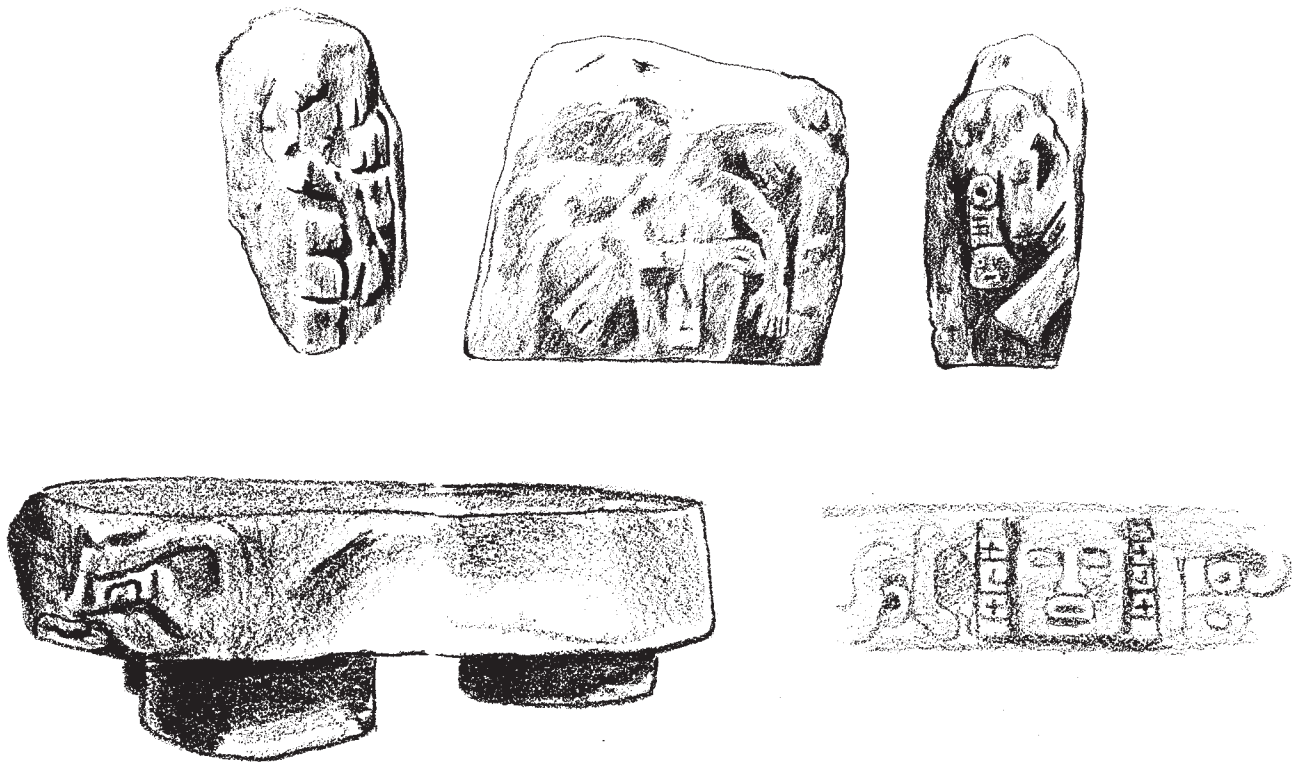
77.5. Sculpture K (p. 43, Fig. 22) and L (p. 43, Fig. 22), Tajumulco.



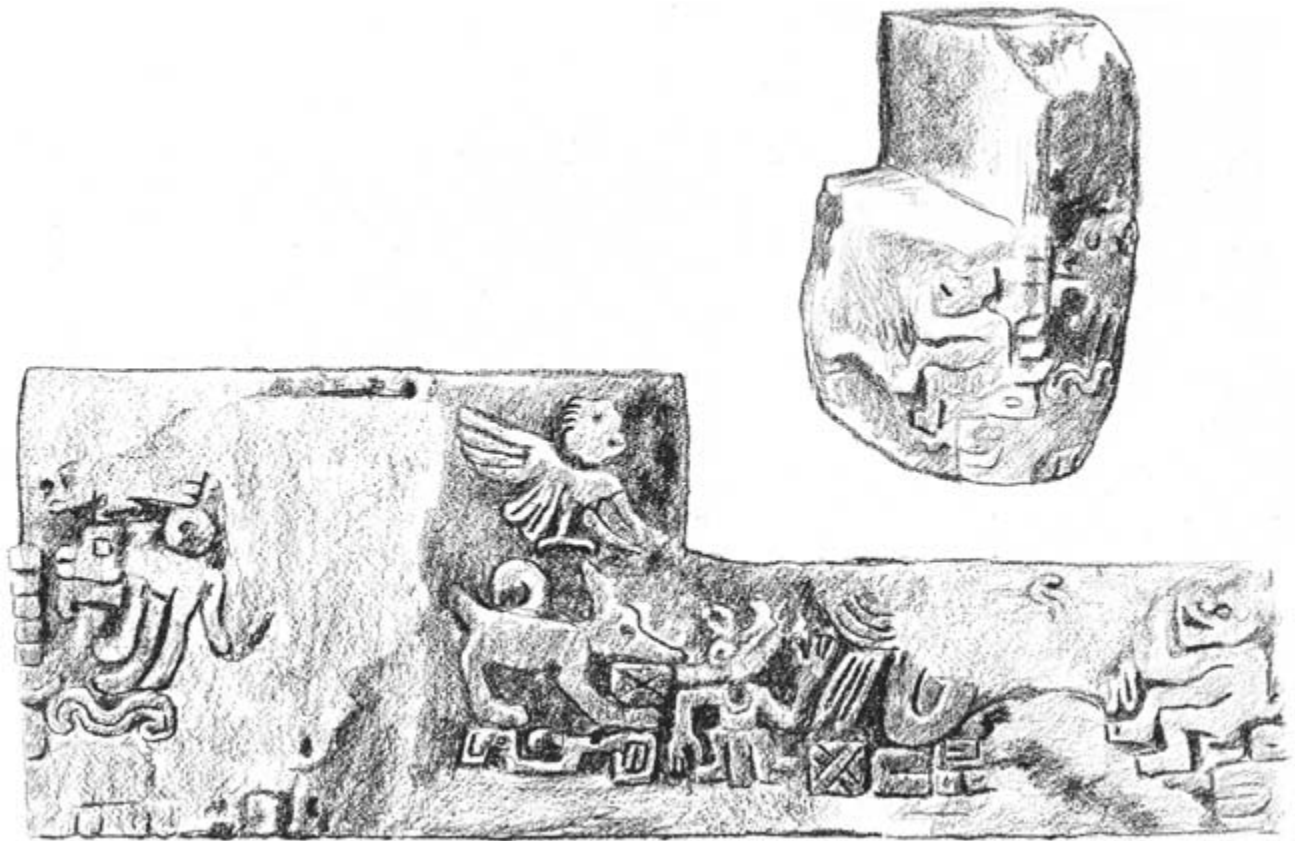
77.6. Sculpture P (p. 44), Zoomorph, and Sculpture Q (p. 44, Fig. 23), Tajumulco.



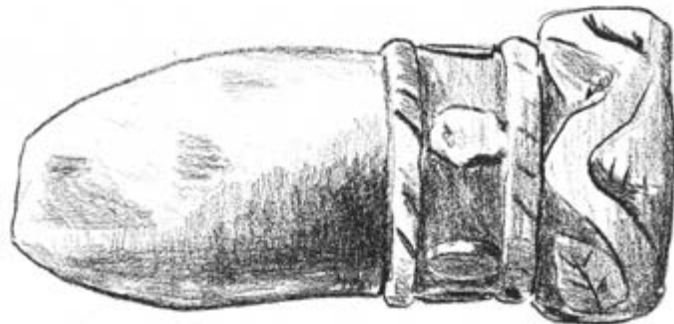
77.7. Number 1 (pp. 33–36, Fig. 15), Tajumulco.



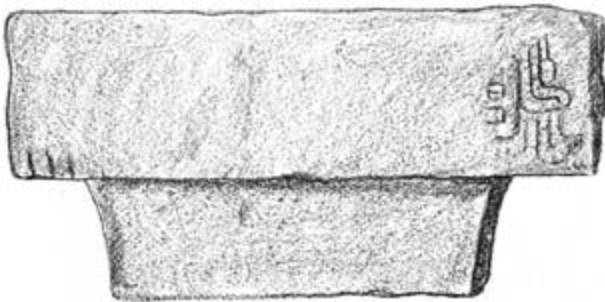
77.8. Number 3 (p. 36, Fig. 16a) and Number 5 (pp. 36–38, Fig. 16e), Tajumulco.



77.9. Number 6 (p. 38, Fig. 16f), Tajumulco.



77.11. Number 12 (p. 39, Fig. 16g), and sculpture said to be from Tajumulco.



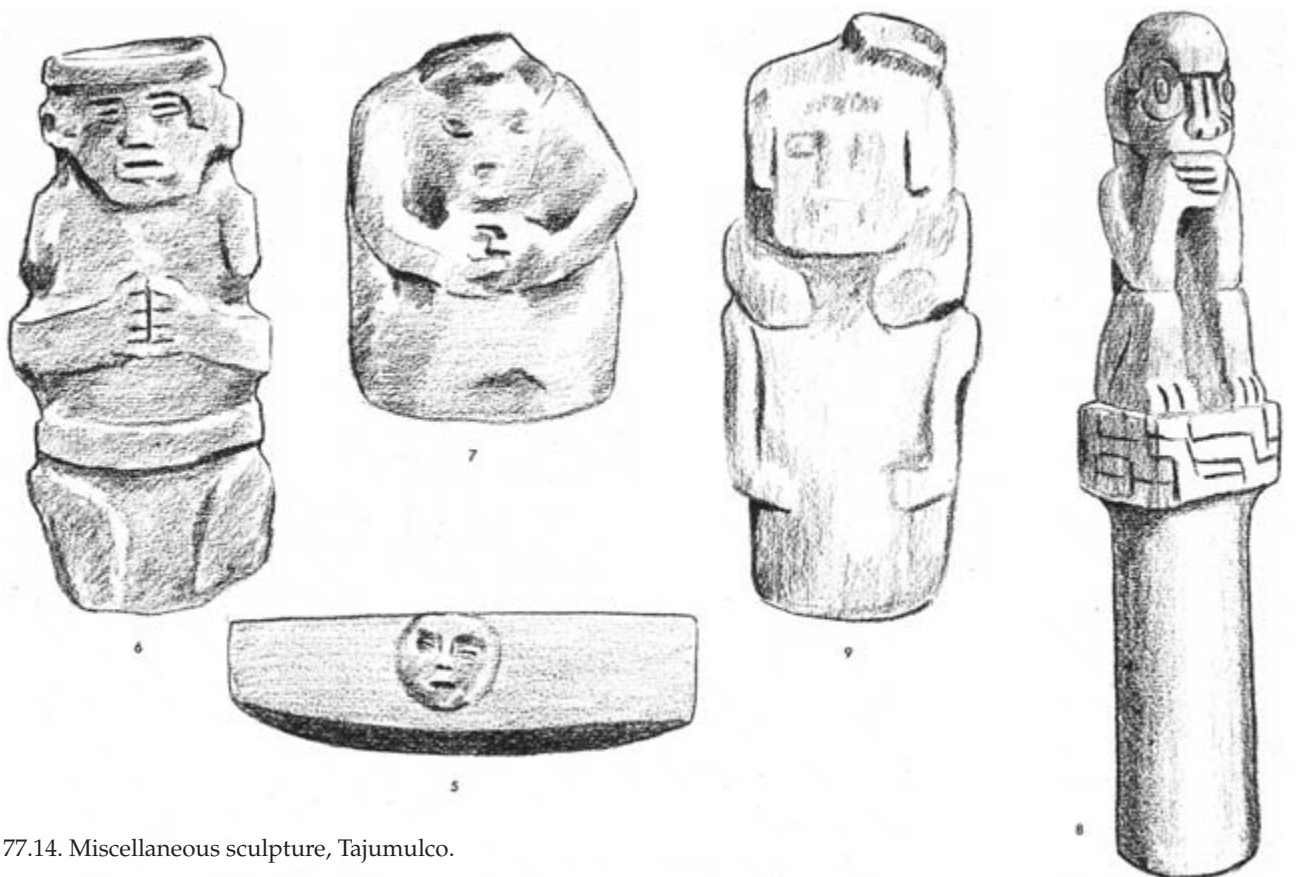
77.10. Number 7 (p. 38, Fig. 20b) and Number 9 (p. 38, Fig. 17), Tajumulco.



77.12. Number 13 (pp. 39–40, Figs. 18, 19), Tajumulco.



77.13. Miscellaneous sculpture, Tajumulco.



77.14. Miscellaneous sculpture, Tajumulco.

Otomi Looms and Quechquemitls from San Pablito, State of Puebla, and from Santa Ana Hueytlalpan, State of Hidalgo, Mexico

Bodil Christensen

The looms to be described below are used for weaving a capelike garment worn by Indian women in several parts of Mexico and called a *quechquemitl*, from the Nahuatl *quechtli*, "neck," and *tlaquemitl*, "garment." The Otomi word for the same garment is *monhuí*.

The *quechquemitl* is a pre-Cortesian garment. In codices and documents written shortly after the Spanish conquest we find illustrations of goddesses and noble women wearing *quechquemitls*, whereas women of the lower classes are pictured wearing *huipiles*. We also find representations of *quechquemitls* on pre-Cortesian stone sculptures and on clay figurines.

The *quechquemitl* is usually made of two rectangular pieces of cloth sewn together by joining the end piece of one (a) to the long side of the other (b), and vice versa, thus forming a garment with an opening in the middle for introducing the head (Figs. 78.1.1–78.1.3). This *quechquemitl* is worn either with the points hanging toward the front and back (Fig. 78.1.2) or transversally with the points hanging over the shoulders (Fig. 78.1.3). It is in use amongst the Otomies, Aztecs, Totonacs, and Tepehuas.

The Huastecs, the Huicholes, and the Coras make their *quechquemitls* of two square pieces joined together at c and d (Fig. 78.1.4), leaving an opening for the head; or of one long piece folded over at e and the selvages joined at f almost to the top. To make the opening for the head, part of the fold at e must be cut (Fig. 78.1.5). These *quechquemitls* are made of commercial cotton materials; those first described

are made of handwoven fabric. A very unusual type is shown in Figures 78.1.6, 78.1.7, and 78.1.8. When worn, it resembles the rectangular type in Figures 78.1.2 and 78.1.3. It comes from the State of Puebla, but the exact place is unknown.

The peculiarity of the Otomi loom lies in the fact that it produces the two pieces of the *quechquemitl* not exactly rectangular but woven into shape, forming a graceful curve which falls over the shoulders. The two looms I obtained in San Pablito are slightly different, and a third one from the Otomi village of Santa Ana Hueytlalpan, near Tularicingo, Hidalgo, is quite different; but all produce a curved fabric by using part of the warp as weft.

Loom 1, San Pablito (Fig. 78.4.12): This is a double-length loom, having been warped for both parts of the *quechquemitl* at the same time. The loom is 2 m long from bar to bar inclusive. All sticks in the loom, with the exception of the end bars and the sword, are bamboo, the shed roll having a diameter of 2 cm and the rest about 1 cm each. Bamboo sticks are preferred because of their smoothness, light weight, and straight lines; but a stronger wood is necessary for end bars and sword. Spanish-speaking Indian women usually call a stick loom *otates*, using the Spanish adaptation of the Nahuatl word *otlatl* (bamboo), instead of the Spanish word *telar* (loom), which is applied only to a foot loom.

The end bars are of hard wood, 2.5 cm in diameter and 66 cm long. The warp is continuous and is attached to a heading cord of maguey fiber, the extension of which is used as binding string

for fastening the warp to the end bars. These are shaped at the ends to keep the ropes and heading cord from sliding.

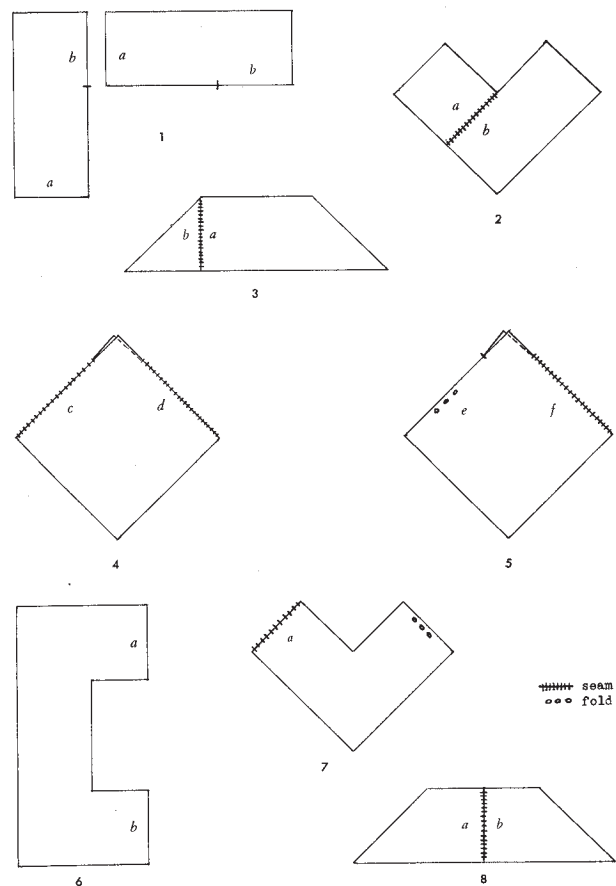
The warp consists of three different sections with the following dimensions (Fig. 78.3.9):

- Section a: 22 cm of white 2-ply cotton yarns (12 to the centimeter).
- Section b: 19 cm of red wool yarns (8 to the centimeter).
- Section c: 5 cm white cotton border, similar to that described under a.

These measurements are taken from the finished fabric, which is 46 cm wide. The warps must be more than twice the length of each part of the quechquemitl, plus almost double its width, which will be understood from the description below.

The woolen yarn employed is hand spun, but not by the weaver herself. She buys it from an Indian from Texcoco, Mexico, who makes a trip to Pahuatlan and surrounding villages every twenty days, selling his wares. The white cotton yarn is a commercial product, which is sometimes respun by the weaver to make it the desired coarseness. It is bought from the merchants in Pahuatlan, Puebla.

The weft is white cotton yarn, wound on the bobbin in pairs of singles. The bobbin is a slender stick and the weft is wound around it in long spirals, so as to make an even thickness throughout its length. The tenter is placed underneath the weaving to which it is fastened by means of two thin thorns, or twigs from an orange tree. The heddle consists of two sticks; the loops (a thin cotton string) are continuous, put on in a spiral forming a figure 8, the crossing lying between the sticks. It is followed by a shed roll and a lease stick. More or less midway between the two end bars, the red warp yarns are twisted around a stick in bunches of eight, probably to add more length to this part of the warp in comparison to the cotton warp. The sword is of hard wood, 77 cm long and 5 cm wide, tapered at the ends and from the back toward the front. As the weaving progresses, the finished fabric is rolled up on the lower end bar and a supplementary cloth bar of similar type, which is placed on top of the end bar. The backstrap, 93 by 8 cm, is a matting plaited of palm leaves, with a small string at each end with which it is fastened to the lower end bar and reaches around the weaver's hips. It is similar to the tumplines used in this part of the country. The weaver sits on the ground with her legs stretched out in front of her or pulled up under her. The loom is tied to a tree in a slanting position, with a rope which is attached to the upper end bar, forming an inverted Y with an

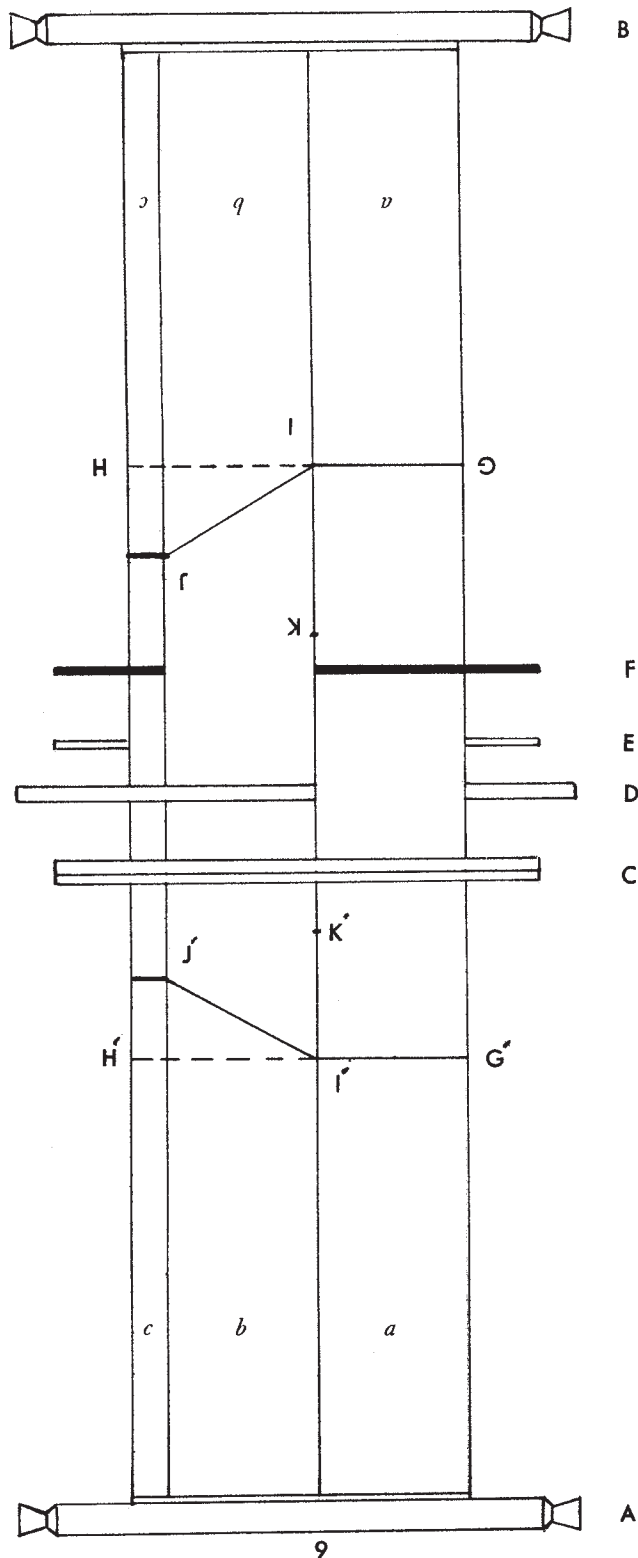


78.1. Different forms of quechquemitls (nos. 1–8).

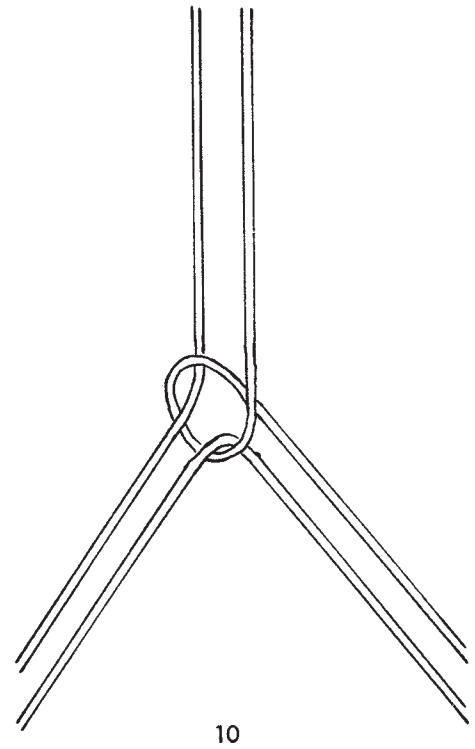
adjustable loop where it divides, so as to secure an even balance (Fig. 78.2.10).

The weaving starts at the heading cord. There are 10 picks to the centimeter in the cotton web; but on account of the difference in coarseness between the cotton warp and the woolen warp, 3 picks in one shed alternate with 1 pick per shed in the woolen part of the web. This is produced by changing the shed three times on every fourth pick; it gives a warpface to the web in Section b, while the cotton web is plain weave all through the fabric.

When 58 cm of cloth have been woven (Fig. 78.2.9, G–H), the shaping of the round shoulder begins. (To follow this part of the weaving on Figure 78.2.9, the illustration must be turned around, with A as the upper end bar.) Starting from the right side (where the narrow white-border is situated at this stage of the weaving), the pick does not go all the way through to the opposite selvage, but turns back in a countershed at the end of the woolen warp at I; the third pick lies in a new shed in the narrow cotton warp, but in the woolen warp it lies in the same shed as Pick 2; catching around the last red warp yarn, it

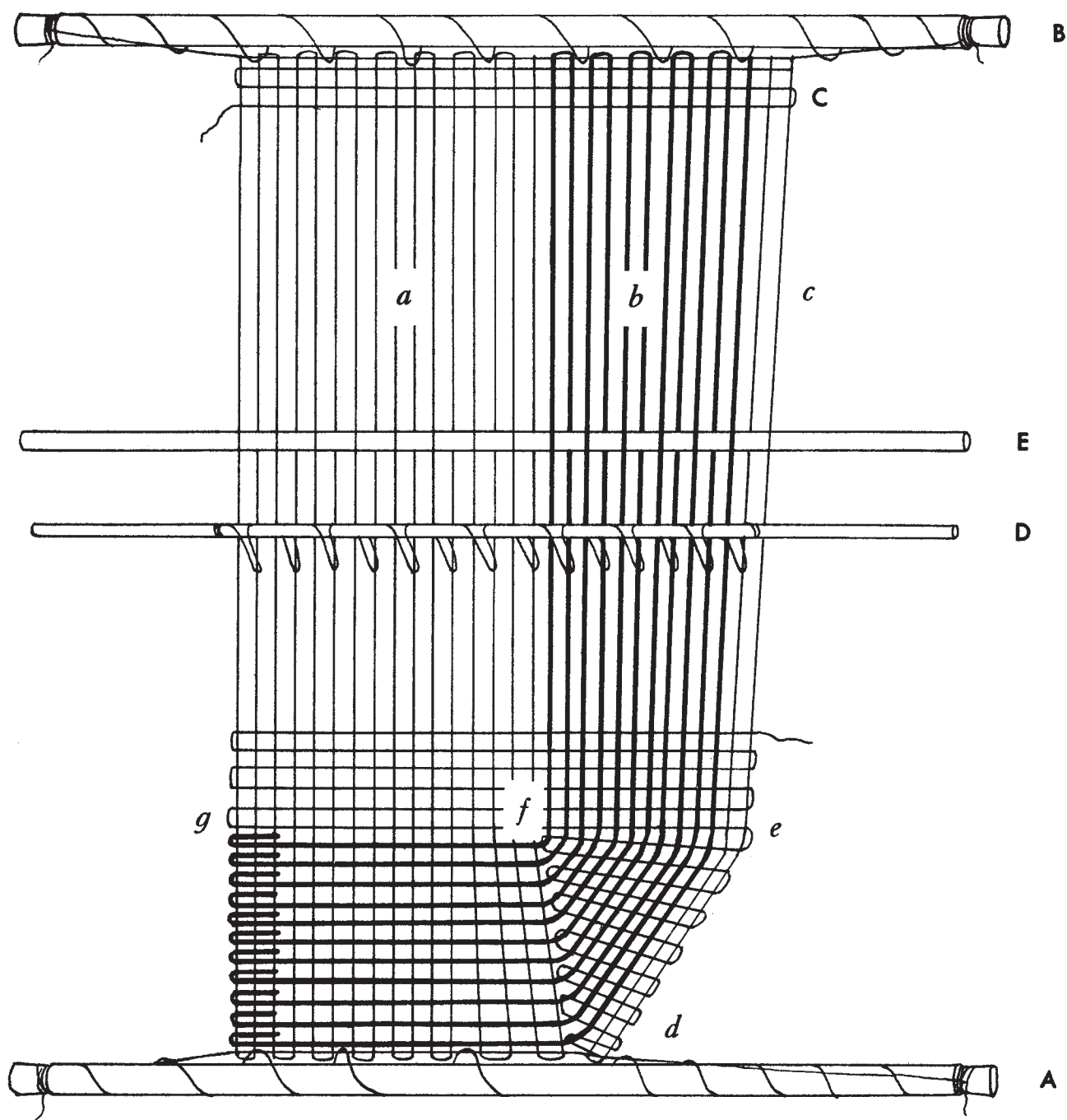


78.2. Loom 1, San Pablito (no. 9): (a) lower end bar; (b) upper end bar; (c) heddle; (d) shed roll; (e) lease stick; (f) supplementary stick (see also Fig. 78.4, no. 12, no. 10); rope with adjustable loop, used for tying loom to tree or other support.



turns back, still in the same shed in the red warp, but in a countershed in the narrow cotton warp. Pick 5 lies in a shed by itself both in the cotton and in the woolen warps, but it turns back eight warp yarns before the first four picks; it is followed by Picks 6, 7, and 8 in a similar manner as described for 2, 3, and 4. Each group of four weft yarns reaches the same point, but each group is eight warp yarns farther away from the middle of the fabric than the preceding group, forming a receding line until the opposite side of the woolen warp is reached (Fig. 78.2.9, I-J). Then the weaving is stopped, and the loom is turned so that the lower end bar B now serves as upper end bar. The heddle and shed roll are removed and placed on this half of the loom in their proper positions, and the weaving of the second rectangular piece proceeds exactly as described above.

When the receding part of this half is finished (Fig. 78.2.9, I'-J'), the interesting part of the weaving begins. The shed roll is removed from the woolen warp and placed in a new shed in the white cotton warp (Section a). This shed is formed by groups of six pairs of warp threads in the following manner: after the crossing in front of the lease stick, the warps are given an extra twist, but this time in groups of from six to eight threads (the grouping is not very exact), so that the warps which passed over

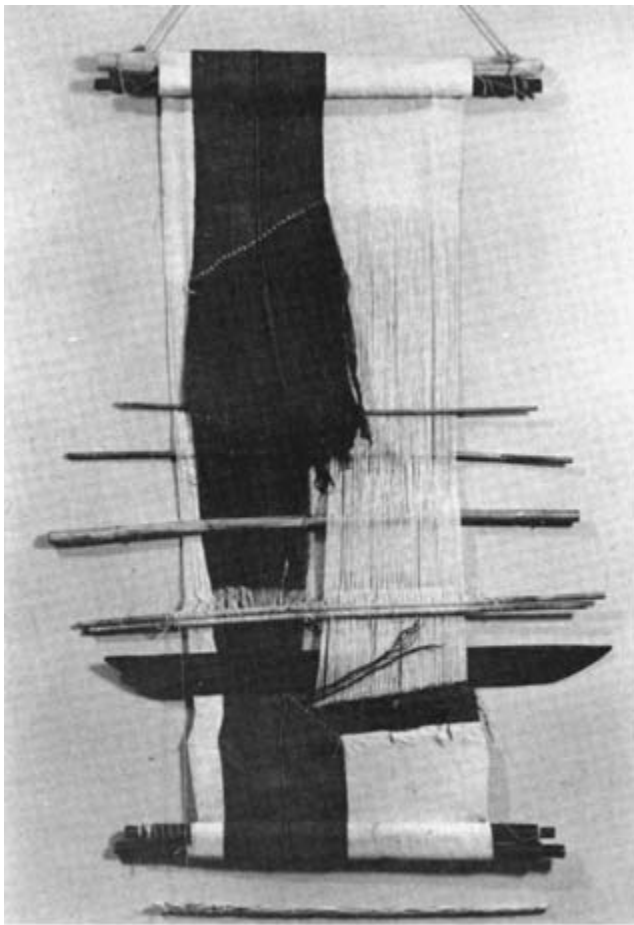


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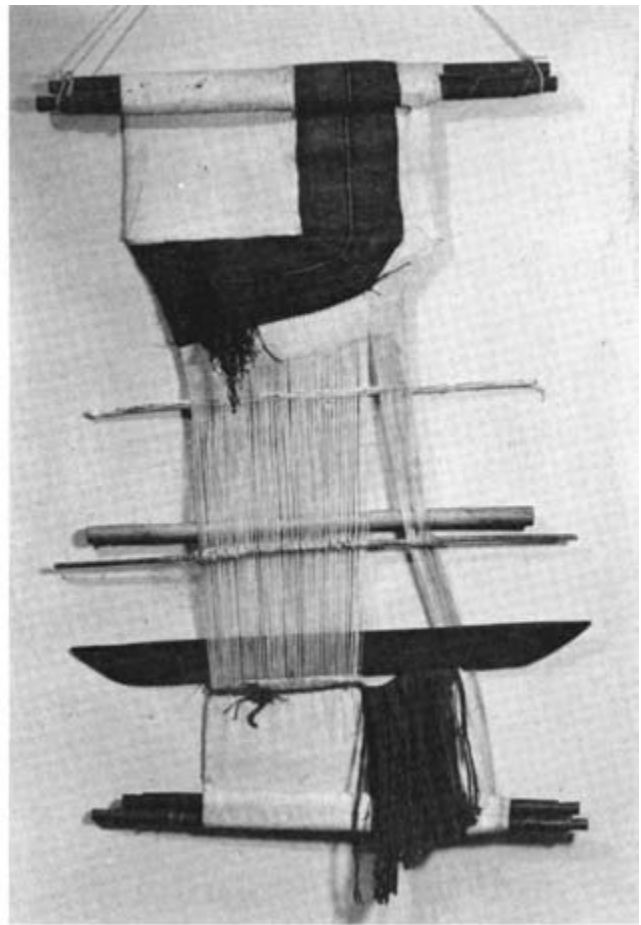
78.3. Looms from San Ana Malacatan (no. 11): (a) lower end bar; (b) upper end bar; (c) heading strip; (d) heddle; (e) shed roll.

the lease stick and which consequently should pass under the shed roll, also pass over this, six over and six under, etc. Part of the woolen warp is cut on the weaver's side of the middle rod, to which this part of the warp is twisted in bunches of eight yarns, as

mentioned before. The strands of loose warp, starting with the one nearest to the broad cotton warp (Section a), are now passed with the fingers through the shed of the cotton warp from I' to Q', thus being used as weft, floating over six and under six warps,



12



13

78.4. Looms from San Pablito (nos. 12 and 13).

corresponding to the special spacing of the warps on the shed roll. The weft is pushed together with an instrument made of a heavy wire pointed at one end, and is afterwards beaten into position with the sword. This gives a weft-face to the transversal band of red, as the wefts are pressed together so closely as completely to conceal the warps. At the opposite sel-vage, the weft is turned back in the countershed for a couple of centimeters and left hanging, to be cut off close to the web when the weaving is finished.

This is the stage at which I procured Loom 1 in San Pablito (Fig. 78.4.12).

Sometimes the warp setup has been miscalculated, so that when cut, the red warp yarns are not long enough to reach to the opposite side and turn back; then an extra strand of yarn is added, but the weaving loses in quality by this procedure.

All the woolen warps, which were cut not all at the same time but part by part to avoid getting them entangled, are passed through the cotton warp

as weft, one by one, bringing the receding part of the woolen web I'-J' up against the cotton warp at I'-K', and giving the impression of the red border turning a corner. This causes a certain pull on the cotton warp, making the weave looser, especially in the part closest to the joining. This can be noticed by the difference in width of the red transversal band, which at the beginning had the same width as the cotton web, but at the end is about 5 cm broader from sel-vage to the receding line. The loops from the heddle stick, which have been disengaged by cutting the woolen warps, are cut and unwound, and the string is tied together again.

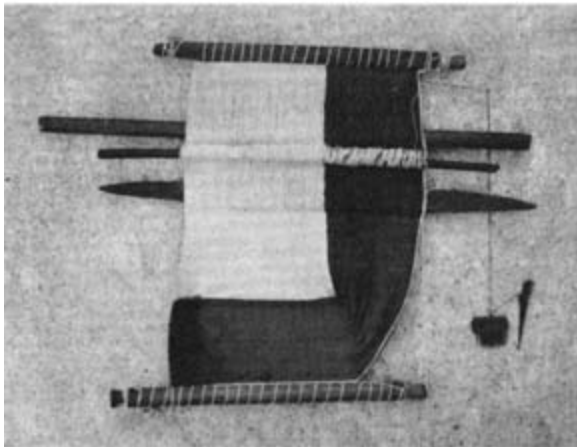
When the last loose strand has been used, the weaving continues with the white cotton weft on the bobbin, thus forming a border 5 cm wide in plain weave, corresponding to the narrow border at the side of the web (Section c). It will be noticed that now the cloth is narrower than when the weaving was started, as the part of the warp formed by the



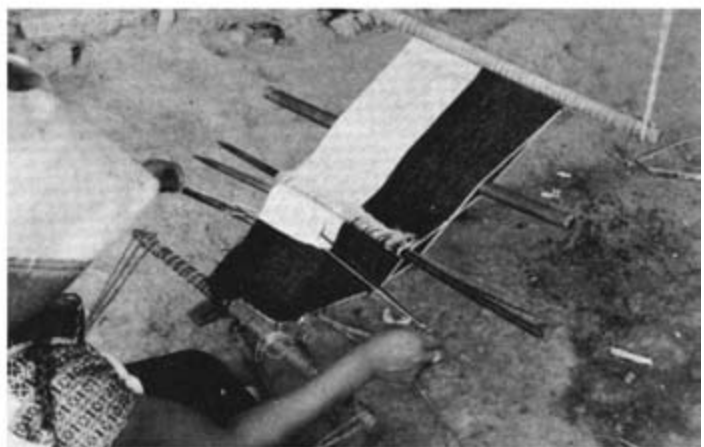
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78.5. Loom from San Pablito (nos. 14–17).

red wool yarns (Section b) has been eliminated (Fig. 78.4.13).

Finally the position of the loom is reversed a second time, so as to finish the shaped part of the first rectangular piece. The shed roll is placed on the other side of the lease stick; and the heddle, which now passes through only the cotton warps, is placed between the weaver and the shed roll.

The woolen warps, which have been taken off the middle rod, are hanging loose and will be used as weft, forming the transversal border on the second part of the quechquemitl.

There is no special finish to the weaving, but the warps are cut off close to the web and a narrow hem is made, each part of the quechquemitl being a three-selva fabric, 4.6 cm wide by 82 cm long.

When the two pieces are sewn together, as described in the beginning of this *Note*, the curves formed by turning the warp into weft fall exactly

over the shoulders of the wearer, giving a graceful line to the quechquemitl.

Loom 2, San Pablito (Fig. 78.4.13): The dimensions of this loom differ slightly from the one described above, but, like the former, it is a double-length loom. The heddle consists of one stick, and the loops are put on in spiral form. The weaving on this loom is at a more advanced stage than on Loom 1, as one part of the quechquemitl is finished and the loom has been reversed a second time. The bobbin is inserted in the shed between the shed roll and the finished part, taking the place of the lease stick. The woolen warps are hanging loose; ready to be used as wefts for the weaving of the transversal band. The loops which encircled the woolen warps have been cut off and the string tied together again.

Loom 3, San Pablito (Fig. 78.5.14): This is a single-length loom. As will be noticed, the transversal band is being almost finished, as only a few strands of

loose warp yarns are left to be introduced as weft, and then a narrow white border, using the long bobbin, will finish this half of the quechquemitl. The warp will have to be cut, as the loom has no heading strip. The heddle is made of two sticks, as on Loom 1. A very heavy shed roll and a lease stick are in place, and an extra stick, which does not appear on the other two looms, is attached to the cotton warp of the narrow white border to the left of the loom.

The quechquemitls from San Pablito may be divided into two main groups: (1) those with a broad woolen band, 15–24 cm wide (Figs. 78.7.22, 78.7.24, 78.7.26), and (2) those with a narrow woolen band, 7–8 cm wide (Figs. 78.7.23, 78.7.25, 78.7.27).

The wide border is always a brilliant red; the narrow borders are purple. The red borders are divided in the middle by a black and orange line 1 cm wide, or an all-black line. The purple border has an orange line of 3 or 4 warp yarns through the center.

The white upper part of the quechquemitl is decorated with embroidery in cross-stitch, the main colors being black and red; occasionally an orange or magenta touch is found. The woolen border is never decorated with embroidery. The embroidery yarn is wool which has been split into 2-ply strands, or commercial embroidery cotton. Two kinds of cross-stitch are used: the simple one, and one where the stitch to the right is twice as long as the backstitch, giving a braided effect to the row. Each stitch is completed before a new one is started. A few motives are surrounded by an outline stitch in red.

The motives may be divided into three styles:

1. A narrow decorative border along the joining seams, and in the corners and in front and back adjacent to the woolen band, the pattern being a row of highly stylized little men (Figs. 78.7.22, 78.7.23).
2. The same borders as above, but the whole upper part decorated with zoomorphic motives: double-headed eagles, deer, birds, rampant horses, jaguars, turkeys, monkeys, foxes, rabbits, in fact every animal from the region, represented with a high degree of stylization and a rich imagination. We also find an occasional human figure, male or female (Figs. 78.6.21, 78.7.24, 78.25).
3. Same borders as in (1) and in addition four big motives, one in each corner and one in front and back, in conventionalized designs of pots with flowers resembling stars and rosettes. Suggestions of the aboriginal signs *illhuil* and *xicalcolihqui* are found as negative designs inside the motives (Figs. 78.7.26, 78.7.27).

The three styles of decorative motives are found in both the quechquemitls with the broad red band

and those with the narrow purple band, making a total of six different styles (Figs. 78.7.22–78.7.27).

Unfortunately, commercial cotton material (unbleached muslin) is taking the place of the handwoven cotton material, but a handwoven woolen border 7 cm wide is inserted 5 cm from the edge. This strip is not woven with a corner, but cut and sewn together by hand, forming the corner. The color is dark blue-violet with an orange line in the middle. The quechquemitl may be left without embroidery, or Styles 1 and 3 may be employed. I have not yet found a quechquemitl made of commercial cotton decorated with Style 2.

Loom 4, Santa Ana Hueytlalpan (Figs. 78.3.11, 78.5.15–17): In Santa Ana all looms are of the single-length type with a double start, which is more economical, as no part of the warp is wasted and it has the advantage of producing a four-selvage fabric.

The loom in Figure 78.5.15 is 60 cm long from bar to bar inclusive. The dimensions of the different sections of the warp setup are as follows (Fig. 78.3.11)

- Section a: 23 cm of white 3-ply cotton yarns, very hard spun (16 to the centimeter).
- Section b: 16.5 cm of red woolen yarns (10 to the centimeter).
- Section c: 8 white cotton yarns, which form the selvage at the opposite side.

Section c is part of Section b, which has been divided at the upper end bar, giving space for Section b, which is not attached to the lower end bar.

Through Section b run five lines of green warp yarns as a decorative motif: two close to the margins and one in the middle.

The cotton yarn used for the warp in Section a and for the weft is commercial cotton, which is sometimes respun by the weaver to make the desired coarseness. The raw wool is bought for \$15.00 pesos a kilo; it is carded, spun, and dyed by the women themselves. Aniline dyes are used, which at the present time cost \$6.00 pesos a kilo.

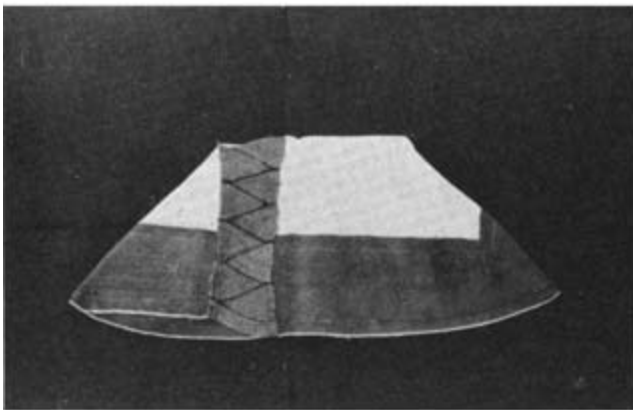
The cotton warp and the woolen warp are warped apart, the woolen warp being as much longer than the cotton as the width of the loom and a bit more. The yarn is dyed after it is warped. Then both the cotton warp and the woolen warp are dipped in a sizing of corn gruel, placed on end bars, and dried in the sun. When the two warps are dried apart, the woolen warp is not cut until setting up the loom; but if they are dried on the same end bars, the woolen warp is cut at one end and tied in four bunches at the upper end bar. When the warp is dry, a heading cord of maguey fiber is introduced in the sheds at



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78.6. Different forms of quechquemitls (nos. 18–21).

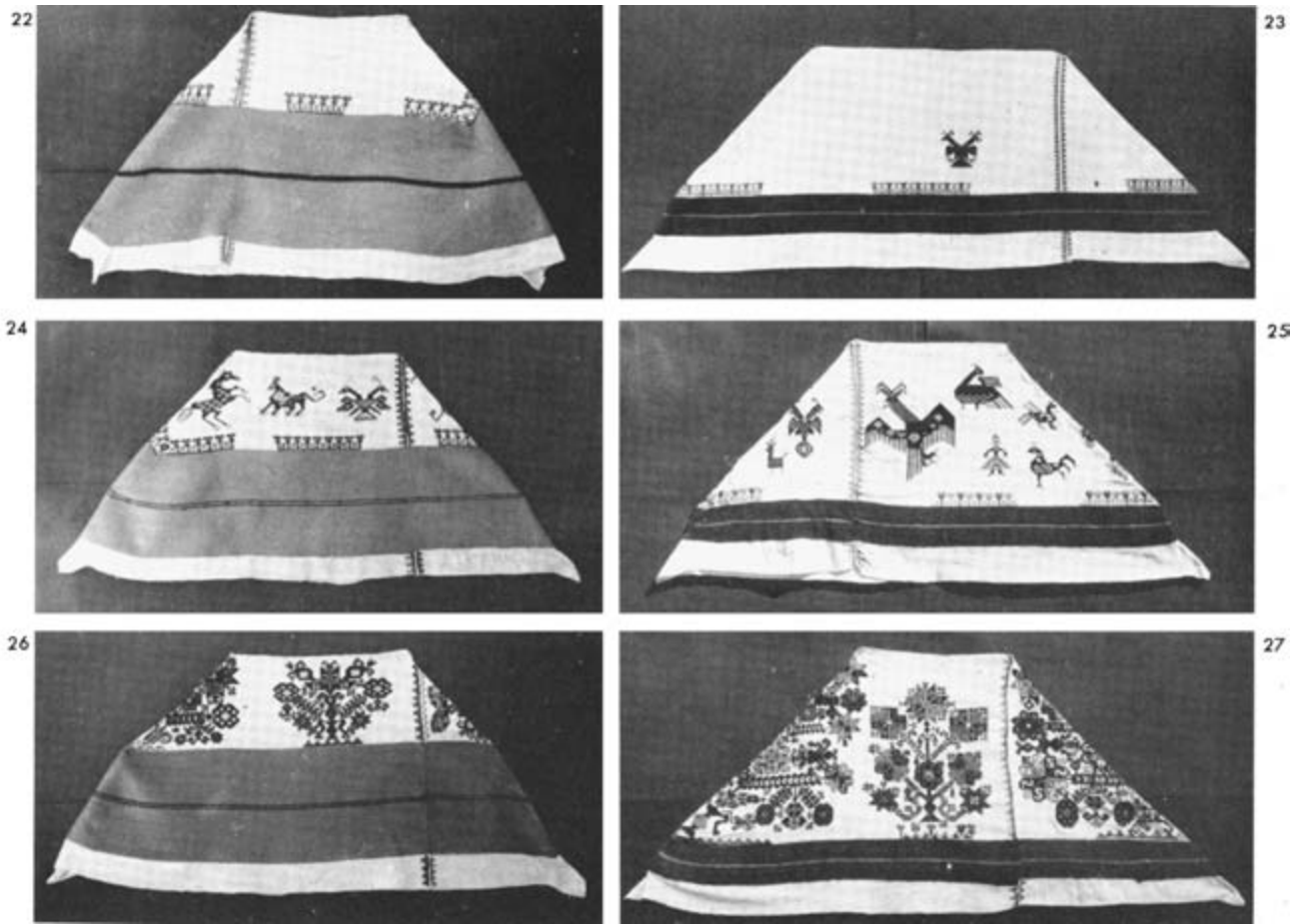
either end instead of the bars, the surplus being used as binding string for fastening the warp to the end bars. At this point the eight cotton warp yarns have been separated from the rest at the end bar B, giving space for the woolen warp yarns. The white cotton warp is continuous, whereas the woolen warp has been cut.

The end bars, of hard wood, are about 53 cm long and 3 cm in diameter. The heddle is a stick 67 cm long and 1.5 cm in diameter. The loops are continuous and are put on the heddle in alternate form; the string is the same hard spun cotton yarn as warps in Section a. The shed roll is a bamboo stick 83 cm long and 3 cm in diameter. The sword is of hard wood, 74 by 4 cm, tapered at the ends and from the back towards the front. The backstrap is a leather band, 80 cm long and 2.5 cm wide, fastened to the lower end bar with loops made of maguey string. A

lease stick is used only while weaving the transversal band, not for the plain weave. This loom has no tenter, probably because the warps are very coarse and short; but usually a tenter is put on after the corner is finished and the plain weave begins. The weft is a pair of 2-ply loosely spun cotton yarns and the bobbin is the primitive longitudinal type.

The weaving starts with a heading strip of about 2 cm. While this is being woven, the woolen warps are tied to the upper bar, using A as upper end bar. Then the loom is turned so that B becomes the upper end bar, and the weaving of the curved shoulder is started.

The shed roll is pushed back to take the function of a lease stick, and a new shed roll is inserted between the lease stick and the heddle in a shed being formed by groups of six cotton warps, which are twisted around themselves, as described under



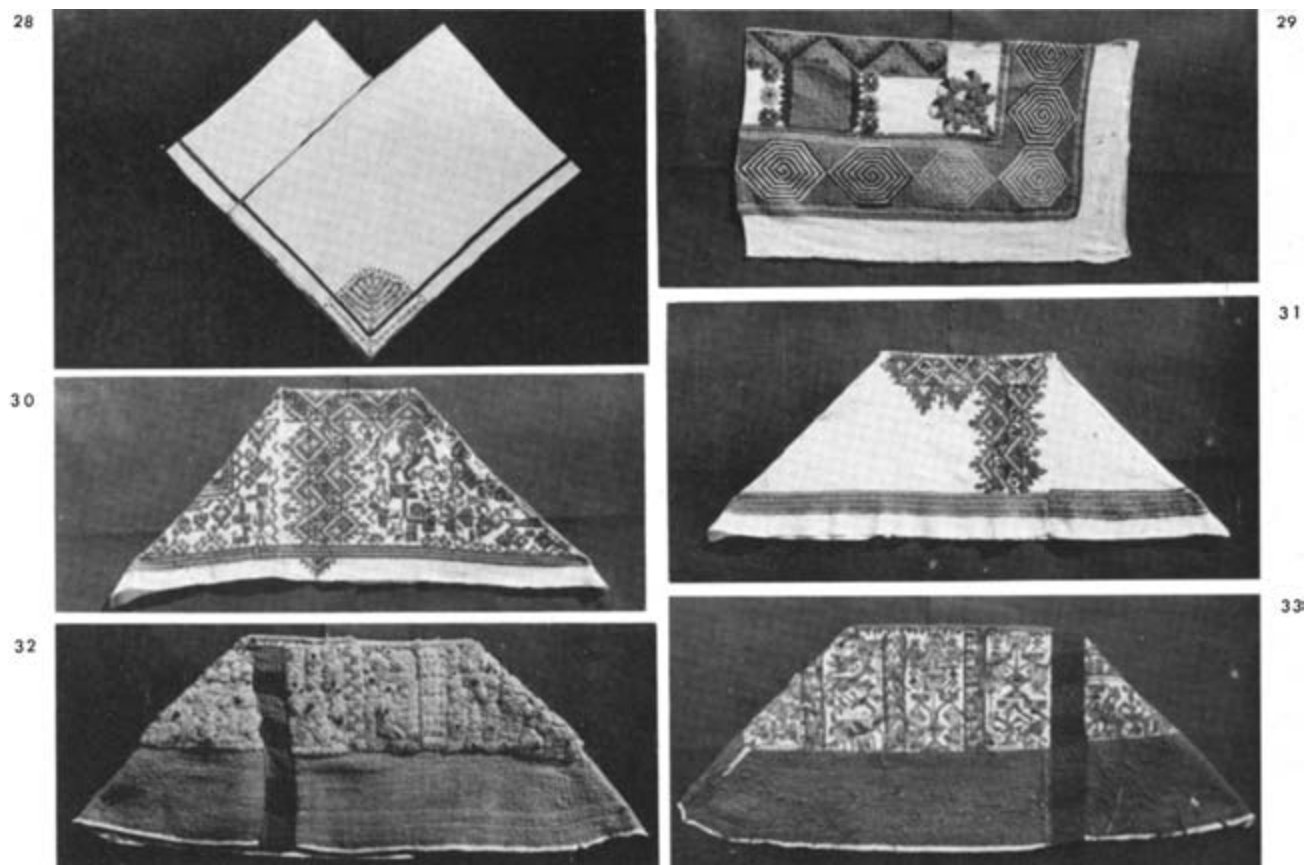
78.7. Different forms of quechquemitls (nos. 22–27).

Loom 1. (Or the long bobbin may be used as lease stick, as in Fig. 78.5.16, inserting it in the white warp while the transversal band is being woven.) The long 'woolen warps are untied from the end bar A and starting with the one farthest to the right, each strand is passed through the cotton shed as weft, floating over six and under six warps. At the opposite side each weft is turned back in a countershed for a couple of centimeters so as to form a selvage. The ends are left hanging, to be cut off close to the web when the fabric is finished.

When all the woolen yarns have been used as weft, the triangular piece between d, e, and f is woven, using the cotton weft and a small, thin stick as bobbin, 38 cm long and 0.5 cm in diameter, making frequent use of fill-in wefts to make the line e-f-g as straight as possible (Figs. 78.3.11, 78.5.16). When the corner is woven, the extra shed roll is removed, eliminating the special shed formed by grouping and twisting of the cotton warp yarns. The rest of the weaving is completed with the cotton weft on the long bobbin in a plain weave from selvage to sel-

vage. To compensate for the difference in coarseness between the two warps, two methods are used: one as described under Loom 1 by occasionally passing three wefts through one shed in the woolen warp, and the other by fill-in wefts in the cotton warp, turning back the weft in a countershed before passing it through the woolen warp (Fig. 78.5.17). No special rule seems to be followed, but each weaver uses her own judgment in evening up the web. All through the weaving frequent use is made of the wooden comb with which the weft is pushed together very tightly by swift, hard, scratching movements. The maguëy thorn is principally used for separating entangled warp yarns. The weave is very tight and the finished fabric is stiff and coarse, whereas the San Pablito quechquemitl is woven loosely and falls softly.

When nearing the heading strip, the shed becomes so narrow that the sword cannot be used. Thinner and thinner sticks are used as shed rolls, and when at last not even the thinnest shed roll can be used, the picks are put through by means of a



78.8. Different forms of quechquemits (nos. 28–33).

long, coarse needle (length about 25 cm). To close up the very last space, the weft yarns on both sides of the open space are pushed together with the comb, so that the joining becomes as invisible as possible. The advantage of a double start is that the web becomes a four-selvage fabric and there is no need of cutting the warp and hemming the end.

The Santa Ana quechquemitl (Fig. 78.6.18) is small in comparison to the one from San Pablito (Fig. 78.6.19), each part measuring only 55 by 40 cm. Others in my collection measure 50 by 34 cm and 46 by 31 cm. The two pieces are sometimes joined together with a peculiar darning stitch from 10 to 15 cm wide made on the bias by the long needle described above; double strands of red wool yarn with a zigzag line run from top to bottom, part of the line being in blue and part in green (Fig. 78.6.20).

The weaving of the quechquemitl takes two days for a good weaver, besides the time spent in preparing the wool and setting up the loom. The embroidery joining the two parts takes one day. The Santa Ana quechquemitl never has embroidery on the white upper part as does the San Pablito quechquemitl. The width of the red and white parts

of the quechquemitl varies, as Indian fabrics are never standardized but highly individual. The weavings are made for personal use, or as orders for women who do not themselves know how to weave.

Occasionally the Santa Ana quechquemitl is woven of all wool warps. Then the grouping and twisting of the white warp forming the special shed for the transversal band is not necessary, as there is no difference between the white warp and the red woolen strands used as weft. For weaving the corner and the plain weave a cotton weft is used.

Examining quechquemits from other parts of the Sierra of Puebla, Hidalgo, and Veracruz, we find that sometimes a narrow border of contrasting color, woven in the "round shoulder technique," has been used as adornment. I may mention Cuetzalan, Puebla [Nahoas] (Fig. 78.8.28); Mecapalapa, Puebla. [Totonacs] (Fig. 78.8.29) in which half a quechquemitl is shown; Tenango de Doria, Hidalgo (Otomi), and Atla (Fig. 78.8.30), Xolotla (Fig. 78.8.31) and other Nahuatl-speaking villages in the State of Puebla between Pahuatlan and Huauchinango. In Zontecomatlan, Veracruz (Nahoas), we find a quechquemitl woven with the Santa Ana technique, but of an in-

ferior workmanship (Fig. 78.8.32). The white upper part is, decorated with heavy wool embroidery, entirely concealing the white fabric. The colors are red and orange with blue, green, and magenta spots. The embroidery is made of cross-stitch, forming loops about 1 cm long on the front, which gives a resemblance to a hooked rug. The patterns of birds, animals, flowers, and other designs are distinguishable only on the reverse side of the embroidery (Fig. 78.8.33). The two parts of the quechquemitl are joined together by a netlike stitch 5 cm broad of wool

yarn, alternating 4 cm in red and 4 cm in green. This quechquemitl is small and stiff, measuring 52 by 28 cm.

This paper does not pretend to have completely covered all phases of the weaving of the San Pablito and Santa Ana quechquemits. Only by watching different weavers from start to finish would it be possible to observe each little detail; but I hope I have explained the main differences between the weaving of these quechquemits and that of other better-known garments.

MEXICO, D.F.

Maya Calendar Round Dates Such as 9 Ahau 17 Mol

Tatiana Proskouriakoff and J. Eric S. Thompson

It has been known for very many years that the positions in the months held by each day were one less in Yucatan at the time of the Spanish conquest than they had been in the cities of the Central area during the Classic or Initial Series Period. That is to say, combinations such as 12 Kan 1 Pop, 6 Imix 3 Yax, or 13 Ahau 17 Mol were used at that time in Yucatan, whereas in the Central area during the Classic Period those dates would normally have been written 12 Kan 2 Pop, 6 Imix 4 Tax, and 13 Ahau 18 Mol.

It has been generally supposed that the backward shift of one place in month positions was a late innovation, not long antedating the Spanish conquest, and perhaps connected in some way with the Mexican domination of much of the Maya area. We believe that this shift occurred at a quite early date in Campeche and, perhaps, elsewhere, and that it is characteristic of the Puuc area.

Across the top of the front of Stela 9, Etzna, there are seven glyphs. The first two record quite clearly 9 Ahau 17 Mol. The next sign is the head of an animal, perhaps with the Chicchan ornament on its forehead, and, therefore, conceivably with the numerical value of 9 or 19. Glyph 4 is a katun sign. There follows next a hand with a bracket prefix. The best interpretation of this part of the text can be made by assuming that the head represents the number 19. The whole would then read: (9.19.0.0.0) 9 Ahau 17 Mol, 19 (?) katuns completed. Whether that reading be acceptable, or not, there can be no doubt that the two opening glyphs record 9 Ahau 17 Mol, whereas one would normally expect 9 Ahau 18 Mol. The junior

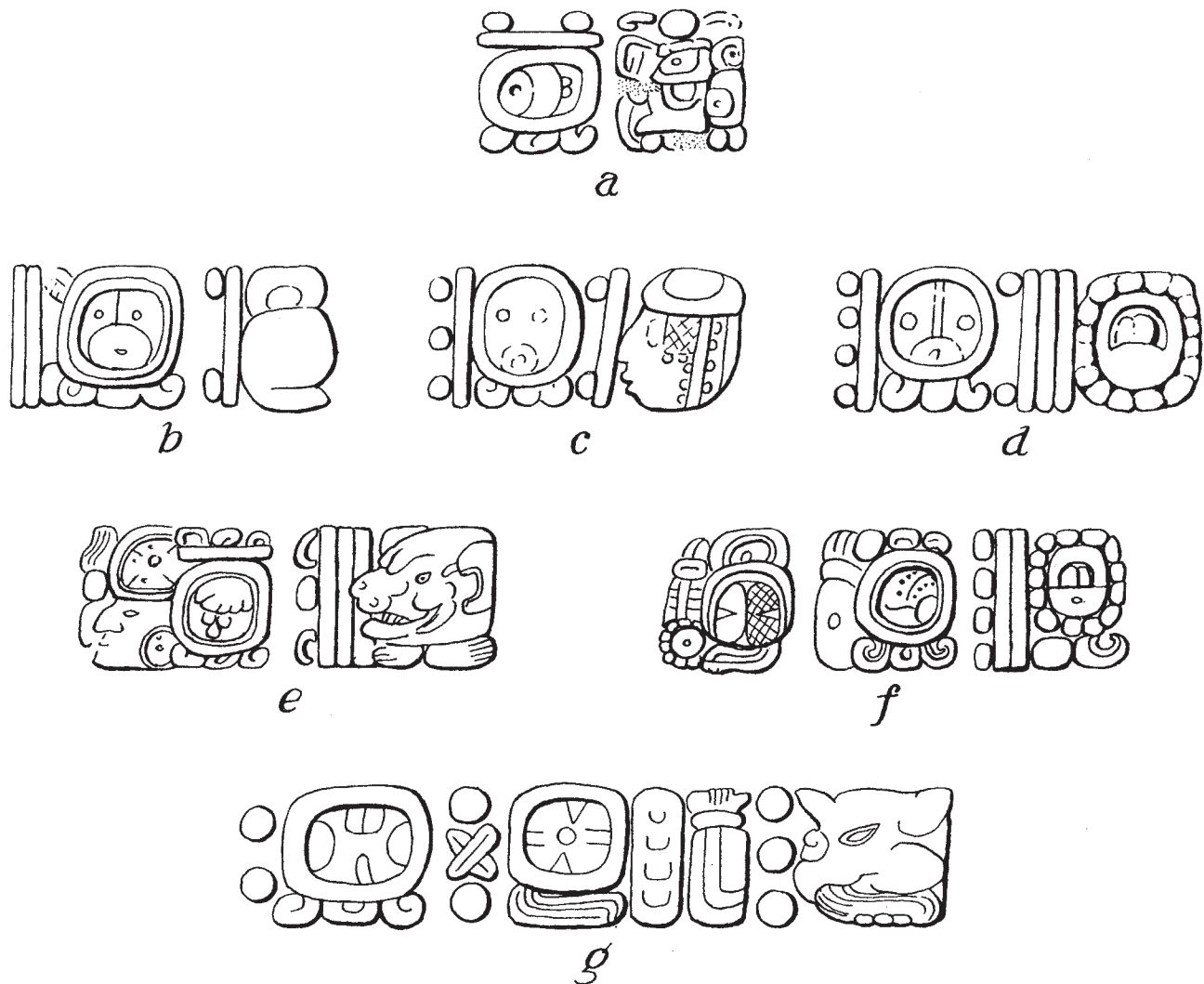
author recently inspected this stela in the regional museum in Campeche, and convinced himself that there never had been a third dot (Fig. 79.1d).

Stela 18, Etzna, records an Initial Series of 9.12.0.0.0 10 Ahau. There follows the Lunar Series, recording a moon age of 25 days, 5 moons. C1 is Glyph B of the Lunar Series; D1 should be Glyph A, but is not identifiable as such. C2 has a coefficient of 7. The glyph itself consists of a weathered element with a recognizable kin tail beneath, and a superfix which has the outline of that of Yax. The inner circle is recognizable. There can, we think, be little doubt that the whole represents 7 Yaxkin. This is the position where one would expect to find the month sign (the second glyph after Glyph B of the Lunar Series) in view of the fact that it is not placed after the day sign. Moreover, the tail and what can be seen of the superfix indicate, that the whole is the month sign Yaxkin. The whole, therefore reads: 9.12.0.0.0 10 Ahau 7 Yaxkin, whereas one would normally expect 9.12.0.0.0 10 Ahau 8 Yaxkin (Fig. 79.1b).

Stela 19, Etzna, has an Initial Series, the opening glyphs of which are absent. However, the surface of the top left corner of the stele is rough, and it is probable that a piece of the original surface, carrying the missing glyphs, has flaked off.

A1, B1, and A2 record 0 uinals, 0 kins, 8 Ahau. A3 is occupied by Glyph G9 and what is probably Glyph F. There follows a record of a moon age of 21 days, 6 moons.

Glyph B2, which follows 10 Ahau, has a coefficient of 7. The junior author studied the rather worn



79.1. Calendar-round dates with month positions one day less than normal: (a) 7 Muluc 1 Kankin (?); Holactun, Temple of the Initial Series; (b) 10 Ahau 7 Yaxkin (?); Etzna, Stela 18; (c) 8 Ahau 7 Uo (?); Etzna, Stela 19; (d) 9 Ahau 17 Mol; Etzna, Stela 9; (e) 6 Ix 16 Kankin; Yaxchilan, Stela 20; (f) 3 Eb 14 Mol; Yaxchilan, Stela 18; (g) 2 Chuen 3 Muan; Kabah, Structure 1, jamb.

glyph in the regional museum of Campeche, and believed that he could see the details as reproduced in Figure 79.1c.

Possible restorations of the defective Initial Series, together with the approximate moon age at the dates in question, are:

A	9.13.0.0.0	8 Ahau 8 (or 7) Uo	Moon age approx. 22 d.
B	9.16.5.0.0	8 Ahau 8 (or 7) Zotz	Moon age approx. 5 d.
C	9.19.10.0.0	8 Ahau 8 (or 7) Xul	Moon age approx. 15 d.

As a moon age of 21 days is recorded on this stela, Readings B and C can be eliminated, leaving only one date which is in close agreement with the lunar data.

Glyph B2, accordingly, should represent 7 Uo. Hitherto, no head variant of Uo has been reported, and we have, there fore, no examples with which to compare it. The characteristics of Uo are the crossed bands and the superfix with crosshatching, to represent black. Crossed bands are not visible on the somewhat worn head at B2, but there is an area with crosshatching behind the eye. All in all, it is at least probable that the glyph is a head variant of Uo. The Initial Series, accordingly, can be accepted with little doubt as recording 9.13.0.0.0 8 Ahau 7 Uo. The read-

ing of the Initial Series as 9.13.0.0.0 (as also that of Stele 18 as 9.12.0.0.0) was first made by Alberto Ruz L. (1945a:59).

No other Calendar Round dates at Etzna are sufficiently well-preserved to indicate whether their month signs were in what we might, perhaps, term Puuc style, or the usual method. However, in all three inscriptions in which the month glyphs can be determined with fair to complete certainty, their attached coefficient is one less than one would expect.

On an ornamented shell, as yet unpublished, which is supposed to have been found at Jaina there is an inscription, the opening glyphs of which read 3 Caban, kin, 14 Muan. The style of the beautifully cut glyphs is that of the Central area during the Classic Period; the interposition of the kin sign between day and month is characteristic of Chichen Itza and northwestern Campeche. It is, therefore, highly probable that this shell was carved in an area, most logically central Campeche, in which these regional differences meet. The best position for the date is 9.13.14.16.17 3 Caban 14 Muan, plus or minus one Calendar Round. It will be noted that by normal standards one would expect the month position 15 Muan.

The Initial Series at Holactun (Xcalumkin), in northwestern Campeche, has been read by both Beyer and the junior author as 9.15.12.6.9 7 Muluc (2 Kankin). There is no month glyph between the day sign and the Lunar Series. It should, therefore, be sought after Glyph A of the Lunar Series. There is, in fact, a glyph at that position, although it is of unfamiliar form. The coefficient is 1. Since, so far as is known, the month position of an Initial Series is never omitted, we can be reasonably sure that this is the month symbol. It may be an unfamiliar form of Kankin, just as an unfamiliar form of Uo apparently occurs on Stela 19, Etzna (Fig. 79.1a). This is a region which differed from the Central area, not only in architecture and ceramics, but also in many hieroglyphic forms (note the many unusual glyphs at Holactun). It is not surprising, therefore, to find unusual variants of familiar signs.

The north jamb of the doorway of Structure 1, Kabah, carries a date 2 Chuen, kin, 3 Muan, instead of the 4 Muan one would expect to find. This is the only Calendar Round date now known at Kabah. We can, therefore, feel reasonably certain that the shift in month positions was also followed at this important Puuc site (Fig. 79.1g).

At Uxmal there are a few Calendar Round dates which appear to show the same backward shift in month positions. The ring of the east wall of the ball court carries a date ? Ix 16 Pop, falling in tun 17 of (a katun) 12 Ahau. This may be the equivalent of

9.10.16.6.14 9 Ix 16 Pop. In any case Ix is linked with 16 Pop in contrast to 17 Pop of normal usage. On the ring of the west wall there is a day sign which, as drawn by Morley (1920:514), looks like an inverted Ix. There is a partly destroyed head coefficient, the best reading of which Morley considers to be 10. This is followed by 17 Pop, a glyph usually found in these texts before the winged Cauac, and a coefficient which is 12 or 17. A detached fragment has a winged Cauac and 12 Ahau. Morley reads the day sign as Ix, and supposes that the double text gives the same date in both systems. Against that interpretation must be set the fact that the day sign apparently is not Ix. Unfortunately, it is in poor condition, having weathered badly. The junior author (Thompson 1937a:194) came to the conclusion that the glyph was a head variant. That the date is 10 Men 17 Pop, the day following 9 Ix 16 Pop, is a possibility. In any case the combination Ix 16 Pop indicates that the backward shift was observed at Uxmal. It is now known from ceramic evidence that Uxmal was abandoned at a relatively early date, almost certainly before 10.10.0.0.0. The shift, therefore, is not attributable to the period immediately before the Spanish conquest.

Morley (1920, Fig. 74) and Blom (1934) reproduce drawings of a text on a capstone in the east wing of the Monjas, Uxmal. This opens with a Calendar Round date 5 Imix 18 (or 19) Kankin. Morley believes the coefficient to be 18; Blom shows it as 17. The complete date has been deciphered as (10.3.17.12.1) 5 Imix 18 Kankin, falling in tun 18 of katun 12 Ahau (Thompson 1941a:107). It is probable, although not completely certain, that this text shows a shift backward in month coefficients.

There is a second capstone with a hieroglyphic text in the Monjas at Uxmal which has been illustrated by Blom in the cited work. This apparently reads 4 Eb 15 (or 5) Ceh, the coefficient of the month being a head variant. This date would therefore indicate that both systems of transcribing dates had been used at Uxmal at one time or another.

The same may have been true of Holactun. In the same building which contains the Initial Series there is a day 2 Ix followed by an unidentifiable glyph with a coefficient of 2. If this is a month sign, it conforms to the regular method of month recording.

Two instances of the backyard shift in month positions occur also at Yaxchilan. On Stela 18, at A2, A3, is a date read by Morley as 3 Cimi 14 Mol. The Maler photograph, however, shows clearly a line flanked by a row of dots curving from the upper right margin of the glyph, which identifies the day sign as Eb and not Cimi. Clearly 3 Eb 14 Mol is the date recorded, though 15 is the expected month

coefficient (Fig. 79.1f). A similar case occurs on Stela 20, on which the day 6 Ix (A1, b), is followed by an animal head, which Morley suggests represents the month Mac. It is, however, in all probability Kankin. In any case the coefficient is clearly 16 (A2). Neither of these monuments records an Initial Series, and both are carved in a style which is peculiar to a group, of sculptures at Yaxchilan and which has closer affinity to some styles in the Puuc region than to the classic styles of the Peten. The pointed shape of Stela 20, very rarely encountered in the Peten, is similar to that of Stela 3, 5, 6, and 8 of Sayil and Stela 3 and 4 of Santa Rosa Xtampak. The treatment of the legs of the figure and of the apron of the *ex* (loincloth) is also characteristic of these sculptures. The figure wears no skirt, and the rounded outline of the thighs is strongly accented. The inner outline of the leg to above the knee is left free either by deliberately deflecting the apron of the *ex* or other low-hanging elements, as on Stela 20 at Yaxchilan and Stela 5 and 6 at Sayil, or by designing the end of the *ex* to parallel the line of the legs, as on Stela 3 at Xtampak. The short sleeveless jacket worn by both Yaxchilan figures is another feature that is not represented in Peten sculpture but occurs in Yucatan on the carved jambs of the building known as the Codz Poop at Kabah. In view of the fact that the two regions share a number of traits to the exclusion of the Peten, it is not particularly surprising to find the Puuc style of date notation used also at Yaxchilan.

Unfortunately, the two monuments bearing this notation are not dated by their inscriptions and there are no close stylistic analogues by which a certain determination of their stylistic period can be made. There are some indications that Stela 18 and 20 are not earlier than 9.15.0.0.0, as, for example, the design of the bag on Stela 18, with its ornament of rattles ending in a scroll, a type which at Piedras Negras occurs for the first time in 9.15.0.0.0 and is characteristic of later monuments, and the very high wristlets worn by the figure of Stela 20, that re-

semble those on Stela 5 and 7 at Seibal and the two figures at El Caribe, all of the period after 9.15.0.0.0. On the other hand, there are no specific traits of the two Yaxchilan sculptures which would suggest that they were carved in the tenth cycle, or that they are much later than other monuments at this site. The best chronological position that can be assigned to the style is therefore somewhere between 9.15.0.0.0 and 10.0.0.0.0.

Both these Yaxchilan texts are very unusual in another respect. In both cases the day sign is preceded by a kin glyph. As is well known, at some sites in Yucatan and Campeche (notably Chichen Itza, Holactun, and Kabah) a kin sign often follows the day sign, being placed between day and month signs. It is not impossible that the insertion of these kin signs at Yaxchilan before the day signs is merely a variant of the custom of placing the kin sign after the day sign. With the exception of these two stela at Yaxchilan, kin signs do not accompany day signs on any texts of the Central area, to the best of our knowledge.

Another example of the backward shift in month position is supplied by a lintel recently discovered by Mr. Giles G. Healey at Bonampak, in the Lacanha drainage, Chiapas. This carries the Calendar Round date 1 Ix 1 Yax (conceivably 1 Ceh), whereas one would normally expect 1 Ix 2 Yax. The art and architecture of this site resemble rather closely that of Yaxchilan. Indeed, the two ruins are not far distant as the crow flies, although as the Maya walks, the journey is more formidable.

The evidence, then, would appear to indicate that in the Puuc region the custom of recording month positions as one less than normal became established at least as early as 9.12.0.0.0, although it is not at all certain that the new system entirely replaced the other at any time. There is also evidence that in the Middle Usumacinta, where art styles indicate contacts with northern Campeche, the shift backward in month positions at one time obtained, although this heterodoxy may have been of short duration.

Stone Objects from Cocula and Chilacachapa, Guerrero

R. H. Barlow

At the Fourth Mesa Redonda, Sr. Covarrubias presented a typology of the stone figures which abound in the region of Mezcala and other parts of Guerrero. When available in a formally published version, this typology will help to anchor the lithic work of Guerrero, which appears frequently in private and public collections but lacks exact information. As distribution in space demands attention, certain pieces found by Ing. Weitlaner and myself are herewith put on record.

Cocula, which was Matlatzinca-speaking in contrast to its Chontal neighbors (Toussaint 1931), provides one "idol", the word may not describe the real function of such sculpture, and two anomalous objects. The "idol" (Fig. 80.1.1) is carved on pale green stone of a poor quality and is notable for its attire: a sort of top-hat and a on. (The historic Tarascans also wore shirts instead of loincloths.) This figure, from El Rincon, near Mina Vieja, close by Cocula, belongs to Sr. Camerino Sanchez.

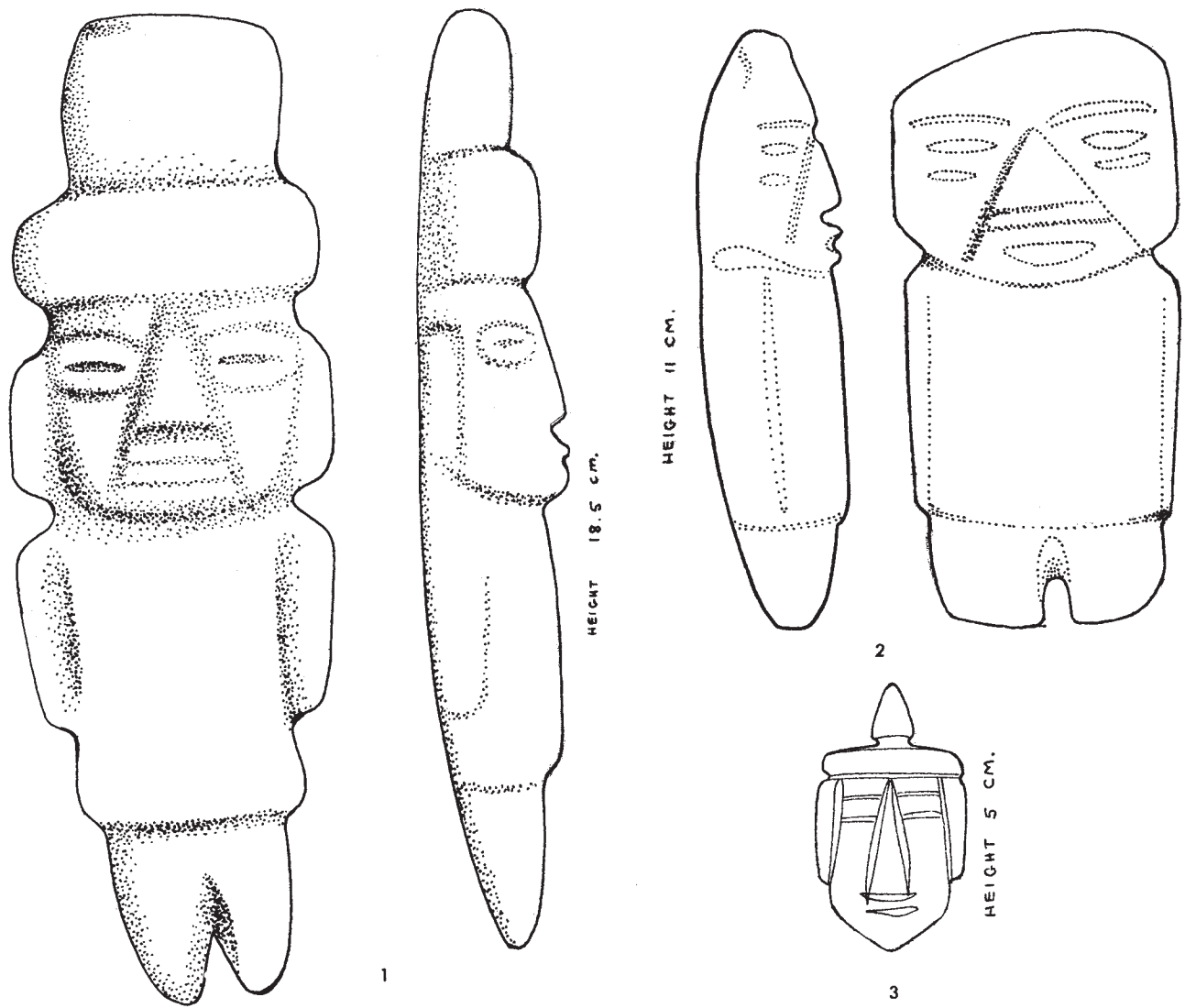
Well inside the town of Cocula, a carved lintel (?) was dug up in a barnyard (Fig. 80.2.4). Made of *piedra azul* (actually, nearer slate gray), it is carved on four sides with a continuous groove

which passes from one face to another. On the wide edge appear an eye and a brow; on the thin one, an arrowhead and a shaft. (The Matlatzinca of Cocula used the sling [Relacion de Iguala].) The same line which divides the eyebrow from the eye forms, on another surface, the arrowhead. Both ends of the piece are broken off. It belongs to Sr. Hernando Meneses.

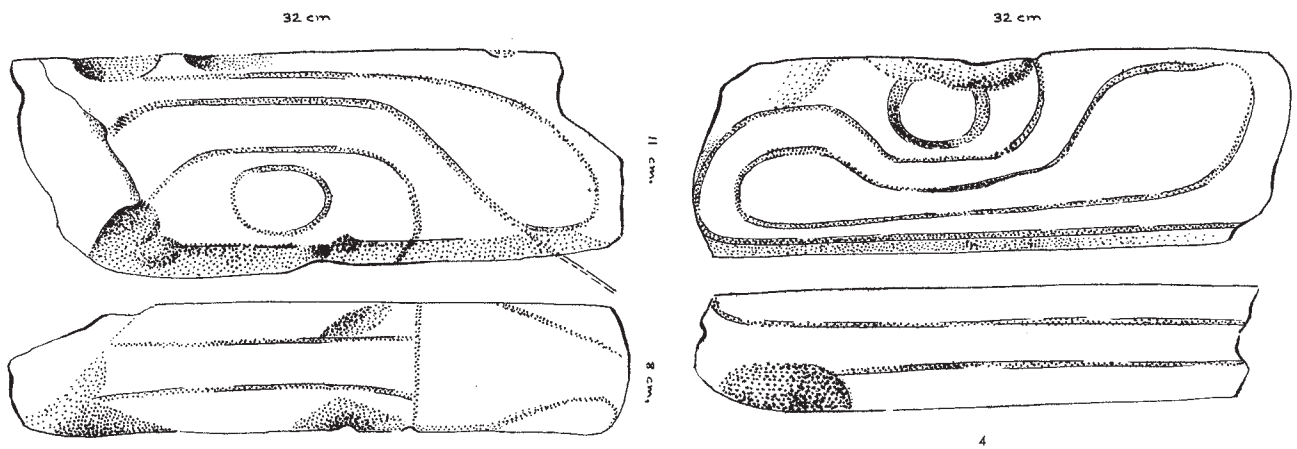
Another geometrically incised object in Cocula was drawn by Ing. Weitlaner (Fig. 80.3.5). This is a stone "stirrup" with ornamentation on both ends which seems to repeat the eye motif. Certain areas of the surface were left rough for decorative purposes, and the rest was polished.

Chilacachapa, six hours on horse above the Valley of Cocula and in the heart of the old Chontal-speaking district, afforded two figures. One is green stone of a poor quality, and seems to wear a jupon like the Cocula figurine. Sr. Florencia Roman Segura generously obtained the loan of it for my drawing (Fig. 80.1.2). The other is a head of good-quality jade and sports a peaked hat. The football-helmet effect which covers the ears is either part of the hat or a Dutch-style haircut (Fig. 80.1.3).

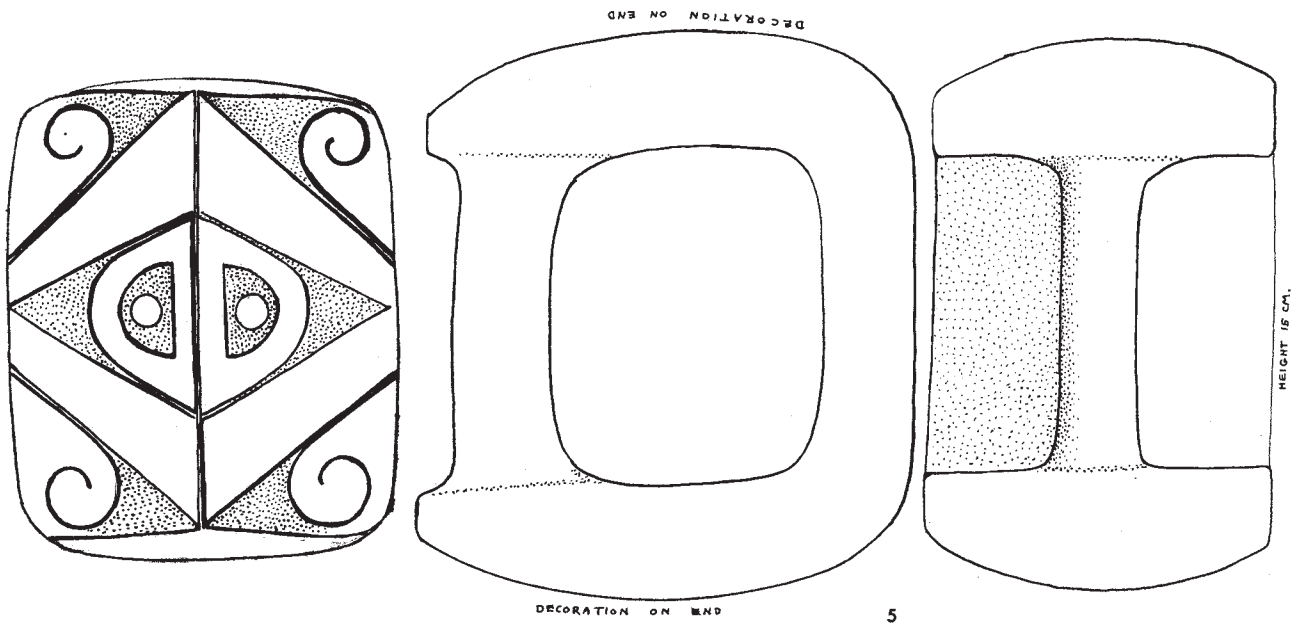
FELLOW OF THE JOHN SIMON GUGGENHEIM
MEMORIAL FOUNDATION
AZCAPOTZALCO, D.F.



80.1. Stone objects from Cocula and Chilacachapa.



80.2. Stone objects from Cocula and Chilacachapa.



80.3. Stone objects from Cocula and Chilacachapa.

Easter Ceremonies at San Antonio Palopo, Guatemala

Elsie McDougall

The small village of San Antonio Palopo is situated on the northeast shore of Lake Atitlan, a mile or two east of Santa Catarina Palopo. The villagers, Cakchiquel Maya, have no canoes; except for fish weirs, of stone or sod, their interests are in the land. Their principal industry is agriculture; their main crops are maize and anise. They cultivate every possible patch or pocket of soil on the steep slopes, at the base of which their village nestles. At the time of my visit (1929) there was only one non-Indian in the village. He was Ernesto Cabrera, who filled the sundry duties of secretario, public scribe, and schoolmaster, and owned the only beast of burden in the community.

The church dominates the village, and from it one has a magnificent view of the whole length of the lake. Various excellent photographs of the village and its inhabitants were published by Mr. and Mrs. Maudslay in their beautiful book *A Glimpse at Guatemala*. The only other building of importance is the *juzgado* (courthouse), which consists of one long room flanked by lock-up cells (Fig. 81.1).

On arriving at the village, I went to the *juzgado* to seek permission to attend the Easter celebrations. The *alguaciles*, who serve as village police and do any odd job required for the municipality, were lounging on the porch, holding their leather-thonged batons, insignia of their rank. Inside, the town councillors, about ten middle aged or old men, were seated on a bench which ran along the back wall. The *alcalde* (mayor) was at one end with his interpreter, Juan, beside him. All the men, as well as the *alguaciles*, wore typical *antoñero* dress consisting of a rusty-

black *gaban* (cloak worn as poncho, emergency sleeve lengths joined at the wrist and dangling toward the rear), which covered all but the red sleeves of shirts made of the same material as the woman's huipil; a black-and-white chequered woolen *rodillera* (wrapped kilt or apron) covering wide, knee-length cotton drawers of home-woven, striped cloth; and a red sash similar to the one used by women. Completing the dress was a fine-striped red kerchief (at times the man's sweat cloth or scarf) wound around the head, the two ends somewhat rakishly protruding. Permission was graciously granted to attend the celebrations, and I was assigned the padlocked schoolhouse as a residence.

About 8 a.m. on Holy Saturday I passed by the *juzgado*. The building was decorated with pine boughs, but the door of the main room was closed. The young *alguaciles*, before the wide-spaced wooden grills of the two cells, were keeping company with their incarcerated friends. These last were youths who had been arrested because of brawling and drunkenness in premature celebration of the fiesta. Traditionally, only the old men were supposed to get intoxicated on such occasions. The young men were expected to stay sober to look after their elders. The prisoners were happy, and were not to be deprived of their part in the festivities. In each cell one young man played a mouth organ, to the music of which his two or three fellow inmates managed to dance in a constricted circle. Evidently their crimes were not taken too seriously, for the prisoners were later released to attend the function in the church.



81.1. San Antonio Palopo: (a) Juan, the officiating priest, after the service; note palm, missal, and violin; (b) the courthouse and thatched shelter for the bells; the water in the fountain is piped from the mountain behind the village; the church is to the left.

The festivities centered around the two huts or lodges belonging to the two *cofradías* (religious brotherhoods). In line with each *cofradía* but was another in which the women prepared food. Each *cofradía*, too, had its own sweat house. The members of the principal *cofradía* had hired a marimba from Chicacao, which the four marimbistas played in the gloom at the back of the hut. The other *cofradía* had the town *teponaztle* (drum, *tun*) and an oboe-shaped flute (*chirimía*) the tone of which recalled that of bagpipes. The two musicians played just outside their *cofradía* hut, one on each side of the doorway.

The interiors of the *cofradía* huts were decorated. One was festooned with limes and oranges and greenery, and the floor was strewn with pine needles. The altar, profusely decorated with pine, stood to the left of the entrance, and on it were some battered saints, apparently salvaged from the façades or altars of derelict churches, and some old statues of San Antonio. The new one, of wood and a product of Panajachel, was gaily painted. It had the place of honor on the altar. Before it was a large gourd bowl of *chicha* in which seeds were floating; below it, on the floor, were censers. As each man entered and made obeisance to the emblems he was offered a small gourd bowlful of *chicha*. This he drank in one gulp, and then took his place among the dancers, circling the room in a trio of rapid steps, one forward, a short one back, and another forward. Each man danced with arms hanging down, his fingers clasping those of the dancer in front of him and behind him. In the second lodge the proceedings were similar except that a young woman, evidently intoxicated and with her baby in a sling on her back, had joined the dancers.

By 9.30 a.m. the courthouse door was open. The alcalde and Juan, the interpreter, were inspecting the Paschal candle and a three-branched candle, brought from Antigua by three young messengers.

The work of decorating the church was assigned to the court *alguaciles*, comprising the youth of the village. The main altar, filling the rear wall of the church, supported various saints in glass cases, San Antonio occupying the center. Some circular fans of fluted paper were a conspicuous part of the decoration. Below, on a ledge which ran across the width of the altar, had been placed the treasures brought from the sacristy: an illuminated missal, a tarnished lectern, and a small shield-shaped emblem of San Antonio. At the entrance other youths had placed water jars, adorned with boughs, on a table near the font. Young women and girls, arriving in groups, settled on the floor at the rear and on the right side of the church. Small boys, some with smaller brothers clad in borrowed shirts which enveloped them,

dogs, and a pet kid played around the youths who were decorating the church. Swallows, disturbed by the activity, flew under the roof.

The preparations finished, a youth ran to the bells (one dated 1730), which were in a thatched shelter before the church, and with a clapper in each hand, rang them briskly.

The members of the *cofradías* came in procession, headed by the chief with his staff of rank, and immediately behind the *teponaztle* and *chirimía*. The new "santo," taken from the staff, was placed on the ledge, adjoining the shield emblem of San Antonio. Each member of the *cofradías* made obeisance to it before taking his place in order, those of rank in front; the young men, *alguaciles*, and helpers to the rear, along the left side of the church. Four *chahalas* (women detailed for church duties), their heads covered with shawls of large squares of the lighter-patterned cloth, came last. They knelt in front, facing the altar.

Finally, Juan, as officiating priest, solemn and preoccupied, marched up the nave to the center of the altar. He had removed his head scarf, had donned spectacles, and carried under one arm a violin and a sheaf of torn leaves of music manuscript. Giving the violin to a sacristan, he opened the missal on its lectern in the center of the altar ledge, and began intoning in a sonorous voice which was a close-imitation of that of ordained priests. The language appeared to be Latin, although it was not possible to catch the words above the music of *teponaztle* and *chirimía*. At times he took the censer from the acolyte and censured the missal.

The shieldlike emblem of San Antonio, resting on the back of the acolyte's hand, was presented to each *cofrade* in turn and kissed by each one. Next, palm fronds brought from the sacristy were presented in formal sprays to the chief persons and then in torn strips to the women and children, who scrambled for them. Later, new wands, stoutly made and freshly peeled, were given to certain men, presumably the newly elected *regidores* (councillors).

At the intoning of the Gloria, Juan was handed his violin. This he apparently played while still intoning vigorously. Of that, however, I could not be certain because, facing the missal, he had his back to the congregation, and because the *teponaztle*, *chirimía*, a small mass bell, and the two large bells outside, echoing across the lake, drowned any notes that might have come from the violin.

A procession then formed down the center of the church with Juan at the head. One attendant bore lectern and missal; two others walked backward before him tensing and scattering petals from a tray basket. The procession, with Juan still intoning,

moved to the jars of water by the font. Some of the water was sprinkled, and small nails or thorns were driven into the Paschal candle, as the intoning of the prayers continued. Tinder was burned in a small enamel frying pan to create near fire for the burning of incense. Then the pots of water were blessed, and some white granulated substance, perhaps salt, was placed in each. After that the blessed water, dipped with a small gourd, was offered by Juan to the *cofradia* chiefs. The youths commenced offering it to the rest of the congregation. Many of the girls and young women (the married women, with the possible exception of the *chahalas*, apparently were not at the ceremony) had brought jugs to carry home a supply of the blessed water. When all had been served, the youths carried the remaining pots to the courthouse to be used in the reception there on the following afternoon.

The *cofradia* processions then returned to their respective lodges, where, to judge from the sound of music, ritual dancing started again. The noise of festivity from the lodges continued through the night. Yells and whoops broke out at intervals, and loud protestations from drunks who were being incarcerated came from the direction of the courthouse. At times old men, who were over-inebriated, were led home by the young *alguaciles*. This was often a lengthy business, entailing much patience and tact on the part of the youths, who are forbidden to drink. The old *yen* apparently give lengthy admonitions during pauses on the journey home, and are not interrupted.

On Easter morn the young *sacristans* prepared the church again, arranging the altar as on the previous day. Two masonry platforms, evidently the bases of demolished altars, one on each side of the altar, supported a collection of weatherworn images from church façades or altar niches. Two were especially battered and had broken noses. One could be identified as that of San Antonio, although the child and the arm which held it were missing; the other was supposed to be of San Nicolas, patron saint of village agricultural activities, but which looked more like a statue of San Gabriel. These were removed from the masonry platforms and placed on two frame biers set halfway down the nave, slightly to the right and facing the main altar. From the *sacristy* two bundles were fetched, each containing the vestments of a saint. Under the superintendence of an older man, two youths carefully bound the images to the biers with long strips of white cloth taken from the bundles. Then they arrayed the figures, each with a loose white garment (*alb?*), an old faded chasuble of imported damask, and damask stoles. Red print bandana handkerchiefs were used as headdresses,

that of San Antonio tied in customary Paloponese fashion, that of San Nicolas in the ordinary Indian manner.

When all was ready, the bells rang the summons. The congregation assembled as on the previous day, the *cofrades* in procession with the *teponaztle* at the head, women and children grouped in their place on the floor, boys at mischief everywhere. The councillors carried their new wands.

Juan again officiated. The first part of the service was much the same as on the previous day. The *cofrades* kissed the emblem of San Antonio, palm was distributed, and, on this occasion, the glass case containing the figure of the Virgin was opened, and a palm was placed in her arm. At the Gloria the frayed piece of black cloth, suspended from two long bamboo poles, was withdrawn from the altar.

Then a procession, headed by the saints in their biers, a strong, agile youth to each pair of shafts, formed. A youth strewing petals from a basketry tray led the way. Juan, with his violin, intoned from the missal carried on its lectern by an acolyte. The procession included the musicians, an acolyte with censer, councillors, and the members of the *cofradias*. The young women and children had previously left to obtain seats on the steps of the church. Juan, surrounded by the men, remained on the terrace above the steps; the youths carrying the biers took their places, facing one another, about 60 feet apart, on the road where it widens into a sort of plaza below the church.

Between prayers intoned by Juan, the youths suddenly dashed past each other, tilting the biers at the moment of meeting, so that the two images clashed against each other. This happened six or eight times. After each run the images rested facing one another until the end of the intoned verse. The images were of wood, and met with a resounding crack. In one encounter San Nicolas lost his head scarf. Only the children saw mirth in the proceedings. The youths treated the event as a sport; the men, surrounding Juan, regarded it with solemnity.

At the end of the ceremony, the men re-formed their ranks and departed in procession. The audience dispersed. The images were undressed in the church, and their vestments once more restored to their respective bundles.

That afternoon the *alcalde* and councillors held a formal reception in the *juzgado*. The desk, covered with greenery, was arranged as an altar to hold the new emblem of San Antonio; four tripod censers smoked on the floor in front. The floor was strewn with pine needles brought in large netted bags. The decorated water bars, brought from the church, were against the rear wall of the room. Four beauti-



81.2. San Antonio Palopo: **(a)** the church dominates the village (courtesy of Franz Termer); **(b)** Paloponese; the use of hats instead of tzutes indicates that the party is on a journey, perhaps for the marriage of the pair in the center; note drum, flute, and staff with thong (photograph taken about 1910 by Valdivieso).

ful, modest chahalas knelt to tend the censers. The cofrades arrived in procession to kiss the hand of the alcalde and partake of the contents of the blessed water jars. The drummer and flutist played outside.

I was offered two explanations of the nose-knocking ceremony. One man said in a half-joking way: "San Antonio va a pegar á su mujer. Está borracho como nosotros." (San Antonio is going to hit his wife. He is drunk like us.) A youth, visibly in-

toxicated, said: "Hoy día es día de la resurrección. Nuestros santos van á tomar el castigo antes de nosotros. Ellos son portadores. (Today is the day of resurrection. Our saints are going to take the punishment for us. They are [its] bearers.)" It would be interesting to know whether this is, indeed, an Indianized survival of some ecclesiastical ceremony, or whether it represents some aboriginal feature in Christian guise.

WOODSTOCK, N.Y.

Cuchumatan Textiles: The Course of an Error

Oliver La Farge

A relatively unimportant error is capable of spreading and perpetuating itself in a remarkable way. One such, originally little more than a bit of carelessness, has developed to the point at which published correction is required, having infected not only one of my own publications (La Farge and Byers 1931), but also Dr. Lila M. O'Neale's magnificent *Textiles of Highland Guatemala* (1945). As an example and a warning, also, the story is not without interest.

Among other specimens I brought back from Los Altos Cuchumatanes of Guatemala to Tulane University in 1927 was a San Mateo Ixtatan huipil, somewhat less elaborate than the average. It was the kind of huipil that would usually be made for an older child. Later, after I had severed my connection with Tulane, this collection was shelved in favor of more important exhibits. The label on the huipil must have been lost. Someone relabeled it as from the "Jacaltenango District." Actually the San Mateo Ixtatan huipil bears no resemblance to the Jacalteca.

When Tulane University published *The Year Bearer's People*, an artist was retained, without my knowledge, to prepare an additional color illustration (facing p. 36). Struck by the bright tones of this unfortunate huipil, the artist placed it upon a nondescript figure, and labeled his work of art, "Jacalteca Woman." Unfortunately an erratum slip was not inserted in the book, nor was the label corrected.

This huipil was the only specimen from the Cuchumatan area shown to Dr. O'Neale. She was aware of a conflict in the illustrations in *Year Bearer's People*, where the description of the women's cos-

tume is skimpy and marred by incorrect terminology. Certainly, when confronted by what appeared to be an actual specimen from the area, supported by the most conspicuous illustration in the book, any reasonable person would include it as at least one form of Jacalteca costume. This Dr. O'Neale did, although with reservations ("Textiles," pp. 108, 7.23, 267; Fig. 35a).

A further factor influenced Dr. O'Neale. The correctly identified San Mateo Ixtatan huipils which she saw and described in her book (p. 278; Fig. 38) are choice specimens. One will not see one woman in a hundred wearing garments of this elaboration. The difference between them and the simple example at Tulane is enough to make it seem reasonable that they came from different villages.

The uncertainty created by the situation described above made it possible for Dr. O'Neale to accept another misidentification, a correction of which she has asked me to include in this *Note*. Figure 129f of her book reproduces a photograph taken by A. Biener. Following his information, Dr. O'Neale describes this picture in part as, "Women of Jacaltenango. Tzute worn under straw hat."

The picture may well have been taken at Jacaltenango. The women appear to be either from San Pedro Soloma or from San Miguel Acatan, most likely the latter. The article worn under the hat is not a tzute, but another huipil turned inside out, a common practice at those villages and at Santa Eulalia.

The Jacalteca women's costume is correctly, but amateurishly, described in *Year Bearer's People* (La

Farge and Byers 1931:36–38; Figs. 11, 19, 21). If we delete the mention of the San Mateo Ixtatan huipil, it is also correctly described in *Textiles* (p. 26), although in this description it should have been stated that the use of the Totonacapan cinta is not very common, and that whether the local or Totonacapan cinta be used, the hair is wrapped in the same way.

Four language groups occupy Los Altos Cuchumatanes. Along the southern edge are the Mam, sharply differentiated from the others linguistically and culturally. The rest of the area is occupied by Maya Indians speaking three closely related, but distinct, languages: Kanhobal, Jacalteca, and Chuj.

The Jacalteca costume has been dealt with. The Chuj wear that described by Dr. O'Neale (p. 278; Fig. 38), except that the embroidery is usually less elaborate. The huipil figured by Termer (1930b, Pl. I) is truly typical.

In general the Kanhobal women dress as shown in Dr. O'Neale's Figure 129f, except that the wearing of hats is common only at San Miguel Acatan. In other villages, women seldom wear hats except when herding sheep. My field notes describe the huipil as follows:

"The huipil is a sack reaching almost from wrist to wrist and neck to knee. Typically, it is of white cotton. A yoke around the round neck is [decorated] with black, blue, green, some red and yellow, in narrow lines, zigzags, scallops and chains to taste. [These] are narrow; applique strips. [A drawing shows these forms, plus a stripe of one color from which depends a serrated band of another.]

"Striped and spotted [huipils] are seen; in the fiesta were many of fine cloth, a very few tinted, and one of silk. Ordinarily heavy 'manta' is used, often quite dirty."

"Women turning slightly Ladina, working for Ladino families, mistresses of Ladinos, etc., begin by donning a shorter and tighter blouse,

tucking it in, sashing the skirt and doing the hair in two braids." [The blouse closely approximates the Jacalteca.]

"Maria Juan, Mateo's wife, made a new huipil. First she sewed together the *cantel* sack, then she sewed on a yoke of the same, hemming and gathering both at the neck. Then she stitched on the decoration, of narrow bias tape, being naturally zigzag. She kicked, because she had to use white thread on the dark, and Mateo got her some black. When she had about half the decoration on she sewed a pleated frill of finer cotton on the bottom of the yoke. Up to there the applique had been stitched through both huipil and yoke, from there on, only through the yoke . . ."

"Under the huipil, women wear a short, short-sleeved shirt, in which they often work. Huipils are often worn inside out when working, and sometimes one, thus reversed, is worn as a shawl . . ."

"... Even in this simple costume there is variation between villages, so that women of each village can be recognized. Thus Soloma women use a design [of a straight line of one color with sawteeth of another dependent from it], and Santa Eulalia [a chain design] . . . San Migueleñas use usually only straight and wavy lines, and these wide apart . . ."

Descriptions in brackets in the last paragraph represent sketches in the original. According to this paragraph, my identification of the women in Figure 129f of *Textiles* seems shaky, but they still look like Migueleñas to me.

The skirt is the red-background jaspeado described by Dr. O'Neale for San Mateo Ixtatan. The hair may be wrapped in wool yarn, or in the Jacalteca cinta.

It is hoped that publication of this *Note* will end a sequence of error which has been surprisingly long extended.

SANTA FE, NEW MEXICO

Representations of Temple Buildings as Decorative Patterns on Teotihuacan Pottery and Figurines

Hasso von Winning

Miniature clay temples occur frequently in the Aztec cultural horizon, as well as in western Mexico, but they do not appear in the Teotihuacan period. Nevertheless, the pattern of temple façades has been widely applied by the Teotihuacanos as decorative motifs on pottery and moldmade figurines. Its use has been conventionalized as have many other patterns in this culture period.

A number of selected specimens manifest the gradual changes which this motif has undergone.

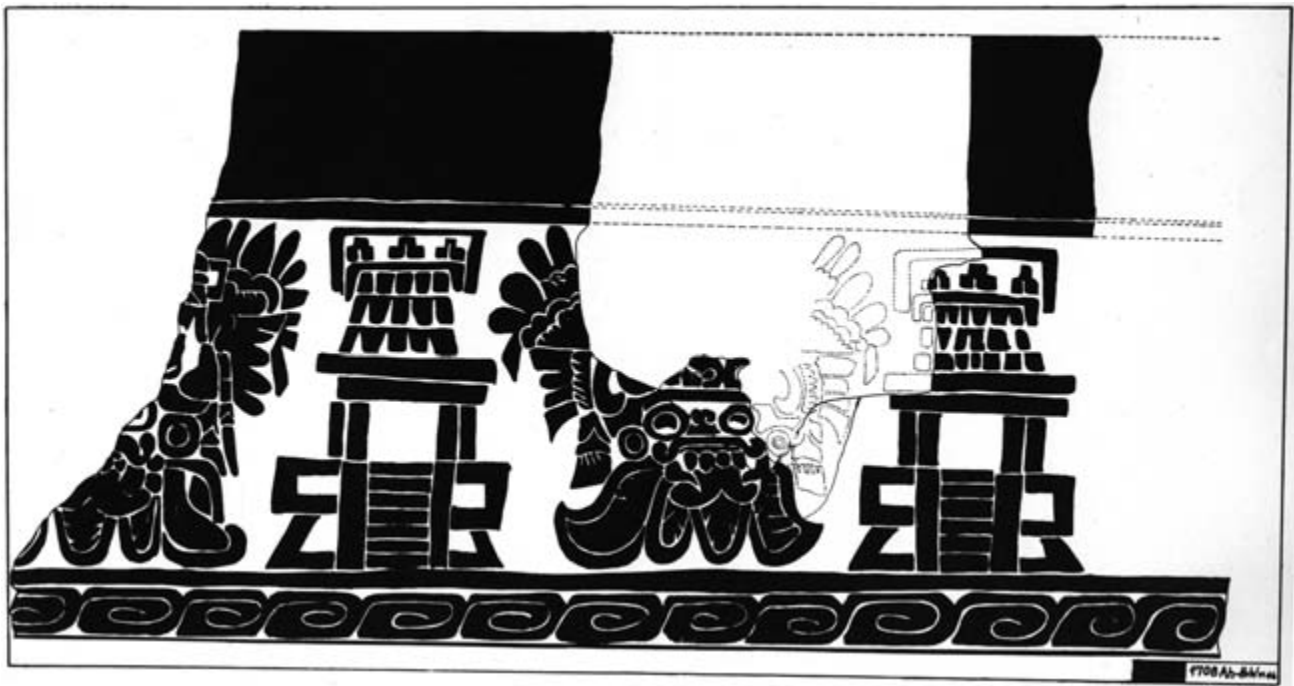
The first example to be considered is a cham-pleve tripod vase on which has been incised four times a temple construction, alternating with a Tlaloc face (Fig. 83.1). The temple has been depicted in such a way that all its architectural details are clear and unmistakable. The sloping base, as well as the rectangular wall panels, is characteristic of the classical Teotihuacan period. The stairway in the center ascends to the entrance of the temple chamber. Emphasis is given to the elaborate roof, consisting of beams over the doorway, supporting the typical thatched roof, which, in turn, is crowned by three pinnacles. Thus we have a complete picture of a *teocalli*, and if we compare it with the corresponding designs on the murals at Tetitla (Teotihuacan) of the same epoch (Fig. 83.2), we find that the artist followed an established pattern. Also at Tetitla the roof is out of proportion, being larger than the lower part. In both cases the pinnacles are above the thatch.

The same structural patterns appear on a fragment (Fig. 83.3) from the lower part of a great ves-

sel to which a moldmade application showing a temple was attached. The thatch roof is clearly distinguishable above the doorway. The pinnacles appear in a rectangular frame decorated with knoblike protuberances, probably representing *chalchihuites*. However, these pinnacles differ from those previously discussed, in so far as the one in the center is modeled completely, while only half a pinnacle appears on either side. The spaces between are filled out.

This peculiar pinnacle arrangement is used on the next figure (Fig. 83.4), which is also a moldmade motif attached to the base of a vessel and which alternates with a half-star surrounded by a mountain design. The roof is almost two thirds of the entire motif, but, by comparing it with our Figure 83.1, we are undoubtedly concerned with a temple façade. In Figure 83.5, which was an appliqué, appears a similar representation.

Traces of clay found on the back of Figure 83.6 indicate that it had been formerly applied to the bottom rim of a vessel. It is a similar motif: posts supporting a thatch roof surmounted by pinnacles. This construction rests on a base formed by a panel above a sloping wall. Attention must be called to the fact that the base resembles in all its details the typical nose plaque which appears frequently in relation to figurines and adorned *braseros*. The sculptor ostensibly intended to depict a temple base, but for some reason or other he incorporated in it the pattern of a nose plaque because the center of the temple platform is grooved.



83.1–83.11. Natural size. Purchased at Santiago Ahuixotla, Mexico. Fig. 83.1: Coll. H. Neys; Fig. 83.7: Coll. J. Hauswald; Figs. 83.2–83.6 and 83.8–83.11: Coll. HvW. Drawings by HvW.

83.1. Temple buildings as decorative patterns (no. 1)

This example points to the probable existence of an ideological association between the representation of temple bases and nose plaques.

Figure 83.7 shows a corresponding arrangement in relief on a small bowl decoration. The temple, with raindrops on either side (Winning 1947), alternates with a half-star, a combination we have already seen in Figure 83.4. The design is repeated four times around the rim of the bowl.

If we now analyze the triple motif introduced in the headdress of a moldmade Teotihuacan figurine (Fig. 83.8), we come to the conclusion that the representation of a temple roof is intended. The pinnacles are clearly shown between two parallel beams, from which are suspended vertical shafts representing thatch. Below this roof design is a circle of owl feathers. Superimposed on its lower sector is an ornament like the nose plaque encountered on small clay masks covering the mouth (cf. Linné 1942:171, Fig. 315). The combination of temple roof, owl feathers, and nose plaque has unquestionably a significance for which we have no positive explanation. This combination, however, is not unique, since it appears one above another in the same form on a fragment (Fig. 83.9) which has been a sort of rectangular shield, originally held by a figurine.

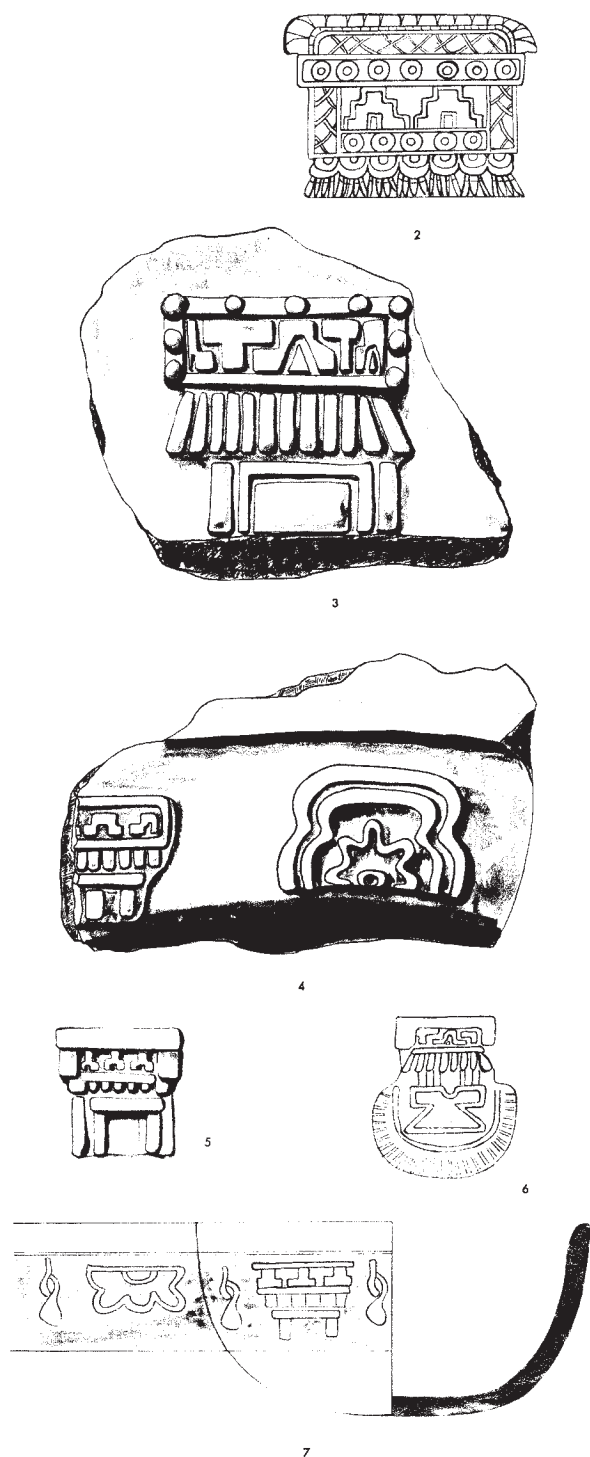
The shield or standard is framed on one side by owl feathers.

Also part of a shield, Figure 83.10 shows the same pattern modified. The pinnacles have been replaced by three bosses, the nose plaque is omitted, and the frame of owl feathers has been replaced by a simple line design.

In the headdress in Figure 83.11, the same idea is expressed with the exception of the introduction of a new ornament, a conventionalized flower hanging downwards.

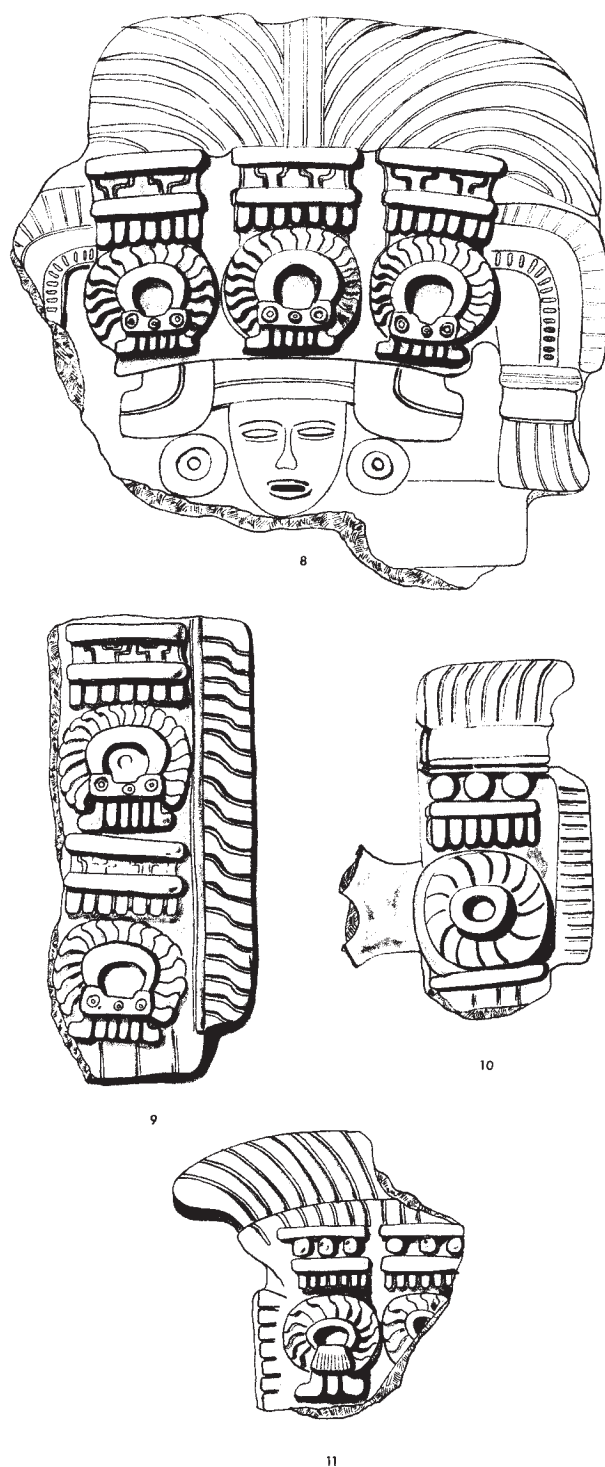
If we compare Figures 83.1 and 83.11, omitting the intervening examples, apparently no correlation of meaning exists between the two. However, by establishing the sequence as presented in Figure 83.12 and analyzing the various interpretations of the temple design, we find it increasingly evident that there exists one basic idea with certain modifications.

On all the figures presented, we find the temple roof placed at the top of the compositions, its logical position. It appears on the ceremonial object (Figs. 83.9 and 83.10) on the upper half and above the feather ring and above the head of the figurine (Fig. 83.8). The accompanying elements, such as the raindrops and half-stars (Figs. 83.4 and 83.7) and both



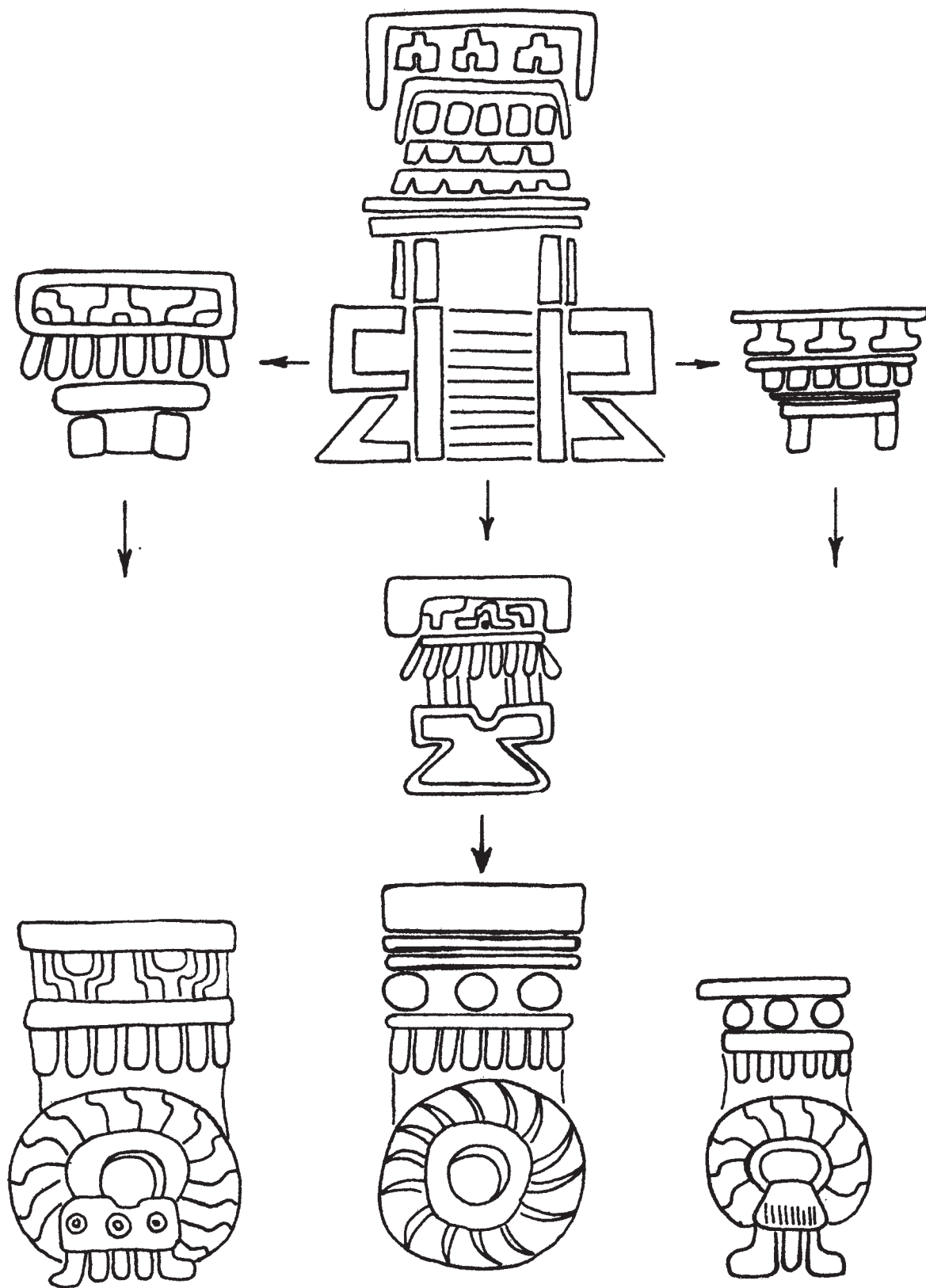
83.2. Temple buildings as decorative patterns (nos. 2–6).

types of nose adornments (Figs. 83.6, 83.8, 83.9), may signify their relation to the deity to whom the temple was dedicated. Similar deductions have been



83.3. Temple buildings as decorative patterns (nos. 8–11).

made from the codices, where the temples portrayed display certain symbols connected with the god to whom they are consecrated.



12

The Codex of Tonayan

R. H. Barlow

The Codex of Tonayan, or Plano de San Juan Chapultepec, was painted a short distance north of Xalapa, Veracruz, in the year 1665. What has become of the original is unknown, but it still existed in 1849, when a watercolor copy was made. In 1852 it was copied again, this time in oils, and this second copy survived in Xalapa until at least 1911, after which it disappeared. The 1852 copy was published in a defective halftone by Ramon Mena, in the *Memorias de la Sociedad Alzate* (30:397–402). The 1849 watercolor has not been published heretofore. In order to make available an adequate copy of this lost codex from a region none too bountifully documented, it seems to me advisable to assemble and circulate such material as we have. This material consists of:

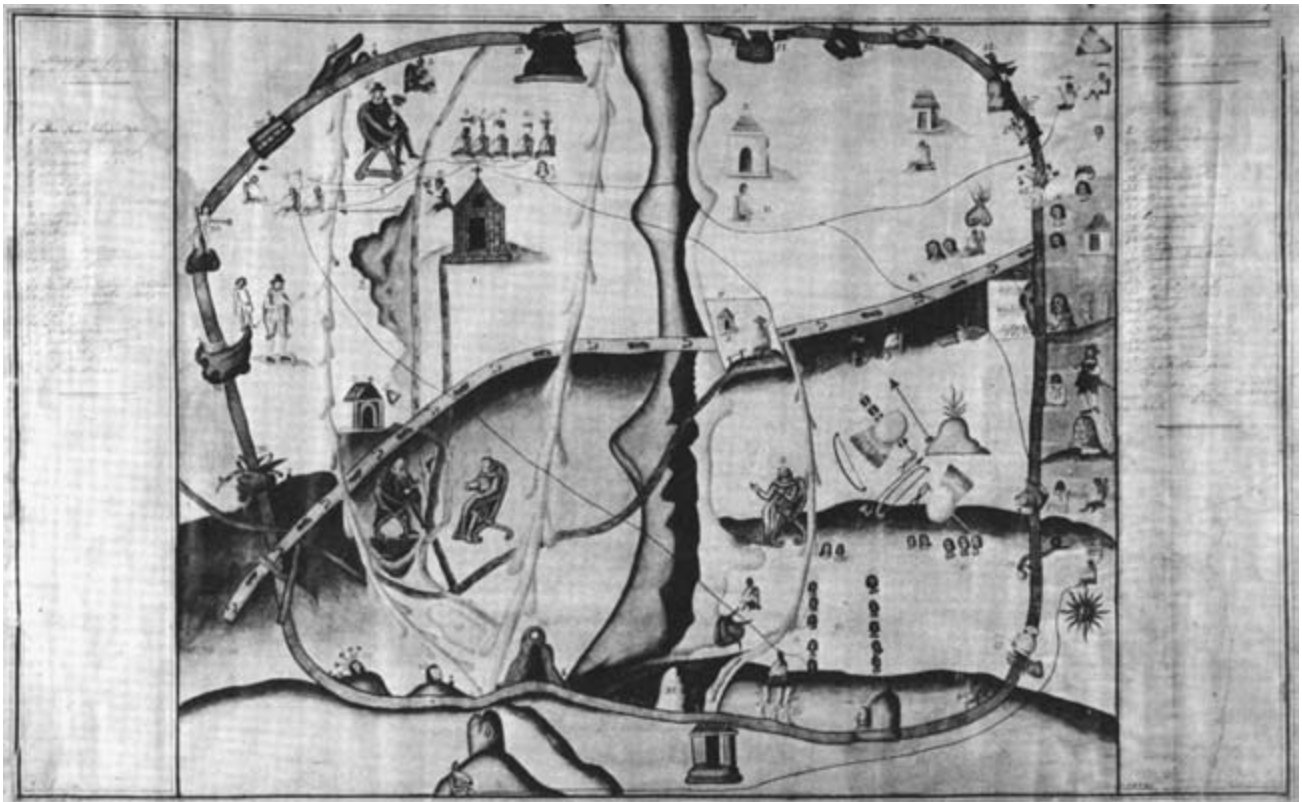
1. The 1849 watercolor, preserved in the Mapoteca Orozco y Berra of the Instituto Panamericano de Geografia e Historia, Tacubaya, D.F., and described in Orozco y Berra's (1871:182) printed catalogue of his map collection.
2. A tracing of the 1849 watercolor, made at an unknown date, apparently by someone who projected an edition (Orozco y Berra 1871:183).
3. A photograph of the 1852 oil, that used by Mena for his edition. This photograph comes from documents of Mena's collection which were acquired by Sr. Rafael Garcia Granados, who generously lent it to me. From it four detailed enlargements were made by the Benjamin Franklin Library, revealing everything which can be squeezed out of the Mena photograph, the lower half of which is hopelessly dark (Orozco y Berra 1871:181–87).

The watercolor is more legible than the oil in regard to this murky inferior portion, but does not copy the inscriptions in their places, as the oil does. Moreover, it contains exceedingly careless transcripts of these names, as a brief examination shows. The tracing of the watercolor repeats these virtues and defects in more legible form.

From the three copies, a fairly satisfactory version may be sifted out, since each preserves something the others lack.

The towns mentioned in the Codex of Tonayan are to be found in central Veracruz, somewhat north of Xalapa. Three of them, Chapultepec, Quaquiztintla, and Xilotepec, figure also in the map accompanying the *Relacion de Xalapa* of 1580 (*Papeles de Nueva España* 1905). Chapultepec was independent until conquered by Moctezuma, according to the relation, whereas Quaquiztintla and Xilotepec were subject first to the local city-state of Tlacolula, and thereafter to Moctezuma. Despite their varied histories, both Chapultepec and Xilotepec were bilingual, speaking Totonac and Nahuatl. Since Xalapa spoke "mexicano corrupto" and in Xilotepec there were still memories of pre-Mexican (Nahua?) Chichimec, it is by no means sure that Nahuatl arrived in the region with the Triple Alliance.

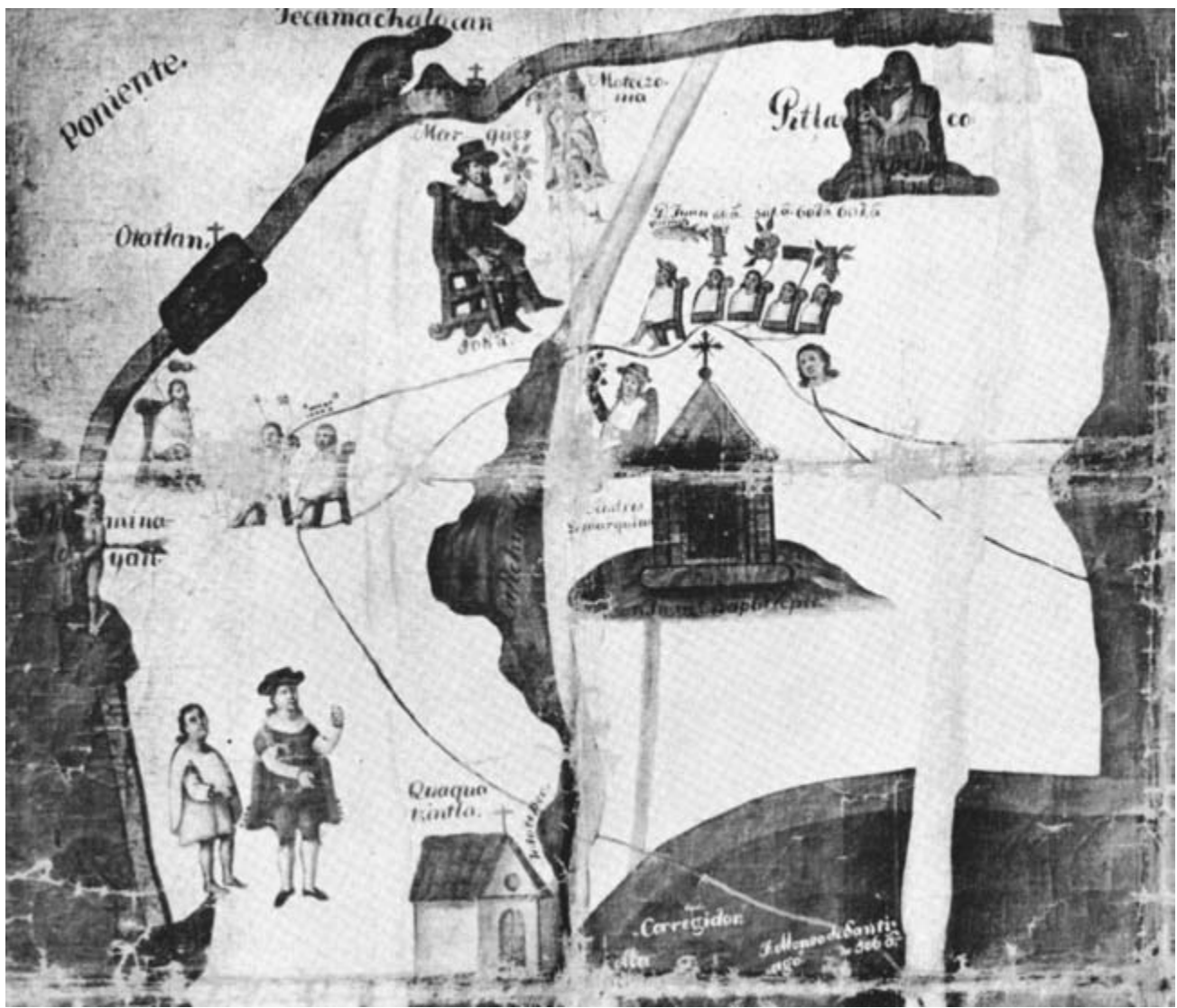
The theme of the codex appears to be the usual one of town boundaries and their demarcation. Glyphs 5, 6, and 8 (extreme left of codex) note the arrival of Cortez, depict Moctezuma as former ruler of the region, and refer to one D. Juan Quimich, who may have been Cortez' contemporary. (The glyph of



84.1. Codex Tonayan.



84.2. Codex Tonayan.



84.3. Codex Tonayan.

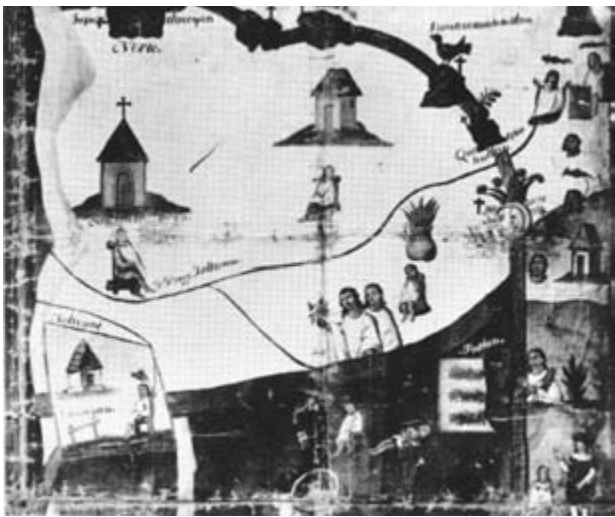
this cacique, however, reads Michin, fish, and not Quimichin, mouse.) Along with D. Juan are four other principales, with hieroglyphic names only (nos. 9–12). These may be ancestors of D. Juan; they are accompanied by the fabulous figures (60 años, 50 años, 607 años, 607 años) of their rule.

Whatever division of lands was made by Cortez, another must have been effected in 1665. Presumably the Indian governors. D. Andres de Marquina of San Juan Chapultepec (13), D. Diego Xaltuma of San Pablo . . . (14), and Xocoyo(t)l of Tonayan (15), observe his coyote-head glyph, met with three Spanish officials, a nameless corregidor (16), and the two priests, Fr. Alonso de Santiago (17) and Fr. Buenaventura (18) to revise the earlier setup. A good number

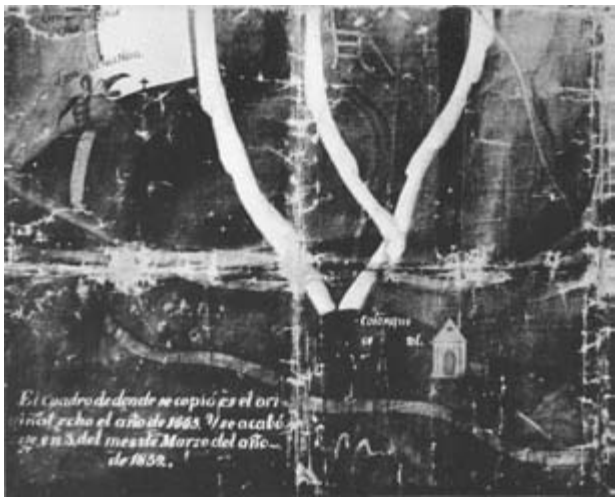
of witnesses (19–21) are depicted in the spaces occurring among the place names, and about two dozen figures (mostly in the upper right-hand quarter of the codex) are not explained, beyond bearing name hieroglyphs.

It may be remarked that the Tonayan Codex has a relative in that of Misantra, also published by Mena and now existing in the collection of Lic. Lombardo Toledano, as Sr. Melgarejo informs me.

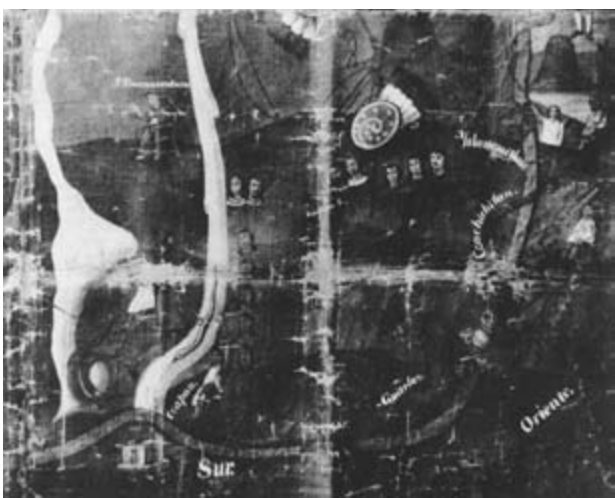
Only a few of the place glyphs make sense, illegible drawing or inaccurate inscriptions accounting for the vast majority. Coapan (38) is "Snake River" and the drawing is clear. No. 46, Mecaxochitlan, has the glyph of the moon (*meetztli*) and of flowers (*xochitl*), though the element *mecatli* seems to



84.4. Codex Tonayan.



84.5. Codex Tonayan.



84.6. Codex Tonayan.

call rather for a drawing of string or cord. Macuil-xochitlan (34) has the glyph of five flowers, which is to be expected, and has something to do with the Flower God 5 Xochitl etymologically. Pitlaco (27) should be corrected to Patlaco, "Place of Flying." The glyph, curiously enough, is of a winged horse. Nos. 47 (Quaquahutlan) and 39 (Quaquanepantlan) mean "Place of Woods" and "Amid the Woods," respectively, and bear glyphs of trees. Tecamachalco (50) and Tecamachalocan (28) both refer to cave mouths (*tetl*, stone; *camatl*, mouth) and bear crude glyphs of the appropriate sort. Tlaminaloan (30) "Place of Shooting with Arrows" intelligently exploits the St. Sebastian martyrdom. Tzontecomatototlan (48) means "Place of the Bird Head," although the whole bird is portrayed.

The rest of the glyphs, as well as the meaning of human heads, bound prisoners, shields, arrows, and other elements scattered about, are Stygian matters indeed.

Alphabetical List of Places Mentioned in the Codex of Tonayan			
Callehualco	26	Quaquanepantlan	39
Chapultepec, S. Juan	1	Quaquatzintla	2
Coachichilan	43	Quaunuxcalocan	40
Coapan	38	Tecamachalco	50
Coionqui.osto[t]	36	Tecamachallocan	28
Estatotontlan	35	Tentoton	49
Guitstlan	41	Tepetlacoyan	51
Macuilxochitlan	34	Teposotlan (cf. Xilotepec)	
Mecaxochitlan	46	Tlaminaloan	30
Nagui Ogtli	33	Tonayan	
Namatequiloyan	42	Tototepec	25
Omiestlagualtepec	31	Tzonnacastlan	32
Otlatlan	29	Tzontecomatototlan	48
Pastepeque	37	Valle ihegadequotla	23
Patlan	45	(Valle Vega de Quauhtla?)	23
Pitlaco tepe[t]	27	Xilotepec teposotlan	22
San Juan Chapultepec	1	Ytlaisquitlan	
San Pablo	3	Çacatepec	24
Quaquahutlan	47	(Acatepec in oil)	

FELLOW OF THE GUGGENHEIM FOUNDATION
AZCAPOTZALCO, D.F.

Elements of Maya Arithmetic with Particular Attention to the Calendar

Charles C. Fulton

Maya (Calendar) arithmetic seems to have had the following well-marked characteristics:

1. Monadic counting and day counts
2. Vigesimal numeration and tun counting
3. Positional notation
4. Use of zero symbols
5. Cyclical time-counting

MONADIC COUNTING AND DAY COUNTS

Maya arithmetic was characterised by virtually complete absence of fractions. No doubt the Maya understood simple fractions such as one-half, one-quarter, and one-third. But quantities, including those we think of as continuous and indefinitely divisible were, for them, strictly counted values of "indivisible" units. This is, indeed, characteristics of primitive arithmetic everywhere. For us the concept of the monad, or "indivisible unit," has almost disappeared, but once it was universal.

The Maya unit of time-counting was the kin, or day. It is generally assumed that this meant a "day" of one complete rotation of the earth, like our "day" of 24 hours. Possibly this is correct, but the assumption has been too lightly made. Nearly all primitive people either count the daylight periods only, ignoring the nights, or (even more often) count the days by the intervening nights. The latter custom was prevalent among the American Indians, and there is some evidence for it among the Maya. It would be a very convenient explanation of certain features of

Maya chronology, if we could say that the days (daylight periods) were *named*, and the nights *counted*. Opposed to this is the meaning of *kin*, "sun," so that apparently the Maya of the inscriptions were counting days, or perhaps sun risings.

The discussion of time-counting by "current time" or "elapsed time" is superficial and often, confusing. These terms suggest our concept of time, something always flowing and infinitely divisible. Primitive people pay little attention to duration. They count time by the *pars pro toto* method, as Nilsson calls it, or by monadic counting, as I should prefer to say, following De Morgan (Nilsson 1920; De Morgan 1850). The question is not when a day of duration began or ended, on which point the Maya may not even have had very clear ideas, but simply when the day was counted as a monadic unit.

One thing is pretty clear: in counting days either forward or backward, the current day, or the beginning day of any period, was not counted. In this the Maya do not differ from us, but they do differ from the Spanish even of the present day, and still more from the Spanish of the time of the conquest. To the French and Spanish, from Monday to Thursday of the same week is a count of 4 days, because they count *one* for the beginning day. To the Maya and ourselves, from Monday to Thursday is *three* days, because we do *not* count the day *from which* the other days of a period are counted. Probably the Maya counted a day as soon as it had begun (become light), but without counting the beginning day. This is just the same as counting the intervening sun risings.

Of exceptional absurdity, it seems to me, is the idea that the Maya, or any other people, ever called today by yesterday's name, as some archaeologists have claimed. The original suggestion, I think, was simply that the day-name and number on a monument might be those for the last completed day; that is, if the monument bore, for example, the date 6 Ahau, the celebration, the feast of dedication, etc., may have been really held on the following day, 7 Imix. This is not altogether irrational, although suggested by the "elapsed time" illusion, the idea that the Maya never *counted* a day until it was *over*. I know of nothing to sustain it. I think it clear enough that with respect, for example, to 9,11.0.0.0 6 Ahau 13 Muan, Ahau was the cyclical day, the round-number date was also the cyclical day, and the feast and the taking of the fates, the shifting of the idols in the temple, and so on, were on that day.

VIGESIMAL NUMERATION AND TUN COUNTING

The regular Maya numeration was by powers of twenty, with a distinct name for each vigesimal order. In most languages the names of higher orders are frequently compound, e.g., our "ten-thousand" and "hundred-thousand."

In the Maya calendar the unit period was the kin, or day; 20 kins made a uinal, then 18 instead of 20 uinals made a tun. The tun of 360 days was no doubt considered the theoretical or ideal year. As a closer approximation to the true year the Maya also recognized a period of 365 days, obtained by adding 5 "useless" days to the tun. The calendar of month-dates employed this invariable 365-day year. Other ancient nations, the Egyptians and the Babylonians, also considered 360 days to be the "ideal" year and added 5 "useless" days to come closer to the real year. There were two differences from Maya practice. The ideal year of the Egyptians and Babylonians consisted of 12 months of 30 days each, instead of 18 "months" of 20 days each. (Thureau-Dangin 1939). And the ancient nations generally counted more or less by actual years, most of them by luni-solar years, the Egyptians by invariable years of 365 days each, but the Maya counted longer periods by their ideal "years" (tuns) of 360 days each.

An interesting peculiarity of old Maya oral numeration is said to be that after 40 the count was usually "on" the following score; i.e., 41 was "one on the third score" (60), etc. In line with this, the Maya, it seems, generally looked forward to round-number dates, and gave other dates as "going on" the next exact tun-number, the next katun-day, etc. I cannot see that this is a matter of naming periods of

time for their *ending* days, as claimed by virtually all archaeologists at present. It was simply a matter of looking forward rather than backward for a convenient reference date. It was similar to the child looking forward to his birthday anniversary and saying, "I'm six years old, going on seven." Sixty is threescore, not *the end* of threescore; three o'clock is the hour, rather than *the end* of the hour; and 9.0.0.0.0, in my opinion, might better be called simply Baktun 9, rather than *the end* of Baktun 9.

POSITIONAL NOTATION

Apparently only the Maya ever developed a system of written positional numeration independently of the invention of our present decimal notation in India and its spread throughout the world.

Because the value of our decimal notation is and has been enormous, the Maya achievement is likely to be over-stressed. The Maya positional system was in the main a rather sorry thing. On the monuments, with one or two exceptions, the numerical values were not by place alone, but were spelled out by means of glyphs for each of the periods involved. In the same way we commonly write any denominate number, for instance "4 rods, 12 feet, 3 inches." It is like having to write out a number as "7 thousand, 4 hundred, 6 tens, 8 units."

It is true, in the codices the Maya did give numerical values for calendric periods by place-value alone. But the system cannot have been of much use for purely arithmetical purposes: it had been spoiled in the making by the irregular, non-vigesimal jump, 18 uinals = 1 tun. In favor of the Maya achievement it is urged that they had the most important essential of a positional notation in having a symbol for zero.

Contrary to the usual statements, a positional notation and the concept of zero are not absolutely inseparable. I shall not stop to prove it here, but it is possible to have a strictly positional notation, not altogether different from our present one, without any zero whatsoever. It does not quite conform to ordinary custom in counting, however. To be sure, the Maya as well as the Hindus did make "zero" an integral part of their plan of positional notation. My remarks here simply mean that to some extent we must analyze these ideas separately. I think we may say that in having any concept of a symbolic zero the Maya were surprisingly advanced, but their positional notation in itself was scarcely more than rudimentary. Their other great achievement in Long Count dates was in having a definite era so early in history. This idea was missed almost completely by the ancient empires of the Old World in times B.C.

Accept, however, that the Maya had a true positional notation, as finally proved by the use of the positional zero. How did they come to think of it? What did they have in common with the Hindus that other people lacked?

Positional numeration is not quite, such a pure inspiration as generally assumed. Many ancient nations had it on the abacus, but without realizing its possibilities. The Hindus set up their notation to record the results of abacal computation, with 0 for an empty column. Apparently the Maya did the same kind of thing, in even simpler fashion, with the board turned for division by rows instead of columns. Their numbers may represent actual sticks and pebbles, perhaps merely laid in places marked on the ground. However, it is very likely that a shell was actually present for the "zero," quite probably the Maya calendric zero does not represent the idea of vacancy, as does the Hindu symbol.

An important factor in the step taken by the Hindus seems to have been that they had a distinct name for each decimal place (Smith and Karpinski 1911). The Maya, in comparison, had a distinct name for each vigesimal period, and also for each time-period in their modified vigesimal system, without anywhere exceeding the vigesimal scale. This, it seems probable, must have been the factor that facilitated the advance made by these two peoples only, from abacal computation to a purely numeral, written, positional notation.

USE OF ZERO SYMBOLS

The Maya had several different symbols for "zero," and actually two different kinds of zero, or glyphs which have been translated "zero." The positional zero was represented in several different forms, the one most commonly used in conjunction with the bar-and-dot numerals being a glyph representing a shell. Besides this they had a symbol, the "spectacle" glyph, for the beginning day of the month. This is also transliterated as 0, since the next day was numbered 1, with the same month symbol. There is no evidence that the Maya saw any definite connection between these two kinds of "zeros." The difference between them is apparent in the fact that the positional zero or cipher never stood alone numerically, whereas the spectacle glyph always did.

In the history of our own notation, most educational theorizers held, until quite recent times, that the "cipher" had no significance by itself, and could not be used alone, but only when preceded by some significant digit. On the other hand, even at the beginning of its history some of the Hindus had been able to connect the symbol for the vacant column of

the abacus with the general idea of "nothingness," "the void." Eventually the concept of zero as a number developed, becoming definite with Stevinus.

I don't know whether the Maya had any idea at all of a "cardinal" zero meaning "nothing." Their arithmetic for cardinal counts of cacao beans, flint knives, etc., is virtually unknown. We have only their calendar arithmetic in written form. Even assuming that in both cases the numbers finally used were taken from the abacus (and this is assumption, for our certain knowledge of any Maya abacus is almost nil), we find that it is entirely possible that in calendric calculations a "zero" row was not vacant, but held a shell. It is probable that the Maya concept of such a zero was cyclical, "return to the starting point," not the idea of "nothing."

The Maya "Long Count" ran from 4 Ahau 8 Cumku as Beginning Day or "Zero Day." The latter designation is correct for our present way of thinking, but the Maya did not represent it by a "zero" symbol. To them it was (as translated) the "end" of Baktun 13; it would be less misleading in English to say the cyclical consummation of Baktun 13; the cyclical date 33.0.0.0.0, from which the next long round of days was to be counted.

A Long Count number is now generally regarded as the cardinal number of elapsed days that had passed since the chosen 4 Ahau 8 Cumku. This implies an idea of duration, flowing time, which I doubt the Maya felt. The Long Count concept I think was really ordinal-cyclical; a Long Count number showed the place of the day in the cycles of baktuns, tuns, uinals, and kins, by a count of kins from 4 Ahau 8 Cumku. The zero was a cyclical ordinal, rather than a cardinal number.

The symbol for the zero day of the month it is possible to interpret as a true absolute zero if we assume that the Maya were really counting the intervening nights. In that case spectacle-glyph Mol, for example, would mean that the day belonged to the month of Mol, but no nights of Mol had yet been counted. I distrust this interpretation if it is supposed to mean that the Maya meant the spectacle glyph to represent an absolute zero. However, I think it quite possible that the Maya numbering of the days of the month may have been adapted from an original count by nights. From one feast-day 20 nights or "sleeps" were counted, then came the next feast-day. If the feast was considered to pertain primarily to the following rather than the preceding month, the day would take its place in that month, preceding the day numbered one.

The evidence in regard to this "zero day" of the month seems to me fairly clear. The same day belonged to two consecutive months, and could be

designated either as the completion of the one, or as the beginning (the zero day) of the next. There is an affinity of ideas here to the concept of the cyclical-positional zero of the Long Count, but it is not necessary to assume that the Maya made the connection. It shows how they thought, however, and strengthens the cyclical interpretation of the positional zero. J. Eric Thompson thinks the spectacle glyph should be translated "the seating of," referring, I presume, to the enthronement of the deity of the month. It seems to me that this excellent translation is fully in accord with the meaning "beginning day" of the month, or in our terms, "zero day." This zero beginning day was at the same time the ending day of the preceding month; a commonplace of cyclical counting, however odd it may appear to us. The ancient Athenians also had a day common to two consecutive months, lunar months. They called it "old and new," as pertaining to both the vanished and the reappearing moon.

CYCLICAL TIME-COUNTING

We have little use for the idea of cycles any more; we have adopted the idea of the infinitely serial instead. Our still-used cycle, the week, is not the subject of calculation; we look at a calendar instead. How many people realize that dates in October as compared with those in September are advanced two days in the cycle of the week, because the number of days of September (30) exceeds the nearest multiple of 7 by 2? or that September 10 (say) is one day earlier in the cycle of the week than July 10, because 62 is one less than the nearest multiple of 7? Somewhat similar calculations were doubtless commonplace to the Maya. The unequal lengths of our months and years have tended to discourage such calculations.

The peculiarities of counting when applied to cycles are not well understood by most people. The end of one period is the beginning of the next, the turn of the cycle. If a time cycle is analyzed down to "instants," this common element may be infinitesimally short, "a point of time." But this is not necessarily so. The common element for successive time-cycles can be a day, a year, or any other element counted monodically. The monadic unit of Maya time-counting was, of course, the kin.

Not only is the end of one cycle the beginning of the next: to count through one complete cycle by itself, one element has to be counted twice, that is, both at the "beginning" and the "end." This is equally true whether or not a zero is used. The Romans had no zero and counted the cycle of the week in days from 1 to 8, as, indeed, the French and Spanish still do. The eighth day is the first over

again, and becomes a new first. In the same way we still number the seven different notes of the musical scale from one to eight. However, our usual custom is now different. Mathematically we designate the beginning element with zero instead of one, then count to the number of the cycle, which is equivalent to zero again. The cyclical element, on which the cycle "turns," is explicitly numbered 0, or alternatively given the number of the cycle, which is equivalent to zero for that particular cycle.

People in general, in this country, now usually count "one" for the next element *from*, or *after*, the starting-point. Usually they are unconscious of their implicit zero; the starting-point is simply "not counted." Our numbering of the days of the week is somewhat confused by vestigial recollections of Roman counting. However, we commonly count forward from a day without counting it, but counting the next day as "one." The Maya did the same, and other peoples, too, have counted days or years in this way. The wonderful thing in the case of the Maya is that they ever made their "zero" explicit and devised written symbols for it. Their zero beginning was not always explicit but sometimes it was, with a cyclical or "ending-beginning" meaning.

The "zero day" of the month is a remarkably explicit example of the same day being both "end" or probably better "completion" of one month and "beginning" or "the seating of" the next. In the codices the starting day of a series of calculations may be omitted, taken for granted, or "not counted," then when the calculations have carried through a cycle one finds at the end the same name of the day from which the start of the count was made. This is an example of counting from a non-explicit cyclical zero. Further, the Maya often used 13, or 20, as a cyclical zero. Goodman nearly realized this at the start and declared that the Maya counted "20, 1, 2, 3 . . ." etc. However, he apparently did not fully understand the characteristics of cyclical counting and later decided that what he had taken for the beginnings of periods were "really" ends.

Cyclical change is well represented by a curve rising from a horizontal line, then falling below it and rising again, and duplicating itself repeatedly. Now consider one cycle of the curve by itself. It extends from a point at which it rises from the horizontal line to the next point at which it again rises from the line. Suppose we select eleven other points in between, on the curve, as also representing important elements to be numbered. Then in the Roman system the point on the line where this cycle begins is numbered 1, the other points 2, 3, etc., to 13 for the next point on the horizontal line at which the curve rises again, 13 being also a new 1. In mod-

ern mathematics the same points will be numbered 0 to 12, 12 being also a new 0. There are only 12 *different* elements, but if we number them 1 to 12 or 0 to 11 and stop there, we have not represented the complete cycle, since we have not yet reached the element at which the curve begins to repeat. Now the Maya would have numbered such a cycle "12, 1, 2, 3," etc., to 12 again, beginning with the ending-number of the "preceding" cycle, whether or not a preceding cycle really comes into consideration. A mathematician might do that today. In fact, we even have an example of such numbering in common use, 12 o'clock midnight as the *beginning* of the day.

The Maya counted about as we do, but were much more familiar with cycles and cyclical counting. Probably much confusion has resulted from attempted explanations by Spaniards, who counted in a different way. Indeed, the Spanish-educated Maya after the conquest cannot have understood their own ancestors, and added to the confusion. There is the possibility also that some changes in Maya counting had already occurred or were under way, owing to Nahua influence, dust before the Spaniards arrived on the scene. To the old Maya the *first* element, so counted, numbered 1, was the first *from* or *after* the starting point, or the *first completion*; to the Spaniards the first was the starting-point, or the *first beginning*. We ourselves are sometimes a little confused about this, due to survivals of the old mode of counting; for our Teutonic ancestors counted in the same way as the Romans, except that in time-counting they usually counted intervening nights, instead of days. As one result we frequently have a discrepancy between our cardinal and ordinal numbers. This is often assumed to be unavoidable; but most of the supposed necessity of the confusion is imaginary. If we agree that when we start from zero, whether expressed or only implied, then "one" or "the first" means the first element from or after the zero starting-point, or, in the case of continuously growing or flowing magnitudes (e.g., duration of time), the first completion rather than the first beginning then cardinals and ordinals will correspond again, as of course they ought to do.

To call the cyclical "turning" days of the Maya "period-ending" dates, as all archaeologists now do, is awkward, unnecessary, and sometimes inexpressibly confusing. "Period date" would do as well, or, even better, "cyclical date" or "round-number date."

I now state some brief conclusions without further discussion. In the cycle of numbered days, 13 was the cyclical number, Ahau the cyclical day-name. 13 Ahau was the turn of the cycle of 260 days; 1 Imix was the first day from the cyclical starting-point. 13 Ahau was also one of the katun-days and the turn

of the cycle of the katuns. Counting a katun of days from this day one comes to katun *day* 11 Ahau, which was consequently the first completed or (better) first counted katun. The cyclical days of the Long Count were, of course, the round-number days.

The Roman rule was, "the end of the old is the first of the new." The Maya rule was, and our modern rule, as regards cycles, is, "the cyclical completion or 'ending' of the old is the beginning or zero of the new."

CYCLICAL CALCULATIONS

The simplicity and ease of cyclical calculations are not as well known as they might be. The place of any number in a cycle is not changed by adding or subtracting the number of the cycle or any of its multiples, since these are equivalent to zero. Any number can be conveniently designated forward or backward from the cyclical turning point, by the positive or negative difference from the nearest multiple of the number of the cycle.

For example, in the Maya system the passage of one uinal advances the day number by 7. Considering the cycle of 13 day numbers, we have:

1 uinal	= 20 kins = 20-13 = +7 (or, 20-26 = -6)
2 uinals	= 2 × 20 = (2)(+7) = +14 = +1

That is, the day-number gains 1 in 2 uinals.

18	= 18-13 = +5
1 tun	= 18 uinals = (+5) × (+7) = +35 = 35-39 = -4
1 katun	= 20 tuns = (+7)(-4) = -28 = -2
1 baktun	= 20 katuns = (+7)(-2) = -14 = -1

Consider a Maya Long Count date, such as 9.17.13.8.5. What is the day number?

From the calculation at the right,	(9)(-1) = -9
the day number is back 1 from 4 Ahau.	(7)(-2) = -1
Since the kins read 5 the day is	(13)(-4) = 0
3 Chicchan.	(4)(+1) = 4

The same kind of calculations can be applied to any other length of cycle. Generally they can be carried out mentally for reasonably short cycles.

A little more difficult to handle is a longer cycle, such as the Maya year of 365 days. In Maya terms this is 18 uinals 5 kins, or 18.5, which is the equivalent of 0 for the cycle of the year. (The point . between 18 and 5 of course is not a decimal point but a vigesimal scale mark; all numbers are integral.)

1 tun	= -5 kins on the cycle of the year
1 katun	= 20 tuns = 20 (-5) = -100 kins = -5 uinals = -5.0
1 baktun	= 20 katuns = 20 (-5.0) = -100 uinals (add 6 years; i.e., 108 uinals 30 kins), 1 baktun = 8 uinals 30 kins = +9.10
2 baktuns	= +18.20; subtract 1 year (-18.5), 2 baktuns = +15 kins

Take the date previously given, 9.7.13.8.5:

8 baktuns	= (4)(15) = 3.0
1 baktun	= 9.10 (obtained from 36.10 (2 years)—35.0 = +1.10)
7 katuns	= (7)(-5.0) = 1.10
13 tuns	= (13)(-5) = -3.5
	+ 8.5 = 18.20 = +15

That is, the year date has gained 15 days on 8 Cumku; it must be 3 Uayeb.

Within the year dates can be represented in the same way: 18.5 can be taken as 5 Uayeb, the end of the year, which is the same as 0 Pop, the beginning and zero day of the year (numbered 0.0 or just 0); 1.0 is Pop completed or Uo begun; 8 Cumku is 17.8; 18.0 is Cumku completed or Uayeb begun, etc.

Let us solve for example 12.16.0.0.0:

12 baktuns = 6(15) = 90 kins	= 4.10
16 katuns = 16 (-5.0) = -80.0 + 90.25	= 11.5
(5 years)	15.15
We can add this to 8 Cumku (17.8)	17.8
	32.23
And then subtract out the completed year	-18.5
	14.18

Date is 18 Muan.

(or, we could subtract a year from 15.15; that is, 15.15 = -2.10, which tells us that we are to go *back* 2 uinals and 10 kins from 8 Cumku: 17.8—2.1.0 = 14.18; date is 18 Muan.)

Such calculations can still be made mentally, or with very slight assistance from pebbles or grains of corn, especially when the equivalents for various numbers of tuns, katuns, and baktuns have been memorized; e.g.,

7 katuns	= + 1.10
14 katuns	= 2(1.10) = + 3.0
28 katuns	= + 6.00 = 1 baktun 8 katuns, etc.

I have little doubt that the Maya experts calculated in just about this way. Of course they did not have our concept of positive and negative numbers, and probably multiplied merely by repeated addition. However, the + and—signs simply mean “go forward” and “go back.” Calculations only slightly simpler should even be within the powers of the modern Maya.

ACKNOWLEDGEMENT

I wish to express an initial indebtedness to Richard C. E. Long, Maya and Christian Chronology, *Journal of the Royal Anthropological Institute* 53:4–41. 1923. I am also greatly indebted to personal correspondence from J. Eric Thompson.

ST. PAUL, MINNESOTA

NOTES

1. Charles C. Fulton (1900–1992) was a pioneer in the development of non-aqueous media for microcrystal tests for drugs. His career commenced in the era of Prohibition and his record of publications began when forensic science literature as such was non-existent. His efforts in drug identification led him to develop many new reagent media, keep pace with the rapidly expanding number of drugs in the post-war era, and contribute his science to combating international drug trade by identifying opium sources for the newly created United Nations Secretariat. He authored *Modern Microcrystal Tests for Drugs* (1969), a text still used in many forensic science laboratories, before retiring to pursue eclectic interests including publishing on archaeoastronomy, particularly of the Maya.

Certain Types of Stamped Decoration on Pottery from the Valley of Mexico

Hasso von Winning

In discussing a collection of pottery from Texcuaco on the Rio Coyolate, Department of Escuintla, Guatemala, Dr. A. V. Kidder (Note 15) refers to a vase which bears two rectangular panels, impressed by the same stamp (Fig. 86.1.1). Each panel is outlined, after stamping, with an incised line. Near the base are three small heads, made in the same mold and luted to the wall. The ringstand or pedestal base has been broken. Precise data as to the provenience of this specimen are lacking. So far Dr. Kidder's commentary. For reasons of harmonious composition the panels are stamped in such a way that one has to turn them to the left to perceive the design, which depicts a human face surrounded by what appears to be the head of a serpent, whose upper jaw covers a human head. The serpent's eye is depicted vertically adjoining the earplug. The rest of the motif consists of scrolls, done in a flamboyant manner which strongly suggests Maya Old Empire style.

Since the decoration was done by means of a stamp, this specimen can be considered as belonging to the group of sculptured vessels. According to Lothrop (1936a), this type of pottery falls into two major groups: those carved before firing and those carved after firing. Further, there are various combinations of the technique. In Figure 86.1 the decoration must have been applied while the outer surface of the clay was soft.

A vessel with an almost identical design executed in low relief has been recently purchased by the writer at Santiago Ahuixotla, in the Valley of Mexico. It is a bowl with rounded bottom and four

identically stamped panels (Fig. 86.1.2). No incised lines frame the panels; the edges, however, were sharply cut after the impression was made. Each convex panel is flanked by a groovelike depression. The relief is not very deep, yet the details are clearly distinguishable. The yellow-brown color of the clay, the brown slip, and the stick-polishing on both sides suggest that this vessel falls in a post-Classical period of Teotihuacan. The dullness of the stamped-out panels contrasts with the polished surface of the undecorated parts.

The position of the decorative pattern is the same as that of the Guatemala vessel; that is, one has to turn it to the left to recognize the motif. The serpent's jaw is opened wide and frames a human head. On the Guatemala vessel (Fig. 86.1.1) there is a short speech-scroll in front of the mouth of the priest or god, whereas the Ahuixotla specimen shows a sinuous detail, representing a tooth or teeth, set in the mouth. The same details denote the serpent's incisors on both the upper and lower jaw. The supraorbital plates of god and serpent are identical in design. From a large scroll there emerges what seems to be a human extremity.

This composition is almost duplicated by a fragment found by Linné at Teotihuacan (Linné 1934, Fig. 130-A). Although incomplete, the Teotihuacan sherd exhibits enough details to make possible a comparison, and the foregoing specimens prove the correctness of Linné's explanations. He classified his find as "Maya style" and compared it with a vessel cover from Ranchito de las Animas, which



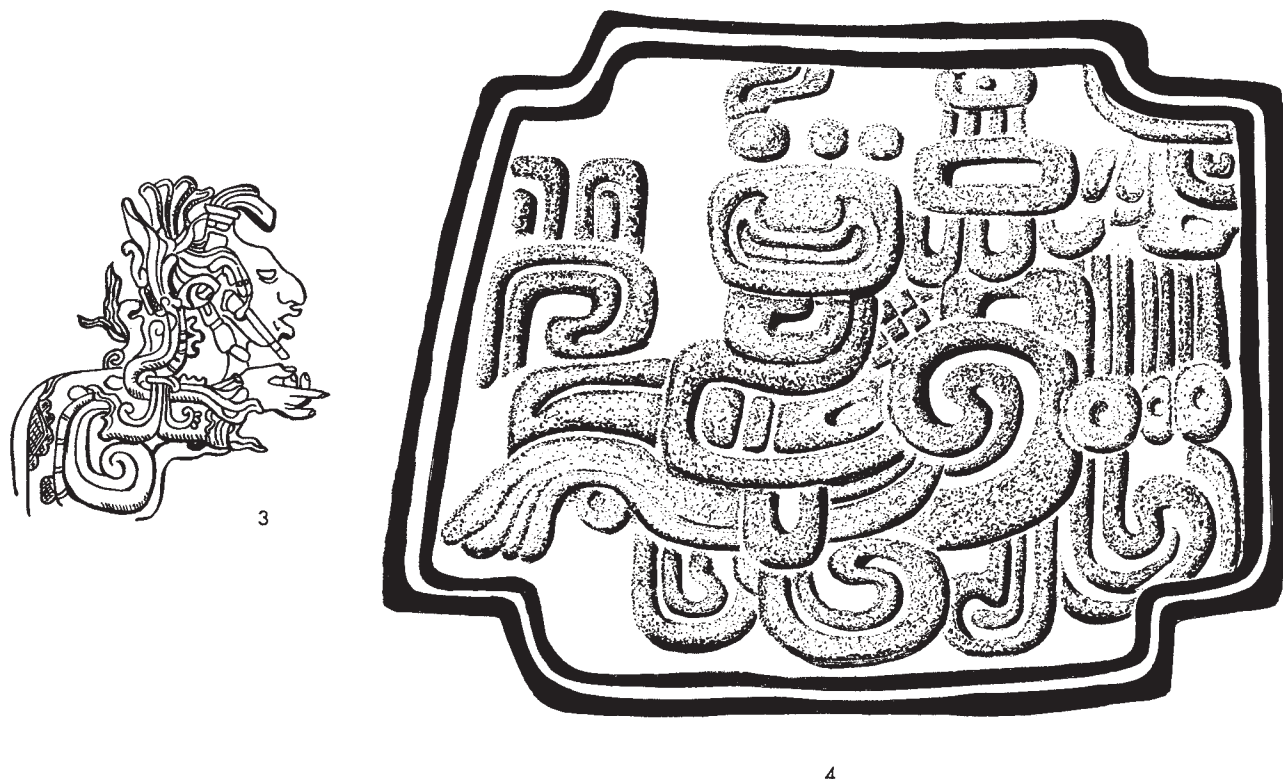
86.1. Mexican pottery with stamped decoration: (1) vase with two rectangular panels, impressed by the same stamp; from a collection of pottery from Texcuaco (Rio Coyolate), Guatemala; (2) stamped design that appears four times on a bowl from Santiago Ahuixotla, Mexico; diameter 19 cm, height 8.5 cm; panel natural size.

Strebel remarked might have come from another region (Strebel 1885–1889:69). Furthermore, Linné sees analogies in the Teotihuacan sherd with the once famous relief vase from San Agustín Acasaguastlan, Guatemala, to demonstrate the Maya origin of the sherd. This comparison, however, can no longer be sustained, since doubt about the authenticity of the Acasaguastlan vase has been substantiated (Thompson 1942). Yet the similarity to the other relief-decorated fragments found by Linné at Teotihuacan points strongly toward Maya origin.

The concept of combining a serpent with a human head set in its jaws is manifested in Maya art where it represents the final steps in the evolution of the divine serpent (Spinden 1913). Figure 86.2.3 shows an example in stone sculpture from Yaxchilan, in which a human head is placed in the distended jaws. (cf. also Codex Nuttall (1903:69); the “Quetzalcoatl motif” at Chichen Itza and at Tula; and the heads set in the xiuhcoats of the Aztec Calendar Stone.)

Figure 86.2.4 is a stylization of the foregoing patterns. The serpent's head is completely conventionalized and resolved into scrollwork. By comparing Figures 86.2.4. and 86.1.2, one can recognize the serpent's features without fear that imagination has led one astray. The center of the composition is the eye. The large scroll next it, also found in Figure 86.1.2, indicates the joint of the jaws. The human face is missing in Figure 86.2.4, but is replaced by scrolls. Another scroll, representing the serpent's nose, is found on all specimens. The style suggests Totonac influence.

The panels of Figure 86.2.4 are impressed four times on a bowl of the same shape as the one in Figure 86.1.2. Both specimens have the same provenience, paste, and finish; the relief is flat in Figure 86.1.2, deeper in Figure 86.2.4. In getting the pattern out of the small mold, the sculptor must have had difficulties which induced him to correct afterwards certain minor details, thus creating in the different



86.2. Mexican pottery with stamped decoration: (3) serpent's head with human head between its jaws; stone sculpture from Yaxchilan; (4) stamped design that appears four times on bowl of same shape and size as Fig. 86.2; from Santiago Ahuixotla; panel enlarged to double size.

panels slight discrepancies which become evident only after careful comparison.

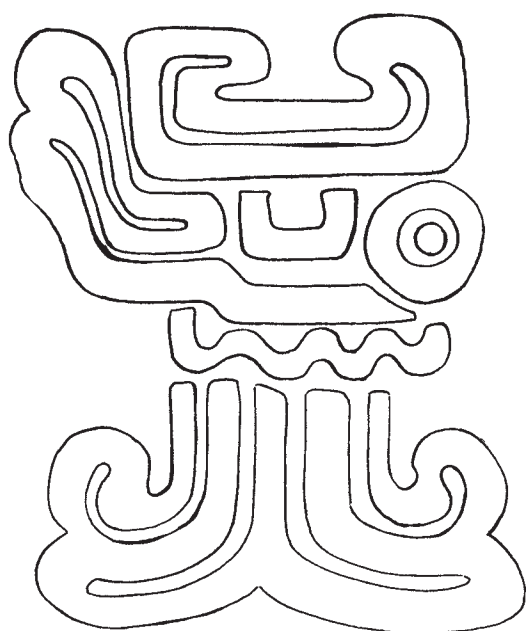
Following the sequence of the various forms of representing this human-head-in-serpent-mouth conception, we find the same idea expressed on another carved vessel, also discovered by Linné at Xolalpan, a suburb of Teotihuacan (Fig. 86.3.6). The technique of the carving is a different one, since the Xolalpan vessel was carved after firing and thus belongs to the champleve group. Linné referred to the design as a "highly stylized animal figure, of which, with the exercise of some imagination, the head can be made out to the left, the tail to the right, and the legs below" (Linné 1934:62). From what we have seen so far, we can deduce that the Xolalpan vessel actually represents a highly stylized serpent's head. Eye with eyelids forms the central motif. To the left protrudes the upper jaw with a row of teeth. The nose is not very clear, but the two greenstone beads, which I do not believe have numerical meaning, seem to belong to it. They also appear on Figure 86.1.2 in the same position. Whether the scrolls on the bottom

and at the right side represent the animal's legs and tail, or whether they are carved to fill out an empty space which should have been taken up by a human head, is an open question.

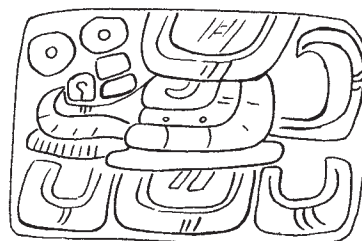
In Figure 86.3.7 we have grouped details of the eye with its supraorbital plate and the upper jaw with teeth belonging to the serpent.

The technique of carving pottery was well developed by the Maya before the end of the Old Empire. This type of pottery has a wide distribution but has not been found at any single site in large quantity, except recently at Tajin (du Solier 1938), where, by means of its peculiar decoration, "the 13 rabbit glyph," it is definitely related to the Temple of the Columns. Yet this type of carved ware is remarkably different in style and technique from all the specimens discussed in this paper. The center of champlevé pottery apparently was Teotihuacan and the vicinity of Azcapotzalco.

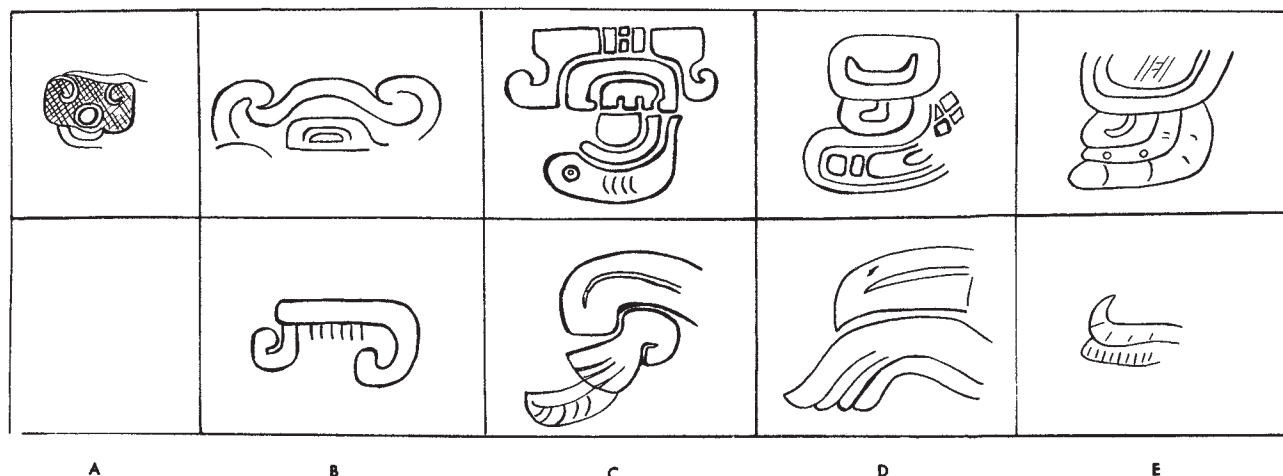
In connection with this head-in-serpent decorative motif, it is appropriate to discuss another type of relief-decorated ware which is also found in the



5



6



A

B

C

D

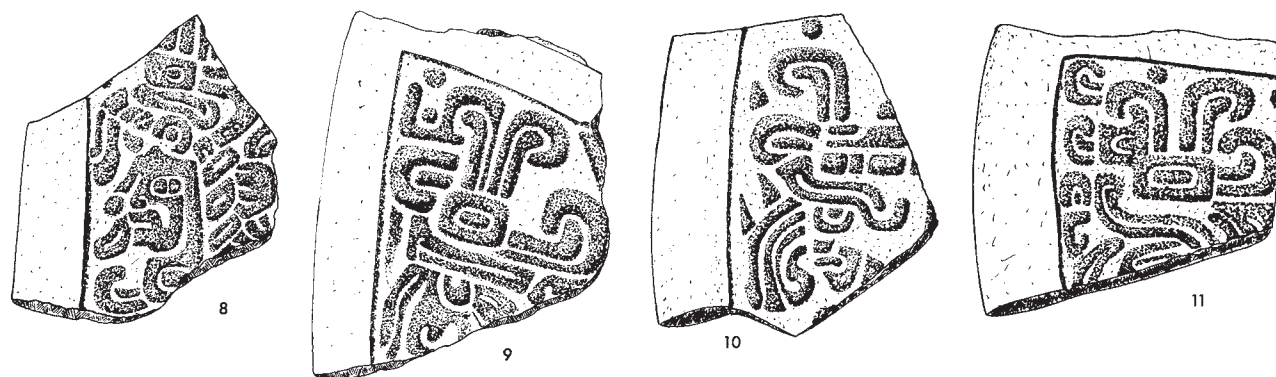
E

7

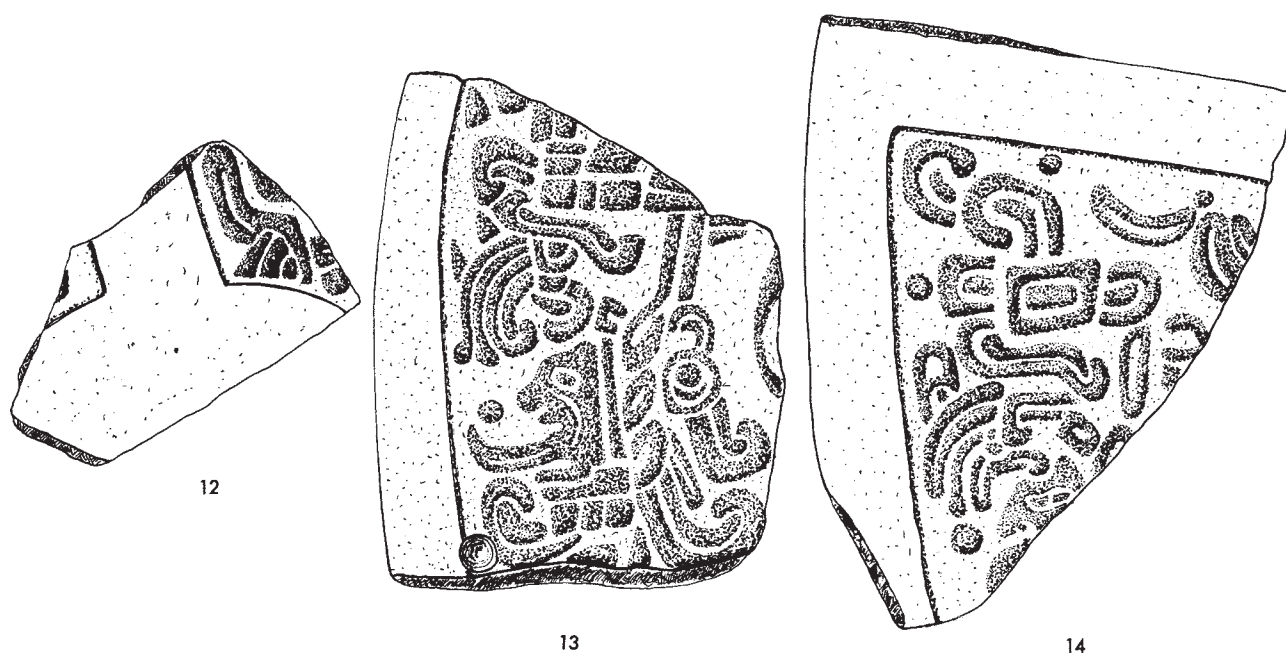
86.3. Mexican pottery with stamped decoration: (5) detail of tattoo markings on stone head, Totonac style; identical facial decoration appears on both sides; (6) stylized serpent's head; carved motif on champlévé vessel from Xolalpan, Teotihuacan; (7) details of the serpent's eye with its supraorbital plate and, in the second row, the upper jaw with teeth; (a) plumed serpent, Chichen Itza (after Spinden); (b) Guatemala vase (Fig. 86.1); (c) Ahuixotla bowl (Fig. 86.2); (d) Ahuixotla bowl (Fig. 86.4); (e) Xolalpan vessel (Fig. 86.6).

Valley of Mexico and which seems to be coeval to the Teotihuacan culture. These vessels are of a yellowish clay, slipped slightly darker on the inside, and are well polished. The decoration is stamped, usu-

ally three times, in panels. The rim and panel separations are highly polished red bands. The relief is unpolished and not sharply outlined, so that details are not always clearly separated from each other.



86.4. Mexican pottery with stamped decoration: (8–11) potsherds showing moldmade relief decoration on red-rimmed bowls with rounded base; Santiago Ahuixotla, Mexico.



86.5. Mexican pottery with stamped decoration: (12–14) potsherds showing moldmade relief decoration on red-rimmed bowls with rounded base; Santiago Ahuixotla, Mexico.

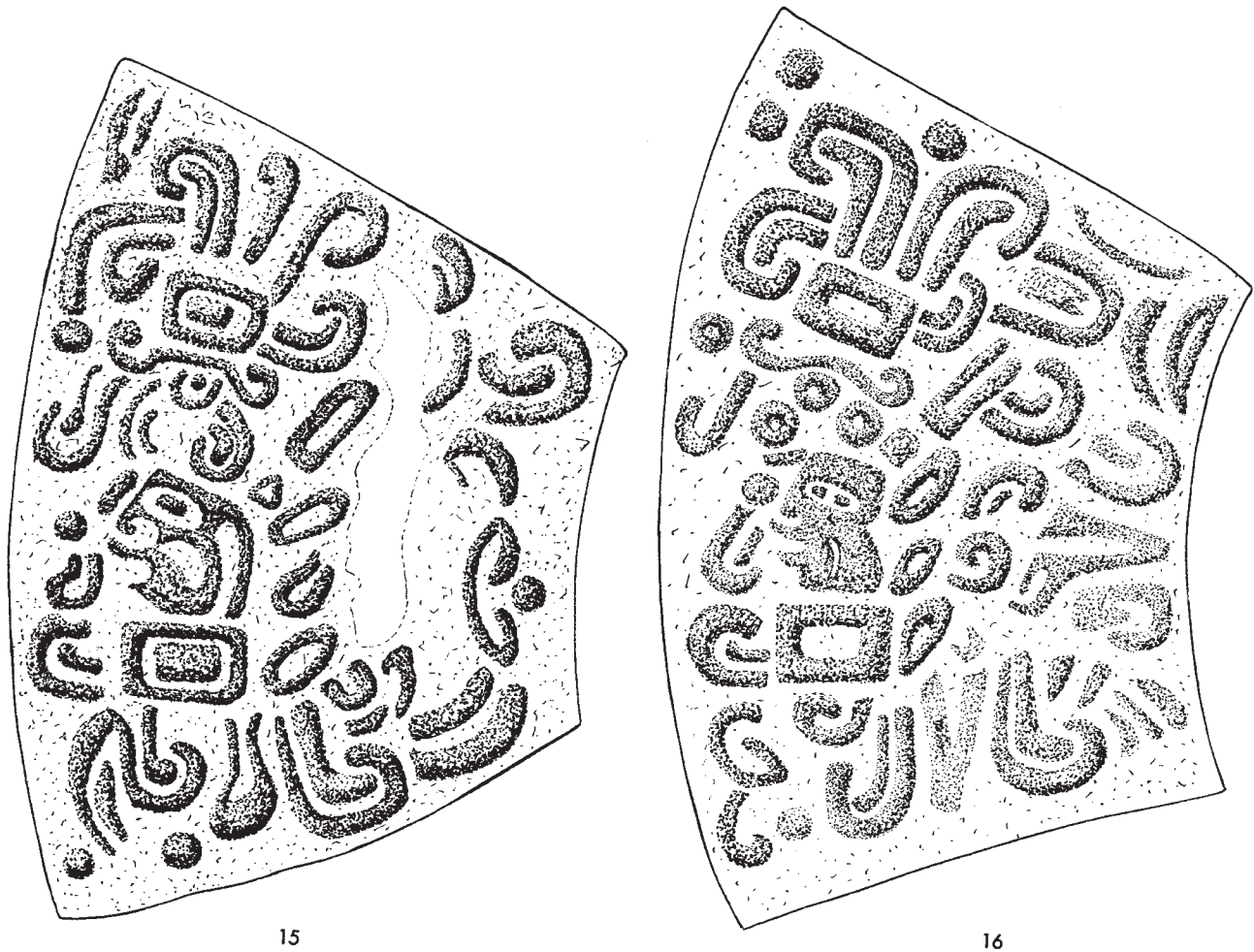
The designs represent a human face of a somewhat fantastic expression, crowned by a large headdress, probably an animals head. Other parts of the body are composed of scrolls and sinuous details.

Figures 86.4.8–86.6.16 show a variety of specimens of identical texture, all expressing the same pattern with variations. The source of this type of pottery might have been the Valley of Mexico, but the pattern seems to be of Totonac origin. Perhaps in this case only the molds were imported. One may make this assumption, since a similar design (Fig.

86.3.5) appears as facial decoration in relief on a flat stone head (*hacha*) of typical Totonac style in the Cranbrook Academy of Art (Exhibition 1940:47).

CONCLUSIONS

Out of the variety of relief-decorated pottery there appear two types in the Valley of Mexico during the post-Classical Teotihuacan period, which show patterns developed by other cultures but applied on vessels made in the valley. Both types of decoration are



86.6. Mexican pottery with stamped decoration: (15) panel design repeated three times on complete red-rimmed bowl (Collection American Museum of Natural History; I am indebted for the tracing to Dr. Gordon Ekholm); (16) panel design repeated three times on complete red-rimmed bowl; natural size (Collection H. Neys).

impressed by stamp. These were, perhaps, imported. The method of decorating pottery in relief is widespread in the Maya region. The designs of the two types herein discussed show a head-in-serpent motif and a head-and-scroll-work motif, both applied two, three, or four times in panels. The head-in-serpent motif is a Maya Old Empire pattern. It is also found in the Mexican highlands during the post-Classical period of Teotihuacan; it was adapted in a simplified

manner as freehand design on champléve pottery of this period and later was continued by the Aztec.

The head-and-scrollwork motif suggests Totonac influence. The sinuous details are characteristic of the style of this culture. The appearance of a stylistically related design on the face of a flat stone head known to be a typical Totonac *hacha* supports this assumption that the motif in question is of Totonac origin.

MEXICO, D.F.

Observation of the Sun among the Ixil of Guatemala

R.C.E. Long

Through the courtesy of the Division of Historical Research I have been able to see the microfilm of the notes on the Ixil by the late J. Steward Lincoln (1946). Appended to it is a diagram entitled "So-called sun observatory. Nebaj. Stone markers extending from behind Campo Santo up to top of high hill west of town. From Campo Santo to top approximately 1 1/2 km. Sun rises on lines a-b and x-y observed from stones O and P, on March 19, 1910, 2 days before the equinox. Sun rose this day at 6 degs 31 1/2 ms. Direction observed with simple *adjustable* compass. Observations of the sun are made at the stone today by zahorins for planting and harvesting." The foregoing is a copy of Lincoln's manuscript note as far as I can read it, which is difficult; I am doubtful if I have correctly read the words and figures [italized]. I can find no reference to this elsewhere by Lincoln except that in listing the ancient remains of the district he includes "stone temples with steps, a sun observatory (have drawn this from Nebaj)."

Unfortunately, he gives no information as to the procedure in taking observations or who takes them. His diagram shows the outline of the hill, the position of the sun at sunrise over an indentation in the hill, and a line extending from O to this indentation. On that line at a considerable distance from O there is a stone through which the line passes. No doubt this stone is used by the observer to take a sight along the line when he makes his observation from O. A similar line connects P, and the indentation and a similar stone is on this line by which to sight along it. Evidently for greater accuracy two persons must

observe the same indentation at the same time from two different points. The Hopi Indians have a similar procedure but only one observer. The diagram shows other stones scattered about some have short lines connecting them with a line running from the sun to a stone circle between the two above-mentioned lines, from O and P to the sun. These short lines are given no explanation, compass bearing, or date. It is very unfortunate that we are not told whether or not any of the other stones are used for observation. Calculation shows that 19 March 1940 was the day 1 Kan in the Ixil calendar.

The Hopi have no definite day-to-day reckoning but only a fluctuating luni-solar year about which they themselves differ in opinion; they have, therefore, no means of obtaining accurate points of time in the tropic year by counting days. Nevertheless, as they take a large number of observations (probably about twenty or so), each at the appropriate time of the year, they can in practice fix very accurately the dates in the solar year required for their work (Forde 1931).

It is evident, of course, to us that as the Ixil have an absolutely accurate count of days, it would be quite sufficient if they observed the sun once a year, say on 19 March, as they could then fix the dates of other occupations at so many uinals and days from that. But perhaps it may not be so obvious to them as it is to us, and this makes it most unfortunate that we do not know if they take more than one observation a year. The choice of the day 19 March is no doubt owing to its being near the vernal equinox; perhaps

the choice of the exact day is due to there being a convenient indentation in the hill, from which to take observations. The Hopi observations are of sunrise at various named marks on the mountain.

All the known calendars still in use in Guatemala show certain day names favorable for planting. Charles Wagley (1941) says that at Santiago Chimaltenango it is so important to plant on the proper day that they work very fast in order to have the whole field completed on that day. Concerning a planting of corn which he saw done among the Ixil, Lincoln says they all worked fast and finished that day, though he does not connect this with the need to complete on a favorable day. However, his list of day names shows A'mak, favorable for cornfields and the "milpa blanca"; I'q, favorable for sowing corn; Kamel, favorable for the yellow milpa, and Kanil, day of the holy milpa, favorable for all other seeds and planting. He does not give the date on which he saw the planting done but mentions (probably a day or two afterwards) that he asked if the turkey being fattened would be sacrificed next Sunday, 7 Noj. Now 7 Noj was a "chief day" and fell on Sunday, 20 April 1940, so his question was asked on any of the days from 13 to 19 April inclusive (13 Tchii to 6 A'mak in the Ixil calendar). It is very probable, therefore, that the planting he observed was on the favorable day 11 Kanil, 11 April 1940. That would be one uinal and three days after 19 March, so the rule might be to plant on a favorable day falling after the expiration of one uinal from 19 March, the day of observation. The tachbal amak (former months) are now confused and not correctly remembered, but when they were functioning it would have been quite easy to note the observation of the sun and to give one of the month names (e.g. Tacaxipual, see below) to the month in which this occurred, even if it involved a break in the order of the months. It would have the effect of intercalating a month at that point to correct the calendar. Then any other work to be done in the year could be fixed as being in such and such a month. It seems probable that the zahorins nowadays either remember the tachbal amak but keep the knowledge to themselves as a useful business secret, or else know how to count so many uinals and days from the day of observation of sunrise at the stones.

An indirect confirmation comes from an unexpected quarter. Emeterio Pineda (1845) does not correlate his list of months with the Christian calendar but on page 11 he says that the natives sowed in the month Olalti, whatever the state of the weather was, and that if the crop was lost, they did not sow in any other month even if the weather was suitable. But according to Schulz (1942), the Tzeltal month Olalti at present begins on March 16. This would quite

well fit my hypothetical rule above. However, he also says that the Tzotzil month Olalti now begins on April 11, which would still agree with planting on the favorable day. It has been thought that the Tzeltal months have been frozen into the Christian calendar. That would dislocate any relation to the ancient shifting year; but, as I believe, and have for a long time contended, that the times of feasts and farm work were fixed as necessary by observation without disturbing the rotation of the shifting calendar (Long 1937:98), it is then natural to conclude that the frozen dates are in fair agreement with the Christian year and the true tropic year. Of course, once they were frozen they would keep right by agreeing with the Christian calendar.

The best evidence we have of correction by observation in preconquest times is the statement of Motolinia (quoted by Maudslay, "A Note on the Position and Extent of the Great Temple Enclosure at Tenochtitlan") that the sun was supposed to rise at the vernal equinox between the two temples of the Great Pyramid at Tenochtitlan at the feast of Tlacaxipeualiztli, and that Montezuma wished to pull down the temples because the line was not quite straight. It will be noted that in this case, too, the year was fixed by the vernal equinox, a time near the most important season of the year, that of planting corn. In addition, as Merrill (1945) has shown, it is much easier to observe the position of the sun at the equinox, when the sun moves swiftly, than at the solstice, when it is nearly stationary for some days. It is also noteworthy that both the Quiche and the Cakchiquel, although most of their months differed, had a month Tacaxipual corresponding in name and date with the Aztec Tlacaxipeualiztli. One might hazard the conjecture that in this case they took over the name of the Aztec month on account of its importance in fixing the year. The Quiche adopted no other Aztec name; the only other name adopted by the Cakchiquel was Izcal (Izcalli). The latter was specially important for the Aztec, being the first month according to the correlation of Alfonso Caso. So in each case it was only specially important month names which were borrowed. Apparently in the sixteenth century both Montezuma in Mexico and the Quiche and Cakchiquel in Guatemala fixed the true year by observing the equinox in the month Tlacaxipeualiztli, to which all gave the same name; and the practice, though not the name, has been continued to our own time by the Ixil, who have the same day names and dominical days as do the Quiche.

The question of correction by observation has exercised the minds of investigators for a very long time. To my mind this observation at Nebaj is very important indeed as it is the first evidence, except

the above from Motolinia, that such observations were really made. It is much to be desired that someone may check this at Nebaj before it is too late.

It is interesting to note the great advance of the Middle American calendars over that of the Hopi. The former were completely developed calendars by which any day in the past or future could be accurately fixed, an accuracy which the variable lunisolar calendars of the civilized nations of antiquity, not even that of the Greeks, had not reached. The ancient Egyptians are an exception, for they had attained that accuracy even though their year was a shifting one. Julius Caesar did the same and, fur-

thermore, removed the shift in his Roman calendar, founded on the Egyptian one. Nowhere else in the Old World had it been thought of, and the Greek astronomers had to use Egyptian years to obtain accurate computations. Yet the Maya had completed their calendar some centuries before the time of Julius Caesar. The Hopi, on the other hand, can fix dates for the year's work only by observation of the sun without any clear idea of a calendar. So much and no more accuracy was reached by the natives of Torres Strait (Haddon and Rivers 1901-1935), who could not count beyond two, yet could fix the time of year for work by observing certain stars.

PORTARLINGTON, IRELAND

Some Remarks on Maya Arithmetic

R.C.E. Long

J. Eric S. Thompson (1942) has set out very fully how the Maya might have used an abacus for calculating and he has given a diagram of such an abacus. Although I am in general agreement with his paper, I think that no abacus was used and that it is useful to consider the methods of reckoning used in Europe and very fully given by Francis P. S. Barnard (1916) with illustrative diagrams. He abstracts information given in ten arithmetical works of the sixteenth century. All give the method of calculation "by ciphers," that is, our ordinary arithmetical rules, but they also give the method of calculation by counters. The counters were called "jettons," and it will be convenient to use that term here. It was usual to have sets of jettons, which were made of silver or other metals, like coins or medals, and had ornamental designs, But as far as the theory of calculation is concerned, of course, any counters such as stones or grains of corn would do just as well. All the writers cited by Barnard consider the method by ciphers much superior to that by jettons. It was impossible to calculate "by ciphers" as long as the Roman numerals were used; the Arabic numerals came into general use only shortly before these works were written. One of the authors, Siliceus, who like Landa was a Spanish bishop of the sixteenth century, says "the reckoning by jettons is very useful to all persons deficient in a knowledge of written ciphering, as usually are merchants, money-changers, retail dealers, inn-keepers, and numerous others of low estate, besides such as through their own negligence or mental incapacity are unable to read, as is the case with many people of all conditions." It is a striking instance of culture change that the memory of such

reckoning has been quite lost in modern times and can be recovered only from the literature, for the practice was a commonplace in the sixteenth century. It is mentioned by Shakespeare and in many references to counting boards and to sets of jettons in inventories of property. When Landa said the Maya counted on the ground or on some flat surface he was referring to what was usual in Europe at the time he wrote.

No abacus was used. In some systems, like that of the English Exchequer, the reckoning was done on a cloth marked with vertical and horizontal lines like a chessboard. But this was not essential, and in several systems the counters were merely arranged in columns separated by spaces, that is, the columns were separated from each other by vertical spaces and within the column the different orders of units were separated by horizontal spaces. The system was decimal (except, of course, where special units, as of money, were required). In all the systems cited by Barnard, as also in the abacus, whether Roman, Hindu, or Chinese, the system was quinary-decimal, not pure decimal. Each decimal column is in two parts, the lower for units up to five, the upper for fives up to ten. When the addition of more jettons made the lower portion of the column amount to five, then five units were taken from this and one jetton added to the upper portion; when the upper part amounted to ten, then two jettons were taken from it and one was put in the lower portion of the next higher decimal column, and so on. So in the case of units with another radix, such as twelve; then the lower portion of the column was for units up to six, and the upper portion for sixes up to twelve. In practice this is much superior

to a purely decimal arrangement, as it requires fewer jettons and there is less chance of error in counting them. Thompson's abacus has only one column for each vigesimal order of units (as well as the special column for the 18 uinals of the tun). This is even more troublesome in a vigesimal than in a decimal system. It would be far more convenient to break up the columns into a quinary-vigesimal system having in the lower portions of the columns counters up to five and having in the upper portions counters for five up to twenty. I feel quite certain that this is what the Maya did. The tables of multiples in the Dresden Codex usually ascend by successive multiples of one up to five times, and then continue by multiples of five up to twenty; and of course the Maya numerals are on a quinary-vigesimal, not a pure vigesimal, system.

I quite agree with Thompson that only addition and subtraction were used. Here again the European systems are instructive. Most of them effect multiplication, where the multiplier does not exceed four, by multiplying the multiplicand by the multiplier, the latter being assumed to be known to the computer or to be taken from a table. But these works were written by persons familiar with ciphering. However, in at least three of the books cited, instead of this method the procedure is to multiply by putting down jettons for the multiplicand as many times as there are units in the multiplier. Thus, to multiply a number by three, the jettons for the number of the multiplicand are put on the board three times, and the result is then added up and put in the proper columns. Of course if the multiplier is ten, or any power of ten, then it is necessary only to shift the whole of the multiplicand so many columns to the left. Usually the books multiply by five by putting down jettons equivalent to half the number of the multiplicand and putting the result in the next lower quinary compartment, thus in effect multiplying by ten halves.

I do not think the Maya could multiply mentally or had multiplication tables, and it is evident that they could quite well proceed in this way by repeated additions. I have drawn attention to methods of multiplication because it seems to me often to be assumed that because the Maya used positional notation in their numerals they must therefore have been able to multiply and divide vigesimally as we do decimally. Probably they knew that it was possible to multiply by twenty or any power of twenty by shifting so many columns to the left, though even in this the tun column with its radix of 18 may have kept them from using vigesimal multiplication. I do not think they could multiply and divide freely by vigesimals, because the contemporary uneducated Europeans did not possess the knowledge of how to use their decimal system in this way.

I agree with Charles C. Fulton (Note 85) that the Maya system of positional notation is likely to be overstressed, and that it was in the main rather a sorry thing. Doubtless at first the zero symbol was inserted on the usual Maya principle of filling up blank spaces and without any conception of the potentialities of a positional system. One must note that on plates 46–50 of the Dresden Codex, where the four subdivisions of five synodic periods of Venus are set down, the last subdivision of each synodic period, which has the value of 8 kins, is written 0–8, which shows that the principle of positional notation was not really grasped. No doubt the zero was found useful to make clear what numbers were written, and the writing of numbers in the Codex was simplified by omitting the glyphs of the orders of units. In the Old World the Sumerians used positional notation with a radix of 60, and some Chinese coins had numerals with a radix of 10 (Couperie 1882), but it is not clear how far the principle was grasped in either of these cases. A somewhat similar situation arises in the case of alphabetic (as opposed to syllabic) writing. It is known that the ancient Egyptians used alphabetic signs as early as the first dynasty (ca. 3000 B.C.), but as Alan H. Gardiner (1943) says this was, as it were, accidental. They used consonantal signs for syllables which had only one consonant and one vowel, and ignored the vowel, thus expressing one consonant only. But such signs remained embedded in the writing which also contained many biconsonantal-syllables (read as two consonants only, again ignoring the vowel) and many ideograms; the writing so continued for over 3000 years without any improvement. The alphabetical principle was not really grasped then, nor was it understood by any people until probably 1000 to 1500 years after the first dynasty, when some Semitic people invented the first real alphabet. This had no vowels but neither had it any biconsonantal signs or ideograms.

Fulton says the Maya were the only people in the New World who used positional notation but he overlooks the Peruvian quipu, which had a decimal notation by position with a blank space for zero (Leland Locke 1923).

It should be noted that if an ancient Maya was adding up numbers which he had before him in a codex, he could quite well do so without putting down counters on the ground. He had merely to count up all the dots and put down the dots which remained after deducting all fives, and could then proceed to add the bars on the same principle by counting each bar as a five. I have often used this method myself in adding up numbers in the Dresden Codex.

PORTARLINGTON, IRELAND

Kaminaljuyu, Guatemala: Addenda and Corrienda

A. V. Kidder

In the recent report by Kidder, Jennings, and Shook (Kaminaljuyu, hereafter referred to as KJS) on the great archaeological site of Kaminaljuyu in the outskirts of Guatemala City, it was stated that four cultural phases were there represented: Miraflores, an Archaic or Middle Culture development; Esperanza, of the Early Classic Period; Amatle and Pamplona, which we assigned to the first part of the Late, or post-Classic, Period. We believed that in the terminal half of the Classic Period either Kaminaljuyu was not occupied or we had failed to hit upon remains which might have been laid down during that time.

Two years after the close of our field work, a local find suggested the presence of an additional early phase, but we did not have opportunity to study the specimens carefully enough to warrant its inclusion in our report. Still later, when the report was already in press, a discovery to Salvador made it evident that the postulated hiatus between Esperanza and Amatle-Pamplona had not existed and that the latter was, in reality, Late Classic. The new phase, which has been named Las Charcas, serves to lengthen the known occupancy of the site; the closing of the hiatus indicates that its occupancy was probably continuous.

Although these two pieces of information do not greatly alter our original conclusions as to Kaminaljuyu and its exterior contacts, they bear sufficiently upon certain wider problems of Mesoamerican prehistory to justify this postscript. The Las Charcas phase will be considered first:

Some 400 m south of the Esperanza mounds there is a slight rise in the generally flat terrain. This was chosen as the site of the Franklin Delano Roosevelt Hospital, a joint enterprise of the Guatemala and United States governments. We had previously examined the locality as part of our general surface survey of Kaminaljuyu, but had found no mounds and only a few sherds and chips of obsidian. When digging for the hospital's extensive foundations began in the spring of 1944, however, a small Esperanza tomb was encountered. The engineer then in charge, Mr. F. A. Crampton, reported it and kindly turned over to us the pottery and other objects it contained (KJS, p. 85). He was asked to save any further archaeological material that might come to light during the summer.

When I returned to Guatemala in the autumn, I found that Mr. Crampton had made a large collection of sherds from a series of bottle-shaped pits dug through the surface clay and into the underlying volcanic ash. The fragments were unweathered, with sharp, clean breaks, and it was obvious at a glance that they represented a ceramic complex not previously known. It was equally obvious that it bore some relationship to Miraflores because of certain close resemblances in vessel shapes and because very similar white ware occurred in both. On the other hand, there were lacking such characteristic Miraflores types as needle-point incised brown-black, heavily incised brown-black, and fine red. Several entirely unfamiliar types also appeared: red jars with bolster rim and simple incising, red-on-yellow bichrome

bowls, deeply scored graters. Detailed description of the Las Charcas wares will be included in a later report on the pottery of Kaminaljuyu.

The Crampton collection, of course, raised the question of the chronological relation of Las Charcas to Miraflores. This could not be denied on stylistic grounds, for the wares of the two groups were equally excellent.

For some time the specimens from the hospital were the only ones available for study. But in 1946 Shook found further sherds, thrown out in grading operations near Guarda Viejo, about 2 km east of the hospital. Again there were no mounds. A third find, once more unconnected with mounds, was made in the suburb of Santa Clara. In this case the sherds were picked up along a trench for a pipe line. Only in 1947 did evidence for the greater age of Las Charcas come to light.

In that year Shook examined a mound cut through by a road at Canchon, on the plateau some 15 km southeast of Guatemala City. Near its base was a burial accompanied by unmistakable 14 Miraflores vessels; in the fill were both Miraflores and Las Charcas sherds. As in the many rich Miraflores deposits at Kaminaljuyu, no Las Charcas had been identified, and as no Miraflores appeared in the hospital pits or in the lots from Guarda Viejo or Santa Clara, it was evident that the two ceramic complexes could not have been contemporaneous. Therefore, the occurrence of Las Charcas sherds in the Canchon mound, which was undoubtedly a Miraflores structure, indicated that Las Charcas was the older.

The Las Charcas phase is so far represented only by pottery. No mounds, no sculptures have been recognized. Clay figurines were perhaps made, as a considerable number were in the Crampton collection. But many of these differed from the sherds in being severely weathered and so may have come from the surface rather than the pits. Others were in better condition. Whether or not these can be distinguished from Miraflores types must await close comparative study of all such objects from Kaminaljuyu. None appeared at Guarda Viejo, Santa Clara, or in a most productive Las Charcas site discovered, by Shook, in the Department of Sacatepequez, some 20 km west of Guatemala City, where a road cut exposed a grave containing a number of fine vessels and a series of pits that yielded a large collection of sherds. This considerably extended the known range of the complex, until then confined to the Guatemala Valley and nearby Canchon, although a few pieces that are probably Las Charcas have come from a site at Calderas, on the south shore of Lake Amatitlan, and a single jar that has a suspiciously Las Charcas

look was ploughed up at San Rafael las Flores, 40 km southeast of Guatemala City.

The fact that Las Charcas wares, although older, are neither simpler nor structurally cruder than those of Miraflores renders still more puzzling the problem of Mesoamerican cultural origins. Their technical excellence argues for a long pottery-making background, of which to date no evidence whatever has come to light. This, incidentally, gives opportunity to correct my statement in the introduction to the KJS report that the precursors of the Andean high cultures had also eluded discovery. It was made before the Institute for Andean Research had worked out a series of developmental phases in the Viru Valley of coastal Peru extending back to a preceramic horizon. When detailed comparisons can be made, it will be interesting to see whether there are resemblances between what might be called the Middle Peruvian cultures and those of Mesoamerica, for a possible South American derivation of certain early Mesoamerican elements, the "Q-complex," has been suggested by Lothrop and Vaillant. Should local origins persistently fail to materialize, one would be forced to conclude that the ceramic art was introduced full-blown into Mesoamerica either from the south or from overseas. If from the south, some trace at least of its northward spread should exist. This highlights the urgent necessity of more intensive archaeological research in lower Central America and northwestern South America than has yet been undertaken.

To return to Kaminaljuyu, it is possible somewhat to amplify our earlier discussion of the Miraflores phase, because of a postwar building boom that has led to extensive destruction of mounds and in surface stripping to procure materials for bricks, tiles, and adobes. Of the resultant exposures, the most important has been that in the large mound at the municipal brickworks, which on the basis of sherds collected there in former years we considered to be a Miraflores structure (KJS, p. 241). This has been confirmed by the discovery, about 10 m down from the top, of a rich Miraflores tomb. Several other mounds that have been cut into have produced only Miraflores sherds, and great numbers of Miraflores refuse-filled pits have been encountered. Among the pottery thrown out from one of these, on the edge of the barranco east of the Verbena Cemetery, was found a fragment of what may have been a silhouetted relief sculpture (KJS, p. 102, Figs. 141, 142). As no Esperanza or Amatlé-Pamplona ware occurred at that spot, it seems possible that this type of carving, which we formerly believed too sophisticated to be assigned to so early a culture, actually dates from Miraflores times. It may be remembered that

an undoubted silhouetted relief fragment came to light in the Miraflores barranco, but as it lay at about the junction of the pure Miraflores deposit and an Amatlé-Pamplona stratum, we hesitated to date it (KJS, p. 103). Another surprising discovery was that of a "mushroom stone" in the abovementioned tomb (KJS, p. 142).

All in all, it is evident that the Miraflores culture was even more advanced than we originally supposed, so highly developed, indeed, that in spite of its carrying Usulután ware, elsewhere usually associated with early remains, and in spite of its finger-modeled figurines, one has the feeling either that it should not be classed as a Middle (Archaic) culture or that it had progressed more rapidly than its contemporaries. If the latter supposition be correct, Miraflores assumes considerable importance as perhaps having been a leader in development of planned mound groups, elaborate sculpture, jade carving (cf. Shook, Note 57), and other elements characteristic of the Classic Period.

A peculiar feature of Kaminaljuyu is the overwhelming preponderance of Miraflores sherds at practically every part of the site where digging has been done. That Kaminaljuyu was a less important center during the more poorly sherd-represented later phases does not seem probable because a number of its mounds are surely Esperanza; the very rich tombs at Mounds A and B argue for a highly prosperous community; and, though no Amatlé-Pamplona tombs have been found, several impressive earthworks can be assigned to that phase. This anomalous state of affairs might be explained by postulating that in Miraflores times Kaminaljuyu was a residential as well as a ceremonial center, whereas at a later date it became primarily ceremonial, the bulk of the population living more widely scattered about the valley and its environs. Still another possibility is that a great quantity of Miraflores pottery was ritually broken on certain occasions, as was done by the Aztec every 52 years (Vaillant 1940). Against this is the fact that the deposits bearing Miraflores pottery often seem to contain normal household rubbish, rather than quantities of freshly broken vessels, although some parts of the site do yield much material of that sort.

Also puzzling is the great rarity of common people's graves at Kaminaljuyu. One could account for the scarcity of Esperanza and the entire absence, so far, of Amatlé or Pamplona interments by supposing that the masses lived elsewhere. But, if the place was as densely inhabited as seems probable during the seemingly long Miraflores phase, thousands of burials should have taken place there and very many ought to have been encountered in the vast amount

of digging that has recently been done everywhere on the site, whereas the only ones certainly known are two that were found by O. G. Ricketson and myself at the Miraflores barranco in 1935. There is no evidence that cremation was practiced. Thus, one can only surmise that some single area, as yet undiscovered, was used as a cemetery.

We now pass to the closing of the supposed hiatus between Esperanza and Amatlé-Pamplona. When the report was written, Esperanza had been proved to be an Early Classic phase by the presence in its tombs of pottery, which, if not actually imported from Early Classic Petén sites, was unquestionably contemporaneous with them. Amatlé-Pamplona we believed to have been subsequent to Late Classic because it carried San Juan plumbate, a ware that so far has not been found in Late Classic Petén. And although we discovered no Amatlé-Pamplona metal at Kaminaljuyu, it had occurred at San Agustín Acasaguastlán on the Motagua in association with the early form of plumbate known as San Juan (Smith and Kidder 1943:173; in this publication San Juan plumbate is called "simple" or "non-effigy"). Metal was also unknown from Late Classic Petén, the only authenticated occurrence in any lowland Maya site of that period being a pair of gold figurine legs from beneath Stela A at Copán (Strömsvik 1941) and these might conceivably have been introduced at a later time. The lack, or at least the very great rarity, of Classic Maya metal strengthened our feeling that Amatlé-Pamplona must be post-Classic.

That we were wrong was indicated by finds at the ruins of Tazumal, in the outskirts of the town of Chalchuapa in eastern Salvador near the Guatemala border. There, Stanley H. Boggs (personal information) uncovered a group of graves containing both copper objects and pottery known as Copador, a type found in caches beneath Late Classic stelae at Copán (Strömsvik 1941). There was no San Juan plumbate in the graves, but there was a frog-pot and a miniature vessel, both of which practically duplicate specimens from Magdalena phase tombs at San Agustín Acasaguastlán, which also yielded San Juan plumbate and metal. Thus San Juan plumbate served to equate chronologically Amatlé-Pamplona with the Magdalena phase of San Agustín, metal to equate Magdalena with the Tazumal graves, Copador pottery to equate those graves with Late Classic Copán. Amatlé-Pamplona must therefore be considered Late Classic. By the same admittedly roundabout reasoning there is eliminated the formerly postulated hiatus between the Early Classic Late phase and the Magdalena phase at San Agustín (Smith and Kidder 1943:175), Magdalena, like Amatlé-Pamplona, now being assignable to Late Classic times.

The shoving back into the Late Classic Period of those cultures bearing San Juan plumbate bears significantly on the problem of the correlation of the Maya and Christian calendars. Under the Goodman-Martinez-Thompson, or 11.16, correlation, at present favored by most archaeologists, the close of the Classic Period, shortly after 10.3.0.0.0 in the Maya count, would have taken place at about A.D. 900, leaving somewhat more than 600 years to be accounted for between that date and the Spanish conquest. This is a long time, which Amatle-Pamplona, Magdalena, and other contemporaneous phases, originally believed to be post-Classic, helped to fill. Deprived of them, we are forced to stretch the at present known post-Classic phases almost to the breaking point. For this reason one cannot, as confidently as before, dismiss the possibility of an 11.3 correlation, which would end the Classic Period 256 years later, i.e. at about 1150. Such a correlation was, indeed, tentatively suggested by G. C. Vaillant (1927), who felt that there were not sufficient post-Classic remains to represent some six centuries or more of cultural activity. On the other hand, there is at the moment no way of estimating the length of such post-Classic phases as are now known, to say nothing of possible phases not as yet discovered.

In this connection it should be noted that R. E. Smith believes that each of the two Classic phases of Uaxactun, Tzakol and Tepeu, lasted for roughly three centuries. But in each of these he recognizes three subphases, which another student might have considered full phases. Vaillant, for example, working on the pottery of nearby Holmul, divided what there corresponded to the Early Classic Tzakol phase of Uaxactun into Holmul I-IV inclusive (Merwin and Vaillant 1932). About the same material from San Jose, British Honduras, is allocated to two phases, San Jose II and III, by Thompson (1939). This emphasizes the fact that phases, or numbered periods, or the foci of the Midwestern Classification, are products of individual judgment as to what constitute significant differences between one group and another of contemporaneous remains. Such divisions are no more than convenient preliminary classificational devices and, in the absence of reliable chronological landmarks such as Maya dates or dendrochronological determinations, should never be considered as measurable in years, nor thought of as having had anything like a standard duration.

If the present assignment of Amatle-Pamplona and the Magdalena of San Agustin to Late Classic is correct, there is rendered less convincing an argument which I formerly felt strongly to favor an 11.16 correlation. This was based on the chronology of Mesoamerican metallurgy and ran as follows:

Knowledge of metal-working came into Mesoamerica from South America. Since no metal had been found in Classic sites but was known from what were believed to be early post-Classic horizons, its introduction should have taken place not long after 900. This allowed time for metallurgy to have come to be practiced in Mexico by 1050 or 1100 and for copper bells to be traded to the United States Southwest, where they have been found in ruins of approximately those dates. But under an 11.3 correlation the Classic Period would have lasted until well after 1100, and it would obviously have been impossible for metal-working to have become established in Mexico as early as the Southwestern bells indicate. Now that we must believe that metal was already present in Salvador and Guatemala in Late Classic times, however, it is possible that even under an 11.3 correlation it may have become known in Mesoamerica early enough for the bells to have been brought to Arizona and New Mexico by 1100.

The above reasoning, if it can be so dignified, is based on the assumption that Mesoamerica owed its knowledge of metalworking to the south. It seems most probable that it did, but proof must await technological comparisons and chronological determinations both above and below the Isthmus. These studies are greatly needed. Without them we cannot be certain that there were not independent beginnings in Mexico or even, although I am far from being a Gladwinite, separate introductions from overseas.

To sum up, we can now recognize at Kaminaljuyu five successive phases; divisible into two groups: Las Charcas-Miraflores and Esperanza-Amatle-Pamplona. Between the first two there are many general resemblances and certain specific carryovers. The same is true of the last three. Between the two groups there are striking differences. In Esperanza new wares and new vessel shapes appear, accompanied by a marked decline in excellence of finish and in beauty and variety of forms, but with a distinct gain in the hardness and durability of the pottery that continues through Amatle and Pamplona. The strong resemblance of Amatle-Pamplona to Esperanza was hard to understand when it was believed that they were separated by the considerable stretch of time represented by the late Classic Period. The closing of this chronological gap removes that difficulty, but the break between Miraflores and Esperanza, discussed in the former report (KJS, p. 246), still remains unexplained. It must be remembered, however, that this unconformity is ceramic and that greater knowledge of other aspects of culture might result in a quite different grouping or, indeed, might indicate that the overall development had

been relatively uninterrupted. What little we know of Kaminaljuyu architecture illustrates these points, the greatest change coming not, as in pottery, at the beginning of Esperanza, but at some time during the life of that phase, when untterraced adobe substructures were superseded by terraced ones of tufa and clay with facings of pebbles and lime. As a matter of fact, this radical innovation appears to have been relatively short-lived, for perhaps before the end of Esperanza, and certainly by the beginning of Amatlé, adobe was again exclusively used. As to terracing we are ignorant.

I close with a correction which may or may not be of importance. The skeleton with pyrite-inlaid teeth that was informally interred during Esperanza times in the rubbish-filled excavation under the south edge of Mound B was stated to be that of a female (KJS, pp. 83, 217). Dr. T. Dale Stewart, however, has determined that the bones are those of a male. This being the only case of such dental ornamentation so far reported from the highlands of Guatemala, we surmised that the person so casually buried might have been a captive from some other area. If so, the sex of the individual might become a matter of some interest.

Did the Maya Have a Zero? The Meanings of Our Zero and the Maya "Zero" Symbols

Charles C. Fulton

Did the Maya have a zero? They had several symbols which have been translated by means of our zero, and the real question, naturally, is whether the translations are correct. Perhaps the answer might be either yes or no. Our symbol 0 represents several different concepts, according to the way it is used. The Maya also had at least two "zero" concepts, distinct if not entirely different, and represented by different symbols: these have both been translated "zero" or transliterated with our symbol 0. Spinden and other archaeologists have held that the Maya invented zero long before the Hindus, while at the same time saying that the Maya zero represents not "nothing" but completion.

To state my own view briefly at the outset, I believe our modern mathematical concepts of zero do embrace the Maya concepts; but I think that the most common idea of our zero is not at all equivalent to either "zero" of the Maya.

Ask anyone what our zero means, and he will probably answer that it means "nothing." This is indeed the pervading idea, and moreover a meaning that the symbol has had ever since its invention. Yet seldom does the symbol 0 or the word *zero* represent an absolute *nothingness*. Except in such cases as the formal contrast between *zero* and *infinity*, it is nearly always a very restricted kind of "nothing" or "no value" that is denoted by 0 or the word *zero*.

Our zero began about 1500 years ago as the representation of a mere blank space. It was just a meaningless cipher, used to hold the meaningful digits in their proper places, so as to represent the

whole number. Some people still think of zero in this way. In this sense it meant "nothing" or "no value" in a purely negative way; the symbol simply had no meaning at all by itself.

It was Stevinus who first held that in Arithmetic not unity, but zero, properly corresponds to the point in Geometry. From this has developed our most common modern concept of zero as the starting point of cardinal value. This is also a very restricted sort of "nothing"; just as a geometrical point has no dimensions but does have position. It should be noted carefully that this concept applies chiefly to our modern way of measuring continuous magnitudes. We do not begin with zero to number a file of soldiers; but we do begin with zero to measure lengths, times, and other quantities that we consider continuous or infinitely subdivisible. (Sometimes the zero is a purely conventional starting point of value, as for instance the 0 of the Fahrenheit thermometer.) This whole concept is fairly recent and I think it extremely unlikely that the Maya had any closely similar idea. This thought of zero as a *point* from which cardinal value takes its origin is, however, frequently read into the Maya symbols.

We have also a modern interpretation of the positional zero, no longer claiming that it means nothing at all as compared with the other digits. In the case of measurements, the symbol 0 may be a digit of measurement, representing the closest value for that place just as truly as any other digit does when so used. Some zeros may be used *merely* to fix the position of the decimal point and are not "significant";

the others are "significant figures" of measurement with the same status as any of the other digits. The Maya cannot have had this concept except we change from a cardinal to an ordinal point of view. This may be a good place to point out, however, that the Maya zeros were assuredly "significant." The Maya did not state any "round numbers" as approximations, but as dates to the exact day.

Our public also accept, though largely unconsciously, the concept of zero as a number of counting preceding one; that is, an ordinal zero. In such cases the 0 does not necessarily mean "nothing" in any sense. As a pure ordinal it indicates place solely, in the series 0, 1, 2, 3, etc.; but often some shade of the "nothing" meaning is subtly present, even when the usage is primarily ordinal. For example, in an examination a preliminary sample question, with answer given, may be numbered 0.

Modern mathematicians also use 0 (sometimes) as a cyclical ordinal. In this usage it may be substituted for the number of the cycle, or vice versa. When the count reaches the number of the cycle it simultaneously returns to zero again, and so on indefinitely. (This was explained, understandably I hope, in my recent "Elements of Maya Arithmetic," Note 85). There is here no essential connection with the idea of nothing, but if the cycle happens to be concerned with fluctuations of cardinal value, the cyclical zero may be taken to correspond with the zero of cardinal value. While it is of course true that in a cycle any element or point may be taken as a beginning, and likewise its repetition as an "end," one naturally as a general rule takes the cyclical zero as the cyclical 'turn' the end-and-beginning, the ordinal starting point or starting element which when repeated shows the completion or 'round' of one cycle of change.

Thus we have no less than six different concepts of zero in our own language, all distinct, and even, in extremes, quite different.

Let us now see what meanings attach to the Maya symbols translated by "zero," as nearly as the archaeologists have translated them for us.

Consider the "zero" day of the month, represented by the "spectacle glyph." It is *possible* to interpret this in terms of a zero signifying "nothing," "none," or "no," if we assume that the Maya were really counting nights, or that they were measuring the month in portions of duration from a zero starting point, and meant that no day had yet expired. (To me the latter idea seems far-fetched. For counting by nights in the Maya area see Thompson 1931, App. IV, quoting Herrera; Brinton 1885, "Annals of the Cakchiquels," quoting Sanchez y Leon; La Farge and Byers 1931, quoting the Ladinos.) J. Eric

S. Thompson thinks the "spectacle glyph" should be translated "the seating of." Why, anyhow, was it ever translated by our zero? Simply for this reason, and no other: that it designated the day preceding the day numbered one, with the same month name (cf. Bowditch). Thus the translation was in conception purely ordinal. Except that the other days carried numerals 1 to 19, I know of no evidence that the Maya thought of the 'spectacle glyph' as a numeral. If it is translated as a numeral, then logically and mathematically the numeral is 0; but the meaning is purely ordinal, and there is no connotation of "nothing" until we begin to interpret, as for instance by theorizing that the Maya counted only by "elapsed time" and meant that *no* day had *expired*. Perhaps it would be better not to use a numeral translation.

We have other evidence of the meaning. The same day could be designated either as the last day or completion of one month (using a different symbol from the "spectacle glyph") or as the beginning day or "the seating of" the next month. This designation of the same day as, in effect, either 20 or 0, even if the Maya did not actually intend their symbols to have a numerical value in either case, has all the aspects of cyclical counting. Certainly the Maya and their neighbors thought of time in terms of cycles, numerical cycles at that. The regular cycles of the months were, to be sure, interrupted each year by the five extra days. But these five days were considered entirely useless and probably were regarded as theoretically not part of the "true" or ideal year. The ideal year of 360 days has been a well-nigh worldwide idea, and is current even to the present time amongst the Hindus, whose "divine years," at least, have exactly 360 days, each day a year of mortals.

Let us now consider the positional zeros of the Long Count. Archaeological interpretation began with the showing that the Maya Long Count numbers, and other calendric numbers in the codices, could be translated into Hindu-Arabic numerals, and that like the latter the separate symbols (or groups of symbols in the Maya numbers) had position value, and included a "zero." It was most natural that this "zero" be interpreted in terms of the Hindu positional zero, that is, as the representation of a blank space, a symbol meaningless in itself, but giving meaning to the whole number by holding the other symbols in their proper places.

What then did the whole number mean? The Maya were counting completed days of duration as they expired, we are told. The Long Count is taken as the cardinal number of elapsed days from a zero starting point at some particular moment of the day 4 Ahau 8 Cumku. By this time another concept, based on *our* zero, has already wedged its way in,

zero as the starting point of cardinal value. Granting that this interpretation is possible, the question is, is it the true one?

May not another interpretation be more nearly correct? The cyclical counting in itself suggests an ordinal meaning for the "zero." The Maya were confirmed numerologists. When Katun 8 Ahau came again, the same powerful influences, the same god of the katun would rule as when Katun 8 Ahau had occurred previously. This idea in some degree applied to every day and to every number (see Colson 1926 for discussion of the Old World acceptance of our cycle of the week as a round of days ruled in turn by powerful influences.) The positional zero meant a return to some of the same influences that had ruled 4 Ahau 8 Cumku long ago, for whatever cycle the "zero" occurred in, whether of kins, uinals, tuns, or katuns. This is simply to say that the zero was a cyclical-ordinal; neither a cardinal "nothing" nor a blank in a cardinal number.

Outstanding archaeologists, authorities on the Maya, have insisted that the Maya zero represented completion rather than "nothing." I suggest we amend this to cyclical completion, which is the same as a new beginning.

If the counting begins at zero or its equivalent, then the round number dates are logically beginnings also. The date 9.0.0.0.0, for example, ought to be called the *beginning* of Baktun 9, especially if subsequent dates are said to be "in" Baktun 9, as is inconsistently done even at present when 9.0.0.0.0 is generally called the *end* of Baktun *nine*. That is, we should call the round number the beginning if we refer to a baktun as a period of duration at all. My own idea is that the Maya generally had reference to the round-number *dates*, katun *days*, etc., or to the *count* of a katun, etc.; not to a period of durational time. I doubt that they thought of their dates as being *in* baktuns or katuns. For that matter our own concept of centuries of duration is fairly modern.

How did the round-number dates, the days designated by zeros, come to be regarded as *ends* rather than beginnings? Spinden (1924) is especially emphatic about this, and in his case, at least, it almost seems that he has in mind that zero is not really a number. Thus he says, referring to the era of the Cakchiquels (*italics mine*):

"The count begins, as we have said, from a zero day, 11 Ah. The first *actual* day is, therefore, 12 Yix . . . The day Yix with numbers running from one to thirteen in a definite but peculiar sequence is the *initial* day of all the numerical positions or periods and the day Ah is *always last*."

In the case of the Maya it is possible to argue that the Zero Day 4 Ahau 8 Cumku is really the end of a preceding period; but how this argument can be applied to the era of the Cakchiquels escapes me. The quotation from Spinden clearly shows the sudden switch from a beginning zero day to a zero day which is "always last." Surely with our modern understanding of the number zero we would normally say that the zero day is the beginning day, and stick to it—whence it follows that the round-number dates are also beginning days. Cyclically, of course, the round-number dates and katun days can be *both* ends and beginnings; or *neither* ends *nor* beginnings, if regarded strictly as dates rather than parts of periods of duration.

To sum up: The translation of certain Maya symbols by our zero may be correct enough, provided we understand what concepts of zero properly apply. If we translate a symbol as "zero" because the meaning seems to fit one concept of our zero, we should be extremely wary lest we then apply some other meaning of our zero, which perhaps is not applicable to the Maya symbol at all. The Maya themselves probably did not read the "spectacle glyph" as a numeral. Its meaning is not too far from that of zero as an ordinal or a cyclical-ordinal; but if likely to be misunderstood, it would be better to translate with other words. As for the Maya positional zero, most archaeologists already hold that it is not identical with our zero. In my opinion it was primarily a cyclical-ordinal. If concepts derived from our zero intrude too much, it would be better to use some other symbol for it in transliterating Maya dates; for example, we might write 9.12.*.* instead of 9.12.0.0.0. Then the symbol could be taken to mean only what the evidence shows it to mean; or, at least, an explanation would not be encumbered with too many ideas derived from our own zero. It is very likely that too high a price is being paid for the convenience of translating by our familiar but too-little-understood word and symbol of many meanings.

WASHINGTON, D.C.

Jades from Guatemala

A. V. Kidder

In 1946 and 1947, A. L. Smith excavated two mounds at a large archaeological site in the outskirts of the town of Nebaj in the Department of El Quiche. The jades recovered are of much importance for the study of Mesoamerican ornaments of this material because of the fact that the age relative to each other of the tombs and caches in which they were found was determinable by stratigraphy; their cultural age, on the basis of the pottery they contained. Thus the jades, of which there were many fine carved specimens, can be assigned to three sequent periods: Early Classic, Late Classic, and the Postclassic horizon characterized by the presence of Tojil plumbate pottery.

Although large numbers of carved jades exist in collections, very few are accompanied by data as to age or provenience. Even fewer have been recovered in the course of controlled excavations. With the exception of the series from Monte Alban, not as yet fully published, that from Nebaj is the only one containing specimens to illustrate the types of jades in use at different periods over any considerable stretch of time.

Study of the Nebaj collection has resulted in recognition, among them, of certain categories of carved jades which, although they may be older, cannot be younger than the archaeological horizon in which they occurred. This in turn permits assigning minimum dates, in terms of cultural periods, to various pieces in museums and private collections as to which we had previously had no chronological information.

A number of the hitherto "floating," but now pretty certainly anchorable, jades are among those



91.1. Jades from Guatemala: (a) doubtful; length of c, 22 cm.

illustrated in the present Note. The cultural hook-ups of others are still uncertain. All are published, however, both because it is desirable that as much material as possible for the study of fades be made available and because the pieces shown in the first



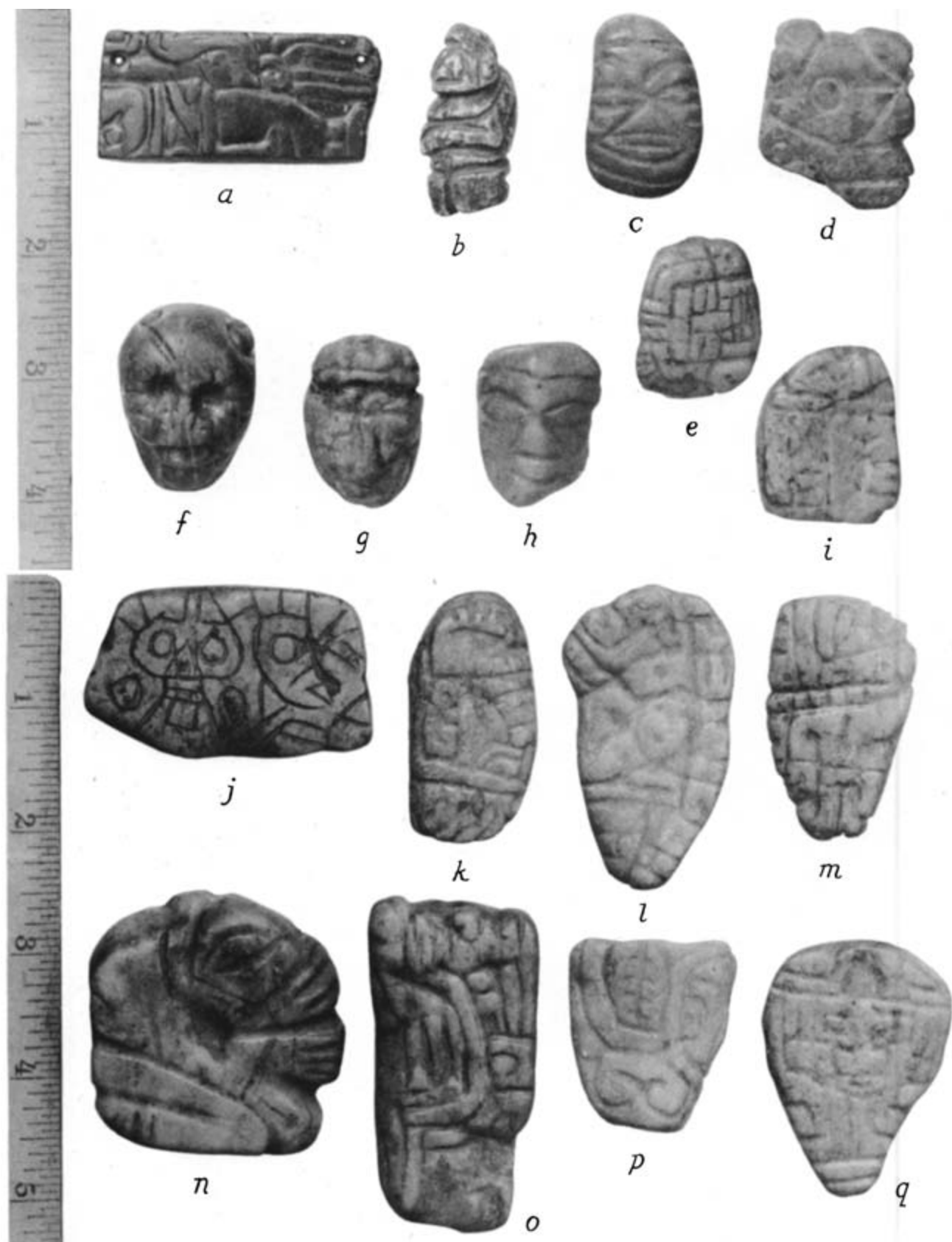
91.2. Jades from Guatemala: (a) Late Classic; (b–d) doubtful; height of *e*, 14.3 cm.

five figures, being in a private collection in England, are not otherwise likely to become accessible. Furthermore, Mr. Smith and I wish to use a considerable number of them for comparative purposes in a report, now in preparation, on the excavations at Nebaj.

The period assignments here made will, for the time, have to be taken on faith. Our reasons for making them will be given in the above-mentioned report. The pieces shown in Figures 91.1–91.5 were found many years ago at unspecified sites in the western highlands. Those in Figure 91.6 are in the



91.3. Jades from Guatemala: (a, h) doubtful, possibly of Mexican origin. (scale in inches.)



91.4. Jades from Guatemala: all but *a* and *n* doubtful. (scale as in Fig. 91.3.)



91.5. Jades from Guatemala: (a) Late Classic; (b–h) doubtful (b, e, h, and i are probably not jade; I have not seen any of these specimens); (i) Olmec (?) or perhaps Olmec-influenced; (j) Late Classic (?); (k) doubtful. (Scale as in Figs. 91.3 and 91.4.)



Museum of the American Indian, Heye Foundation, and are reproduced with the kind permission of Mr. George G. Heye. They are thought to have come from the vicinity of Mazatenango, on the Pacific slope in the Department of Suchitepequez. All of both lots are tentatively identified as Early Classic, except as noted below.

91.6. Jades from Guatemala: (h) doubtful; height of *b*, 11.2 cm; of *d*, 10.5 cm.

Certain Archaeological Specimens from Guatemala I

A. V. Kidder

Most of the objects treated in this Note were incidental finds or purchases made in the course of Carnegie Institution's field work. As such, they will not find a place in papers devoted to major excavations and surveys. The rest are in private collections which are unlikely ever to be published and always risk loss or dispersal. Some of the specimens are well documented. The exact provenience or the cultural affinity of others is doubtful, but among these are pieces that throw light on technological processes or provide well-preserved examples of types hitherto known only in fragmentary condition. It therefore seems worth while to put them also on record. Unless otherwise stated, all are now in the National Museum of Guatemala.

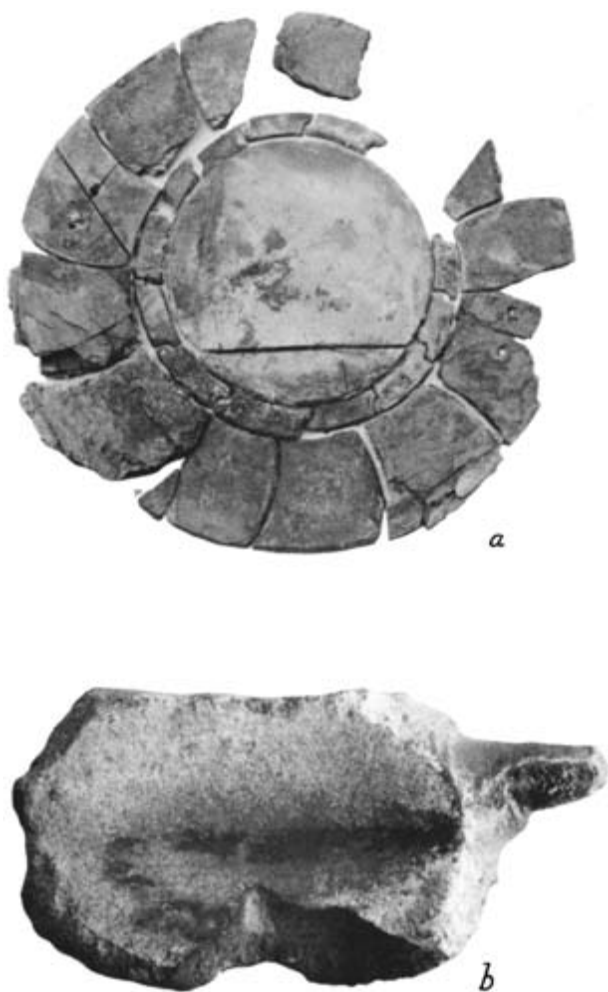
Pyrite-incrusted plaque. From an Esperanza Phase (i.e. Early Classic) tomb at Kaminaljuyu there was recovered, in 1928, a plaque whose back was coated with stucco and elaborately painted (Kidder, Jennings, and Shook 1946, Fig. 175a). Its decoration, remarkable both for an apparently unique method of application and for unmistakable Teotihuacan affinities, is described in the same publication (1946:130, 234). It was found lying face down and as it was obviously in shockingly rotted condition it was removed to the laboratory in a lump of earth cut from the tomb floor. The face thus remained hidden while the decoration of the back was being reproduced by Sr. Tejeda in watercolor. It was planned, indeed, to keep the specimen as excavated, in order to save the painted surface intact for museum display. But in

spite of the application of preservatives the underlying slate continued to crumble to such an extent that the decoration was destroyed. In 1948 it was therefore decided to remove the disintegrated backing and examine the face. This was done by carefully brushing, with the interesting result shown by the accompanying photograph (Fig. 92.1a).

The central element of the face proved to be a 12 cm slate disc 6 mm thick. This had been covered with a mosaic of polygonal plates of pyrite, which had become completely altered to a yellow crust. The small interlocking elements, probably 14, that surround the disc, and the petal-like outer elements, probably 12, were of stone, their curving edges accurately cut for close fit. They bore a thin yellow coat of altered pyrite, the remains of a layer of that mineral naturally deposited on the stone matrix.

A second plaque, likewise faced with a central disc surrounded by curving matrix-and-pyrite "petals," was found at Kaminaljuyu (Kidder, Jennings, and Shook 1946, Fig. 155h; the drawing of this plaque, Fig. 53d, is faulty in showing six rather than seven "petals" and in indicating that they were set with pyrite polygons). Still another from the same group of tombs has a central disc ringed with matrix-and-pyrite cutouts that may represent bird heads (Kidder, Jennings, and Shook 1947, Figs. 53b; 155i).

Matrix-and-pyrite was also used at Kaminaljuyu for the polygonal elements of the incrustation of a few plaques. More commonly, the Kaminaljuyu plaques were incrustated with polygons cut from pyrite crystals. Matrix-and-pyrite incrustation has been found



92.1. Archaeological specimens from Guatemala.

at Nebaj, Department of El Quiche, but there too it is less common than incrustation of pure pyrite. The two materials apparently were never mixed in the same area of incrustation, although they might be used, as in the case of the present specimen, on different parts of the same plaque. There is no record of the use of matrix-and-pyrite on plaques from lower Central America, nor on those from Alta Verapaz. It is reported, however, from Iguala, Guerrero, as polygons on plaques (Saville 1922:52) and there are single-piece plaques, also from Iguala, in the Museum of the American Indian; several single-piece examples in the National Museum of Mexico are from Michoacan. Ekholm (1945) describes a single-piece matrix-and-pyrite plaque with carved back. It is said to be from Queretaro. In the museum at Morelia, Michoacan, are several necklaces of neatly and variously shaped matrix and pyrite elements. Kelly (1947) found at Apatzingan, Michoacan, one-piece

matrix-and-pyrite plaques but, with the exception of a single pyrite polygon, no evidence of incrustation. She also recovered many matrix-and-pyrite elements that evidently had been combined with elements of shell to form necklaces or ornamental bands. Their cutting was accurately done, in some cases in such a way that the pieces interlocked. This of course suggests the close fitting of the "petals" and the interlocking of the inner ring of the Kaminaljuyu specimens. The Apatzingan material is of the Delicias Phase, believed by Kelly probably to equate chronologically with Teotihuacan III. In view of these more abundant northern finds, and because of the undoubtedly Teotihuacan III style of the Kaminaljuyu plaque's painted back, it is possible that all the Guatemala specimens on which matrix-and-pyrite was used were importations from Mexico.

Tool for reaming earplug flares (Fig. 92.1b), a surface find by A. L. Smith at Chalchitan, a large mound group near the town of Aguacatan, Huehuetenango. It is a lump of fine-grained but gritty sandstone, 14.5 cm long. One end has been worked to a point, round in section at the base and showing long wear. It is of exactly the proper size and shape for reaming out the face and throat of a jade earplug flare. The originally rough edges of the rest of the specimen are softened and smoothed by protracted use. The side that appears in the photograph bears a shallow longitudinal trough, doubtless used as an abrading surface, probably for the preliminary shaping of jade objects. A very similar specimen is from an Esperanza Phase mound at Kaminaljuyu (Kidder, Jennings, and Shook 1946, Fig. 154a). The length of occupancy of Chalchitan is uncertain. Sherds collected there by Smith indicate that it was in existence during Early Classic times; Postclassic Tojil plumbate ware is also present, but the site had certainly been abandoned well before the conquest, for no protohistoric pottery types occur.

Cache of small ornaments (Fig. 92.2c-o; all specimens in this figure natural size). Found lying together in a hole anciently cut through an adobe floor beneath a small mound immediately south of Mound B, Kaminaljuyu. They came to light during grading operations in connection with the building of the Franklin Delano Roosevelt Hospital. Their age is uncertain but I believe them to date from the Amatlé-Pamplona Phase (i.e. Late Classic). In both material and form they are unlike anything from the Esperanza Phase (i.e. Early Classic) tombs of Mounds A and B. Notes: Figure 92.2m: Dark red stone, salient parts of front and whole back highly polished; conical hole on right of forehead slants inward to meet second

similar hole drilled straight in from back; left side probably treated in same way, but edge broken off a considerable time before specimen was buried, as fractured surface shows much wear. Pairs of biconical holes through chin. Fig. 92.2n: Same stone, same sort of perforations. Fig. 92.2o: Dark green stone (not jade), low polish; biconical holes, Fig. 92.2c, e, f, i, l. Same red stone as Fig. 92.2m; well-polished, cylindrical perforations; three other specimens like Fig. 92.2f not figured. Fig. 92.2g, h, j, k: Deep black stone, high polish, cylindrical perforations; two other specimens like Fig. 92.2m, n; Fig. 92.2k, broken edge much worn, as in m. Private collection.

Pendant (Fig. 92.2a). Dark gray stone, highly polished, biconical suspension hole drilled from front; surface find, Kaminaljuyu. Private collection.

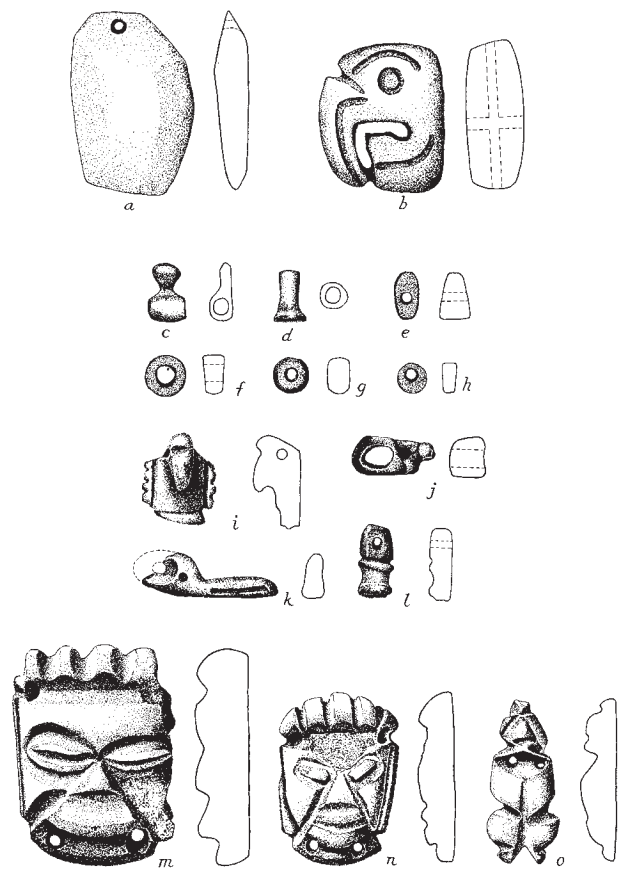
Parrot (?) head (Fig. 92.2b). Gray-green jade, well polished; both sides bear same carving; cylindrical perforation in long axis passes through mouth-cut; latter a good example of string-sawing, started from cylindrically drilled hole at back of cut. Said to be from Kaminaljuyu. Private collection.

Small bird head from La Brigada, Department of Guatemala (Fig. 92.5b). Surface find. Dark red stone similar to that of some of the small objects shown in Figure 92.2. Eyes and nostrils made with conical drill, biconical perforation. Length 3 cm.

Stone human heads (Fig. 92.8j, k). Purchased at Rabinal, Baja Verapaz. Light green crystalline stone, gray patina. Larger head (Fig. 92.8j) a complete object, i.e., not broken from a figurine. On either side of back at eye level a pair of conical drillings that meet at right angles to provide attachments for suspension string. The smaller head also probably a complete object, but has no attachment holes. Both in material and in rendering of faces, these specimens are unique. Length of j, 13.5 cm.

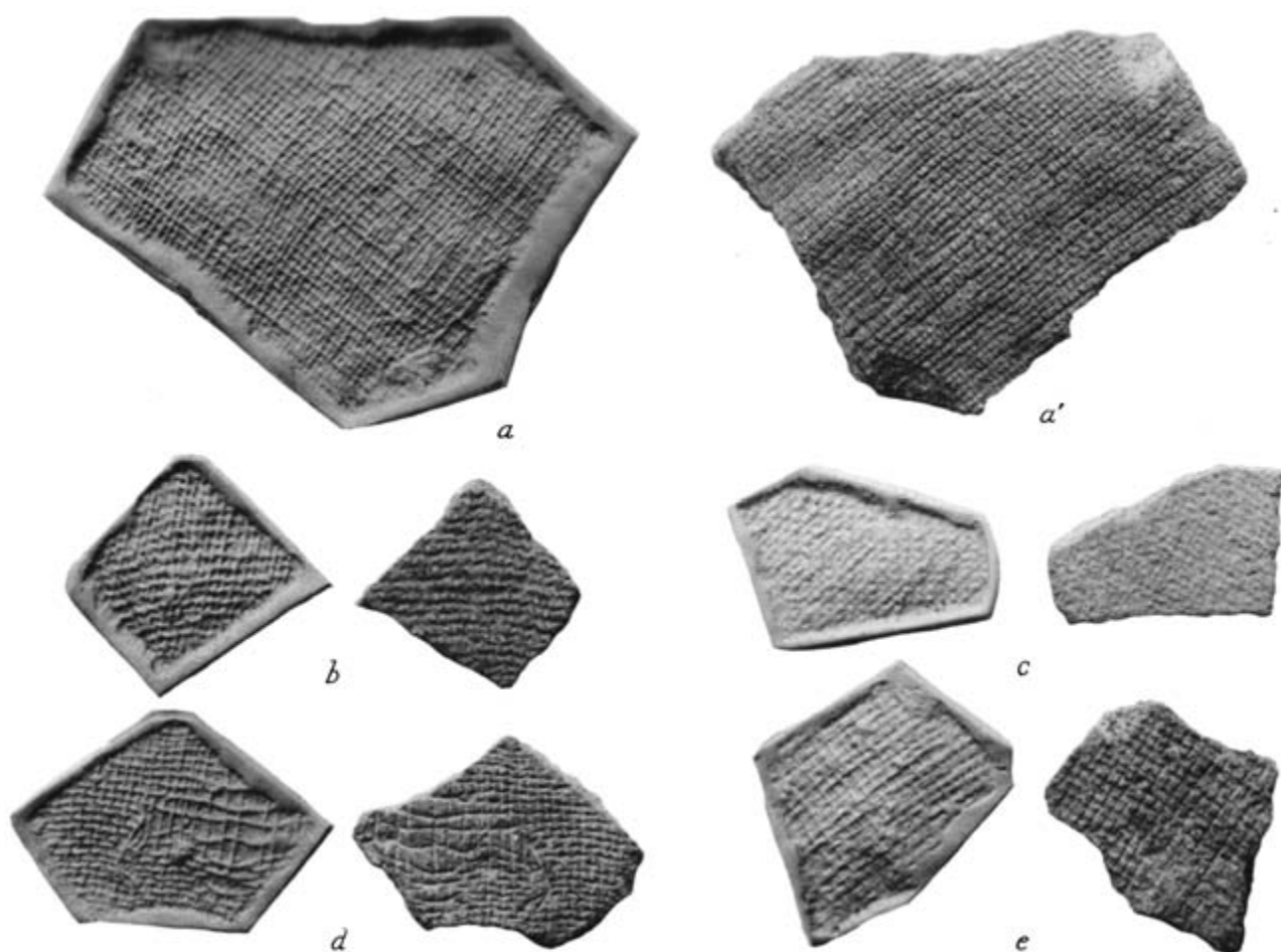
Textile-marked sherds. The specimens described below add to our unfortunately very scanty knowledge of ancient Mesoamerican weaving. Certain of them also indicate a peculiar use of textiles in pottery making that has, I believe, not previously been noted.

1. Finca Variedades, near Guatalon, Suchitepequez, collected by E. M. Shook at a site with much broken pottery and fragments of manos and metates, but no mounds. Six sherds (five shown in Fig. 92.3, scale about X 1.5; plasticine casts to the left). All are from flat, unslipped utensils, presumably comales



92.2. Archaeological specimens from Guatemala.

(tortilla griddles) of reddish brown clay sparsely sprinkled with tiny flecks of yellow mica. One side of each is evenly smoothed, the textile-marked surface slightly undulating (Fig. 92.3a). I think this was probably due to a cloth having been spread on imperfectly smoothed ground and the clay pressed down on it. In Salvador, comales are made today in shallow, dish-shaped hollows scooped into hard earth, a dusting of wood ashes serving to keep the clay from sticking. The only rim sherd (Fig. 92.5a; textile print on lower surface; specimen not photographed because print indistinct) indicates a diameter of about 50 cm. All but one of the textiles were of plain weave. The clearest print (Fig. 92.3e) is of a piece of "open" fabric, i.e. one with relatively large spaces between both warps and wefts. The yarns, about 0.3 mm in diameter, were evidently hard, as they have left deep, sharp impressions. There was none of the crepiness noted by Dr. O'Neale in textile prints from Kaminaljuyu (Kidder, Jennings, and Shook 1946:98; see also Fig. 170a, b, which shows similar crepy fabrics from Peru). The yarn count is 8 or 9 per square cm each way, the interspaces about 1

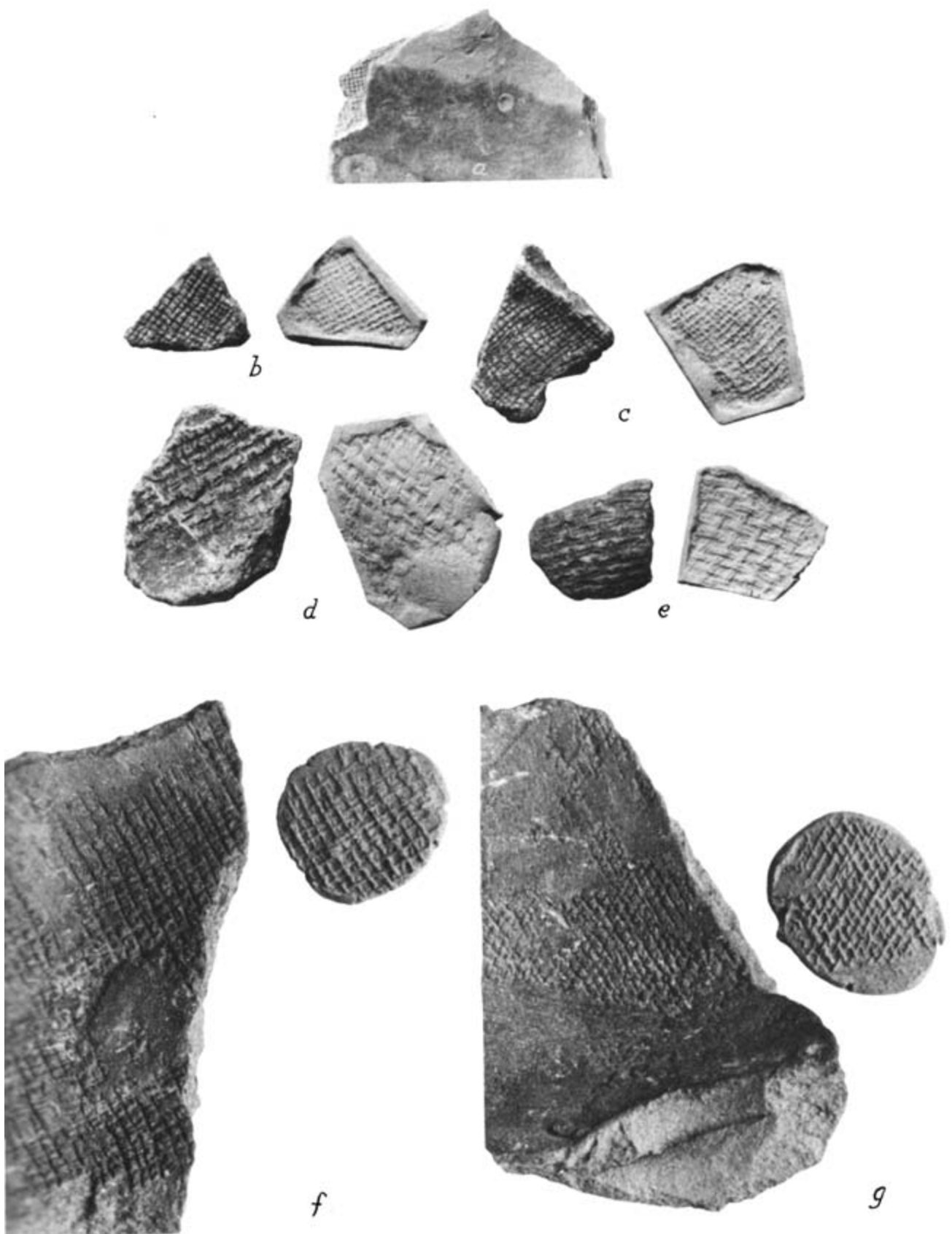


92.3. Archaeological specimens from Guatemala.

mm square. Another print is similar (Fig. 92.3b; yarn count 7 by 7, threads somewhat softer and heavier). A third (Fig. 92.3.1) is more open, the interspaces about 1.5 mm square. It is the one, just mentioned, in which there is a variation in the weave. Most of the fabric is plain, but at the right the wefts pass alternately over and under a single pair of warps. If this, as seems probable, was done at regular intervals throughout the piece a striped effect would have been produced. In two other sherds (Fig. 92.3c, e) the wefts are double; each consisting of two yarns laid in side by side. The weave of c is close. The count is again about 7 by 7, but both warps and wefts were softer and "fatter" and have left no interspaces. At the middle of e, single warps apparently alternate with the doubles for a space of four or five picks. If, as seems probable, the singles were of contrasting color, striping would again have resulted.

2. Zaculeu, Huehuetenango. Four sherds (Fig. 92.4b-e, scale about X 1.3; casts to the right). These

are from a small, low mound south of the narrow, deep little valley that forms the southern boundary of the main Zaculeu site. A. L. Smith excavated the mound in 1945, recovering some 2,000 fragments of small moldmade and larger hand-modeled human figurines, the latter with moldmade heads. All are much weathered, as if they had lain long on the surface before being buried. The same is true of the four textile-marked and a few other sherds, among which are two of Tojil plumbate, indicating that the mound was erected in Postclassic times. The textile-marked pieces are of dark brown, unslipped ware without mica flecks. The textile prints are on the concave surface of three of the pieces; the fourth bears the print of the same sort of textile on both sides (Fig. 92.4e, convex surface shown): None has a finished edge. Whether they are parts of small jars or of the larger type of figurine is uncertain. The textile used on two of them (Fig. 92.4b, c) was a plain open weave of hard yarns, their impressions, like those of all but



92.4. Archaeological specimens from Guatemala.

one of the Finca Variedades specimens, being clear and sharp. The count is 11 by 11, the yarns a little less than 0.5 mm in diameter, the interspaces slightly over 1 mm. Another piece (Fig. 92.4d) shows double warps and triple wefts, the yarns in each case laid side by side. They were thicker and softer than the open-weave yarns. The count is 5 by 5. The sherd at a shows double warps and wefts in a more open weave, 4 warps and 6 wefts.

3. Cahyup and Chuitinamit near Rabinal, Baja Verapaz, are Late Postclassic sites at which A. L. Smith collected sherds in 1947 (Smith, 1947:184). Among them are a number of pieces from the lower parts of coarse black jars, each bearing textile impressions on the concave inner surface (Fig. 92.4a, f, g, a from Chuitinamit, f, g, from Cahyup; scale about X 1.6). The cloth was a plain open weave of hard single strands, the count about 10 by 10. What purpose the textile served in the making of the lower part of these vessels, is a mystery. It seems either to have covered a convex mold or a rounded anvil such as was used in the paddle-and-anvil method of pottery making, but in the latter case one would expect to find the impressions crisscrossing over each other, whereas on all but one sherd they are sharp and clear, as in 92.4a and 92.4g. Only in Fig. 92.4f is what appears to be a double impression and this looks to have resulted from the use of two layers of textile, rather than from two applications of an anvil. A mold seems indicated, but why cover it with cloth? Only the lower half of the vessel was treated in this way, the upper half having been built up in normal fashion (see Fig. 92.5d, drawn from Fig. 92.4e, which is inverted in the photograph, the lower part showing the thickening caused by the overlapping of the prepared base, drawn in black in Fig. 92.5l by the lower edge of the pot's upper wall). During the building of the upper wall, or perhaps in removing the presumably moldmade base from the mold, the textile impressions were in places obliterated (see Fig. 92.4f, g). And in the sherd at a the entire interior of the pot's lower body was covered with a 4 mm layer of clay, which has split off at the edges showing the underlying textile impression.

Pottery from El Cerrito, Department of Santa Rosa. Four purchased vessels, said by a reliable person to have been found by himself lying together in one of the several mounds in the town, which is some 25 km southeast of Chiquimulilla. The jade illustrated in Figure 92.8h is stated to have been with the vessels.

1. Pseudo-gadrooned vessel (Fig. 92.6a) black, exterior well polished, prepolish groove-incised

lines producing gadrooned effect run to edge of slightly recurved base. Height 14.5 cm.

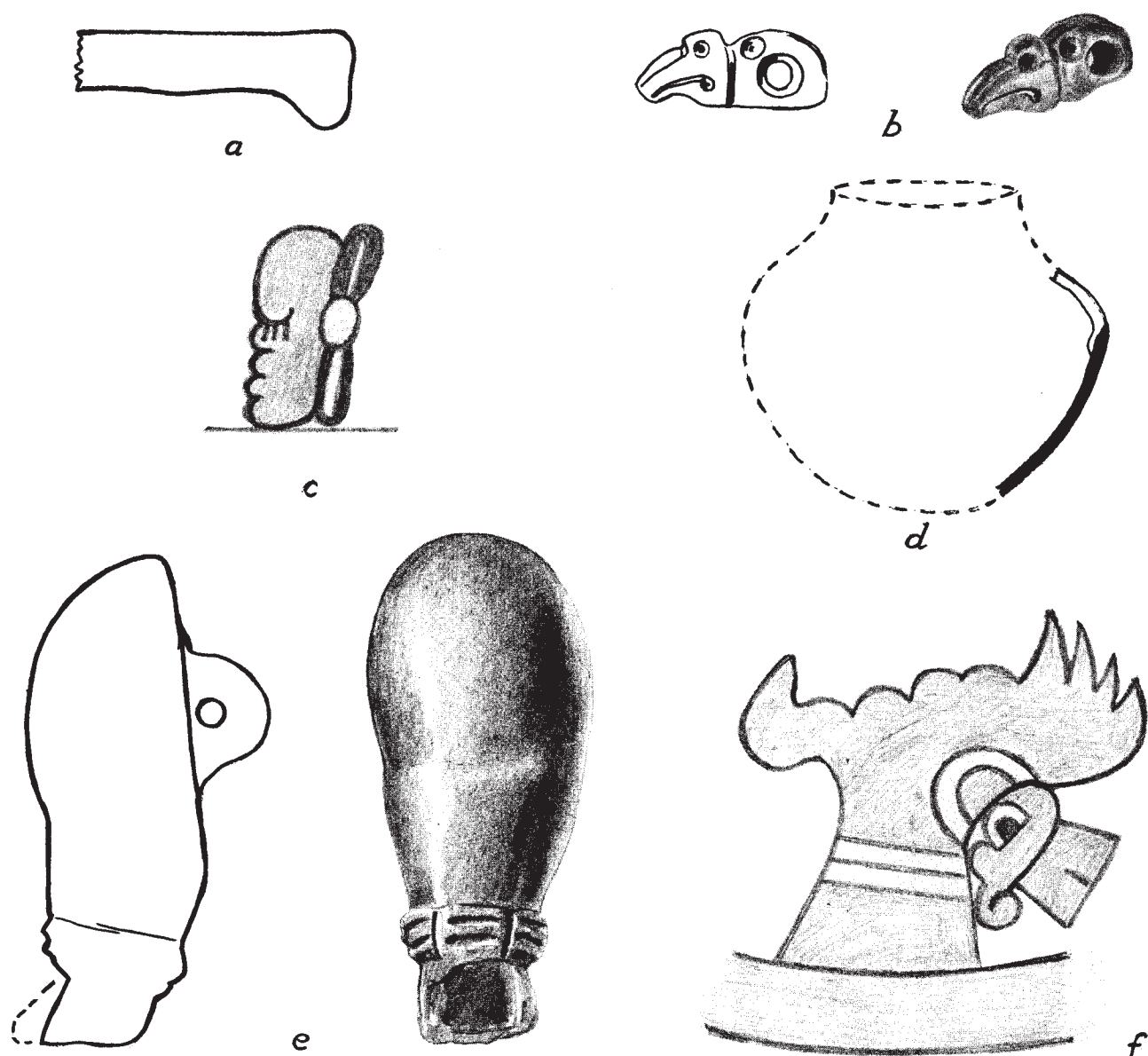
2. Lobed vessel (Fig. 92.6b). Brownish-clouded black, exterior indifferently polished, four evenly spaced vertical prepolish groove-incised lines and similar lines about "waists" between two upper lobes. False bottom, its edge forming low ring-stand, contains several pebble (?) rattles; four round 5 mm vents in wall of false bottom, single 4 mm round vent in middle of bottom. Height 19.5 cm.

3. Monkey (?) pitcher, front and side views (Fig. 92.6c). Dark brown, poorly finished, marks of polishing stone obvious; arms, sex organs, bosses on neck are smoothed-down fillets and lumps; base rounded; handle cylindrical in section.

4. Polychrome cylinder (Fig. 92.6d). Originally well-finished surface badly eroded. Plano-relief braided design in two opposed panels, the relief painted black. Painted decoration in red, orange, and black on yellowish slip; almost obliterated but appears to have consisted of three human figures on one side, four on the other. Encircling vessel just below rim and just above base are close-set, conventional human faces (Fig. 92.5c). Upper 14 cm of interior also decorated with repeated units, nature uncertain. About edge of slightly recurved bottom a series of interlocking "lazy" S's. Height 23 cm, diameter of base 17 cm.

In spite of its bad condition, this vessel has been described at length because it is the only specimen of its sort which, as far as I know, has come to light in Guatemala. It is of the Honduran Ulua-Yojoa type (cf. Strong, Kidder, and Paul, 1938, Pl. 8). The monkey (?) pitcher also has eastern affinities, there being similarly shaped examples, likewise phallic, from Asuncion Mita, Department of Jutiapa, and from western Salvador. It would appear that southeastern Guatemala, about whose archaeology almost nothing is known, formed part of a ceramic area embracing the Ulua-Yojoa country and western Salvador, the latter region also producing polychromes of Ulua-Yojoa type.

Effigy vessel (Fig. 92.6e). Purchased in Guatemala City, said to have come from Department of El Quiché; E. M. Shook believes, however, that it may be from Salcaja, Department of Quetzaltenango (personal information). It seems surely to be of Archaic (Middle Culture) date, because of its double-punch eyes and its soft, brownish black, well-polished ware, much like Miraflores brown-black. Strong, Kidder, and Paul (1938, Pl. 15a) illustrate a spouted effigy of almost identical form, but without incising, from an early (Playa de los Muertos Bichrome) horizon at Lake Yojoa, Honduras. The incising and



92.5. Archaeological specimens from Guatemala.

punctuation of the present specimen is prepolish. Total length 20.5 cm.

Moldmade adornos from Kaminaljuyu (Fig. 92.6f-h). These are of interest because of the rarity of Middle American examples of casting from vegetal forms. The specimens are fragments of large, ornate incense burners of coarse reddish brown ware, unslipped, but bearing traces of thin white paint. All three are from Amatlé-Pamplona, i.e. Late Classic, deposits: 92.6f, a nubbly fruit or vegetable, and 92.6h, are from a stratum overlying the Esperanza Phase, i.e. Early Classic, frontal platform of Mound A; from near Mound E-III-3, in a deposit containing

many fragments of incense burners and large, hollow clay figurines. Length of vegetable in f, 6 cm, of ear of maize in g, 8 cm, of part of ear in h, 6 cm. The broken edge of the latter shows it to have been cast separately and welded to the vessel, as doubtless were the other two.

Hollow figurine from Kaminaljuyu (Fig. 92.7a). Purchased at the site. The vendor said that her husband, hearing the rattling of what, from the size of the vent, must have been a large pellet, now lost, broke off the head in search of treasure. The figurine is of coarse brown ware, covered by highly polished



92.6. Archaeological specimens from Guatemala.

red slip 1 mm thick, now largely flaked off. There are traces of a string of oval beads that had once extended around the front of the neck from earplug to earplug. Height 38.5 cm. This is without question a Miraflores, i.e. Archaic, figurine, the double-groove-and-central-punch eye and the thick, polished red slip being characteristic of that phase. Few Miraflores figurines, however, are hollow and complete

specimens are very rare, I have, indeed, wondered about the fragmentary and battered condition of most figurines from Archaic sites in Guatemala and elsewhere. Could it be that, like the Hopi kachinas, they had brief service in ceremonies and were then given to the children as playthings?

Figurine leg from Kaminaljuyu (Fig. 92.5e). Found by E. M. Shook in a Miraflores deposit ex-



a



a'



a''



b



b'

92.7. Archaeological specimens from Guatemala.



92.8. Archaeological specimens from Guatemala.

posed in a road-cut. Typical yellowish white, finely finished Miraflores ware. It offers the first evidence that jointed figurines were made by Archaic people, the only other examples hitherto known being those from Teotihuacan, which are of Early Classic (Teotihuacan II or III) date. The latter specimens differ from this in that the tops of the legs were perforated and a string was run through them and through a transverse hole in the pointed lower part of the body. In the present case, it would seem that each leg must have been separately attached, its perforated boss having fitted into a cup in the edge of a flattish body that was perforated front-to-back. Length 7.5 cm.

Pottery mold (Fig. 92.7b; at right a plaster cast from same). Believed to be from Alta Verapaz. Lower arms and hands evidently meant to be added after casting. Height 25 cm. Mold in private collection, Guatemala; cast in Peabody Museum, Harvard.

Polychrome jar (Fig. 92.8i). Purchased in Guatemala City, provenience unknown. Neck red, body slip cream with decoration in black-bordered red, six bird (?) heads (Fig. 92.5f) on upper body, six N-shaped figures on lower body. Strap-handles, width

2.5 cm. Base recurved. Height 20 cm. I believe this to be a protohistoric or early colonial piece. Polychrome, two-handled jars with red necks were found at Zacualpa by Wauchope (1948, Figs. 73, 74), who assigns them to the late Yaqui Phase; they contained cremations. Said to be from Zacualpa is a similar jar (Lothrop 1933, Fig. 30); and there is one from Chuitinamit, Atitlan, the 16th-century Zutugil capital (Lothrop 1936, Fig. 59k). There is, incidentally, the greatest need of information as to conquest and early colonial wares, to serve as a datum from which to work backward. Private collection.

Small carvings from western highlands (Fig. 92.8a–g). Exact provenience unknown. Most of these specimens, which I have not seen, are apparently of jade; c appears to be of black stone. Height of b, 5 cm. Private collection in England. Other pieces in the same collection are illustrated in Note 91.

Jade from El Cerrito, Department of Santa Rosa (Fig. 92.8h). Said to have been found with the pottery vessels shown in Figure 92.6a–d. Very fine, deep green jade, high polish front and back, transverse bi-conical perforation at eye level. Height 6.7 cm. Private collection.

Some New Discoveries at Coba

William R. Coe and Michael D. Coe

In December 1948, we made a trip to Coba for the purpose of photographing the ruins. Starting from Valladolid, we went to Chemax, thence on mule back to Tsinup, approximately 12 km beyond. About halfway between Chemax and Tsinup we observed, across a milpa to the right of the trail, some rather large and well-preserved buildings, which appeared to be on an acropolis. Leaving Tsinup at six o'clock in the morning, we traveled the 20 km to Coba over a very bad trail in about seven hours, and made camp on the shore of Lake Macanxoc.

The destination of Sacbe No. 15 has been the source of some speculation. J. Eric Thompson thought that it might run to Ixil (Thompson, Pollock, and Charlot, 1932:27). Sidman P. Poole states, on the authority of a guide, that it probably continues all the way to Guatemala (*Geog. Jour.*, 95:124). Actually, after starting out between Lakes Coba and Macanxoc at an angle of 199° (all compass directions are read from N. to E), it crosses Sacbe No. 16 and terminates at a group of ruins approximately 3.5 km from the intersection. It is perfectly straight throughout, and is in excellent condition. The group at the terminus we named "Uxulil Be," or "end of the road" (Fig. 93.2). Two new sacbes were found branching out from No. 15. The first, Sacbe No. 17, leaves No. 15 about 1 km south of the intersection of Nos. 15 and 16 in a direction of 120°. It continues for 107 m and ends at a small group of ruins which we named "Pech Mul," meaning "tick mound." The second sacbe, No. 18, branches out in the opposite direction about 2 km south of the main intersection, and con-

tinues on a course of 300° to an unknown destination. Along Sacbe No. 15 were observed many small mounds in very bad condition, but their exact location was not noted.

Uxulil Be (Fig. 93.3) consists of a large structure and some smaller mounds lying on a raised rectangular terrace of considerable size. The main building, Structure I; is oriented to 19°. It rises in a series of three terraces, the stairways to each being aligned with the terminus of Sacbe No. 15. Flanking mounds extend from Terraces C and D. The three mounds on the highest terrace, D, are in complete ruin and are so low that the only type of construction possible would have been base-walls with thatch roofs. The masonry of each terrace facing is of a rather good quality for Coba (Fig. 93.1a). The total elevation of Structure I is 15.2 m. Two mounds are placed on either side of the main terrace, A, near its northern end, and a tiny square mound sits on the northwestern corner.

Pech Mul lies on a terrace of two heights (Fig. 93.4a, b), of which only A was mapped, as there are no ruins on the lower terrace. Structure I, oriented to 3000, is a small pyramid with a single stairway (Fig. 93.1b). The stairway is badly ruined, but, from the few steps still in place, was evidently much wider at the bottom than at the top. On the summit of Structure I is a large and very curious room, with only the walls standing. Its dimensions suggest that it was once divided into smaller rooms, but only two interior mounds (Fig. 93.4a, b) remain, differing considerably in length. If these were the dividing walls,

*a**b**c**d*

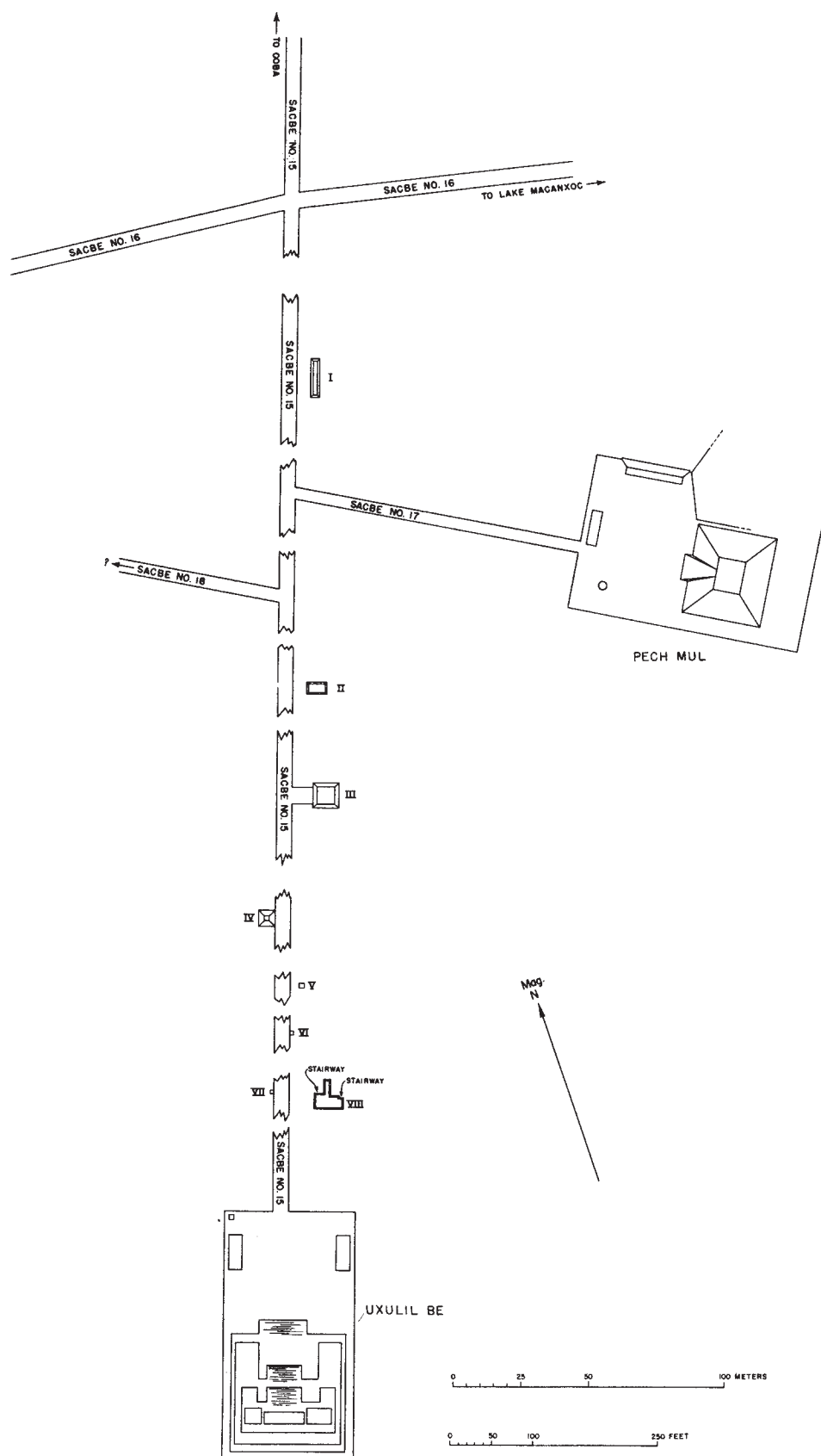
93.1. Coba: (a) Uxulil Be, facing of Terrace B on left of Stairway 1; (b) Pech Mul, northern corner of Structure I, stairway on right of photograph; (c) Pech Mul, northeast wall of room on summit of Structure I, showing spring line and Mound A (at right); (d) Pech Mul, small altar or shrine on summit of Structure I.

the rooms were highly asymmetrical. The absence of fallen stone between these mounds and the front and back walls implies that no vaults had existed. Nevertheless, a spring line was found about 2.1 m high on the northeastern wall, formed by a row of slabs (Fig. 93.1c). Possibly there had been a beam-and-mortar roof supported by a small corbel. At the back wall is a low bench (Fig. 93.4d), its extent undetermined because no excavations were made. At the front of the room, just behind the doorway, is a small, square, masonry structure with a lower projection (Fig. 93.1d), probably a shrine or an altar, indicated by the presence, at the top, of flat stones caved in at the center. Structures II and III on Terrace A are ruined mounds. The purpose of Structure IV, a circular ring of masonry about 0.3 m high, is unknown.

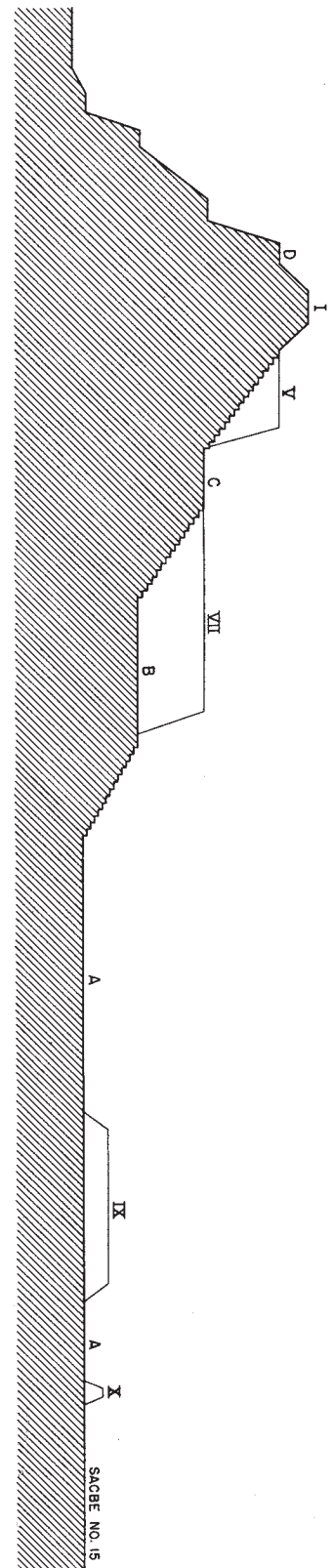
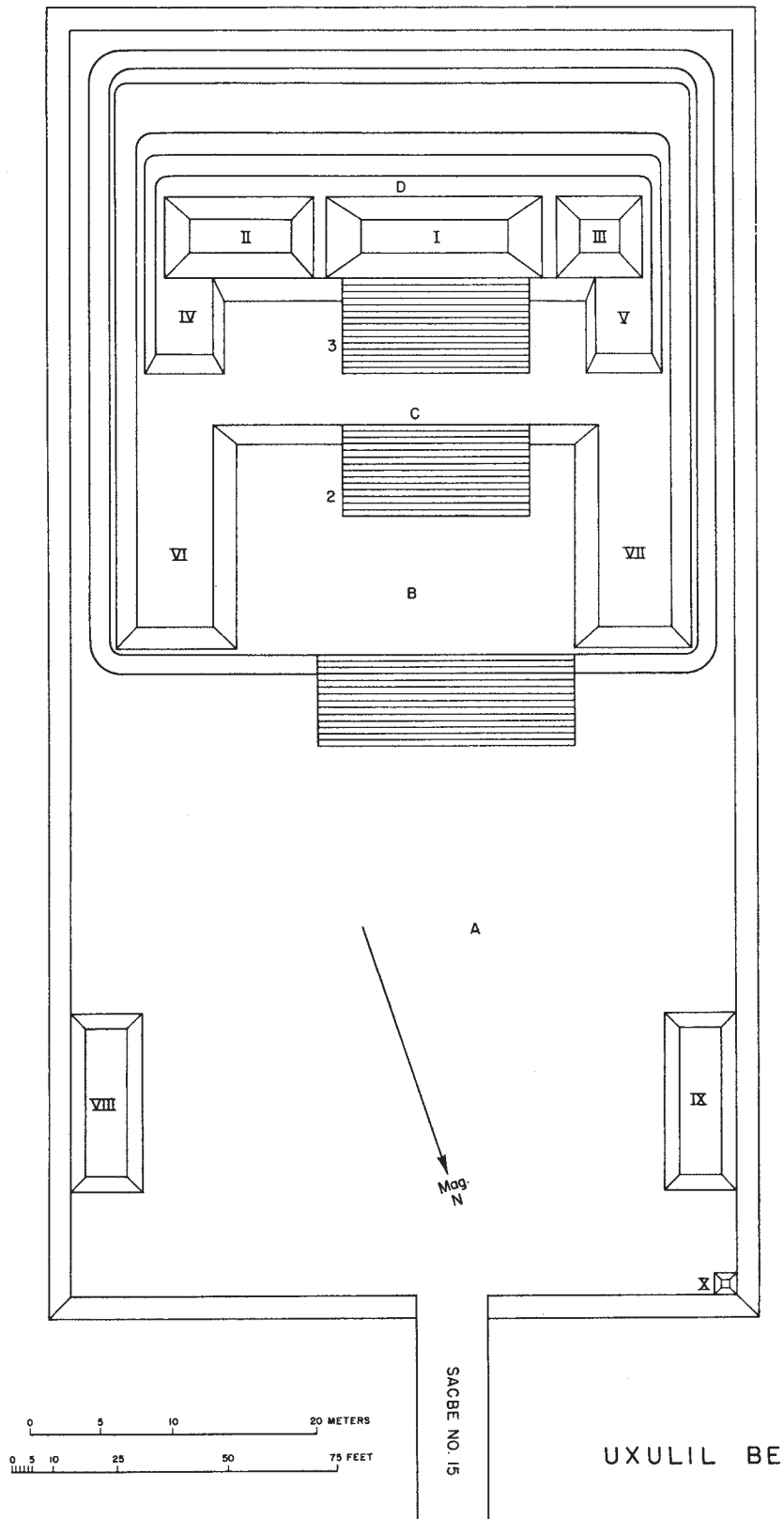
Another new *sacbe*, No. 19, was found at Nahoch Mul but not followed. It starts off in a northeasterly

direction from a group of mounds situated about 12 m from the northeast corner of Structure I.

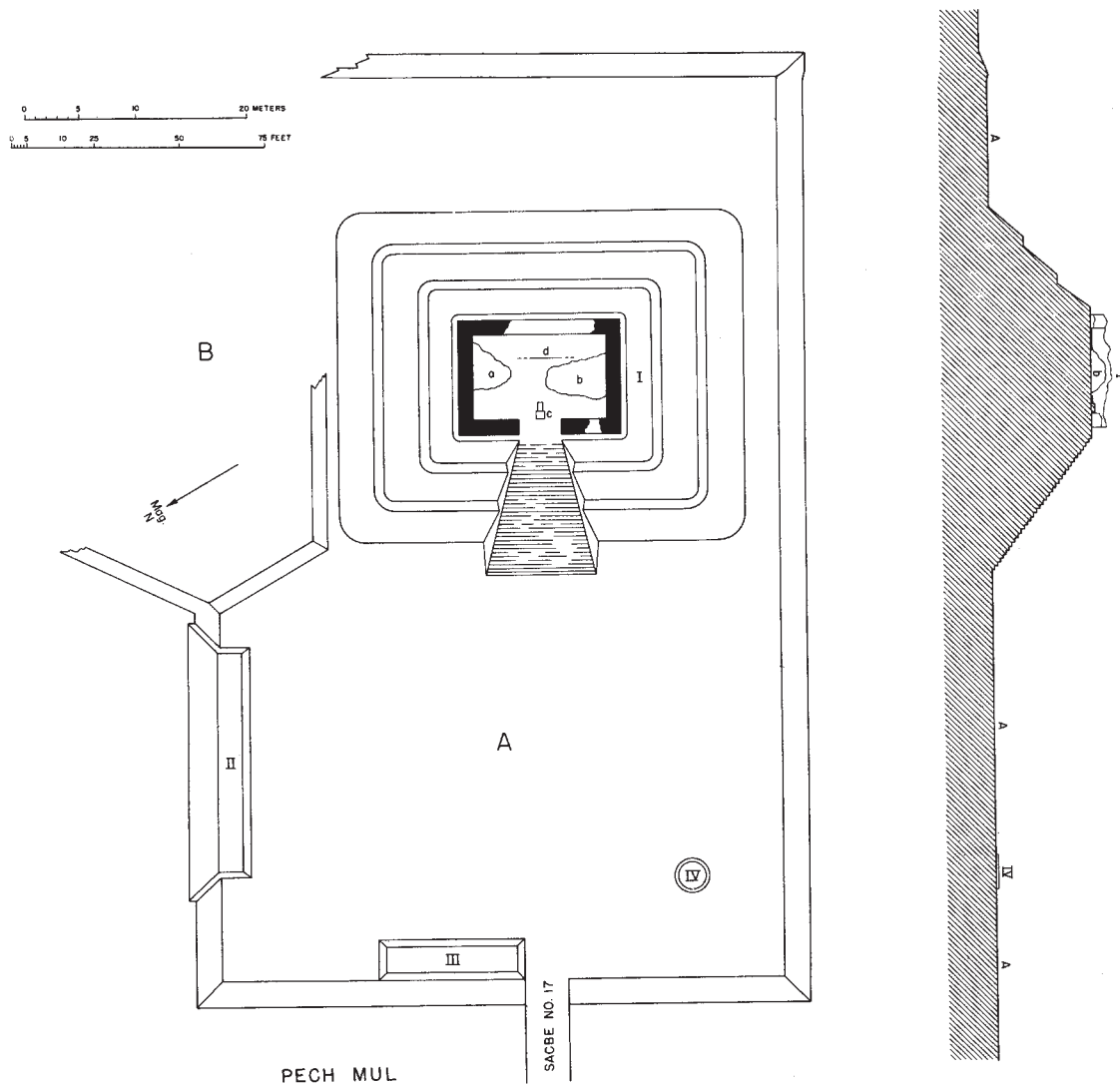
An interesting change of name was noted from the information of our Indian guide. The southeastern most lake at Coba is named "Sacakal" on the Carnegie Institution map of the site. The guide, who has hunted all his life around Coba, said that its real name is "Sacal Puc." Sacakal, "reed-covered swampy depression," is a purely descriptive name; Sacal Puc is the name of the greatest of the Maya lineage gods; he was one of the first four Mexican conquerors of Yucatan and founded many settlements in the eastern part of the peninsula. Scholes and Roys (1938:609), in speaking of Sacal Puc, say, "Indeed, he still figures in the Maya prayers of modern *yerbateros* as the first man to offer *posole* to the Chacs." There is a thorough discussion of Sacal Puc in Tozzer (1941:9, 34).



93.2. Location of the sacbés.



93.3. Plan and elevation of Uxulil Be.



93.4. Plan and elevation of Pech Mul.

Measurements in this paper are approximate; orientations were obtained with a simple but reliable pocket compass.

GLEN COVE, N.Y.
CAMBRIDGE, MASS.

November 21, 1949
Editor's Note

I wish to call attention to the fact that the greater part of the material in Note 93, "Some New Discoveries at Coba," had been recorded previously by E. Wyllys Andrews (1938), who visited those outlying groups in 1937 and subsequently published his observations.

For the authors, young students at the time little acquainted with the Maya area, ignorance of Andrews' paper, published in a foreign journal, is understandable; on myself, as editor of the "Notes," must fall the full blame for the mistake. I have no excuses to offer; I tender my apologies to Dr. Andrews for my negligence. Not Jove, but a Ganymede, no competitor of Juno, nodded.

Note 93, however, serves to supplement Andrews' paper, for it gives fuller details of the plaza at which Sacbe 17 terminates, and establishes that the sacbe ends against the center of the plaza, not on the south edge (at the time of Andrews' visit the plaza was deep in *guamil*). Moreover, to the Brothers Coe are due the discoveries of Sacbes 18 and 19.

J. ERIC S. THOMPSON

Tlaloc Incensarios in the Baratta Collection, El Salvador

Stanley H. Boggs

The collection of prehistoric pottery vessels owned by Prof. Augusto and Doña Maria Baratta of San Salvador, El Salvador, includes many fine specimens, most of which, unfortunately, are of unknown provenience. The five incensarios with which this paper deals were purchased by Doña Maria in 1944 from a workman who stated that they had been discovered on the Hacienda Chanmico, property of Don Alfonso Quiñonez. This farm lies immediately south of the Hacienda Sitio del Niño and is geographically at least within the San Andres Archaeological Zone, in sight of the mounds forming the Sitio del Niño group of that zone. However, no ancient structures have been reported on the Hacienda Chanmico itself.

The Baratta incensarios are reported to have been uncovered a short distance below the surface of fairly flat land, placed to mark the four corners of a square oriented to the cardinal points, with one vessel at each corner and the fifth in the center. An urn containing human bones is said to have appeared a short distance under the central incensario but this was not available for examination.

How much of this arrangement may be accepted as fact is impossible to prove since similar finds are so far unknown. Furthermore, in El Salvador at least, sales of ancient objects are almost invariably accompanied by what the seller considers a good story in order to endow his merchandise with greater value. Such stories are infrequently true, occasionally amusing, and generally fantastic.

SPECIMENS

The five vessels are so similar, one to the other, that all will be described together as to fundamental features.

Form: Essentially hourglass shape. Decorative details, applied exclusively to bands around the top, bottom, and one side of the exterior, do not basically affect this form. The interior of four examples (Vessels 1, 2, 3, and 5) show division into an upper (or container) vase portion, and a lower, very high annular-base support. Bottoms of the container sections are flat and were formed in two distinct ways: (1) true bottom, shaped by clay added to and thinned inward from the side walls, one small round hole was punctured in the center of this bottom; (2) removable bottom, consisting of a disc-shaped, re-used sherd. This disc rested on a narrow flange which extended inward a few centimeters from the side walls. The interior flange was shaped at the same time as the incensario itself (Vessel 5, Fig. 94.3b) or a large hole was cut through an original true bottom (Vessels 2 and 3). Vessel 4 has no bottom; in case a removable disc was originally employed for this purpose it must have been supported simply by the constricted side walls of the vessel's middle height (Fig. 94.3a).

Rims, both superior and inferior, were thickened and flat, or slightly concave. All specimens show small round holes, one to each side, punctured into the basal portion of the vessel just behind the vertical flanges which divide the decorated from the undecorated halves.

Surface: Unpolished. All specimens show signs of having been hand-smoothed and patted. Horizontal striations are apparent on all vessels and especially noticeable on the basal and undecorated areas. These striations are usually very regular and suggest use of flat sticks or possibly stones in smoothing of the surface. Interior surfaces also show indentations due to pressing of the moist clay with the fingers.

The surfaces are generally granular, and are uneven to the touch except for the horizontal ridges encircling the basal and rim areas: these are so regular that one is reminded of the marks on wheel-made vessels.

Clay: Various shades of red-brown. Rather coarse texture. Much pumice and mica temper. Apparently even firing.

Decoration: Mainly modeled, some incising and some painting. In all specimens, confined to one half of the exterior surface, plus rim and base bands.

The principal decorative motif of all five vessels consists of a partially squatting, rather grotesque figure in full face, the legs and head of which are modeled in the round and the remainder of the body in bas-relief; the entire figure applied to the exterior surface of the vessel and framed above and below by horizontal bands of concave discs and, at the sides, by short vertical flanges. The face of the dominating figure is characterized by features generally considered attributes of the god Tlaloc. The right arm of this figure generally slopes downward from the shoulder but the right hand is turned up, palm outward, and grasps an atlatl in the throwing position. The left arm also slopes downward from the shoulder, but the left hand is turned downward and back and apparently grasps four darts.

Other elements common to all of these Tlaloc figures are: a headdress, a spiky, tiara-like feature on the brow; earplugs; round eyes outlined by flat fillets; a sharp, protuberant nose; a heavy mustache-like upper lip turned downward at the outer ends; four large upper incisors; no chin; a pectoral pendant suspended from a cord (?) encircling the neck; a trifoliate kiltlike garment, the center element of which reaches to below the knees; and two legs ending in small feet, the heels of which are affixed to the outer surface of the vessel with the instep resting on the upper edge of the basal decorative band.

The upper and the basal horizontal decorative bands show a succession or chain of concave discs between two raised ridges. Vessels 1 and 3 portray these discs as though they were the round links of a chain.

The principal differences of decorative elements occur in connection with the headdress, the pendants, the atlatls, and the ribbon-like adornments attached to or immediately behind the arms of the Tlaloc figure.

The headdresses of the figures affixed to Vessels 1, 2, 3, and 5 are essentially alike, though presenting individual differences of details. For example, those of Vessels 2 and 5 seem to include feathers, indicated by incising and (Vessel 5) small lumps, as well as by the bent-over, somewhat wavy appearance of the upper portion of the headdress. The pendants suspended over the breast of Tlaloc are of two main forms: a rectangular slab, partially divided in two by incisions extending inward from the narrow edges (Vessels 1 and 3), and an element resembling a curvilinear W (Vessels 2, 4, and 5).

The atlatls represented on Vessels 3 and 4 were anciently damaged and their original form cannot now be determined. But those preserved on the three other incensarios are intact. That of Vessel 1 was bent in a shallow S curve, the right hand of Tlaloc grasping the stick at about its center. This atlatl shows no groove, nor any protuberance against which a dart might have been placed for launching. The other two examples, however, are much more detailed and each shows a lump or knob at its upper end. All three are broader and flatter at the upper than at the lower ends. The atlatl of Vessel 5 separates two pairs of what may have been intended to represent smaller atlatls, all held in Tlaloc's hand.

Vessels 1, 2; and 5 show, on both sides of the Tlaloc figure, from about its shoulder height to its heels, two broad "ribbons," which are crossed or joined together at the elevation of Tlaloc's upper arms. Vessels 1 and 2 bear, at the point of this crossing, a knot or perhaps rosette of some kind which seems to affix the ribbons to the figure's arms. The ribbons of Vessel 5, on the other hand, lack "knots" and the ribbons themselves appear to pass behind the arms. Vessel 4, which also bears these ribbons, though here shown by deep incisions rather than in bas-relief, likewise lacks any suggestion of a knot, and the arms are again shown to be in front of the ribbons. Vessel 3 lacks any kind of ribbons.

COMMENTS

The position of the Baratta incensarios in time and space is difficult to determine, owing in part to our rather dubious information of their provenience and in part to the scarcity of closely comparable vessels.

As far as I am aware, after examination of perhaps 10,000 specimens of pre-Colombian pottery in Salvadoran collections, only one fragment from



94.1. Tlaloc incensarios in the Baratta Collection. Vessel 1: height, 35.5 cm; rim diameter, 27 cm; Vessel 2: height, 43.5 cm; rim diameter, 26 cm.

a similar vessel has so far come to light within El Salvador itself. This large sherd, in the Salazar collection, is believed to have been found in the area of Suchitoto in the Lempa Valley.

Tall, annular-based incense burners, though lacking the basic hourglass form of the Baratta specimens, were discovered in some numbers at the Campana-San Andres site. There such vessels were associated with ladle-form, tripodal incensarios which possessed long handles decorated with grotesque serpent heads. Stratigraphically there is no

doubt that both of these forms are late at San Andres, probably representing a postconstruction phase of occupation of that ruin. Such specimens removed from Altar A of that site are almost certainly post-Copador in age, thus datable to some period after 9.16.5.0.0, perhaps roughly contemporary with Tohil plumbate. Somewhat inconclusive evidence furnished so far by carefully excavated sites in western El Salvador suggests that vase incensarios of the general dimensions of those found at San Andrea and in the Baratta collection lack the antiquity of the



94.2. Tlaloc incensarios in the Baratta Collection. Vessel 3: height, 39 cm; rim diameter, 25.5 cm; Vessel 4: height, 40 cm; rim diameter, 27 cm.

earliest ladle forms. Furthermore, of those known in El Salvador, earlier versions of vase incensarios are considerably shorter in proportion to maximum diameter.

Of decorative elements, perhaps the Tlaloc heads affixed to or modeled on the sides of certain rather crude clay bottles from central El Salvador bear the closest similarity to the Tlaloc features of the Baratta incensarios. These bottles, noted by Lothrop (1927:194ff, Fig. 15,11) and included in vari-

ous private collections, are distributed throughout the area between ancient Cuzcatlan and the Lempa River. "Associated with them in the ground are life-size images of frogs, sacred to Tlaloc . . . also incense burners with long serpent handles . . . recalling incense burners found in central Mexico or those portrayed in Aztec codices; likewise figurines of sub-Maya stamp . . . as well as portrait jars . . . and burial urns" (Lothrop 1927:195, 196). This ceramic complex Lothrop attributes to the Pipil Indians, whose arrival



94.3. Tlaloc incensarios in the Baratta Collection. Vessel 5: height, 46 cm; rim diameter, 32.2 cm; (a) back of Vessel 4, showing lack of bottom; (b) base of Vessel 6, showing interior flange support for disc-shaped removable bottom.

in El Salvador he places at between 1100 and 1200 A.D.

If we accept Lothrop's evidence and suggestions for dating the aforementioned "ceramic complex," we may be justified in assigning the Baratta incensarios to Pipil times and, presumably, inspiration for the following reasons: (1) The provenience given for these vessels, even though correct only for the general area involved, falls within what was anciently the principal zone of Pipil rule in El Salvador. (2) The only reasonably comparable specimens likewise proceed from this area. (3) Ladle incensarios with serpent-head handles, contemporaneous with large vase incensarios at San Andres and demonstrably late at that site, are likewise contemporaries

of Tlaloc bottles, the principal decorative motif of which is closely similar to the Tlaloc heads of the Baratta incensarios. (4) Tlaloc motives of this style and execution find reasonably close counterparts among ceramic manufactures ascribed to peoples of supposed Nahuatl speech of late prehistoric times, in El Salvador identified as the Pipil.

On the other hand, evidence from Tazumal in western El Salvador, arid Kaminaljuyu in Guatemala, suggests that cultural connections between the inhabitants of the central plateau of Mexico and dwellers on the Pacific slopes and highlands of Central America were well established long before Pipil times. In view of the antiquity of Tlaloc worship in Mexico, plus the numerous and varied rep-

resentations of this god found at many ruins lying between that country and El Salvador, covering a time span of perhaps more than 1000 years of the pre-Columbian Christian Era, one may well hesitate to assign vessels whose stratigraphic position is unknown to any definite period of prehistory. Again, the fact that tall vases with hourglass contours have yet to be excavated from early levels of carefully dug sites in El Salvador does not automatically rule out their existence in such strata. In Guatemala, for example, basically similar forms are dated by Butler (1940, Pl. VI, j) to Chipal I, perhaps several centuries before the traditional entry of the Pipil into El Salvador. Cylinder forms with vertical flanges and appliqued faces and figures are even earlier at Kaminaljuyu (Kidder, Jennings, Shook 1946, Fig. 201g. Unfortunately, no Salvadoran Pipil ruin has yet been thoroughly examined by competent archae-

ologists; consequently, certain objects now attributed to that poorly known civilization may later prove to pertain to other times and fabricants.

Aside from the manifest need for further excavation, however, a line of research which might today prove of aid in fixing the antiquity and ethnic origin of the varying forms and decorations of incensarios in Mesoamerica is a careful technological examination of all specimens from specific levels and positions in carefully excavated ruins. At the present time, no general presentation of this material is available, though many of the necessary facts are available in the numerous reports and articles which have been published during the past fifty years. Lacking such a synthesis of documented specimens, the field worker without access to a large archaeological library cannot securely place his discoveries in their proper historical perspective.

Certain Archaeological Specimens from Guatemala II

A. V. Kidder

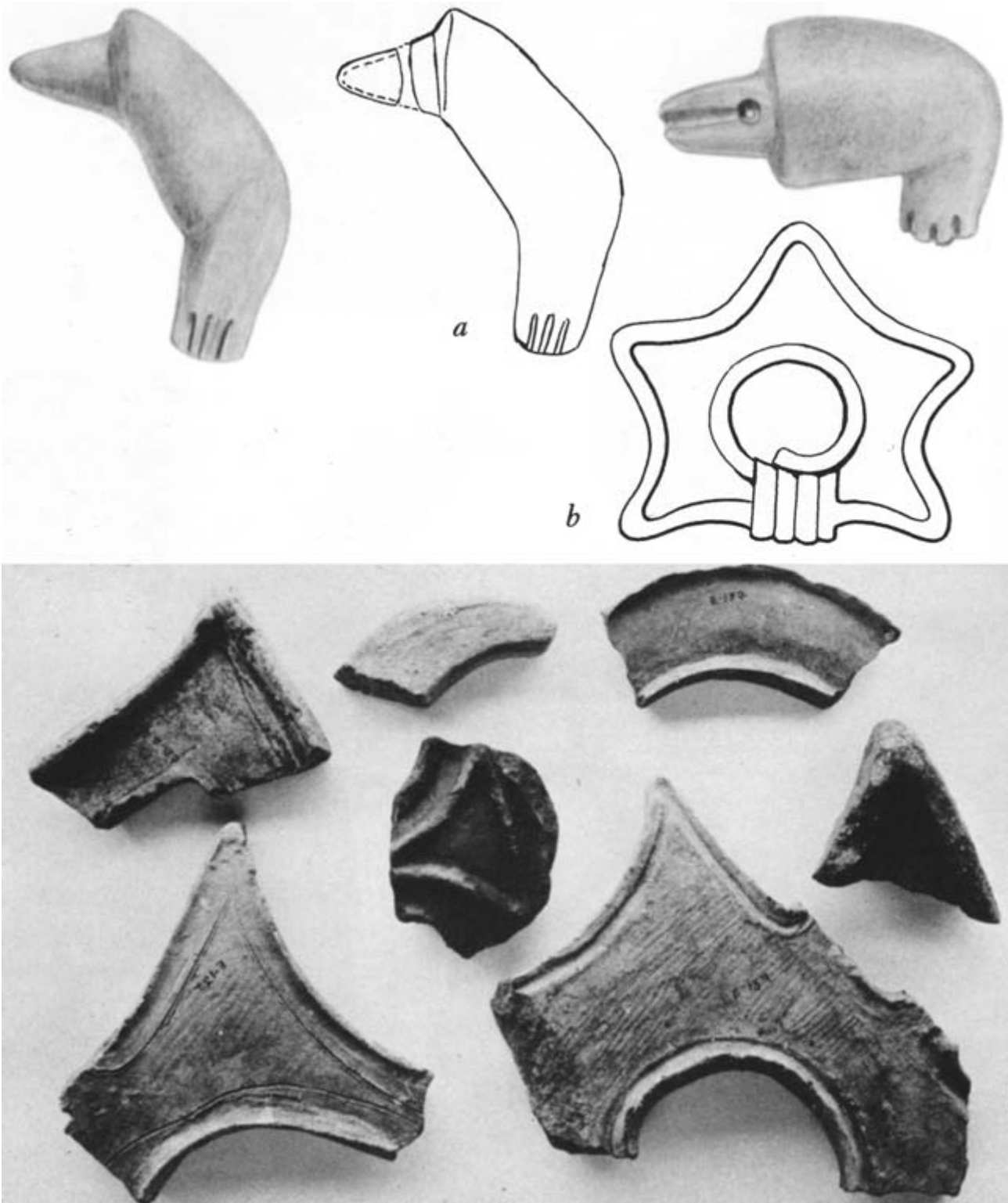
Like specimens from Guatemala recorded in an earlier paper in this series (Note 92), the objects here described are incidental finds, purchases, or gifts and therefore will not be included in reports dealing with Carnegie Institution's major archaeological undertakings. All are now in the Guatemala National Museum.

Figurine arm from Kaminaljuyu (Fig. 95.1a). A surface find, this finely finished whiteware arm from a jointed figurine is doubtless of the Archaic Miraflores Phase. A leg of the same ware and finish, also from Kaminaljuyu (Fig. 92.5e), possesses a similar perforated protuberance designed to fit into a cup in the body of a figurine. In that case it was inferred that each leg was attached separately but the longitudinal grooves on either side of the present specimen's protuberance might indicate that a string passed through the body to the other arm. No figurine body with cups such as would be necessary to receive arms or legs of this sort has been reported from Kaminaljuyu or, as far as I know, elsewhere. The drawing is natural size, by Antonio Tejeda F.

Problematical pottery objects (Fig. 95.1c). Collected by A. L. Smith in 1949 at Pantzac, a site near San Andres Sacabaja, Dept. of El Quiche, which, because of presence of Tohil plumbate sherds and absence of recognizable earlier or later pottery, is assignable to first part of Postclassic period. They are heavy star- and ring-shaped objects of gray to light brown, unslipped ware, backs flat and fairly well smoothed.

Average thickness, disregarding the slightly raised edges of some, 2.5 cm; original diameter of lower right probably about 45 cm of lower left apparently somewhat greater, because of larger central opening. Although numerous, approximately contemporaneous Guatemala highland sites have been examined by Mr. Smith and others, no similar specimens have been found in any of them. Mr. J.E.S. Thompson has called my attention to what are undoubtedly the same sort of objects from Teotihuacan: baked clay models, greatly enlarged, of cross sections of conch shells. Three of these are illustrated by Peñafiel (1900, Pls. 44-46; that in Pl. 46 here shown, much reduced, in Fig. 95.1b). Mr. Thompson tells me that the cross section of the conch was the special attribute of Quetzalcoatl and of his ally Xolotl. White lime plaster adheres to back of the specimen at upper right, as if it might have been mounted on a wall as an architectural ornament.

Carved jades (Fig. 95.2a). Said to be from La Nueva, Dept. of Jutiapa. *Left*: light green; soft unaccented relief, T-shaped nose, necklace in same line with earplugs, faces in profile at upper corners, are traits of Early Classic jade carving (see Smith and Kidder, MS), but small perforations in beads in necklace not previously noted in specimens of that period. Transverse biconical perforation at eye-level; three 1 mm perforations in edge of back, one on either side at earplug-level, one at lower point. Back polished. Width 6.8 cm. *Center*: light green; edge broken away all around and cursorily reworked. Back polished. Oblique measurement 11 cm, thickness 3-



95.1. Archaeological specimens from Guatemala.

3.5 mm. *Right*: earplug flare (?), very fine dark green, high polish both sides; four serpent heads facing outward. Diameter 6.3–6.4 cm; thickness 3.5 mm.

Polychrome vase (Fig. 95.2b). Collected by A. L. Smith from a looted tomb at the ruins of Tzicuay on Brol Brothers' Finca San Francisco, near Cotzal,

Dept. of El Quiche. Decoration in dark red and black on medium gloss orange slip, which also covers interior nearly to bottom. Red rim-band carries over squarish rim, extending 1 cm into interior; 4 mm below interior red is a red encircling line 3 mm wide. Exterior design on either side a deer, the two separated by vertical panels representing three-strand braids. Diameter of orifice 13.2 cm. The piece is of interest because of rarity of deer in pottery decoration; examples: Nebaj (Smith and Kidder, MS., Fig. 71a), Ilom (Termer 1931, Fig. 5s), Yucatan (Bliss 1947, Fig. 137). For representations in codices, see Tozzer and Allen (1910). Because the tomb had been used for a long time and had contained Early, Late, and Postclassic (Tohil plumbate) pottery, the period of present piece uncertain, probably Late or Postclassic.

Incense burner and cover (Fig. 95.2c, d). From finca at Zumal, Dept. of El Quiche, belonging to Diego Brito Perez, who presented specimen. Unslipped reddish brown. Head and body of extended jaguar on cover are hollow, a round 5-cm hole opening into interior, presumably to allow smoke to enter body and pass out of mouth. Two vertical pairs of "spikes" on either side of cover and of body. Period unknown. A similarly extended jaguar appears on cover of incense burner from an Early Classic (Esperanza Phase) structure at Kaminaljuyu (Kidder, Jennings., and Shook 1946, Fig. 192b). Greatest diameter of cover 25 cm.

Face on wall of incense burner (Fig. 95.2e). Gift of David Herrera of Aguacatan, Dept. of Huehuetenango. Specimen probably from nearby ruin of Chalchitan. Ruddy brown ware, unslipped. Face moldmade, accessories appliquéed. Face painted red (white is lime deposit); buttons encircling earplugs and around face bear traces of blue paint. Vessel probably cylindrical, perhaps with pedestal base. Diameter orifice about 42 cm, height of fragment 26 cm.

Question of incense burner "spikes." From at least Early Classic times until the conquest, many forms of Mesoamerican incense burners bore small rounded or, more commonly, pointed protuberances (Fig. 95.2d, f, g). Their frequent use during many centuries on ceremonial vessels of wide geographical distribution seems to imply some definite symbolic significance. It is here suggested that they may represent the very similar protuberances that appear, in the early stages of its growth, on the ceiba (bark shown in Fig. 95.2y), a tree long held sacred by the Maya (Redfield 1936). Mr. Thompson has suggested to me that they might represent nodules of copal such

as the modern Lacandon use (Tozzer, 1907:125, Pls. XXIII, XXIV) and which also appear on large lumps of copal from the Sacred Cenote at Chichen Itza. The "spiked" vessels here shown are probably Late Classic: one a shallow bowl from an unknown locality in Guatemala, the other a late post Classic fragment from Chuitinamit Atitlan, Dept. of Solola. The former (Fig. 95.2f) is of a type of which many examples have been found in Lake Amatitlan, into whose waters they had evidently been cast as offerings. Like many incense burners, it bears thin, white, apparently post firing paint. Diameter 24.8 cm. The fragment (Fig. 95.2g) is from a large, thick-walled incense burner. Original diameter probably over 50 cm.

Figurine whistle (Fig. 95.3a). Purchased from Barnum Brown at Altar de Sacrificios, a Classic lowland Maya site at junction of the Salinas (Chixoy) and Pasion Rivers, Dept. of El Peten. Chocolate-brown pottery, protruding mouthpiece at rear base, two 5 mm-round "stops" in back at level of neck cloth tie. Rectangular shield, hafted celt. Entire front moldmade, bank modeled. Total height 15 cm. Period uncertain; in this connection it may be noted that a Tohil plumbate sherd was found by E. M. Shook at Altar de Sacrificios in 1937, the only occurrence of this Postclassic ware so far reported from El Peten.

Moldmade head (Fig. 95.3b). Collected by R. E. Smith in a Late Classic deposit at Chipoc, near Coban, Dept. of Alta Verapaz. From a hollow figurine, presumably a whistle. Flat band over forehead and mouth of serpent (?) headdress red; human face and head of serpent (?) lighter red; traces of blue on feathers (?) at right. Height 6.5 cm.

Face from wall of incense burner (Fig. 95.3e). Provenience and period unknown. Unslipped brown. Hollow; opens below edge of necklace, therefore evidently not part of a complete figure. Note unique nose-ornament and similarity of eyes and earplugs to those of Fig. 95.2e. Width "as is" across earplugs 17 cm.

Cover of small incense burner (?), Dieseldorff Collection (Fig. 95.3e). Provenience and period unknown. Unslipped brown, well smoothed. Rounded edge of open base shows wear; 4 mm orifice (smoke vent?) in conical top. Unique specimen. Height about 8 cm.

Water pipe of jar necks (Fig. 95.3f). Collected by R. Redfield and A. V. Kidder at a spring near Agua Escondido, Dept. of Solola. Three of five jar necks



a



b



c



d



f



e



g



h

95.2. Archaeological specimens from Guatemala.



95.3. Archaeological specimens from Guatemala.

placed end-to-end as if to form a drain or conduit running downward from spring on sloping ground. Shape and ware of necks same as those of Late Classic (Amatole Phase) jars from Kaminaljuyu. Specially made pottery pipes set vertically end-to-end and leading down to a large perforated jar that served as a cistern were found by Ricketson (1935) at Quirigua.

Doughnut-shaped vessel (Fig. 95.3d). Purchased at San Marcos, Dept. of San Marcos. Heavily weathered, dark red, medium gloss slip over whole surface; black decoration outlined with post-finish incising. Broken-off spout opposite animal head evidently rose nearly vertically. Probably pre-Classic. Diameter, exclusive of head, 21 cm.

Rectangular vessel (Fig. 95.3g). Purchased at Kaminaljuyu and presented by William Foshag. Red-

dish brown, possibly slipped; smooth matte finish; thin white, post-firing paint on eyes, lower part of nose, fangs, flat rim. White also applied to ends and back to represent moldings of same 1.5 cm width as fillet-moldings on front. Print of woven mat (over-two under-two twill, elements 4 mm wide) on interior of sides and ends and exterior of bottom, indicating that five slabs were made separately and welded together to form vessel. Length 20, width 12, height 8 cm; walls 1.2 cm thick. A deep vertical-walled, flat-bottomed bowl and a small simple silhouette bowl, both heavy and unslipped, with traces of thin white paint, were found, according to vendor of all three, with rectangular piece. Probably Early Classic (Esperanza Phase), as flanges and other flat parts of Esperanza incense burners were also made of clay patted out or pressed down on mats (Kidder, Jennings, and Shook 1946:212).

Tlaloc Effigy Jar from the Guatemala National Museum

Stephan F. de Borhegyi

The large Dieseldorff Collection, donated to the Guatemala National Museum in 1942, includes many fine specimens, most of which, unfortunately, are of unknown provenience. The anthropomorphic jar representing a bearded individual, with which this paper is concerned, is believed to have come from Kaminaljuyu, the large archaeological site near Guatemala City. No other information concerning the association and age of the specimen is available.

The jar is of coarse, unslipped, reddish brown ware, the surface unpolished but fairly well smoothed. The paste is a warm brown, showing small particles of white temper. The flaring rimmed, straight necked jar has a spherical body, slightly recurving at the base. The nose, eyebrows, and ears of the individual represented are modeled. The other details are applied (Fig. 96.1a).

The heavy eyebrows forming a semicircle around the eyes, the upcurving scrolls on either side of the vertically grooved beard, as well as the prominent aquiline nose, are characteristics generally associated with the Mexican rain god, Tlaloc. This resemblance is interesting in view of the fact that a similar jar from the Early Classic horizon has been reported from Kaminaljuyu (Kidder, Jennings, and Shook 1946, Fig. 200q, r). This specimen (Fig. 96.1b), accompanied by another jar identical but crushed beyond repair, was found in Tomb II of Mound A during the excavations by Carnegie Institution in 1937. Both were recognized as representations of Tlaloc and were assigned to the Esperanza Phase at Kaminaljuyu. It is believed that the site was under

Teotihuacan religious influence and possibly even political control at that time. The close similarity in shape, technique, and ware to the specimen from a controlled excavation enables us to place the Dieseldorff jar, at least tentatively, on the same time level.

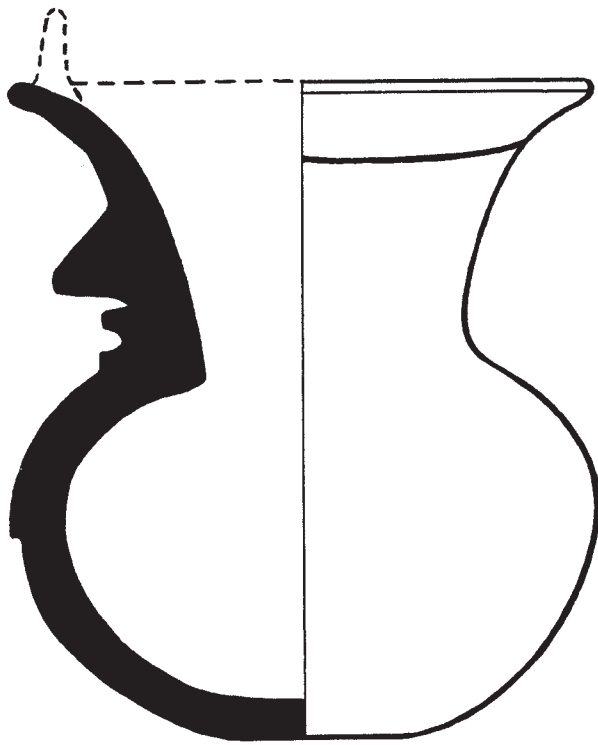
Certain interesting differences between the two specimens, however, should be mentioned. (1) Figure 96.1a lacks the tripartite headdress which has broken off from the rim, as shown by the line of fracture. This, as well as the "tri-mountain symbol" seems to be often, if not exclusively, connected with Tlaloc representations (Kidder, Jennings, and Shook 1946, Figs. 102a; 169a, b; 175a; 199l; 200q, r; 207a). (2) The applied scrolls, the beard, and the aquiline nose of Figure 96.1b are considerably longer and of cruder workmanship than those of Figure 96.1a. (3) The earplugs of Figure 96.1b do not have central depressions; the hand shows no indication of fingers as do the hands of the other. (4) A vertical, solid roll of clay, with outcurving end, connects the rim of the jar with the left shoulder of the Figure 96.1a, effigy. Strangely enough, the right shoulder shows no sign of similar treatment. It seems, therefore, that this extension existed only on the left side. A Tlaloc effigy jar from Teotihuacan (Kidder, Jennings, and Shook 1946, Fig. 169, 2) has a similar but crooked roll of clay connecting the right shoulder with the rim. Unfortunately, the significance of this strange object on the shoulder of each specimen is problematical. It may represent an atlatl, a snake, or a streak of lightning, all frequent attributes of Tlaloc. The outcurving



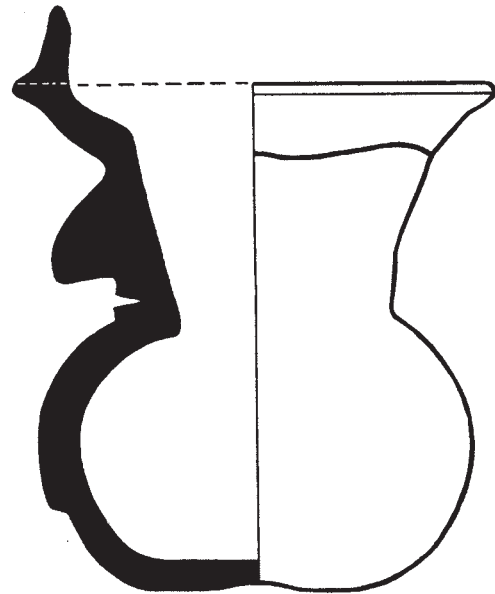
a



b



a'



b'

96.1. Tlaloc effigy jars: (a) anthropomorphic jar, with sectional view; Dieseldorff Collection, Guatemala National Museum, no. 5177; height, 18 cm; diameter, 14.5 cm; (b) anthropomorphic jar from Kaminaljuyu, with sectional view (Kidder, Jennings, and Shook 1946: fig. 200r), Guatemala National Museum, no. 2433, total height 19 cm, diameter 15 cm.

end of the otherwise straight clay roll of Figure 96.1a would suggest a conventionalized representation of an atlatl. (For the association of Tlaloc with the atlatl see Boggs 1949, Figs. 1, 2, 3; Kidder, Jennings, and Shook 1946:221, Fig. 204a). (5) The little jar under the left arm of Figure 96.1, a is also a well known attribute of Tlaloc. The codices often represent this rain god holding a small jar, sometimes of jade, in his hand, or pouring water from it, a symbol by which his power to produce rain is demonstrated (Caso 1936:25, Fig. 14).

It is interesting to note that Cocijo, the Zapotecan counterpart of Tlaloc, is frequently represented on the funerary and effigy urns from Oaxaca as seated, and holding in his hands a small, outcurving rimmed jar identical in most respects to the jar held by the Tlaloc in Figure 96.1a (Linné 1938, Pls. 28a, d; 29a, b, c).

The Tlaloc effigy jars of the Esperanza Phase at Kaminaljuyu, together with many other ceramic features, are believed to indicate a Teotihuacan influence from the north (Kidder, Jennings, and Shook 1946:208). In 1946, when this report was published, no definite evidence of communication between the great centers of Oaxaca, in particular Monte Alban., and Kaminaljuyu had been established, although a strong contemporary relationship had been shown between the Monte Alban III and Teotihuacan III periods by Caso (1938). The lack of stronger ties between Oaxaca and Guatemala seemed explainable only by the mountainous nature of the intervening area or by the warlike behavior of the Oaxacans, and it was proposed that the influence from Teotihuacan might have detoured via Veracruz on its

way to Kaminaljuyu (Kidder, Jennings, and Shook 1946:257).

A recent publication by Ignacio Bernal (1949) has brought to light new evidence of cultural connections between Monte Alban IIIA, Teotihuacan III, and the Esperanza Phase at Kaminaljuyu. Among the specimens illustrated by Bernal are two Tlaloc effigy jars from Tombs 95 and 137a at Monte Alban (Bernal 1949:9–11, Figs. 20, 21) which bear certain similarities to the specimens dealt with in this paper and in addition have several points of resemblance to specimens illustrated by Kidder, Jennings, and Shook (Fig. 169a, b) from Teotihuacan. Both the Tlaloc effigy jars from Monte Alban have been assigned by Bernal to the Monte Alban II–IIIA Transitional period, which is coeval with early Esperanza and Teotihuacan III. His Figure 21 bears the tripartite headdress already noted on specimens from Teotihuacan and Kaminaljuyu and. also has the remains of a solid vertical clay roll applied to the right edge of the jar rim in much the same way as in our Figure 69.1a and on the Tlaloc effigy jar from Teotihuacan (Kidder, Jennings, and Shook 1946, Fig. 169a). Further similarities can be found between these jars and those of Tehuacan (Kidder, Jennings, and Shook 1946, Fig. 202e) and Xolalpan (Linné 1934:66–68, Figs. 31, 34, 40).

This evidence alone might go a long way toward establishing stronger cultural ties between Oaxaca and Kaminaljuyu but until more information has been obtained from the interlying areas of Chiapas and western Guatemala, it can only be suggested that at least one, and perhaps the major, route by which Teotihuacan influence reached Guatemala was by way of Oaxaca and the Pacific slope.

GUATEMALA CITY

Rim-Head Vessels and Cone-Shaped Effigy Prongs of the Preclassic Period at Kaminaljuyu, Guatemala

Stephan F. de Borhegyi

In July 1949 I received a grant from the Viking Fund of New York to organize the study material of the Museo Nacional de Arqueología y Etnología of Guatemala. While engaged in the organization of the large figurine collections, composed of material from the Dieseldorff Collection, the "desconocido" or unreliably recorded material of the Museum, and the collections donated by the Carnegie Institution of Washington, I encountered some unusual specimens deserving of special notice.

On examination it appeared that much of what had formerly been considered part of the Preclassic figurine complex of the Guatemalan highlands was actually part of the "rim-head" vessel complex described by Kidder and Shook (Note 69). In that publication the authors were able to place a group of remarkably uniform, hollow, bald, human heads, from flat-bottomed tripod vessels, in the Miraflores Phase, the oldest culture then recognized at Kaminaljuyu. It was believed that these vessels served a ceremonial purpose and were undoubtedly related to ones with three similarly placed but smaller "rim-heads" found in later horizons on the south coast of Guatemala, El Salvador, Honduras, and Mexico (Kidder Note 15). Therefore the former were designated as "rim-head" vessels but of a type peculiar to the Miraflores culture. Hereafter in the present Note this homogeneous group will be referred to as Type A. No variations of this type had been recognized by Kidder and Shook.

While organizing the Dieseldorff figurines I ran across some solid, human, head fragments (Fig.

97.1a, c, d) which showed a striking facial and technical resemblance to the previously described Type A rim-heads. These fragments were made from the same coarse, unslipped, reddish brown ware, the paste of which was a warm brown and thickly sown with particles of white temper. The major difference, however, was that all the head fragments were solid instead of hollow. On closer examination it appeared that, to judge from the angle of breakage, these heads could never have been attached to figurine bodies but must have been applied to the side of some vessel. With these fragments as a basis, similar ones were identified in the Hartwell M. Webb Collection (Fig. 97.1e, g) and collections of unknown provenience in the Guatemala Museum (Fig. 97.1f). All were solid and bore the characteristic slightly swelled cheeks, out-thrust chin, prominent nose to which pellets of clay had been added as a representation of nose buttons or nostrils, and protruding eyes made by the application of a round or elliptical button of clay set into a shallow, horizontal depression. The supposition that all came from Kaminaljuyu was strengthened when comparison was made with the same uniform type of solid heads found at Kaminaljuyu by the Carnegie Institution (Fig. 97.1b, h, j, l) and at Las Majadas, a section of Kaminaljuyu, by Lic. David Vela (Fig. 97.1i, k).

The question of the type of vessel and the proper orientation of the heads on it was still unsolved until I was fortunate enough to find in the Dieseldorff Collection two pieces which I consider to represent the original appearance of the solid, human, head

fragments (Fig. 97.2a, b). Both specimens bear the same relationship to tripod, flat-bottomed bowls as do the rim-heads of Type A. The most striking and significant difference, however, was that here a solid head had been applied to a large, upright, hollow bulb instead of the human features appearing on the bulb itself. They were therefore classified as Type B of the "rim-head" vessel complex. For a probable restoration of Type B in comparison with Type A (Kidder and Shook 1946, Fig. 1a) see Figure 97.3.

Type A, as described in Note 69, is uniformly bald and lacking in headdress. Since then some exceptions to this type have appeared (Fig. 97.4f, g, i). These have an appliqué headband, two being rippled, with a central ornament usually consisting of a button of clay. This subtype shows a further connection with some of the specimens of Type B (Fig. 97.1a, f, g, i).

Another form depicts the pouting individual in profile (Fig. 97.4a–e, h). Of these six, three are hollow (Fig. 97.4a, e, h) and three are solid (Fig. 97.4b, c, d). That shown in b is highly conventionalized; d appears to be reclining, his head resting on his hand. The rectangular, depressed eyes, headdress, and mouth of d strongly resemble Figure 97.1.1. Although these heads do not form as homogeneous a group as Types A or B, because they carry certain characteristics of both, the fact that they are all in profile makes it advisable to class them separately as Type C.

Unfortunately, the chronological relationship of the three types is not known; we know at present only that they were different manifestations of the same idea, although a hypothesis based on the greater sophistication of the conventionalized profile form might consign this type to a later stage of development. At the moment, all the specimens thus far described are believed to belong to the Miraflores Phase at Kaminaljuyu and in particular to the Providencia (rarely), Verbena, and Arenera subphases. They are apparently lacking in the Santa Clara, or latest, subphase.

It should be mentioned that some specimens of Type B (Fig. 97.1d, e) differ from the others in having a wide open mouth, which gives them a certain resemblance to a jaguar or "tiger" face. This characteristic has been linked to the Olmec "baby face" by Vaillant (1940) and more recently by Covarrubias (1944). This similarity between the solid-head types and the Olmec "baby face" becomes more interesting when we recall the earlier observation by Kidder and Shook that the bald head and up-turned lip of the hollow rim-heads bear similar resemblances to the representation of the human head in Olmec art.



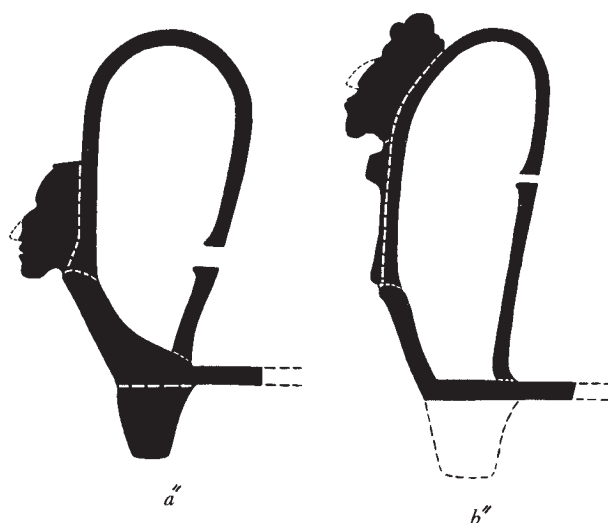
97.1. Rim-heads, Type B, Kaminaljuyu: (a, c, d) Dieseldorff Collection (Guatemala National Museum); (e, g) Hartwell M. Webb Collection (Guatemala National Museum); (f) of unknown provenience (Guatemala National Museum); (i, k) private collection of Lic. David Vela, found at Las Majadas, a section of Kaminaljuyu; (b, h, j, l) excavated by the Carnegie Institution of Washington (Guatemala National Museum); (b, h) Mound E-III-3; (j) Mound E-IV-4; (l) arenal, near Mound E-III-3; (f', h', k') sectional views of f, h, k. Remains of white slip shown on c, f, i, j, k. Note the open mouth of b, d, e, f and the rectangular, depressed eyes of l. Height of k, 90 cm.

CONE-SHAPED EFFIGY HEADS FROM KAMINALJUYU

Bearing a probable parallel relationship to the rim-heads of the Miraflores culture are the three-pronged effigy incense burners of the Preclassic horizon.



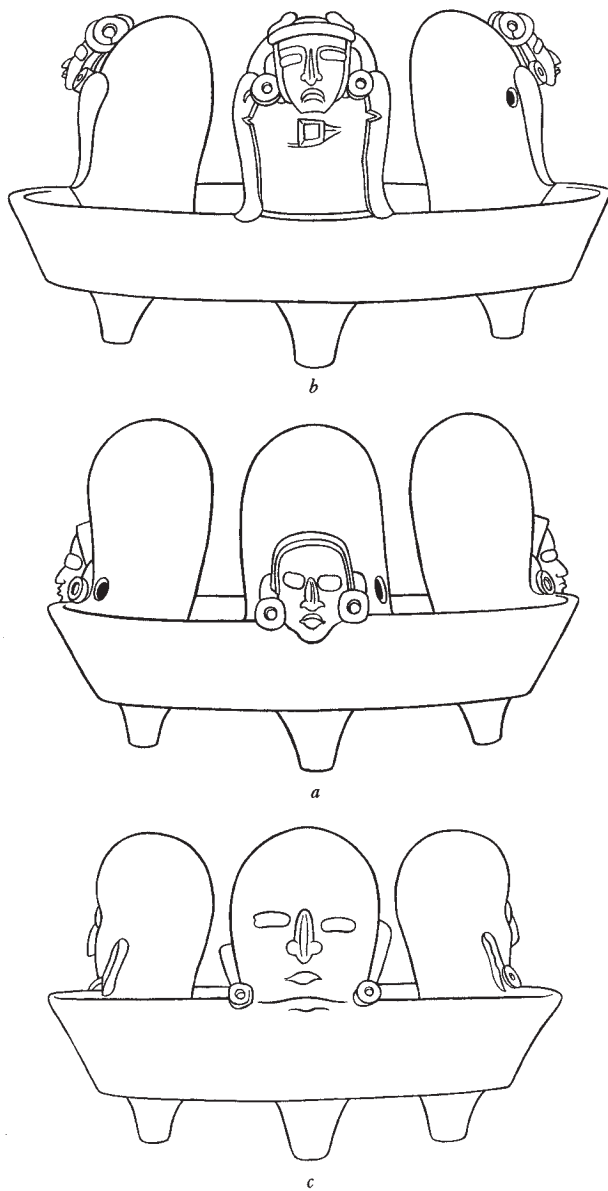
Our present knowledge of the ceremonial function of such pieces is very incomplete. We know (Shook, publication in preparation) that one type existed with vertical side-flanges and three plain, solid or hollow, conical prongs on the top and human effigy heads on the body (Fig. 97.6b). On the other hand, we have hollow, cone-shaped human heads presumably serving the same purpose as the plain prongs but because they have not yet been found at Kaminaljuyu with the rest of the incensario it is



97.2. Rim-heads, Types A and B, Kaminaljuyu: (a, b) Dieseldorff Collection (Guatemala National Museum). (a', b') left and right side views of a, b; (a'', b'') sectional views of a, b; the vents shown in section as at back of head are actually just below the right shoulder (a) and behind the left ear (b). The solid, truncated, conical foot of b has been broken off at the base; remains of white slip on a; note the hunchbacked appearance and the pectoral pendant of b; height of b, 20 cm.

not known if the bodies of these vessels bore additional effigy heads. For suggested restoration see Figure 97.5d', f' and caption. One complete example of this type, found near Chiquimulilla, Department of Santa Rosa, Guatemala, bears no additional effigy heads or flanges (Fig. 97.7a). The fact that the effigy incensarios were three-pronged, as were also the rim-head vessels just described, led me to suspect a parallel connection both in stylistic technique and in ceremonial function. Both the plain and effigy prongs were made from a coarse, reddish brown to gray ware and paste similar to that of the rim-heads, both solid and hollow types. Little can be inferred as to the ceremonial functions of these two types of vessels but definite facial characteristics common to both the rim-heads and the effigy prongs are to be noted. The most common and impressive points of resemblance are illustrated in Figure 97.5: appliqué but slanted eyes (a, b, d, e); the presence of nose-button (a–d); the characteristic pouting mouth (e, f); and the occurrence of a headdress with a central ornament extending to form a vertical flange on either side of the head. In this connection, special comparison should be made between Figures 97.5b and 97.1f as well as between Figures 97.5a and 97.4e.

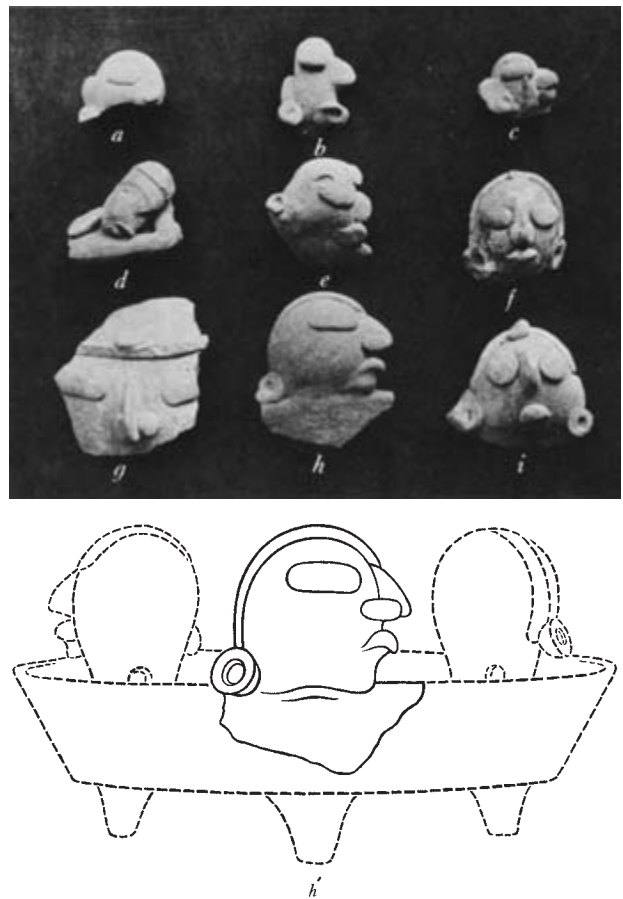
Present also at Kaminaljuyu and probably from the pre-Classic horizon are huge stone "altars."



97.3. Rim-head vessels, Type B, Kaminaljuyu: (a, b) Type B vessels; restoration based on fragments shown in Fig. 97.2a, b; (c) Type A vessel (after Kidder and Shook 1946: fig. 1a).

They originally bore three large top prongs, which are now broken off at the base, and are as yet of undetermined culture and function (Fig. 97.6a). They may well represent a similar manifestation of this complex.

It is my opinion that the three prongs of the pottery incensarios and stone "altars" served the same purpose: supports for another vessel during some kind of religious performance. Definite signs of wear on the exterior surface of the tips of both the plain and effigy prongs suggest a type of vessel with

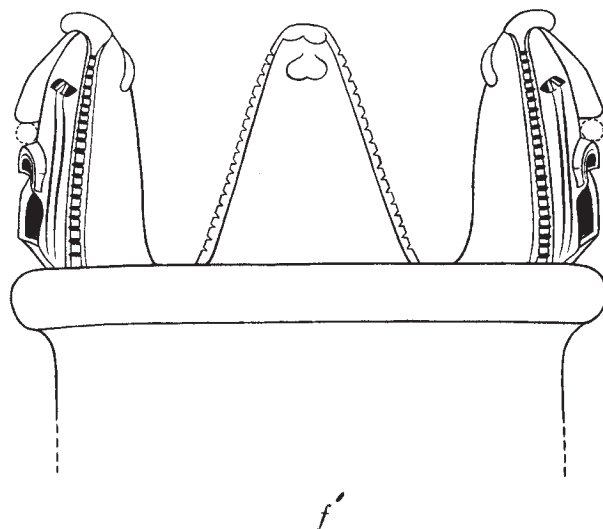
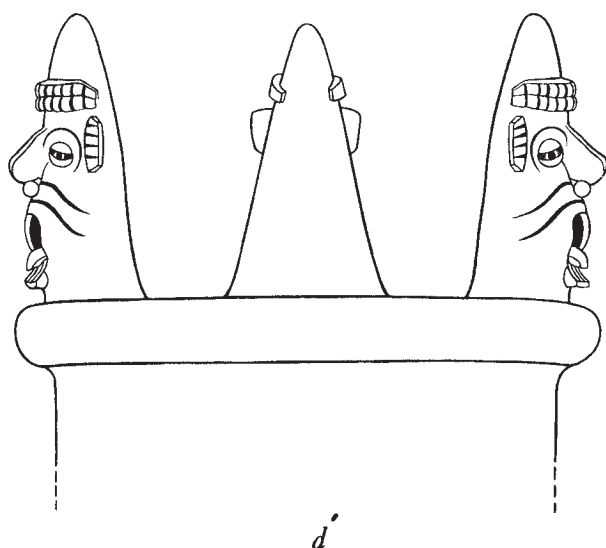


97.4. Rim-heads, Types A and C, Kaminaljuyu: (f, g, i) Type A rim-heads; (a, b, c, d, e, h) Type C rim-heads; (a, c, d) Dieseldorff Collection (Guatemala National Museum); (h) private collection of Harold Martin; (b, f, g, i) Carnegie Institution; various parts of Kaminaljuyu (Guatemala National Museum). Remains of white slip visible on b, c, e, f, i, and traces of yellow paint remain on top of head. Circular vents on back of head (h, i) and behind the right ear (a, f). No vents on b, c, d, e, g. Note the prominent aquiline nose of the specimens. Height of i, 90 cm.

a wide, overhanging rim which would have rested on these prongs. There is just such a vessel in the Preclassic horizon. They have been named "grater bowls" because of their deeply grooved inner surface (Shook, publication in preparation, probable restoration in Fig. 97.6c, c'). Although there is no definite proof, it seems likely that these bowls were used in combination with the incensarios. They are made from the same coarse, reddish brown to gray ware, and are deeply grooved on the rim and interior surface in the same manner as are the conical effigy heads. It is hard to say what might have been the original use of these bowls; perched as they were



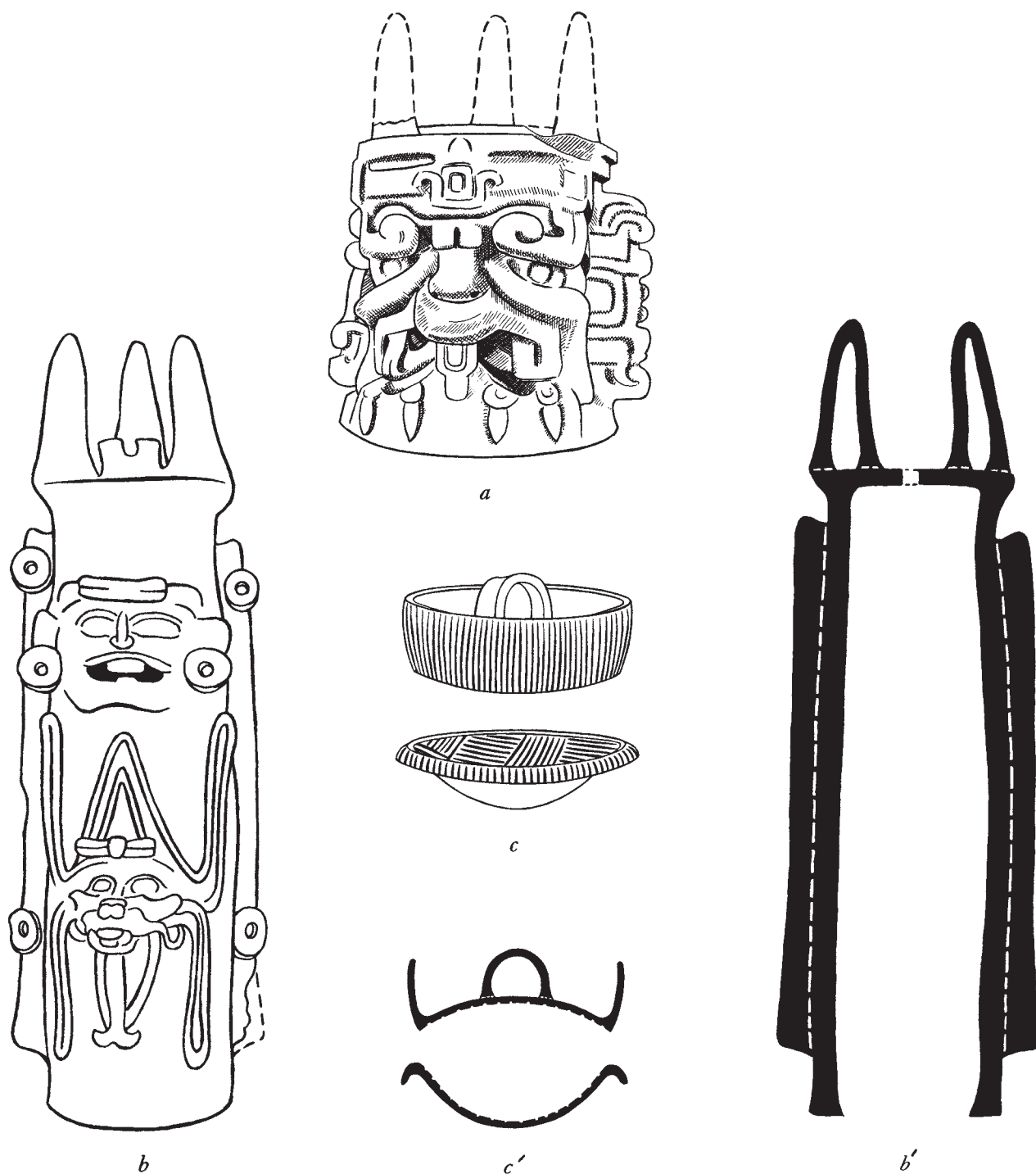
97.5. Cone-shaped effigy heads from incensario vessel supports, Kaminaljuyu: (a, b, c, e, f) Carnegie Institution of Washington; collected and excavated from various parts of Kaminaljuyu near the Roosevelt Hospital and Finca Las Charcas; (d) Dieseldorff Collection (Guatemala National Museum); (d', f') suggested restorations of d, f. All specimens have or had an opening to the outside through the mouth or through a large hole directly below the mouth. Note the peculiar tool-indented fillet head-dress and the flanges. Height of d, 14.2 cm. Concerning the suggested restoration of d' and f', it should be mentioned that one rim fragment of a three-pronged incensario support was found on the surface near the Roosevelt Hospital (Las Charcas, Pit 3), Kaminaljuyu vicinity. This specimen bears three rows of red-painted spikes immediately below the top surface. Below the spikes is evidence of rectangular openings similar to the triangular ones of Fig. 97.7a. The remains of an effigy prong showing the function with the rim is also similar to the Chiquimulilla specimen. Around the openings, remains of a white slip are still visible. This suggests that the incensario body connected with the Las Charcas effigy prongs is similar to the specimen shown in Fig. 97.7a. To associate this fragment definitely with the Las Charcas culture is unwise because it is a surface find and the proper association and age of the Chiquimulilla specimen are not known. It is hoped that further stratigraphic excavation will clarify this point.



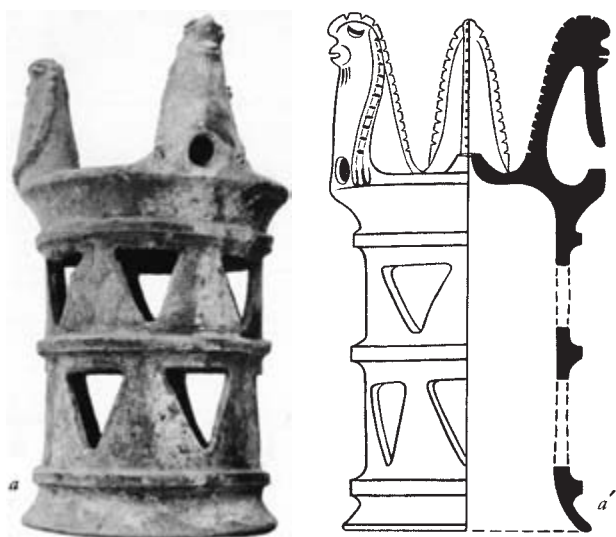
high on the tops of incensarios, they would seem to have contained an offering to the gods. It should be noted, moreover, that the grooved interior surfaces show no signs of wear but are heavily fire-blackened, which further connects them with the incensarios and makes it hard to believe that they could have been used for such utilitarian purposes as graters.

The faces of the stone "altars" and the effigy prongs from the pottery incensarios bear certain characteristics often associated with the conventionalized, sometimes feline, portrayal of the Kaminaljuyu rain god. Although the faces of the conical effigy

heads are far from uniform, as was the rim-head material, all show some characteristics of that deity, as seen in Figure 97.5; namely, deeply grooved "tear streaks" (b, e, f), pointed goatee (b, d), nose button (a-d), a strong oblique line from either side of the nose to the jowl (a, c, d), circled eyes and outstretched tongue (d), and a headdress with a central ornament which extends into vertical side-flanges. It has been pointed out that some of the rim-heads have a similar form of headdress; those which are bald have short side flanges in the form of ears, and very probably nose buttons rather than nostrils are



97.6. Three-pronged incensario vessel supports and stone "altars," Kaminaljuyu: (a) "Altar" V, Guatemala National Museum; found at La Providencia, a section of Kaminaljuyu, museum no. 2046; height, 85 cm, diameter, 76 cm, basal diam without prongs (now broken off) 17 cm; volcanic tuff; headdress terminates in a knotted band at back of head and there are traces of red paint; (b) large, three-pronged pottery incensario, Guatemala National Museum; donated by Rafael Pinol from Finca Las Charcas, a section of Kaminaljuyu, museum no. 3625; height 110 cm, diameter 30 cm, height of prongs 22 cm; remains of white slip; a human face appears on upper half of body; on the lower half is a jaguar head with bifurcated tongue and two curving fangs; note the vertical side-flanges and the "fish-tail" protuberance on top; (b') sectional view of b; (c) suggested restoration of the "grater bowl" believed to be the vessel used in connection with the three-pronged incensarios and supported by the prongs; fragments excavated by the Carnegie Institution near Roosevelt Hospital, Guatemala City; height of bowl cover 9 cm, diameter of bowl cover 29 cm; (c') sectional view of c.



97.7. Three-pronged incensario vessel support, Chiquimulilla, Guatemala: (a) three-pronged incensario vessel supports found in a lake on the finca of Lic. Faustino Padilla near Chiquimulilla, Department of Santa Rosa, Guatemala; museum no. 1195; total height 37.5 cm, diameter 21 cm, height of prongs, 11 cm (shown inverted in Kidder, Jennings, and Shook 1946: fig. 202c); (a') sectional view of a; remains of red paint and white slip on body. Note the crudely modeled, bearded individual and the tool-indented fillets on the hollow, conical prongs.

represented by the pellets on either side of the nose. Even more interesting, however, is the fact that two rim-heads have very possible "hear streak" representations. One from Type A (not illustrated) has a pair of red vertical lines painted beneath each eye; the other, Type C (Fig. 97.4c), has an appliqué band from eye to chin. If these effigy prongs are indeed representations of the Kaminaljuyu rain god and if our feeling is correct that between the effigy prongs and the rim-heads there is a parallel connection, then it can be assumed that the rim-heads depict the same deity or that there is a close relationship between the "tiger-faced" god, the Olmec "baby face," and the Kaminaljuyu rain god.

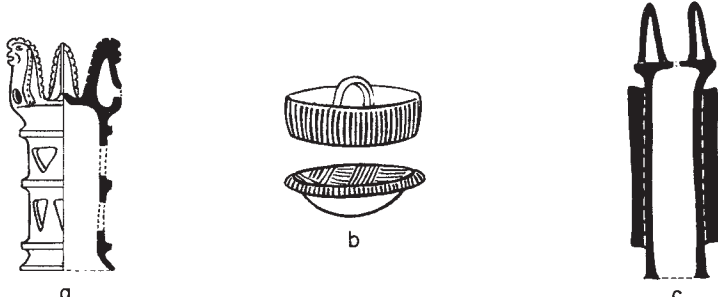
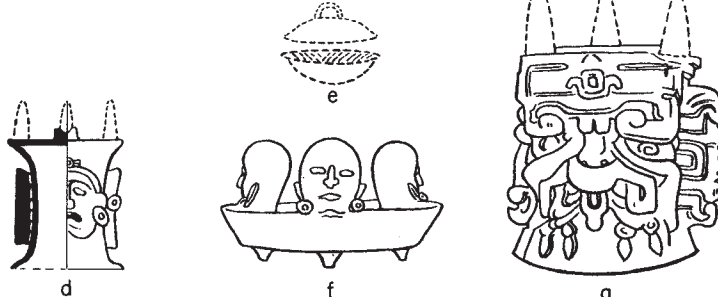
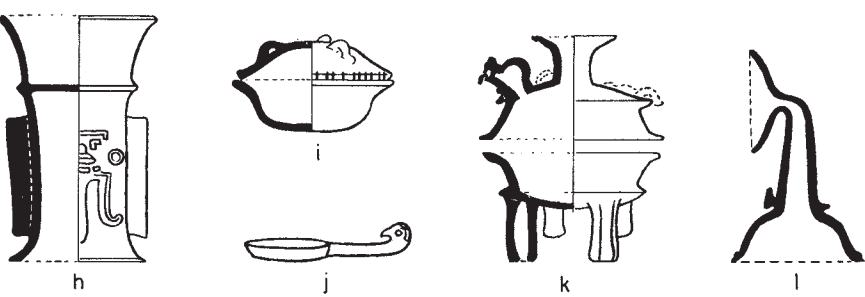
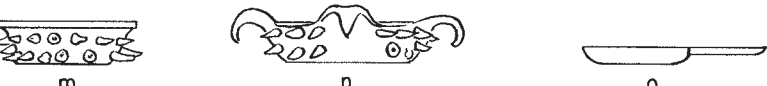
THEORETICAL RECONSTRUCTION OF THE USE OF INCENSARIO SUPPORTS AND RIM-HEAD VESSELS DURING THE PRECLASSIC PERIOD AT KAMINALJUYU

It seems advisable to collect and discuss individually the arguments for some of the specific points mentioned above. As many of the hypotheses were made on a theoretical basis as well as on analysis of the material at hand, there should be explained the ideas leading to their formulation. I hope that this

will stimulate criticism and thereby affect progress through the contribution of other workers in this field. Let it be understood that my conclusions are not to be considered final explanations but merely attempts to pull together a great many scattered ideas into a picture; the canvas depicting some new conceptions of the religious-ceremonial features present in the early agricultural period in Middle America and the frame binding it into a whole, consisting of the previously described group of cultural objects from Kaminaljuyu. Therefore, I hope to give a fuller explanation of the use and religious significance of these objects, both rim-head vessels and especially incensarios. These vessels had a very long and complex history; knowledge of their use and change through the centuries requires detailed study. Here I attempt only to suggest their connection with rain and rain deities during the early stages in the development of the complex. I have done this in the belief that some kind of explanation is better than none.

It has already been suggested that the prongs of the three-pronged incensario were used as supports for a bowl. What are the arguments which lead to this conclusion? First of all, the tips of the prongs actually show signs of wear, not on the points, as might be expected, but on the outside. There is no chance of mistaking these prongs for feet, however, because in the case of the plain cones which have been found attached to the incensario this would necessitate inverting the effigy head on the body. The effigy cones discussed earlier in this paper have not been found attached to any Kaminaljuyu vessel, with the exception of one doubtful Las Charcas fragment (Fig. 97.5, caption) but, besides the fact that their close similarity to the plain cones leads us to suspect that they occupied the same position, the location of the worn surface makes their orientation as feet impossible, as in that case the wear would have been on the tips of the prongs; furthermore the effigy heads would have been upside down. Their identification as prongs was confirmed by the specimen found near Chiquimulilla (Fig. 97.7a), whose prongs represent a crudely modeled, bearded individual in the same style and technique as those from Kaminaljuyu. The interior of the stand is not smoked. It might be thought that these objects with their cone-like projections served no more than a decorative function because their upper surface rarely, and their interior never, shows signs of burning. This is to be explained, I believe, by the suggestion that the burning of incense took place in a separate container, a special bowl supported by the prongs.

A somewhat similar situation in the case of certain types of incensarios from later horizons at Kaminaljuyu bears out this idea. These Classic period

EARLY PRE-CLASSIC PERIOD (Las Charcas and Sacatepequez phases)	 a b c
LATE PRE-CLASSIC PERIOD (Miraflores phase)	 d e f g
EARLY CLASSIC PERIOD (Esperanza phase)	 h i j k l
LATE CLASSIC PERIOD (Amatle and Pamplona phases)	 m n o

97.8. Principal incensario types at Kaminaljuyu: (a) see Fig. 97.7a; (b) see Fig. 97.6c; (c) see Fig. 6b'; (d) Kidder, Jennings, and Shook 1946: fig. 201h; (e) fragmentary, Guatemala National Museum; (f) see Fig. 97.3c; (g) see Fig. 97.6a; (h) Kidder, Jennings, and Shook 1946: fig. 201g; (i) Kidder, Jennings, and Shook 1946: fig. 201e; (j) Kidder, Jennings, and Shook 1946: fig. 201a; (k) Kidder, Jennings, and Shook 1946: fig. 201b; (l) Kidder, Jennings, and Shook 1946: fig. 201j; (m) museum no. 4925; (n) museum no. 4900; (o) fragmentary, Guatemala National Museum.

examples, which must have originated elsewhere as they show no direct evolutionary connection with those of the Miraflores Phase, have a generally flaring-sided upper receptacle intensely fire-blackened, whereas the lower part consists of a high annular

base with no sign of burning. Only the inside of the so-called "grater" bowls, believed to have been the prong-supported vessels in which the actual burning was done, is smoked, whereat the "incensario" itself, being comparable to the high annular base of

the later examples, lacks this evidence. The concept of a high base or stand is apparently one of the basic principles in the construction of incensarios, for it gratifies the wish to lift the offering up and away from the earth.

Found in connection with incensarios of the Esperanza Phase at Kaminaljuyu (Kidder, Jennings, and Shook 1946:212, Fig. 90) are tall "smokestack" covers which allowed the escape of smoke during the burning of the incense. The "grater" bowls also had covers, I believe. Vessels of the same coarse, unslipped ware and bearing similar deep grooves on the interior surface have been found in the same deposits with the "grater" bowls. They lack the wide overhanging rim but have instead a vertical apron and loop handle (for proposed restoration see Fig. 97.6c, c'). This sort of vessel would fit neatly on the rim of the other, suggesting its use as a cover, the loop handle enabling it to be lifted to permit ventilation during the burning process. The interiors of both the postulated container and the cover are heavily smoked.

All this simply leads to the conclusion that only the bowl supported by the prongs was used for the actual burning of the incense. The large three-pronged "incensarios" served merely as an elaborate support for the bowl. It therefore seems advisable to distinguish them from true incense burners by referring to them as *incensario vessel supports*.

Turning from the significance of the prongs on these incensario vessel supports for a moment, I wish to say a few words concerning the bifurcated, "fish-tail" protuberance on the top and to the vertical side-flanges. The protuberance may have been primarily decorative or ceremonial rather than functional as not all incensarios and incensario vessel supports have it. It is present on the tops of certain of these vessels throughout the early Classic and Preclassic periods with only minor changes in shape and size. The vertical side flanges, in addition to any decorative or ceremonial function they might have had, would have

been convenient handles for lifting and moving these vessels, which were frequently of considerable size. Their appearance in later times on smaller incensarios could indicate a religious significance or simply decorative conservatism. (For further information concerning flanged incense burners see Kidder, Jennings, and Shook 1946:213; Boggs 1949).

In concluding this section on the probable function and methods of use of the incensario vessel supports attention should be called to a possibly late type reported from the Motagua Valley of Guatemala (Smith and Kidder 1943:143, Fig. 22a, f), where two specimens, similar in many respects to the three-pronged variety found at Kaminaljuyu but much smaller, were found at San Agustín Acasaguastlan. Unfortunately the lower parts of these examples are missing, which makes it impossible to tell whether or not they had vertical flanges. Both have the bifurcated protuberance. Neither the prongs nor such parts of the bodies as remain are smoked, which indicates that, in spite of their small size, they presumably could have been used only as supports for the actual incensario vessel. Although one came to light in a Late Classic (Magdalena Phase) tomb and the other in a deposit containing sherds of the same period, the fragmentary nature of both makes it possible that they date from earlier times.

I wish to express my sincere thanks to Dr. Paul Fejos, Director of Research of the Viking Fund, and to Dr. A. V. Kidder, Chairman of the Division of Historical Research of the Carnegie Institution of Washington, for making possible this opportunity for further study in the Maya area. I also wish to thank the staffs of the Carnegie Institution and the Museo Nacional for their co-operation and help. Special acknowledgment goes to Mr. E. M. Shook, who supplied much of the information on the Las Charcas and Sacatepequez phases and permitted the description and illustration of some of his unpublished material, and to Sr. José Antonio Oliveros, who did the drawings for this paper.

GUATEMALA CITY

A Polychrome Maya Plate from Quintana Roo

Frans Blom

In a private collection in Oaxaca City is a Maya plate which probably is one of the most magnificent pieces of Maya ceramics and certainly one of the most intriguing (Fig. 98.1a). It was found in Quintana Roo, Mexico, not far from Chetumal Bay. I am much indebted to the owners for permission to reproduce it; it was first called to my attention by Mr. Frederick A. Peterson.

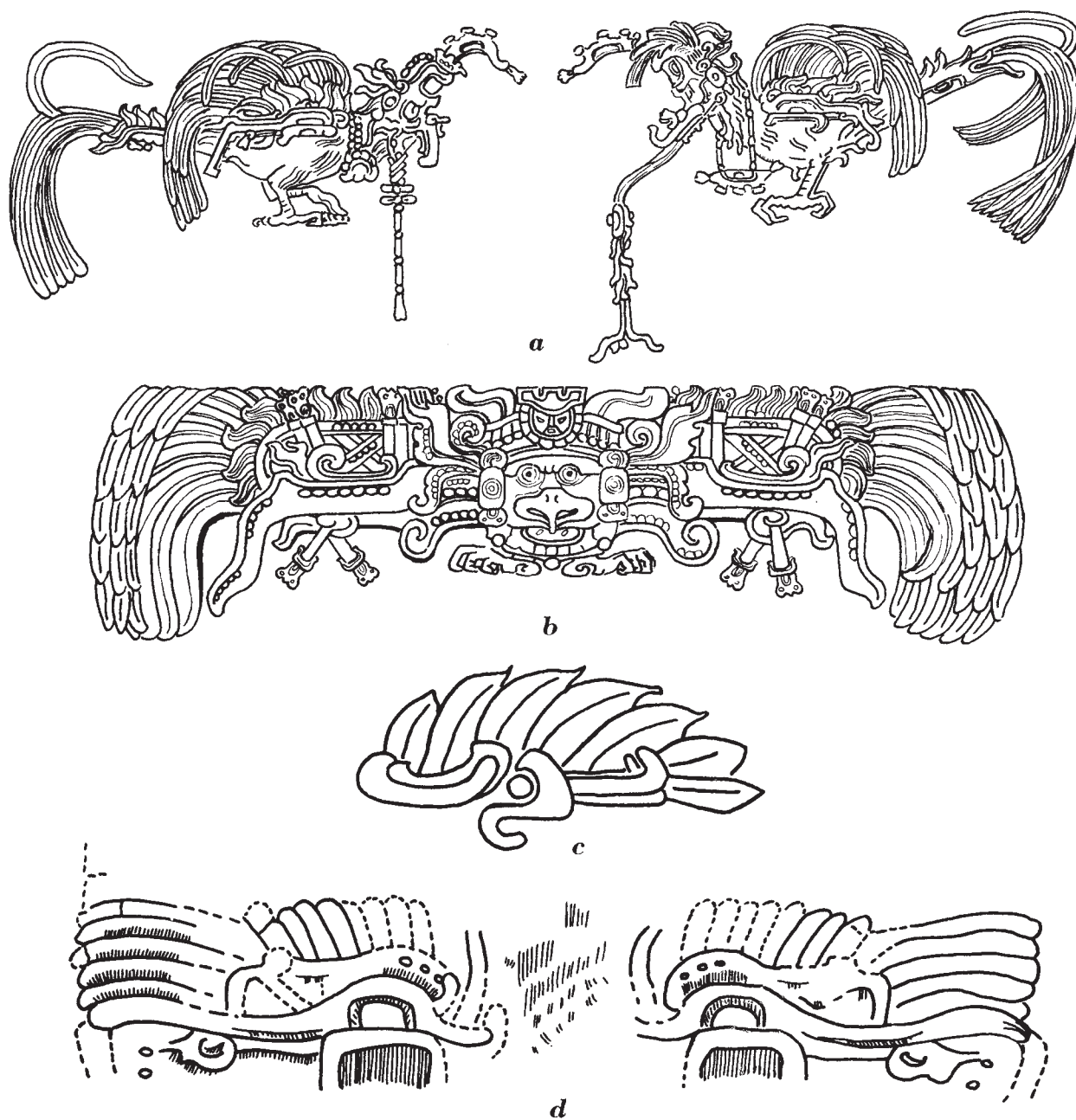
The plate measures 44 cm in diameter. Its surface is divided into two fields of equal size, the upper of which is covered with a multitude of figures and scrolls painted in black and brown with occasional red dots on an orange slip. The base is flat, the low sides are curved. The exterior of the base is slipped reddish orange, somewhat redder than the interior.

The center of the scene is occupied by a bird, which I shall discuss later, flanked by two seated men, each holding a blowgun. So far as is known, this is the only representation of users of blowguns in Maya art, in spite of the fact that the *Popol Vuh* constantly refers to this weapon. The black spots on the blow gunners' bodies indicate that the men are dead. Note the sights on the guns, I have made a quick but unsuccessful search of the *Popol Vuh* to find a passage which would describe this scene.

The strange bird, the Moan, sometimes with a human head and sometimes with a bird head, is quite frequent in Maya art. It appears at least three times at Palenque, once at Tikal, and at Tonina the stucco relief over a temple door, described by Stephens, shows this bird from the front (Figs. 98.1,11; 98.2a, b, a). It is also depicted as a clay whistle which was



98.1. Polychrome Maya plate from Quintana Roo: (a) polychrome plate, with representations of blowgun users; (b) stucco design, the Palace, Palenque, after Maudslay (1889–1902); (c) pottery figurine whistle, Tonina.



98.2. Representations of serpent-birds: (a) Temples of Cross and Foliated Cross, Palenque; after Maudslay (1889–1902); (b) wooden lintel, Tika1; after Maudslay (1889–1902); (c) detail of pottery figurine whistle (Fig. 98.2f); (d) stucco design over sanctuary, Structure A, Tonina.

found in a milpa at the foot of the slope where Tonina stands and which was given to me some years ago but is now in the Museo Nacional in Mexico City (Figs. 98.1c; 98.2c, j. Further search would no doubt reveal more representations.

In the plate illustrated here, the bird sits on the head of the earth monster, shown in profile. The out-

standing characteristic of this bird is its wing, part of which shows a serpent head in profile. Whatever head the bird may have, the serpent-head wings are always shown.

The lower half of the plate has a border of hieroglyphs along its edge. I like to imagine that they are a quotation from the *Popol Vuh*.

SAN CRISTOBAL LAS CASAS, CHIAPAS

"Olmec" Pictographs in the Las Victorias Group, Chalchuapa Archaeological Zone, El Salvador

Stanley H. Boggs

During a rather hurried reconnaissance of the Chalchuapa Archaeological Zone in 1942, a large, irregularly shaped boulder, decorated on four surfaces with incised human figures, was found in the Las Victorias coffee plantation about 2 km east of the city of Chalchuapa. At that time, I prepared a brief note of this discovery which was published in 1944 by Longyear (1944:17). No photographs of the stone accompanied the text, and the only conclusions then reached were that "the style of carving is very different from that usually found in El Salvador and may relate to the technique and time of the Tazumal stela."

The subsequent comparison of photographs of the Las Victorias monument with illustrations of bas-relief figures in the north and south ends of altar 5 at La Venta, Mexico (Stirling 1943, Pl. 41), has led me to believe that stylistically these carvings may be related and are presumably "Olmec"-inspired.

LAS VICTORIAS GROUP

The Las Victorias group of ruins in the Chalchuapa Zone has been very badly damaged as a result of long-continued cultivation of the soil scantily covering the remains. At present, the original nature and extent of the group is uncertain, owing both to this physical deterioration of the ancient constructions as well as to the fact that an extensive coffee finca, which now covers virtually the entire area, conceals whatever vestiges remain. The soil here is generally shallow, large outcrops of cracked and fissured stones of volcanic origin are visible at many points, and hundreds of boulders of the same material litter

the surface. The monument here discussed differed from scores of other surface stones only in its possession of carvings.

So far as I have been able to determine, this site contains no constructions comparable with those of the principal groups of the zone: remnants yet visible include low platforms and lines of stones, probably what is left of house mounds or foundations. No mound exceeding 1 m in height has yet been reported within Las Victorias group, nor indeed within 1 km of the stone monument.

THE LAS VICTORIAS MONUMENT

This monument consists of a large lava boulder of irregular form, decorated on each of four relatively flat surfaces with one incised or very low relief carving of a human, supposedly male, figure, three of which are portrayed standing or walking and one seated. There is no clear evidence of any special effort by the sculptor to prepare the surface of this stone; the figures were carved with little apparent regard to minor irregularities of the surface.

The stone itself is very hard, fine grained, grayish brown to gray; it shows many small air holes and probably relates to basalt. Its apex reaches 1.56 m above present soil surface. Some casual excavations around its base by finca employees prove that it extends but a short distance underground.

Since the carvings were adapted to the available rock surfaces and the entire stone has been turned slightly since 1943, probably during the aforementioned excavations, nothing can be said of the original

orientation. Roughly speaking, Figure A appears on the west surface, B on the south, C on the east, and D on the north (Fig. 99.1).

Figure A. Erect, probably walking, human figure, the body depicted in approximately three-quarters view but with face in profile and directed south. The left arm extends downward and away from the shoulder; the right arm, bent at the elbow, presses a bundle of some kind against the body.

Dress details are very sparsely indicated: a round pendant over the breast, a headdress of some soft (?) material which flows down over the sides and rear of the head, perhaps a jacket-like garment (more likely a poor drawing of the trunk), and a flap (of breech-clout or kilt?) which hangs behind the body to the knees. The upper part of the head covering has been broken off in fairly recent times, and the left hand and foot are missing.

The face is poorly sketched but its principal features are essentially similar to the corresponding elements of Figure C.

Figure B. Erect, probably walking, human figure in three quarters view, and face in profile and directed more or less east. The right arm holds a staff vertically and the left extends downward in front of the body. This figure stands on a more or less flat (platform?) surface, below which are toothed supports. Its staff suggests a thick pole over which a carved club-head has been slipped to serve as a weapon.

A helmet with a shoulder-length flap and a knob-like top covers the head. Suspended from the neck and resting on the breast is a large, more or less oval, pendant. Several horizontal lines about the waist seem to depict a broad belt composed of several bands or folds, while below, front and rear, vertical lines sketch the flaps of a breech-clout or "kilt." In the background, a generally rectangular area outlined from the height of the shoulders to below the knees may have been intended to signify a cloak.

Facial features, with the exception of the commonly pointed chin, differ considerably from those of other figures on this monument. The nose is pointed and rather aquiline, the sketchily drawn lips seem thinner than those of A and C, and the eye is a mere slit. The right ear is so clearly drawn that one might suspect that shoulder-length hair, rather than a helmet, is portrayed as covering the head. The expression of this face seems less dour than that of the other figures.

Figure C. Seated human figure in full face with head in profile, turned to its right facing south. The right arm rests on the right leg, hand on knee. The

left is bent at the elbow to grasp a rather elaborate staff or club. Damage to the stone after completion of the design has erased the upper portion of the headdress, the tip of the staff, and the lower half of the right leg.

The left leg is bent at the knee, suggesting a cross-legged, seated posture.

The staff generally resembles those of B and D, but its lower portion is much more detailed and appears to involve a bulging bundle of rods (?) with a glyph-like element superimposed. A strap-like object, broken at its outer extremity, separates the club head from the staff portion. The proportions of this staff or club would seem to imply that its employment was symbolical rather than utilitarian.

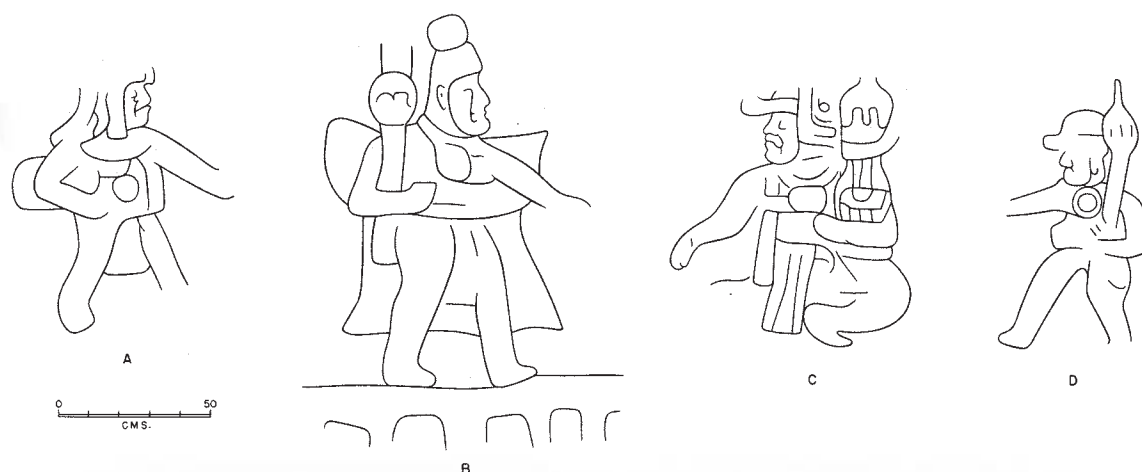
The headdress apparently consisted of at least three elements: a forward-projecting, stiff band or circlet slightly above or resting on the brow and turned upward at its outermost projection, a helmet-like peak, and a heavy, complicated covering of parts of the sides and rear of the head. This last covered the ears.

A broad flap or 'kilt,' probably the front portion of a breech-clout, hangs vertically from the waist. A narrow strap, suspended-vertically from the right shoulder, passes over the right groin. A similar band crosses over this at right angles, at the height of a large pendant or pectoral of cartouche form. Whether the pendant was attached to this second strap or, more likely, suspended from a third which encircled the neck of this figure is not clearly shown. The harness-like arrangement of these three straps, however, leads me to believe that the first two at least were parts of the dress and may have been functional, whereas the third was intended to delineate a necklace from which the ornamental pendant is suspended.

The facial features resemble rather closely in details those of A, but are here more elaborately drawn. The nose is concave, with a thick tip and widespread alae, perhaps rather "negroid." The down-turned, fairly thick lips and the heavy, jutting chin impart a somewhat grim expression to this countenance. The heavy-lidded eye seems to be closed (?).

The overall proportions of this figure are slightly greater than those of B and approximately double those of A and D.

Figure D. Erect, probably walking, human figure in three-quarters view, head in profile, facing east, and, like A, more schematically depicted than either B or C. the right arm, of which the lower third is missing, extends almost horizontally in front of the body; the left is bent at the elbow to grasp a long club-like staff with a sharp tip.



A



B



C



D



E

99.1. Monument 1, Las Victorias Group: (a-d) pictographs on Monument 1, Las Victorian Group; (e) Monument 1, showing B and C chalked.

Virtually no details of dress can be detected save a beaked, hat-like head-covering or helmet. Some cryptic lines about the base of the staff, a curve on

the left thigh and a bulge at the waist, may refer to some covering of the midsection, though this is questionable. The first suggest, from their position only,

fingers of the left hand closed around the base of the club. Of ornamentation, only a large round pendant resting on the breast can be discerned.

Drawing of the face is also very sketchy. The nose is virtually round in profile and seems to show broad alae. The round, jutting chin and down-turned lips reflect such features better portrayed in A and C. A curved line immediately behind the jaw may sketch the lobe of the left ear.

REMARKS

The pictorial significance of Las Victorian monument may be impossible to interpret. A rather obvious, very possibly erroneous, guess is that the four figures are centered on C, since that is the most elaborately drawn and the only seated member of tile group. From this point of view, accepting all as the component parts of one (court?) scene, B and D, which face around the stone toward C and carry simple clubs, may personify priestly subordinates or military guards of the chief, and D a petitioner or tribute-bearer.

On the other hand, readily observable individual differences in attitude, scale, details of dress and of facial features intimate that A and D may not have been carved at the same time as B and C, and were almost certainly not the work of the same sculptor. In some degree, the former seem inferior imitations of the latter. However, B and C differ markedly one from the other in nearly all respects save style and execution, a fact which inclines me to believe that two sculptors were employed, each responsible for one pair of figures, although the pictographs may have been completed at approximately the same time.

Whatever the idea and purpose of these carvings may have been, one interest they possess for the

archaeologist stems from their possible relationship with La Venta bas-reliefs. Obvious restrictions on any attempted comparison are the superior technique, greater elaboration, and finer execution of the La Venta figures as well as the difference in subject matter. However, after taking into account these variations and the considerable distance between the two sites, there remain surprising similarities in artistic style and in several specific details. For example, the idea back of the strange "hats" or helmets, as well as certain details of these objects themselves, are very distinctive and characteristic of figures on both monuments. Again, the lips, noses, eyes, and chins of all show many points of correspondence. Whether either or both the La Venta and the Las Victorian monuments were carved by "Olmec" sculptors may be queried, but that both are expressions of basically the same artistic tradition seems highly probable.

Turning to the date of the Las Victorian monument, we find that virtually no evidence exists in El Salvador on this point. No careful excavation has been attempted in this part of the Chalchuapa Zone, and surface sherds indicate a very long occupation of the area, from perhaps before the time of Christ to the present. Stirling assigns the major stone monuments at Tres Zapotes to the Lower and Lower Middle periods established there and postulates an early, apparently roughly similar, time for the La Venta monuments. If we accept his suggestion, the temporal position of this particular style of sculpture would appear to refer to Preclassic centuries of the Christian era and, at a guess, the Las Victorian pictographs may be no later than the fifth century. Whether a major time lag is involved between the execution of the Mexican carvings and that of their Salvadoran comparatives is problematical in view of the lack of contributory ceramic evidence associated with the monuments themselves.

A Group of Jointed Figurines in the Guatemala National Museum

Stephan F. de Borhegyi

A small group of "Archaic" figurines, thought to be of interest to students of Middle American archaeology, came to light during organization of the large study collection of the Guatemala National Museum. This project is being made possible by a fellowship granted by the Bollingen Foundation of New York to the writer, who wishes to express his indebtedness to this institution, as well as to Dr. Heinrich Berlin for helpful suggestions and to Sr. Antonio Oliveros for careful drawings. A description of two figurines from Kaminaljuyu, on the outskirts of Guatemala City, and one from the ruins of Tazumal in El Salvador follows.

Female figurine torso (Fig. 100.1a-e). Yellowish white, finely polished, Miraflores ware with a grayish yellow paste containing particles of white volcanic ash. Both head and legs of the figurine are now broken off. Creases and folds in the solid, carefully modeled 'body are indicated by pre-slip perforations and incisions. The under part of each shoulder forms a smooth-edged cup, from the center of which a hole runs to the back of the neck. The holes, made by a sharply pointed instrument, are indicated in Figure 100.1c, d by parallel dotted lines.

Height of torso: 9 cm. Diameter of shoulder cups: 1.5 cm. Provenience: Kaminaljuyu surface find near the area called Arenal. Guatemala National Museum No. 2357a. Chronological position: Late Preclassic, Miraflores phase.

Small female figurine torso (Fig. 100.1f, g). Weathered, yellowish white, Miraflores ware with yellow-

ish brown paste containing volcanic ash and mica temper. The head and legs are missing. The solid, carefully modeled specimen represents a pregnant woman in sitting position. Each shoulder forms a smooth-edged cup although, unlike those of Figure 100.1, they do not have the transverse hole from the center of the cup to the back of the neck. How the arms were attached is problematical.

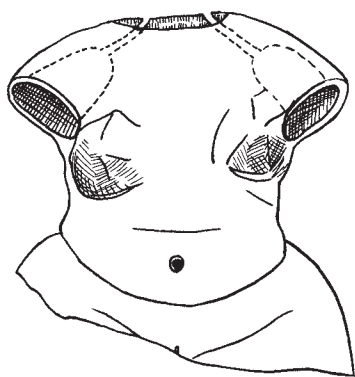
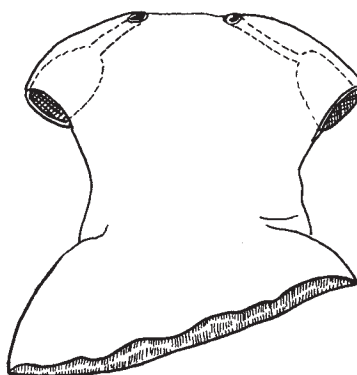
Height of torso: 3 cm. Diameter of shoulder cups: 7 mm. Provenience: Kaminaljuyu surface find. Guatemala National Museum No. 2357b. Chronological position: Late Preclassic, Miraflores phase.

Female figurine torso (Fig. 100.2a, b). Yellowish white ware with grayish yellow paste containing particles of white volcanic ash. The solid specimen is very weathered and consists only of the right upper part of the trunk. The right shoulder forms a smooth-edged cup perforated in the same manner as in Figure 100.1a-e.

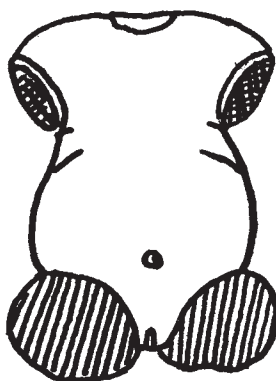
Height of torso: 6.3 cm. Diameter of shoulder cup: 1.4 cm. Provenience: Tazumal, near Chalchuapa, El Salvador. Surface find. Guatemala National Museum Lot No. S-1.+ Chronological position: probably Late Preclassic.

This small group of figurines seems to bear a close relationship to the finely finished yellowish white figurine arm from a Miraflores deposit at Kaminaljuyu illustrated by Kidder (Fig. 92.5e) and reproduced here as Figure 100.2c, d (Museum No. 2317). At the time of its discovery, this specimen was the first evidence that jointed figurines were made


a

b

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d

e

f

g

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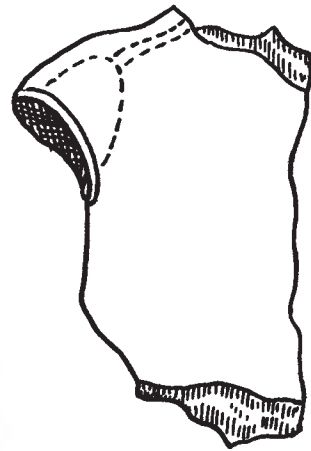
100.1. Jointed figurines in the Guatemala National Museum.

by Archaic people in Guatemala. It was thought that the applied perforated boss must have, to quote Kidder, "fitted into a cup in the edge of a flattish

body that was perforated front-to-back." A careful re-examination of this specimen has revealed that, rather than being a leg, as originally thought, it is a



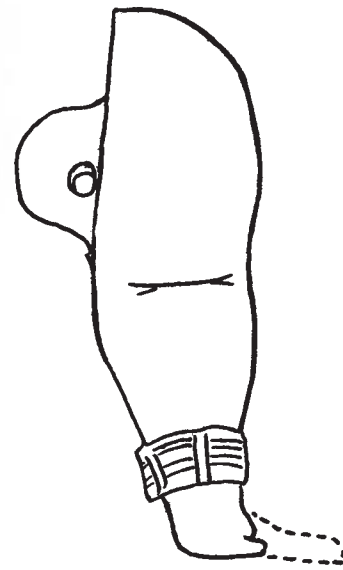
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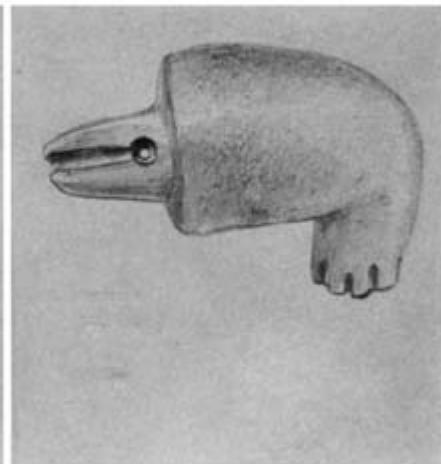
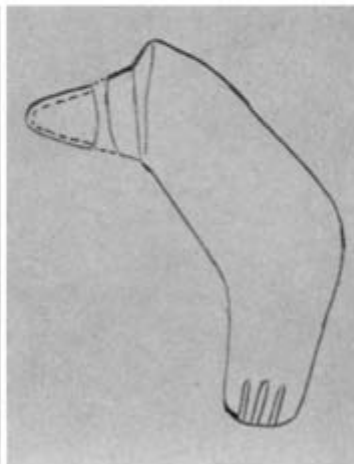
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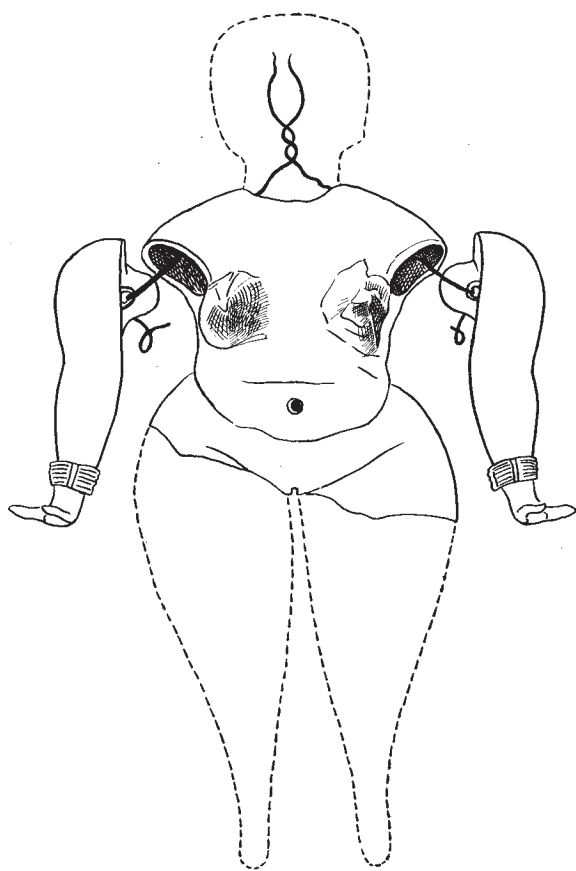


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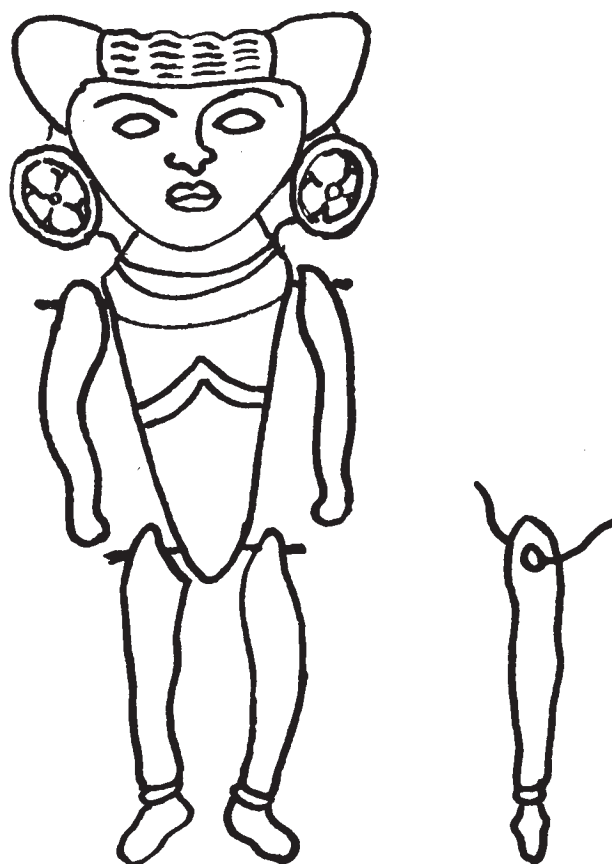


e

100.2. Jointed figurines in the Guatemala National Museum.



a



b

100.3. Jointed figurines in the Guatemala National Museum.

left arm, the fingers of which, as well as the greater part of the palm, having been broken off. A restoration of the hand is indicated by the dotted line in Figure 100.2d.

I am of opinion that the shoulder treatment of the figurine torsos here considered may well constitute the cup postulated by Kidder. Somewhat smaller bosses than that of Figure 100.2c, d would fit neatly into the shoulder cups of the figurines just described. Except in the case of Figure 100.1f, g a cord could be knotted through the perforated boss of each arm and passed through the transverse holes to meet at the back of the neck. In this way the arms are so attached that they could be lifted singly or in unison by pulling upon the cord, a method similar to that used to work marionettes (Fig. 100.3a). So much we know of the appearance and attachment of the arms but as for the legs, little is known. Judging from the Mexican examples, such as illustrated by Spinden from Teotihuacan (1922, Fig. 57) and here reproduced as Figure 100.3b one would expect the legs as well as

the arms to be jointed, but the Guatemala specimens suggest that they formed parts of the solid body, as indicated in Figure 100.3a.

Information as to the occurrence, other than at Kaminaljuyu, of this type of jointed-arm figurine is lacking, being limited so far to one specimen from Tazumal on the western border of El Salvador. For further data on relations between Kaminaljuyu and Tazumal, see S. H. Boggs (1944). In a letter of October 24, 1950, Boggs kindly informed me that the jointed-arm figurine type is at Tazumal not uncommon, though statistically it occurs in small percentages. Further details can therefore be expected in his forthcoming publication on the excavations at Tazumal.

Perhaps one of the most interesting points in connection with these Late Preclassic jointed-arm female figurines from Kaminaljuyu is that, although considerably earlier than the apparently sexless specimens from Mexico, they involve a mechanical concept both more sophisticated and more complex.

In the case of the Mexican examples the top of each arm and leg is perforated instead of having a boss. A cord was passed through a transverse hole from shoulder to shoulder and from hip to hip through the solid, usually flat, triangular body as seen in Figure 3,b. They are common throughout the Classic period (Teotihuacan III and Upper Tres Zapotes), and are reported from Teotihuacan (Gamio 1922:1, Pl. 87a, b; Spinden 1922: 178, Fig. 57), San Miguel Amantla and Santiago Ahuizotla (Seler 1915c:473, Pl. XXXII, Fig. 2), Jalapazco (Seler 1915c, Fig. 1), Huamantla (Seler 1915c, Pl. XIX), Tres Zapotes (Drucker 1943b:121, 132, Pls. 41,w; 47,1; Weiant 1943:116, 123, 128; Pl. 61, first row), near San Andres Tuxtla (Seler-Sachs 1922:24, Pl. 10; Valenzuela 1945a:88, Fig. 5; 1945b), from the Zempoala region (Garcia Payon 1950:102, Pl. 16, Fig. 6), from the Pavon site near Tampico (Ekholm 1945:457, Fig. 42k), Tajumulco (Dutton and Hobbs 1943).

These doll-like figurines with their movable joints, although of two distinct types, are possibly of similar concept; their wide geographical distribution and long duration argue for their considerable importance. To just what important function these pre-Columbian "dolls" may be assigned is unknown. What seems to be most likely, as already suggested by Kidder (p. 17), is that they may have served some brief but unknown purpose in ceremonies and were later given as toys, like the Hopi katchinas, to amuse the children and, what is worse, confound such playful adults as archaeologists.

Since this paper was submitted, Note 95 in this series has been published. In it Kidder illustrates another jointed arm from Kaminaljuyu with perforated and longitudinally grooved boss, which I here reproduce as Figure 100.2e. This specimen is also of finely finished Miraflores white ware.

A Study of Three-Pronged Incense Burners From Guatemala and Adjacent Areas

Stephan F. de Borhegyi

Since the recent discussion (Note 97) of a group of cone-shaped effigy heads and three-pronged incense burners from the Preclassic period at Kaminaljuyu, the large archaeological site just outside Guatemala City, some interesting new specimens have come to light. Their study has brought about new concepts and filled several gaps unavoidably left open in the earlier report, as well as necessitated some slight alterations in the theories previously advanced. This study was made possible by a grant-in-aid from the Bollingen Foundation of New York, to which institution I am greatly indebted.

Thanks go to Dr. A. V. Kidder for unfailing help and encouragement and to E. M. Shook and Heinrich Berlin for many helpful suggestions. The drawings were made by Sr. Antonio Oliveras of the Guatemala National Museum, photographs by Dr. Kidder (Figs. 101.1–101.3; 101.4a) and by Sr. Eugenio Escaler (Figs. 101.4b–6).

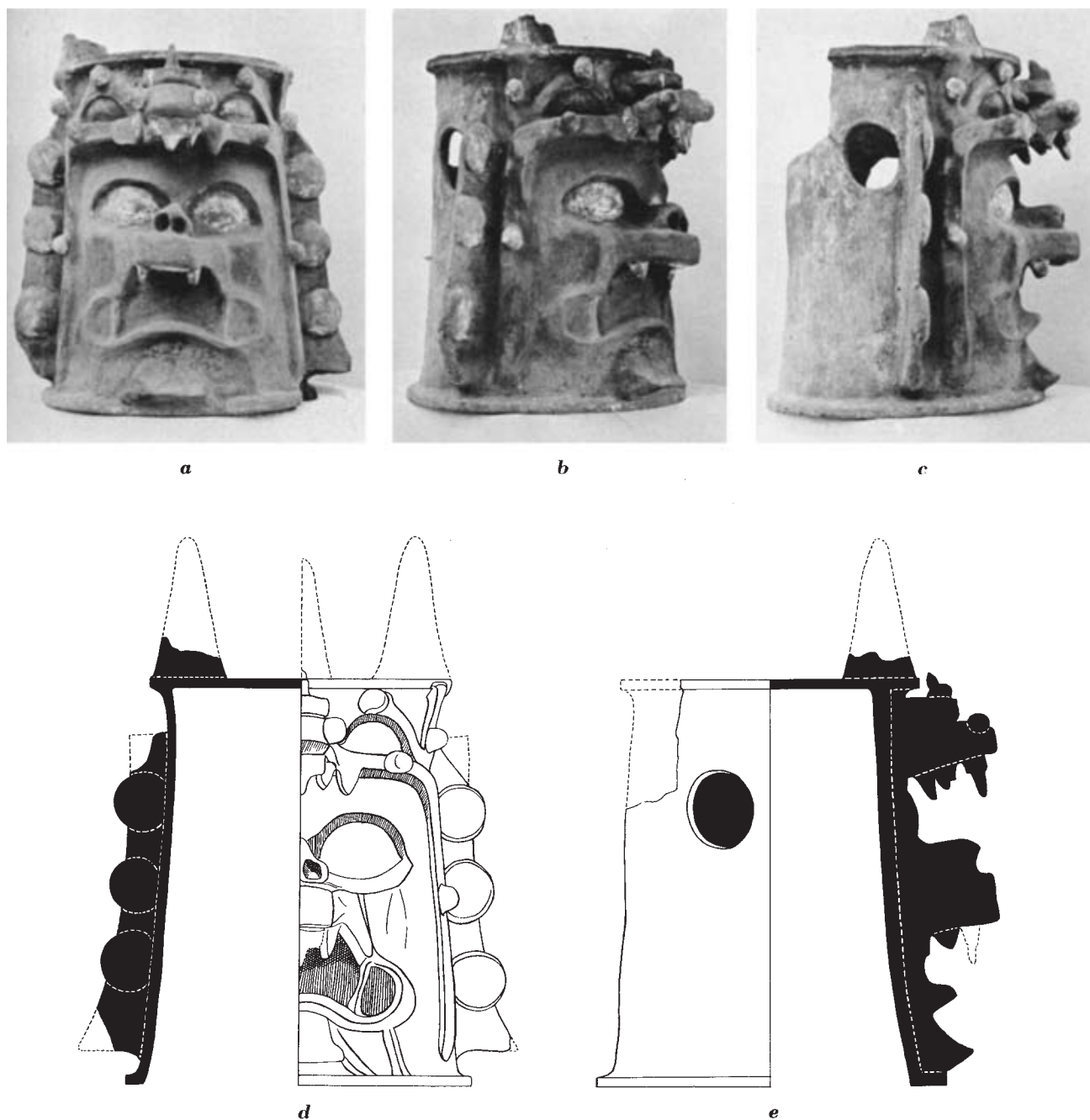
The materials are in the Guatemala National Museum and in private collections in Guatemala. Little is known of their provenience or age. Many have passed from hand to hand, thereby losing all identity, and it is only recently that, in the organization of the collections of the museum, they have been recognized as members of this interesting type of incense burner.

DESCRIPTION OF MATERIAL

1. Large, cylindrical, three-pronged incense burner (Fig. 101.1). One badly damaged solid prong remains,

the other two have been broken off but scars indicate their position and basal diameter (8 cm). The reddish brown ware is well smoothed but unpolished. The paste is also reddish brown and liberally sprinkled with particles of white temper, presumably volcanic ash. A grotesque, conventionalized jaguar face with open mouth is depicted below the upper jaw of another jaguar or possibly serpent. The solid snouts of both animals and their sharply filed teeth are applied to the front wall of the vessel. The incisors of the upper face are tau-shaped and the corresponding teeth of the lower face, although broken, appear to have been similar. The large oval eyes, eyebrows, and lips are well modeled, probably of applied fillets. In addition, the face of the serpent-like creature is adorned with 10 spherical buttons, four of which are applied to parts of the upper lip, one above each eyebrow, one on either side of the eyes, and one on either side of the projecting snout, possibly as a representation of nostrils. The side flanges (30 cm long and 5 mm thick) are also applied and are adorned with three larger, flat, appliqué buttons (5 cm in diam.) evenly spaced along the length of each flange. Immediately behind each flange a round vent (7 cm in diam.) has been cut in the vessel wall and the edges carefully smoothed. Light vertical raking is visible on the back; horizontal striations encircle the interior.

Covering the entire piece is a red slip; traces of a calcareous white wash are present on the eyes and teeth of both animals, the prongs, the bulging rim around the base, the top, and the less carefully smoothed posterior half. The short, blunt, beardlike



101.1. Three-pronged incense burners from Guatemala.

protuberance of the jaguar face bears traces of thin yellow paint. Between the two frontal prongs there may have been a connecting ridge.

The flat top and the solid stump of the one remaining prong are fire-blackened. The well-smoothed interior shows no sign of fire or smoke.

Dimensions: ht. (without prongs) 38, basal diam. 32, top diam. 18.5 cm. Provenience: Hartwell

M. Webb collection, Guatemala National Museum, private coll. no. 9; believed to be from Kaminaljuyu. Comparative material: Several solid fragments of snouts, similar to that of the jaguar face, were found by Carnegie Institution at Kaminaljuyu. Apparently, these had been broken from similar incense burners. Chronological position: probably Late Preclassic, Miraflores phase.

2. Fragments of a cylindrical three-pronged incense burner (Fig. 101.2). The ware is coarse and reddish brown; paste thickly sown with white crystalline particles. A grotesque, conventionalized jaguar face with open mouth is depicted on the front wall. The teeth, fangs, eyes, tongue, ears, and nose are applied. A vague indication of a vertical side flange is present on the remaining portion of the left wall. The frontal solid prongs (basal diam. 3 cm) are broken; the rear part of the rim and the third prong are missing but the three were undoubtedly placed in the usual triangular formation as on another fragment with the same top diameter in which the scars are clearly visible (Fig. 101.2b, c): A low ridge (6.5 cm long) connects the two frontal prongs on each specimen.

Faint traces of a thin white wash are present on the prongs and the slightly convex top. These areas are heavily fire-blackened; no evidence of smudging on the interior.

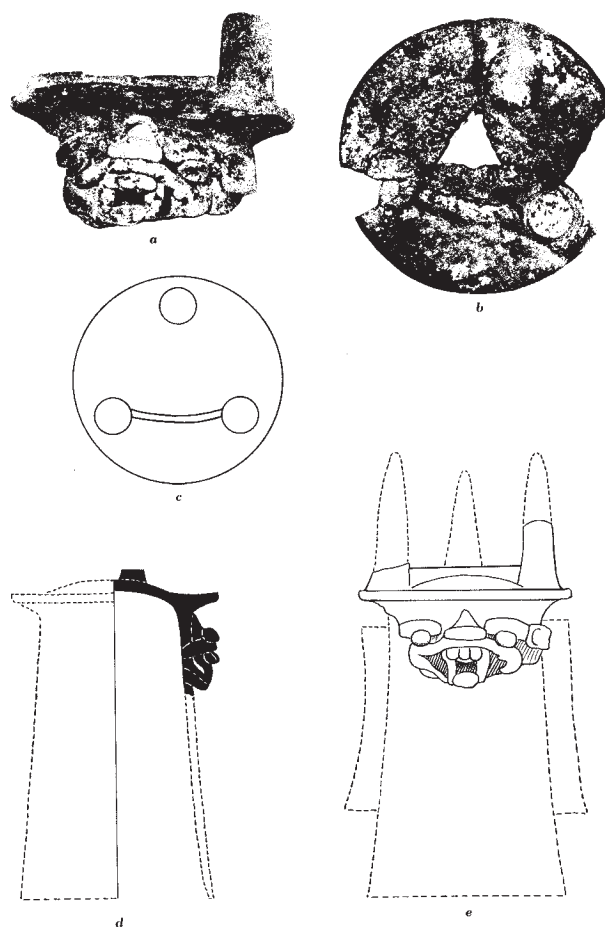
Dimensions: ht. (without prongs) 7, top diam. both specimens 15 cm. Provenience: Both in Guatemala National Museum (Fig. 101.2a; no. 3487). They were recovered at Kaminaljuyu by Carnegie Institution in 1949 from a pit in the northern part of the area called Arenal. Chronological position: Late Preclassic (possibly Arenal subphase of Miraflores).

3. Cylindrical, three-pronged incense burner (Fig. 101.3a, a', a''). All three prongs, presumably solid, are broken off; the remaining scars indicate a basal diameter of 5 cm. The ware is coarse, unslipped, unpolished, reddish brown; paste slightly darker, tempered with mica and white crystalline particles. A grotesque, probably human, face with open mouth, arched nose, and flat, protruding cheeks, lip, and ears, is depicted on the front wall. All features are applied. There are two plain, vertical flanges, 16.5 cm long, 7 mm thick; a vent, 2.5 cm in diameter, behind each. Between the frontal prongs is a connecting ridge 6.5 cm long.

Remains of a thin white wash around the face and on the front base suggest that the entire front was once so covered. No signs of a wash are present on the rear but that surface has been lightly raked as in Figure 1. The top is fire blackened but not the interior.

Dimensions: ht. (without prongs) 24, basal diam 15 cm. Provenience: Guatemala National Museum, no. 7336; believed to have come from Kaminaljuyu. Chronological position: probably Late Preclassic, Miraflores phase.

4. Fragment of cylindrical three-pronged incense burner (Fig. 101.3b, b', b''). All three prongs, presum-



101.2. Three-pronged incense burners from Guatemala.

ably solid, broken off but scars indicate a basal diameter of 1.4 cm. The ware is coarse, unclipped and slightly smoothed but unpolished, reddish brown with slightly darker paste tempered with pumice and mica. A grotesque, probably human, face with wide-open mouth is on the front wall, the effect being that of a Greek mask of tragedy. The four pointed teeth (lower left now broken) and the button nose are applied. Lips, eyes, forehead pendant, and eyebrows may have been applied or possibly modeled. Although not connecting there, a ridge 5 cm long lies between the frontal prongs. Remains of a white wash are visible around the lips, nose, and forehead pendant. Top but not interior fire-blackened. The specimen is too fragmentary to say whether or not it had vertical side flanges.

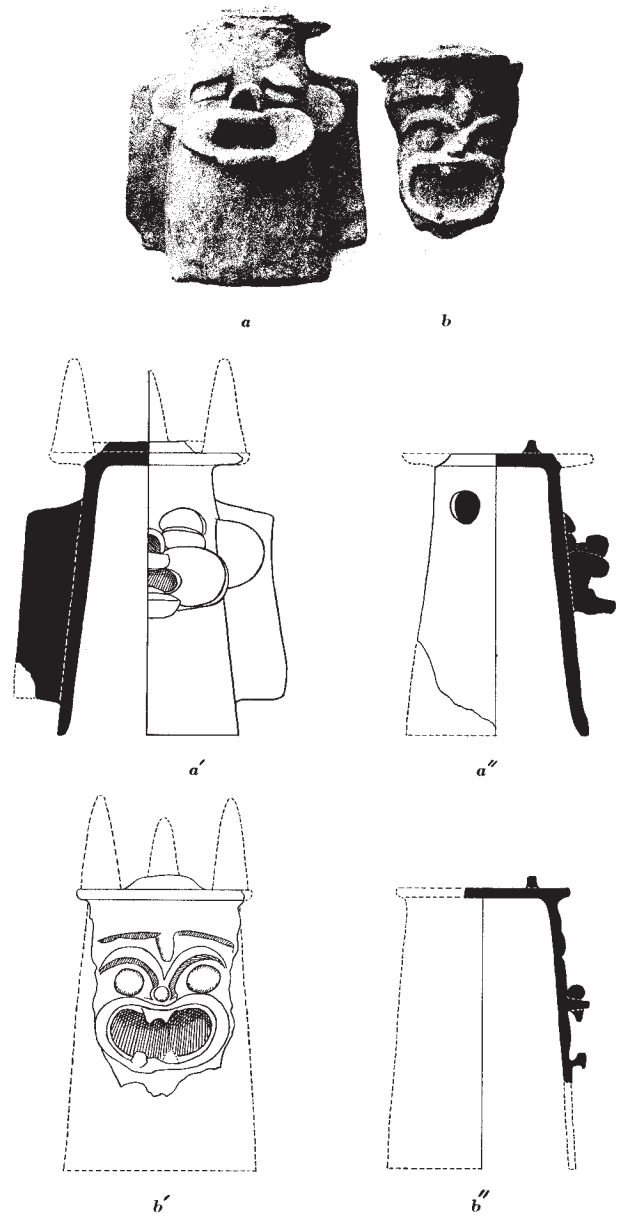
Dimensions: ht. (without prongs) 17, top diam. 16 cm. Provenience: Guatemala National Museum, no. 4384; believed to be from one of the archaeological sites at Asuncion Mita, Dept. of Jutiapa, Guatemala. My only source of information concerning provenience was the old museum catalog (no.

2298), which in many cases has proved inaccurate. I believe the specimen is of Late Preclassic date and probably comes from Kaminaljuyu, because similar fragments occur there in Miraflores deposits. Comparative material: sherds from incense burners with similar paste and bearing modeled or applied eyes or eyebrows, frequently with traces of a white or yellowish wash, were found at Kaminaljuyu near Mound E-III-3 by Carnegie Institution: chronological position: probably Late Preclassic.

5. Top fragment of large three-pronged incense burner (Fig. 101.4a, a'). The ware is unclipped, unpolished, reddish brown; paste darker, thickly sown with white particles. One complete and one fragmentary large hollow prong, 13 cm in basal diam., remain; a vent, 2.5 cm in diameter, at the base of each. Between the frontal prongs is the remnant of a connecting ridge 3.6 cm high. A vestige of a vertical flange is present on either side of the vessel. A vent, probably round, has been cut in each of the two side walls and the edges smoothed. Twisted appliqué fillets and spherical buttons are applied to a flat scroll formerly attached in some manner to the front. Unfortunately the fragmentary condition of the specimen makes the restoration questionable. The top and prongs are covered with a thin white wash and are fire blackened. The rough interior shows no sign of smudging.

Dimensions: ht. of prong 28, top diam. ca. 47 cm. Provenience: Guatemala National Museum, lot no. C-42; from bottom of deep barranca northeast of Mound E-II-1, Kaminaljuyu; Carnegie Institution, 1948. Association: the same lot contains several fragments of a fire-blackened, deeply scored, coarse ware incense burner cover, believed to have been used in connection with this specimen. The theory that the prongs of the three-pronged incense burner supported such a cover was discussed at length in Note 97 (Fig. 97.6c): These covers were formerly referred to as "heavily scored grater bowls" (Note 89; Shook 1951). Fragments of fine incised Miraflores black-brown ware, white ware, and red ware "flower-pots" are also numerous in the lot. Chronological position: Late Preclassic, possibly Verbena subphase of Miraflores.

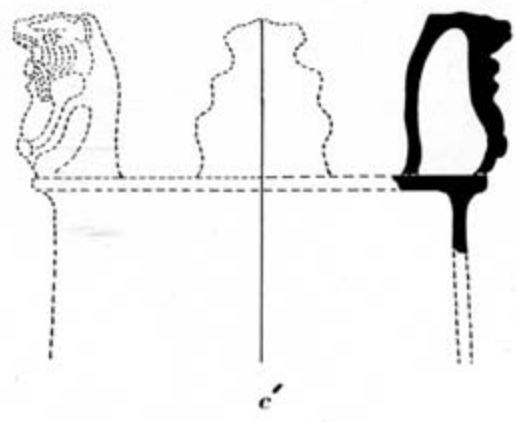
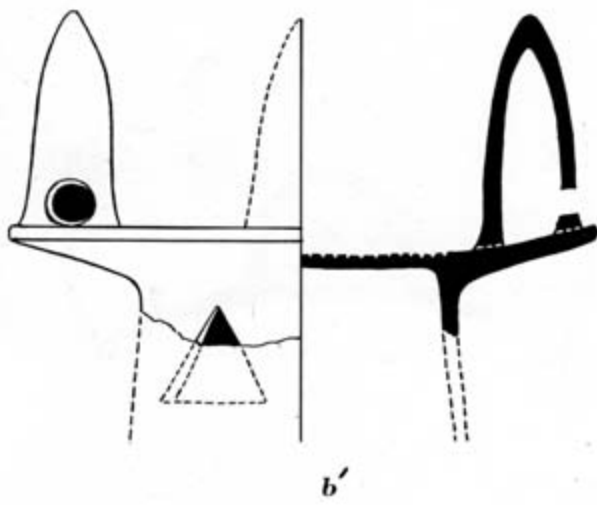
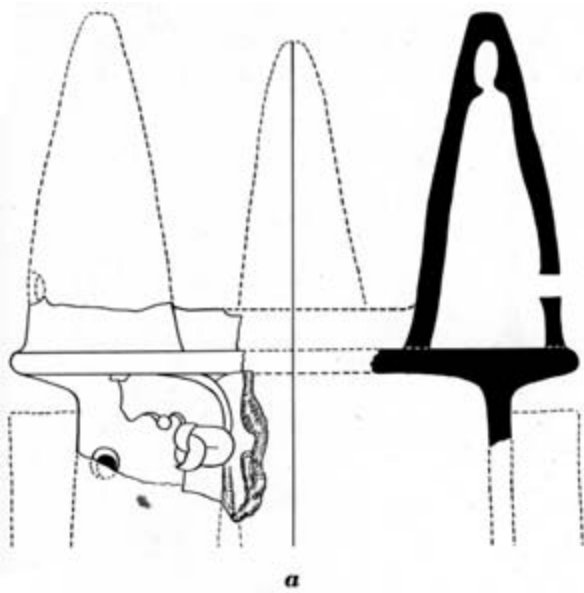
6. Top fragment of three-pronged incense burner (Fig. 101.4b, b'). The fragment bears one hollow prong, with a vent 2.5 cm in diameter at the base. The ware is light pinkish orange, considerably weathered; paste slightly darker, contains particles of white temper. Parallel striations encircle the slightly concave top. Neither side remains to indicate the presence or lack of side flanges. Below the rim is



101.3. Three-pronged incense burners from Guatemala.

a section of a smooth-edged triangular opening in the wall, presumably decorative. No trace of slip or wash, probably due to weathering. Fire-blackening on the top but not in the interior.

Dimensions: ht. of prong 13, top diam. ca. 32 cm. Provenience: Guatemala National Museum, no. 4203. Found by Gustav Strömsvik in the main plaza of Quirigua during work by Carnegie Institution in 1934. At the same time, similar but more fragmentary pieces of broken, hollow prongs were found in Pit 7 in the cobble pavement of the same plaza. Associated material: Weathered base sherds of round,



101.4. Three-pronged incense burners from Guatemala.

hollow-footed tripod vessels of Late Classic type and Morocco red-on-orange ware flaring-sided bowls (Copador type). The red paint of the latter contains specular hematite. Also in association were heavily fire-blackened sherds of deeply scored incense burner covers of the same ware and paste as the incense burner. Comparative material: The effigy-pronged incense burner from Chiquimulilla, Dept. Santa Rosa, Guatemala (Fig. 97.7; Kidder, Jennings, Shook 1946, Fig. 202.c, shown inverted), has similar triangular openings in the vessel wall. Chronological position: probably late Classic.

7. Two effigy prongs from three-pronged incense burners (Fig. 101.5a, b). (a) Hollow effigy prong depicting the wrinkled face and stooped Figure of an old man. Only a small section of the rim still adheres to the prong. An unpolished yellow-ocher slip is applied to a reddish brown paste containing particles of white temper. The features, earrings, and "peaked cap" headdress of the effigy are moldmade but the arms and legs are modeled; fingers and toes are indicated by crude, preslip, incisions. At the middle, below a horizontal groove suggestive of a belt, is a vent 7 mm. in diameter; a second vent is in the rounded top of the prong. The feet of the old man, as well as the prong itself, rest on the gently outcurving rim of the incense burner. Below the rim is a carelessly painted, dark red horizontal line, 3.5 cm wide. Parallel to this and 1 cm below is a finger-indented fillet. To judge from the angle of breakage, the top of the specimen must have been slightly convex. The back of the prong is lightly smudged.

Dimensions: ht. of prong 18.5, basal diam. of prong 8.5 cm. Provenience: Dieseldorff Collection, Guatemala National Museum, no. 5796; provenience unknown. Comparative material: A similar moldmade effigy prong from an incense burner was exhibited in September 1950, at the Honduran Cultural Exposition in Guatemala City. It bears the face of an old man with a "colonial cocked hat" headdress. The ware is unpolished grayish ocher and the paste contains particles of white temper. As in most prongs, the top is slightly worn on the outside and a vent, 2 cm in diameter, is at the exterior base. In addition, there is a narrow slit under the chin of the effigy. The exterior wall of the stand has been raked vertically. The specimen is said to be from the Sula Valley in northwestern Honduras and is in the private collection of the Escuela de Belles Artes of Tegucigalpa. Unfortunately no photograph was taken. Another similar group of moldmade effigy prongs from three-pronged incense burners has been reported from Travesia and San Pedro Sula, Honduras, although they were described as "rising inner

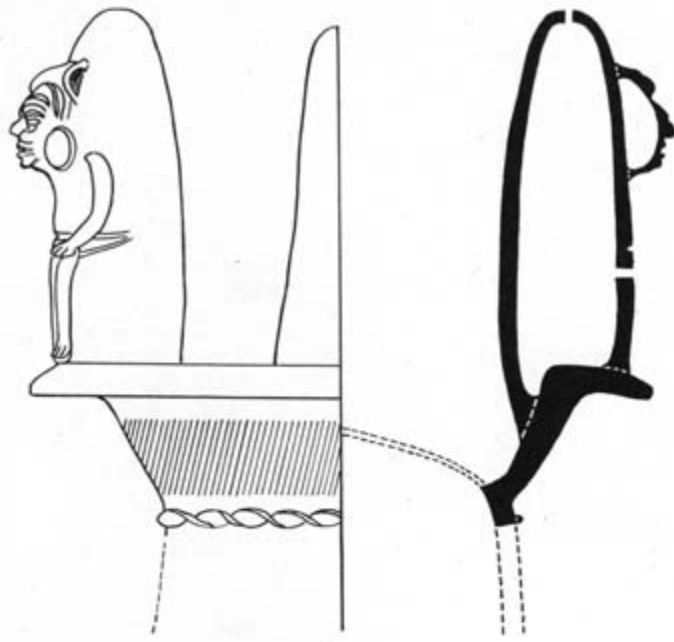
handles from large vessels" (Stone 1941:82, Figs. 93; 94j, o). Chronological position: probably Late Classic or Early Postclassic.

(b) Hollow effigy prong depicting moldmade animal, probably pisote (Fig. 101.4c, c'). The animal is squatting on the flat rim of an incense burner fragment with what appears to be a scarf knotted around its neck. The ware is moderately well polished and pinkish cinnamon over a very sparingly tempered, slightly darker paste. The prong and the remains of the rim are well fire-blackened; interior wall unsmudged.

Dimensions: ht. of prong 8.5, basal diam. of prong ca. 6 cm. Provenience: Dieseldorff Collection, Guatemala National Museum, no. 5924; provenience unknown. Chronological position: probably Late Classic or Early Postclassic.

8. Incense burner with three flattish, bowed columns supporting a cover (Fig. 101.6). Superficially polished, reddish brown ware; darker brown paste containing particles of white temper. No trace of paint or wash. The specimen consists of two major parts: bell-shaped base with three vertical, slightly bowed columns; and an attached hemispherical cover resembling a sailor's cap. Two round vents 3 cm in diameter have been punched in the wall on either side. The exterior of the flaring rim and the concave interior of the cover are scored with deep parallel and crisscross lines, executed while the clay was still in the leather-hard stage, the edges being jagged and elevated above the general surface. On the apex of the cover a modeled animal head has been applied. A smoke outlet runs from the interior of the cover through the neck and out the mouth. The animal appears to be a jaguar. Both the eyes and ears are applied. The mouth is badly damaged but at one time sharp teeth were represented by deep incisions. The interior of the cover, the smoke outlet, the flattish columns, and the slightly convex upper surface of the base are all heavily fire-blackened. The interior of the bell shaped base bears no sign of smoke or burning.

Dimensions: total ht. 33, basal diam. 20, top diam. 24 cm. Provenience: Private collection of Sr. Juan Jose Pellecer, Antigua, Guatemala; provenience unknown. Chronological position: unknown. Comparative material: a similar specimen was noted by E. M. Shook in the private collection of Sr. Jose Llarena, Antigua. Of similar ware and paste but of much finer workmanship than the foregoing, it is somewhat taller (total ht. 38, basal diam. 18 cm). A finger-indented fillet encircles the base. The animal head on the cover also suggests a jaguar but is more carefully modeled and in addition has an outstretched tongue.



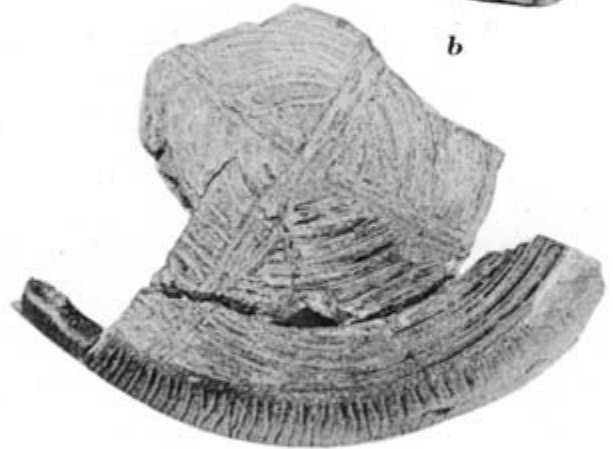
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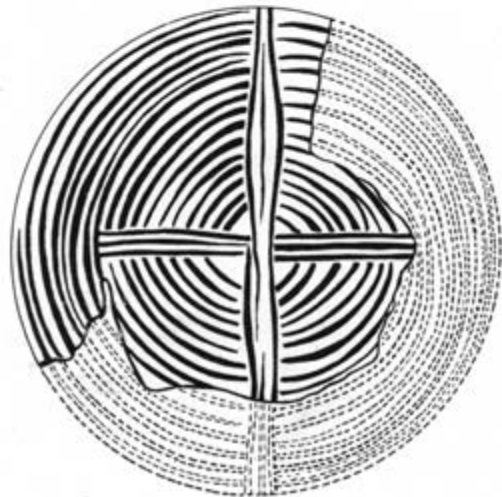
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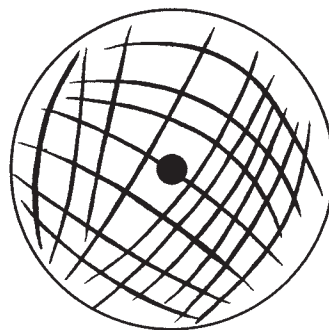
101.5. Three-pronged incense burners from Guatemala.



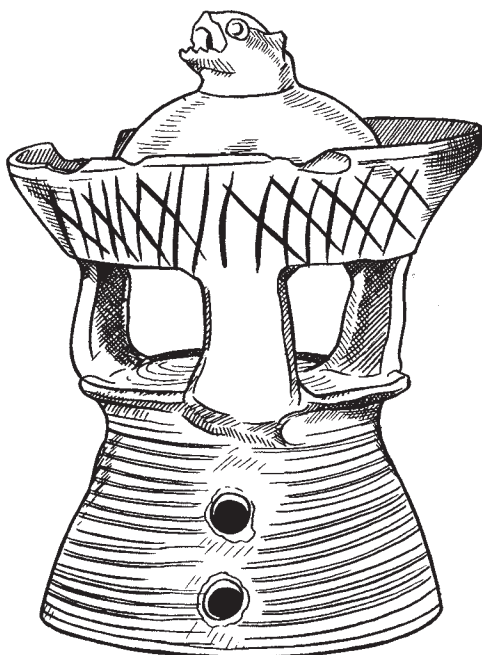
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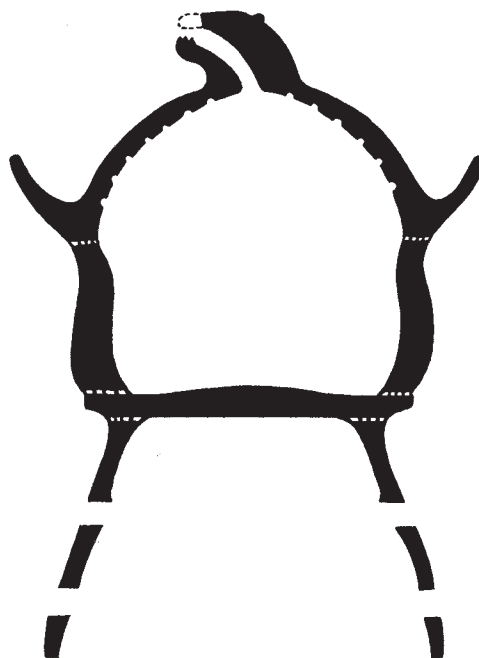
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101.6. Three-pronged incense burners from Guatemala.

There are traces of white wash on the stand. Exactly the same areas show smoking as on the specimen here illustrated. Provenience and age unknown.

A deeply scored fragmentary incense burner cover with loop handle of the type formerly called "grater bowl" is illustrated here (Fig. 101.5c-f) for comparison with the cover of the Antigua specimen (Fig. 101.6). It was found in 1947 in the Santa Clara district of Guatemala City (lot no. C-27) associated with Las Charcas material (diam. 29 cm). The interior of the cover is heavily fire-blackened as is the one illustrated in Figure 101.6. An interesting piece of Nicoya polychrome ware from the Nicoya Peninsula of Costa Rica bears a vague but nevertheless striking resemblance to the Antigua specimens. The annular base of the vessel is surmounted by three solid, slightly bowed columns which support a shallow bowl with scalloped rim. The base has four triangular openings similar in treatment to Figure 101.6 and to Figure 97.7. Unfortunately, the photograph does not show clearly the grotesque face with large round eyes depicted on the body wall, and can therefore not be compared with the specimens illustrated and discussed in this paper (Lothrop 1926:129, Fig. 32).

9. Not illustrated in this paper but present among the sherd lots in the Guatemala National Museum collected by Carnegie Institution from various locations at Kaminaljuyu, are a great number of the solid or hollow prongs from three pronged incense burners as well as fragments of the deeply scored covers. Although all are very fragmentary, a considerable number bore loop handles such as illustrated in Figure 101.5c, e. Some 63 solid and 12 hollow prongs of the plain conical variety were assembled for study, besides 167 deeply scored cover fragments. Their abundance suggests a role of considerable importance at Preclassic Kaminaljuyu.

Dimensions: top diam. of incense burner 10-47, ht. of prongs 7-28, basal diam. of prongs 2-13 cm. Chronological position: early and Late Preclassic. Comparative material: Figures 101.2c; 101.4a, a'; 101.5c-l.

DISCUSSION

The specimens here described do not form a homogeneous group, nor are they from the same chronological horizon. The fact that all have three symmetrically placed prongs or columns, although these may be solid or hollow, plain or effigy, unites them and they are presumed to have served the same or a similar function, doubtless ceremonial.

In Note 97 I made a tentative reconstruction of the appearance and use of several three-pronged

incense burners from Kaminaljuyu similar to some of those here described. The discovery of the previously unknown Antigua incense burners (Fig. 97.6) necessitated certain changes in the theory previously advanced.

I had formerly supposed that the three prongs supported a deeply scored hemispherical "grater bowl" with wide overhanging rim and that a similarly shaped and scored cover with center loop handle was placed on the rim of the bowl to form a closed chamber in which incense could have been burned (Fig. 97.6b, c). Following this line of reasoning, I tentatively designated these pronged specimens "three-pronged incensario supports."

The discovery of the two examples of the previously unknown Antigua type has thrown new light on the picture, for they seem to be the missing link obviously connecting the three-pronged incense burners with the deeply scored "grater bowls." It now appears that the hemispherical bowl had no place in the postulated reconstruction (Fig. 97.6c). Apparently only a cover rested on the outer tips of the prongs and the burning took place, not in a closed chamber formed by bowl and cover but on the top of the incense burner, thereby causing the blackening of the prongs anti top as well as the interior of the cover. The handle was used to remove the cover from, or return it to, the prongs but, in the specimens from Antigua, effigy heads with smoke outlets served as handles. Except for this difference, the attached covers of the Antigua specimens are identical to the deeply scored covers (cf. Figs. 97.6c, f; 97.5c, d).

The combination of deeply scored cover with three-pronged or three-columned stand, together with similarity in ware and paste, and both chronological and cultural association, makes fairly certain the connection of these objects throughout their history. Unfortunately, the Antigua specimens cannot be dated; it is therefore impossible to say whether this columned type represents a beginning, intermediate, or final stage in the development of the three-pronged incense burner.

Pending further information, my previous reconstruction should be ignored and the name "three-pronged incense burner supports" changed to "three-pronged incense burners supporting wide-brimmed, deeply scored covers with loop or effigy handles."

As stated above, the similarity in appearance and function of all these specimens unquestionably unites them, and the fact that they were surely incense burners presupposes their ceremonial character. It is not too difficult to believe that they pertained to a single religious cult or even were dedicated to the worship of one particular deity such as

the Kaminaljuyu rain god. The theory that some of the cone-shaped effigy prongs from three-pronged incense burners represent the Kaminaljuyu rain god was advanced in Note 97. Bearing out the idea that all pertained to a single cult are the many likenesses noted among the specimens, although several are widely separated in time and space. The following paragraphs indicate the common characteristics of most of the specimens described in this paper and in Note 97:

1. *Grotesque human face*, characteristically present on the hollow, effigy prongs of the Early Preclassic period (Figs. 97.5, 97.7), as well as on the front walls of the plain-pronged incense burners of the Late Preclassic period at Kaminaljuyu (Fig. 97.3; Figs. 97.6, 11; Fig. 97.8d). The face is usually represented with open mouth, often with sharp, filed teeth, outstretched tongue, beard, tusks, and fangs, and probably tear streaks (Fig. 97.5b, e, f; Kaminaljuyu rain god?). On the other hand, the Late Classic moldmade effigy prongs often depict an aged man with wrinkled face (Fig. 101.5a; Stone 1941, Fig. 93).

2. *Jaguars or serpent-like monsters*, present on the covers of the incense burners from Antigua (Fig. 101.6) and on the front walls of the Late Preclassic incense burners (Figs. 101.1, 2; Fig. 97.6b). They are found also on the large three-pronged stone altars from Kaminaljuyu which are believed to belong to the Late Preclassic period (Fig. 97.6a). The face is usually represented with open mouth, sharply filed and sometimes tau-shaped teeth, outstretched or bifurcated tongue, tusks, and fangs. (For possible connections between the tiger faced god and the Kaminaljuyu rain god see Note 97).

3. *Vertical side flanges*, common on specimens from the Late Preclassic (Figs. 101.1–101.4; Fig. 97.6b) but may have originated during the Early Preclassic period (Sacatepequez phase, Fig. 97.8c). They are also found on the stone altars (Fig. 97.6, 1).

4. *Bifurcated protuberance* applied to the front rim or between the frontal prongs, noted on two of the late Preclassic (Miraflores) specimens from Kaminaljuyu (Figs. 97.6b; 97.8d) and on two Late Classic (Magdalena) incense burners from San Agustín Acasaguastlan (Smith and Kidder 1943, Fig. 22a, f).

5. *Ridge connecting the frontal prongs*, common on Late Preclassic specimens (Figs. 101.2–101.4) as well as on the three pronged stone altars.

6. *Circular vent in the center of the top*, noted on Early Preclassic specimens. In one case a hole was punched completely through the top (Fig. 97.7); in another it consisted only of a deep circular indentation (Shook, MS. on Las Charcas material). It was also present on one Late Preclassic specimen (Fig. 97.6b).

7. *Triangular or rectangular openings in the vessel wall*, present on the walls of the Early Preclassic effigy-pronged incense burners (Fig. 97.7; Shook, MS.) as well as on the Late Classic plain-pronged specimen from Quirigua (Fig. 101.4b).

8. *Round or irregular opening on prong*, found on all plain or effigy hollow prongs. The opening generally takes the form of a mouth or a hole under the chin of the effigy, or a smooth edged vent at the base of the plain prongs. One specimen bears another hole at the top of the prong (Fig. 101.5a). As any hollow prong must have a vent to prevent cracking in firing, only the position and form of the vent are of significance.

9. *Wide-brimmed, deeply scored covers attached to or supported by the prongs*, attached to a three-columned, bell shaped base on the two specimens from Antigua (Fig. 101.6). It is presumed that a similar cover, but with loop—instead of effigy—handle, was used in connection with the three-pronged incense burners and was set on the prongs rather than permanently attached to them (Fig. 101.5c–e).

10. *White calcareous wash*, thin white (sometimes yellowish) coating applied to the majority of the incense burners examined.

11. *Thin red paint* seems to have been the only other pigment used. It was applied either as an overall covering or as geometric design elements. It is present on the Early Preclassic specimens (Fig. 97.7); Late Preclassic examples, including the stone altars (Fig. 101.1; Fig. 97.6a) and on those of the Late Classic period (Fig. 101.7a; Smith and Kidder 1943, Fig. 22a).

SUMMARY

In a summary of this study it seems desirable to classify the various types of incense burners and covers according to location and chronological period. Such a tentative classification, naturally limited to the information available and on hand at the moment (see chart), follows:

- (1) Three-pronged incense burners with handmade effigy prongs,
- (2) three-pronged incense burners with moldmade effigy prongs,
- (3) three-pronged incense burners with solid or hollow plain prongs,
- (4) three pronged incense burners with combined cover,
- (5) three-pronged stone altars.

Early Preclassic period (see chart), characterized by incense burners with three, hollow, modeled effigy prongs usually representing grotesque human faces, frequently bearded (Kaminaljuyu rain god?; Figs. 97.5b, d, 97.7). The wall is perforated with triangular or rectangular openings and is occasionally painted red. Deeply scored covers with loop handles were supported by the prongs. At the end of the period the solid and hollow plain prong seems to dominate and the vertical side flange appears (Shook, MS.). Probably there were no bifurcated protuberances or connecting ridges at this time. Distribution: Kaminaljuyu and Chiquimulilla (Dept. of Santa Rosa) in Guatemala.

Late Preclassic period, characterized by incense burners with hollow or solid, but plain, conical prongs. The three pronged stone altars from Kaminaljuyu should probably be assigned to this period. The stands usually have a bifurcated protuberance or a connecting ridge on the top. On the front wall there is generally a grotesque jaguar, serpent-like, or human face, usually with open mouth. The prongs supported an unattached deeply scored cover with loop handles. There is no evidence of either effigy prongs or triangular or rectangular openings. Distribution: Common at Kaminaljuyu, possibly indicating the strongest development of the complex at this site. One small rim fragment of a deeply scored cover was found by Wauchope (not illustrated) at Zaculpa in Group A of the Central Barranco and two at Chiche (Wauchope 1951a:139, Figs. 23a, f; 36h). Both sites are in the Dept. of Quiché, Guatemala. They may be from the early Balam phase which, according to Wauchope's new classification, is proto-Classic (Wauchope 1951b:242). Fragments of deeply scored incense burner covers are in the Museum collections from San Andrés Semetabaj (Dept. of Solola) and Salcája (Dept. of Quetzaltenango). Similar deeply scored covers were found in Period II deposits at Gualupita, Cuernavaca, Morelos, Mexico, by Vaillant although at the time they were reported as "graters" (Vaillant and Vaillant 1935:95–97, Fig. 28d). In a letter of October 6, 1950, Dr. Ekholm informed me that they are fire-blackened on all sur-

faces. Deeply scored covers were also reported from Yarumela, Honduras (Canby 1949).

Early Classic period. No type of three-pronged incense burner has thus far been encountered which could safely be assigned to this period. A specimen from Kaminaljuyu (Kidder Jennings, Shook 1946, Fig. 201h; Guatemala National Museum, no. 2422; Fig. 97.8d) was found in an Early Classic Esperanza mound but is now thought to be from a Late Preclassic horizon (verbal communication from Dr. Kidder). Some fragments of crude, deeply scored covers occurred in the Esperanza mounds at Kaminaljuyu but these lack the deep overhanging brim of the earlier type. Because of their position in the mound fill, which contained many Preclassic sherds, these are also possibly from the preceding period.

Late Classic period, characterized by solid or hollow plain, or hollow effigy-pronged incense burners. Bifurcated protuberances are present on two specimens from the Motagua Valley (Smith and Kidder 1943, Fig. 22a, f). Triangular openings were occasionally cut in the vessel wall (cf. Fig. 101.4b'), A thin red paint is present, usually in a horizontal band around the vessel (Fig. 101.7a; Smith and Kidder 1943., Fig. 22a). The effigy prongs and the faces on the wall represent such animals as the monkey (Smith and Kidder 1943, Fig. 22f) and the pisote (Fig. 101.7b); occasionally a wrinkled and stooped old man (Fig. 101.7a; Stone 1941, Fig. 93). The faces on the effigy prongs are often moldmade. The few specimens from this period are so fragmentary that it is unknown whether or not vertical side flanges were present (see Note 97). At Quirigua the Late Classic prongs were found in association with deeply scored covers similar in many respects to those of earlier periods. Distribution: Quirigua, San Agustín Acasaguastlan. There are in the Museum fragments of plain hollow prongs from Tajumulco (Dept. of San Marcos) and Asunción Mita (Dept. of Jutiapa). Two fragments of hollow plain prongs, presumably of Late Classic type from Zaculeu and Chalchitan (Dept. of Huehuetenango) were found among sherd lots (E-109, E-71 respectively), collected by A. L. Smith during his excavations at these sites in 1945 (Carnegie Institution, Yearbook 44:166–167). The specimen from Zaculeu is decorated with a vertical finger-indented fillet. They also occur at Travesía and the Sula Valley; Honduras. Fragments of deeply scored covers also occurred in Period III–IV deposits at Benque Viejo, British Honduras (Thompson 1940, Fig. 10a). Fragments of deeply scored covers are present in the Guatemala Museum collection from Capellania (Lot S-3) near the Rio Lempa and San

Miguel in El Salvador. Being surface finds, they are of unknown date.

Postclassic period. No type of three-pronged incense burner can yet be safely assigned to this period.

Even so tentative a classification as this shows that the three-pronged incense burner went through a long period of development and use without losing many of its basic characteristics. Fragments of one type or another have been found in deposits ranging from the earliest known Preclassic to the end of the Late Classic, except for a possible break in continuity during the Early Classic. This suggests that their production and use were motivated by a rather strong and fundamental religious ideology, probably in connection with a rain-god cult. Their spread throughout the Maya area is, to my mind, undoubted evidence of a spiritual impulse which brought about the dispersal of many related ideas. The region in which these ideas first took form and the routes along which they later traveled are unknown, but the quantity of material from the earliest periods at Kaminaljuyu suggests this site as its place of origin. The ceremonial significance of the three pronged incense burner is also open to speculation.

If these censers were indeed not made in Early Classic times, it is puzzling that their use did not die out during that period, although the associated cult might have, so to speak, lain dormant or perhaps been practiced in obscurity to blossom again in the Late Classic.

It is interesting that the apparent disappearance of these three-pronged incense burners during the Early Classic period and their reappearance with

moldmade features and slightly filtered form during the Late Classic in the Maya area seems to have been paralleled in the case of "rim-heads" vessels (see chart). Different types of rim-head vessels, similar in appearance and possibly in function, found outside the Maya area have been described under several names such as "inner handles of incensario covers" (Seler 1915c:495), "vessels with effigy handles" (Weiant 1943:112), "vessels with vertical modeled lugs" (Drucker 1943a:76), "vasijas con tres brazos huecos en el horde" (Armillas 1944), "bowls with inner handles" (Linné 1934:315). To avoid further confusion, it is proposed that the name "rim-head vessel" be applied to all such vessels. This evidence, although very vague, probably favors the theory advanced in my earlier publication (Note 97) that both complexes were motivated by the same, or at least a similar, religious concept. It is also interesting that the making of small clay figurines likewise appears to have ceased during the Early Classic and to have been resumed in Late Classic times, and that they too underwent the change from modeled to moldmade form.

The problems thus far stated and the questions posed are difficult to answer because of the relatively small amount of comparative material from other parts of the Maya area and adjacent regions. The three-pronged incense burner cult is merely one of many recently recognized Mesoamerican ceremonial complexes. As a new-born child, it has still to grow and should be handled with special care. New data from other areas may be expected to nourish this youngster who, given the proper archaeological food supply, should mature and demand well-merited attention.

GUATEMALA CITY

Table 101.1. Major Characteristics of Three-Pronged Incense Burners.

<i>Major Characteristics</i>	<i>Early Preclassic, 700–200BC</i>	<i>Late Preclassic, 200 BC–AD 300</i>	<i>Early Classic, AD 300–600</i>	<i>Late Classic, AD 600–900</i>	<i>Postclassic, AD 900– 1540</i>
Prongs	F	N	N	C/M	N
Effigy (hollow)					
Plain (solid)	R	F	N	R	N
Plain (hollow)	R	C	N	C	N
Vertical side flange	R	F	N	¿	N
Interconnecting ridge	N	F	N	N	N
Bifurcated protuberance	N	R	N	R	N
Tri- and rectangular openings	C	N	N	R	N
Grotesque human face	F	F	N	R/M	N
Jaguar face	¿	F	N	N	N
Circular top vent	R	R	N	N	N
Three-pronged stone altars	N	R	N	N	N
Deeply scored covers	F	F	?	R	N
Distribution					
I. Three-Pronged Incense Burners	Kaminaljuyu, ¹ Chiquimulilla ²	Kaminaljuyu ³	?	Quirigua, ⁴ Chalchitan, ⁵ Zaculeu, ⁵ Asunción Mita, ⁵ Tajumulco, ⁵ San Agustin Acasaguastlán, ⁶ San Pedro Sula, ⁷ Travesia ⁷	?
II. Deeply Scored Incense Burner Covers	Kaminaljuyu ⁸	Kaminaljuyu, ⁹ Zacualpa, Chiche, ^{9a} San Andres Semetebaj, Salcajá, Gualpita, ¹⁰ Yarumela ¹¹	?	Quirigua, ⁴ Benque Viejo ¹²	?
III. Rim Head Vessels		Kaminaljuyu, ¹³ Teotihuacan ¹⁴	Teotihuacan ¹⁴	Texcuaco, ¹⁵ Trapiche Grande, ¹⁵ El Baul, ¹⁶ Tiquisate, ¹⁷ Teotihuacan, ¹⁸ Xolalpan, ¹⁹ Santiago Ahuizotla, ²⁰ San Miguel Amantla, ²¹ San Andres Tuxtla, ²² Tres Zapotes, ²³ Cerro de las Mesas ²⁴	?

Notes to Chart

C, Common; F, Frequent; M, Moldmade; N, No data; R, Rare.

1. Borhegyi, Fig. 97.5.

2. Kidder, Jennings, and Shook 1946, Fig. 202c; Borhegyi, Fig. 97.7.

3. Figs. 1–4; Kidder, Jennings, and Shook 1946, Fig. 201h; Fig. 97.6.

4. Fig. 101.4b.

5. See p. 114.

6. Smith and Kidder 1943:143, Fig. 22a, f.

7. Stone 1941:82, Figs. 93; 94j, o.

8. Fig. 101.8.

9. Fig. 101.4a; Fig. 97.6c.

9a. Wauchope 1951a:139, Figs. 23a, f; 36h.

10. Vaillant and Vaillant 1935, Fig. 28d.

11. Canby 1949.

12. Thompson 1949, Fig. 10.

13. Note 69; Figs. 97.1–97.4; Gamio 1926–1927:219.

14. Armillas 1944; Kidder, Jennings, and Shook 1946:253

15. Note 15.

16. Thompson 1948, Figs. 25a; 35.

17. Shook 1949:10; Thompson 1948, Fig. 25f, g.

18. Gamio 1922:1, Pl. 88d, e; Seler 1915c, Figs. 122, 129, 131, 132.

19. Linne 1934:114, Figs. 165, 166.

20. Tozzer 1921a:50, Pl. 15k.

21. Seler 1915c:491–96, Figs. 123–28, pl. XLVII.

22. Seler 1915c: 495, Figs. 133–35; Seler-Sachs 1922:13, Pl. 8.

23. Weiant 1943:68, 112, 128, Fig. 37a, d, Pls. 54, 55; Drucker 1943b:76, Fig. 43, Pls. 30h; 40a–d; 42a; 47w, x; 62d.

24. Drucker 1943a:58, 83, Pl. 55.

Some Archaeological Specimens from Pomona, British Honduras

A. V. Kidder and Gordon F. Ekholm

During the winter of 1950 the writers and Mr. Gustav Strömsvik had opportunity to conduct an archaeological reconnaissance of the Bay Islands and north-west coast of Honduras and the southern coast and cays of British Honduras. This was made possible by Mr. Charles Sumner Bird, who, through the sponsorship of the Institute of Andean Research, chartered the yacht *Irmay* for the purpose. We are also under much obligation to His Excellency Ronald H. Garvey, Governor of British Honduras, for the necessary permit to explore and excavate in the Colony; as well as to Mr. W. H. Kieffer of the United Fruit Company, who assisted us in securing supplies and arranged for shipment of the large collection of potsherds obtained in Honduras and British Honduras.

The present note concerns a find made by Messrs. A. P. Bellhouse and H. D. Anderson of the Citrus Company of British Honduras Ltd, on the company's land at Pomona, in a fertile widening of the North Stann Creek Valley, some 18 km from the sea. There, in the course of clearing land for an orchard, it became necessary to remove one of the several mounds that prove the Pomona area to have been the site of a sizable ancient community. Permission to do this was obtained from the Governor by Mr. Frank Sharp, general manager of the company. In the operation two tombs came to light. Messrs. Bellhouse and Anderson removed their contents with great care and when we visited the place they asked us to take the specimens to Belize and deliver them to the proper authorities. This we did and after consultation with Governor Garvey, it was decided

that they should be temporarily deposited in the British Museum because of the danger of fire to the Belize Public Library building, which houses the colony's present archaeological museum. We were given permission to take the pottery vessels, which were badly crushed, to New York to be restored and studied.

The mound in question, now completely removed, was circular, about 27 m in diameter at ground level and with an estimated height of about 9 m. The mound fill contained a large amount of stone. Five plaster floors were encountered. The lowermost floor, pink in color, covered a platform about 60 cm thick and 16 m in diameter and composed of clay and river stone. The bottom of this platform was at approximately the level of the ground surface. The other plaster floors were unequally spaced vertically, the uppermost being fairly close to the highest point of the mound.

The most important feature of the mound was what we are calling Tomb I. This was a large rectangular chamber whose floor was the pink-colored plaster floor of the basal platform mentioned above. Only estimates of the tomb's size are available, but it would seem to have been something in the order of 5 m long, 1.2 m wide, and 2.1 m high. The tomb was in the eastern portion of the mound with the long axis running north and south. The excavators noted that one corner of the top of the tomb was about 30 cm below the slanting surface of the mound. The walls were built up of what the excavators thought were mortar bricks but which on examination of samples



102.1. Jadeite and shell: (a) section of longest of six similar jadeite tubular beads 9.3–10.3 cm long, all biconically perforated, ends cut square, Tomb II; (b) section of tubular gray stone bead (Fig. 102.5a) to show unusual method of perforation and square-cut ends, Tomb I; (c) section of jadeite earplug flare (Fig. 102.4i); note square cutting of edge of face and stem, Tomb I; (d) section of jadeite ornament (Fig. 102.4f); position of lower pair of triangular perforations indicated by dotted line; two pairs of triangular openings, each pair made by a single cylindrical drilling that pierced both sides of object, the triangular form produced by subsequent cutting at surface (see d'), Tomb II; (e) faintly incised lines on face of jadeite celt (Fig. 102.5c); apparently start of a decoration that was not completed, Tomb II; (f) sections (approximate) of perforated baroque pearls found in fragmentary condition, Tomb I; (g) design, drawn by Strömsvik from rubbing of badly eroded larger carved area on bivalve shell (Fig. 102.6a, b), Tomb I. All natural size.

shell, and an obsidian blade were on the floor along the west wall and another blade is said to have been lying beside the flat stone in the center of the tomb. The large earplug flare was standing on edge between the center and southern round stones just inside the entrance. A stack of bowls was also found near the southern end of the tomb.

A third feature of the mound was a pottery jar (containing only one bead) reported as being in the center of the mound on the bottom floor.

seemed to us to be a soft white limy material cut into squared blocks. Large slabs of granite, flat on one side, had formed the roof, but these had fallen down into the chamber. There was an entranceway toward the southern end of the east wall of the tomb.

Tomb II was a small rectangular chamber in the upper portion of the mound on the second floor from the top. It was placed well to the south of the center of the mound with its long dimension running east and west. This chamber would seem to have been something like 1.2–1.5 m long, 90 cm wide, and 90 cm high. Its roof was a single stone slab, and apparently the walls were constructed of the same kind of stone blocks described for Tomb I.

The objects found in the two tombs are listed below. Only a few notes can be given as to the arrangement of finds within Tomb I. On the floor were four round slabs of the same soft stone used in the walls. These were placed one in the center of the tomb, one in the center near the south end and two side-by-side near the north end. One of the small pottery bars was resting on one of the northernmost stones and contained a gray substance as well as a single bead. Two of the plates were found beside the southernmost stone. Two lots of beads, the carved

SPECIMENS FROM THE TOMBS

TOMB I

Jadeite

Earplug flare, large; incised (Figs. 102.2, 102.3)

Earplug flares, pair, scalloped (Figs. 102.1c; 102.4i, j)

Figurines, 4 (Fig. 102.4b–e)

Beads, ridged, 2 (Fig. 102.6e, center)

Beads, subspherical, 69 (Fig. 102.6e, strung)

Beads, minute, 8 (Fig. 102.6e, end of string)

Bead, tubular (Fig. 102.6e, upper left)

Pendant (Fig. 102.6e, center left)

Inlay? (Fig. 102.6e, lower left)

Stone other than jadeite

Bead, tubular (Figs. 102.1b; 102.5a)

Disc-crystalline hematite

Flake-blades, flint, 2 (Fig. 102.5a)

Flake-blade, obsidian

Shell



102.2. Jadeite earplug flare, Tomb I. We believe this to be the largest flare (i.e., forward-facing element of an earplug assemblage) found to date in Mesoamerica. Its great size (diameter averages 18 cm) renders it probable that it adorned a mask-headress or perhaps a wooden statue, rather than that it was worn in the ear. It is of highly polished dark green jadeite, with lighter mottlings. Edge of face and of stem cut squarely across. On either side of the stem is a conically drilled perforation 5–6 mm in diameter on exterior, 4 mm on interior. The central perforation was evidently drilled, as it is perfectly circular (diameter, 7.9 cm), the tool used having doubtless been a large hollow drill. On the back are five straight marks of a sawing tool, used vertically for the preliminary blocking out of the stem. The four glyphs on the face were incised with a sharp implement that produced smooth lines slightly less than 0.5 mm wide; in this and the enlarged photographs (Fig. 102.3) they have been filled with white powder.

- Earplugs, openwork, pair (Fig. 102.4g, h)
- Beads, tubular, ridged, 5 (Fig. 102.6d; 2 at lower left, 3 at right)
- Beads, tubular, ringed end, 5 (Fig. 102.6d, 1 shown at left)
- Beads, spherical, 3 (Fig. 102.6d, left)
- Beads, tubular, plain, 27 (Fig. 102.6d, strung)
- Beads, barrel-shaped, small, 1 (Fig. 102.6d, upper left)
- Univalve, carved exterior (Figs. 102.1g; 102.6a, b)
- Univalve, carved interior (Fig. 102.6c)
- Univalves, uncarved, fragments of at least 7 shells
- Pearls, baroque, 6 (2 shown in Fig. 102.1f)
- Sting-ray spines, 9
- Bone object, problematical (Fig. 102.4a)
- Pottery
- Basal-flanged bowl (Fig. 102.7a)

Basal-ridged bowl (Fig. 102.7b)

Straight-sided bowls, 3 (1 shown in Fig. 102.7c)

High-necked jar (Fig. 102.7d, also fragments of another)

Small plain ware dish (Fig. 102.7e)

Covered plain ware jar (Fig. 102.7f)

Plain ware jars, 2 (Fig. 102.7g, h)

Bulbous-legged bowl, fragmentary (Fig. 102.8a)

Bulbous-legged bowl, fragmentary (Fig. 102.8b)

TOMB II

Jadeite

Ornament, tubular, pierced (Figs. 102.1d; 102.4f)

Beads, tubular, 6 (Fig. 102.1a)

Celt (Fig. 102.5c)

Granite

Celt (Fig. 102.5d)

Descriptions of such of the foregoing objects as are illustrated are contained in the captions. Other specimens are:

TOMB I

Disc, crystalline hematite. Only fragments recovered. Cut to very true 2.5 cm circle; drilled 3 mm central perforation. Both faces highly polished.

Flake-blade, obsidian. Keenly pointed, lancet type similar to those of flint (cf. Fig. 102.5a). Fine



a



b

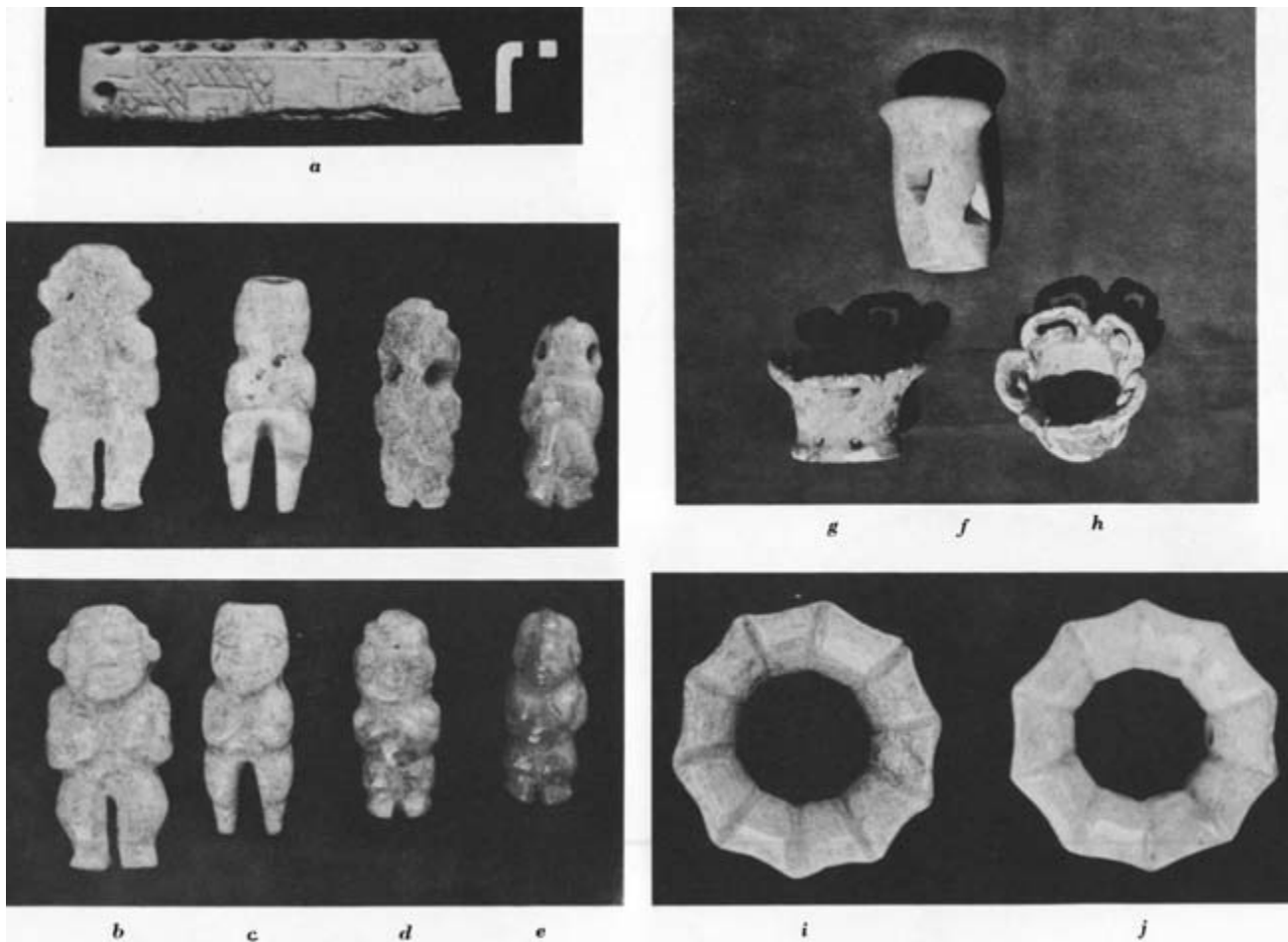


c



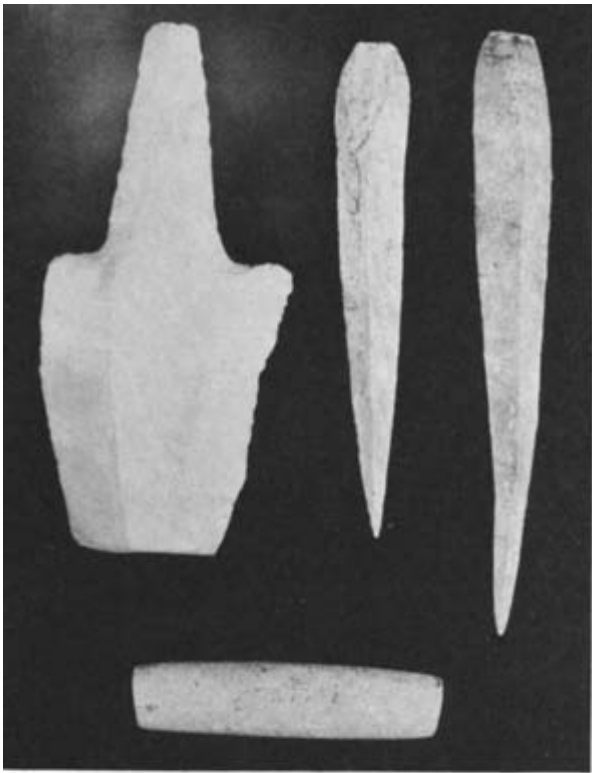
d

102.3. Glyphs on large earplug flare: enlarged photographs. J.E.S. Thompson states that these glyphs are undoubtedly early; their significance is unknown to him.



102.4. Jadeite, shell, bone: **(a)** fragment of problematic bone object, section in white, length 3.5 cm, Tomb I; **(b-e)** jadeite figurines from Tomb I, all highly polished; **(b)** light green finely mottled with white; T-shaped nose; back flat; transverse 3.5 mm perforation below ears; height 4.9 cm; **(c)** gray-green; eyes incised ovals, pupils indicated by small drillings; transverse oval (6 × 1 × 5 mm) perforation at neck level; from top of head a slightly conical drilling 6 mm at entry runs down 2 cm from which point a 2-5-mm cylindrical drilling extends to crotch; height 4.2 cm; **(d)** front white with emerald-green clouding, well-polished, back is less well-polished; features vaguely indicated; biconical perforation, diameter 5 mm at entries, passes through rounded back; height 3.8 cm; **(e)** clear apple-green; features vague eyes made by shallow conical drillings; transverse 3.5 mm cylindrical perforation at nose level; height 3.6 cm; **(f)** jadeite object (sectional drawing Fig. 102.1d); possibly element designed to protrude from flare of an earplug; light gray-green with fine white mottling; triangular cuttings a unique (?) feature in jadeite carving; height 3.2 cm, Tomb II; **(g, h)** shell earplugs with comma-shaped cutting in each of the five "petals" of the evened forward edges; beautifully fashioned pairs; in stem of g are two perforations 3 mm in diameter, 7 mm apart; **(h)** unperforated; diameter of face 3 cm, height 1.8 cm, Tomb I; **(i, j)** jadeite earplug flares, pair; very light green with emerald-green clouding; evidently cut from same piece of stone; admirable workmanship, high polish; grooves from points of scallops to throat perhaps made by string-sawing as they are slightly deeper at either end; flare i has single 3.5 mm cylindrical perforation in stem (section Fig. 102.1c); diameter, point-to-point, of faces, 4.4, 4.6 cm; height 1.5 cm; Tomb I.

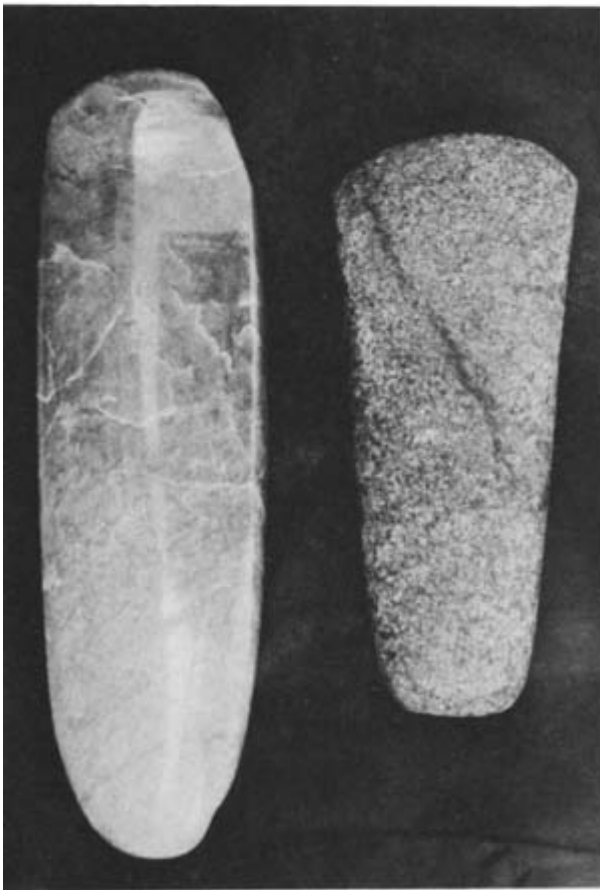
102.5 (following page). Objects of stone: **(a) left**, stemmed spear-point or knife made from large core-struck flake of buff-colored flint; edges of stem and blade retouched; length 13.3 cm; surface, Pomona site; **right**, two very fine lancet-like flake-blades of gray flint with purplish streaks; very delicate retouch on upper part of edge of larger blade; lengths 12.415 cm; these are the only Mesoamerican flake-blades of flint of which we have record; Tomb I; **bottom**, tubular bead of gray stone, apparently not jadeite (for section showing unusual method of perforation, see Fig. 102.1b); length 7.2 cm; Tomb I; **(b)** slab of gray stone with face in relief; width of face 11.5 cm; Pomona site; **(c, c')** celt, blue-gray jadeite (?), glassy polish; on one face lightly incised lines, apparently an unfinished design (Fig. 102.1e); length 22.5 cm; Tomb II; **(d, d')** celt, igneous rock; length 16 cm; Tomb II.



a

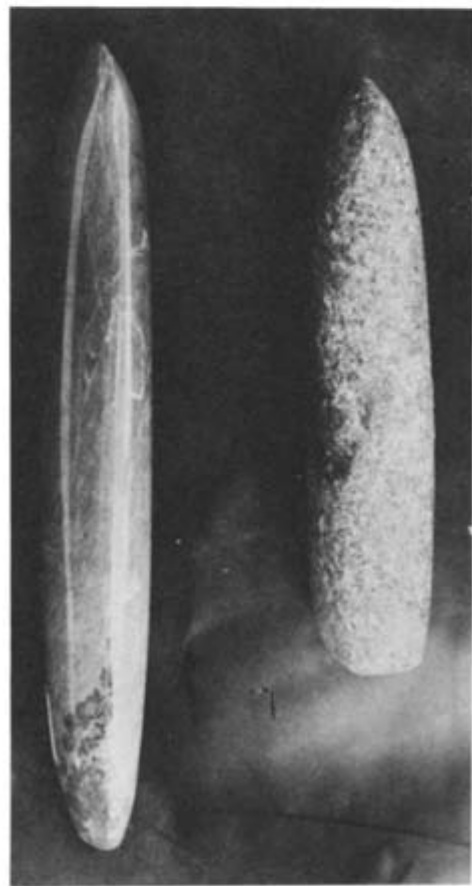


b



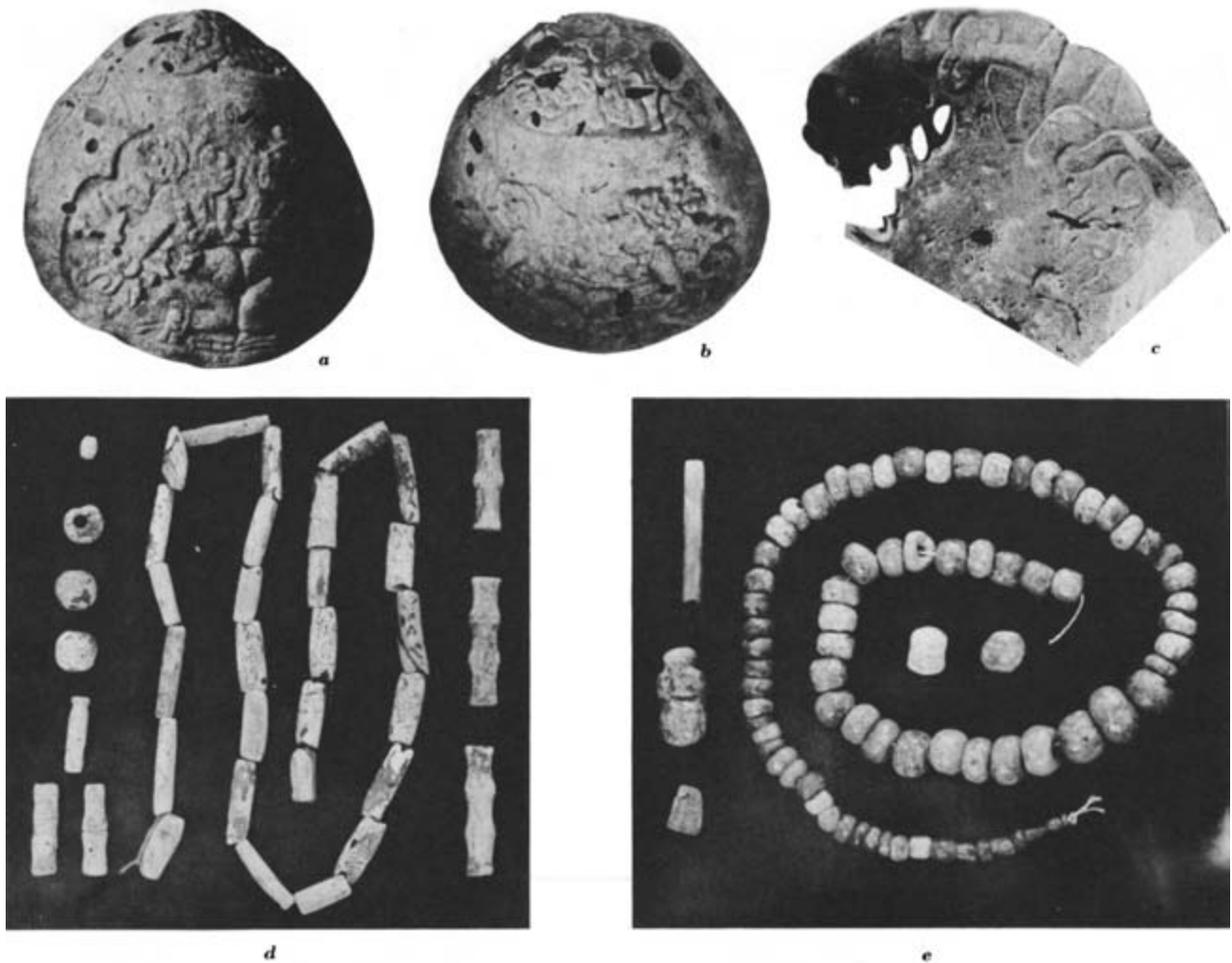
c

d



e'

d'



102.6. Shell, jadeite: (a) univalve (*Spondylus pictorum*) with badly eroded carved areas, each showing two human figures kneeling face to face (drawing of larger area Fig. 102.1g); length 15 cm; Tomb I; (b) same, to show placement of carved areas; that at hinge end too eroded for reproduction; at either side of latter is a 1.6 cm cylindrically drilled hole; (c) fragment of shell of same species with carving on edge of interior, Tomb I; (d) ornaments of shell; upper left, small barrel-shaped bead, length 8 mm; below, three subspherical beads, diameter 1.2–1.4 cm; next below, one of five tubular beads with ringed end, lengths 1.7–2.5 cm; lower left and right hand row, tubular beads with encircling ridges, length 3–4.1 cm; middle string, plain tubular beads, lengths 2–3.3 cm; all shell beads cylindrically bored; all Tomb I; (e) ornaments of jadeite: upper left, tubular bead, gem-quality emerald-green, high polish, length 4 cm, biconical bore 4 mm diameter at ends; center left, pendant, inferior quality, grayish, length 3.2 cm, 3 mm transverse perforation at neck; lower left, inlay (9), gray, one side polished, other dull, length 1.3 cm; strung beads, first sixty-nine subspherical to discoidal, medium quality gray-green to apple green, well-polished, most specimens cylindrically, a few biconically, bored; diameter 7 mm–1.7 cm; terminal eight beads, small, irregularly shaped, gem-quality, high polish, bores cylindric, less than 1 mm; center, two beads with one ridged surface, fine light green, high polish, large cylindrical bore, diameters 1.6, 1.7 cm; all Tomb I.

retouching has rounded the butt and removed the flat remnant of the parent corers striking surface that is usually present on obsidian flake-blades. Length 9.7 cm.

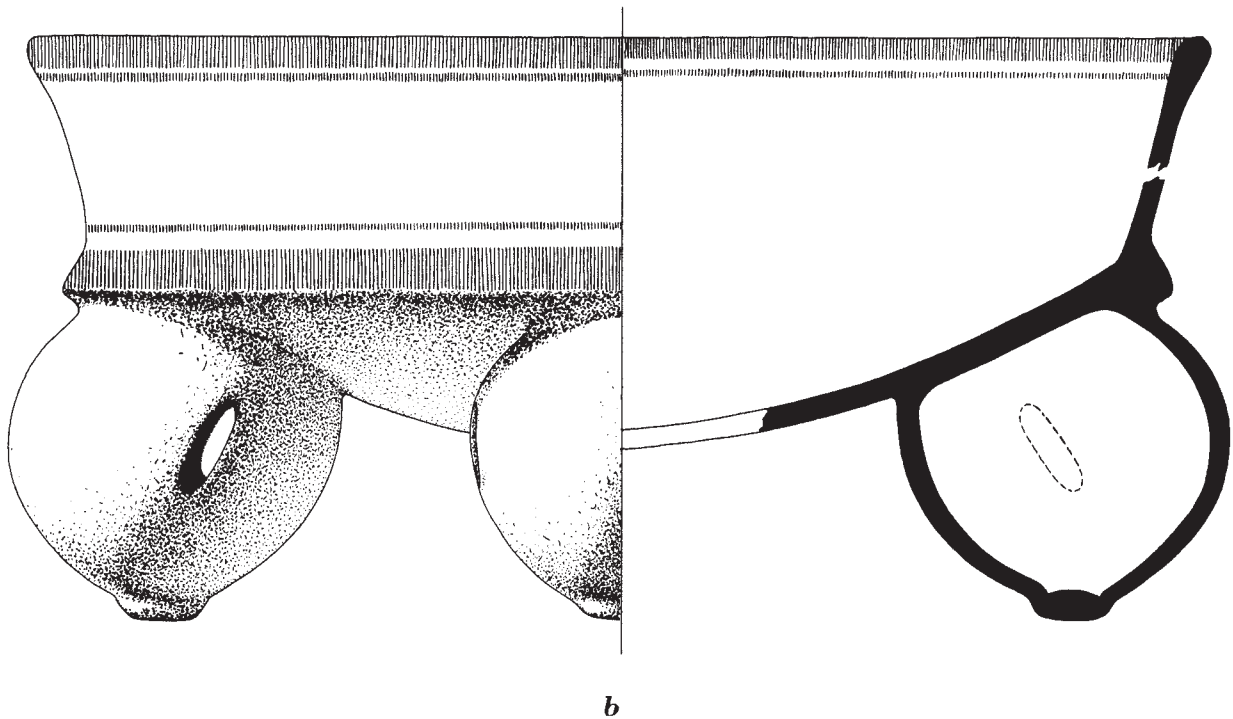
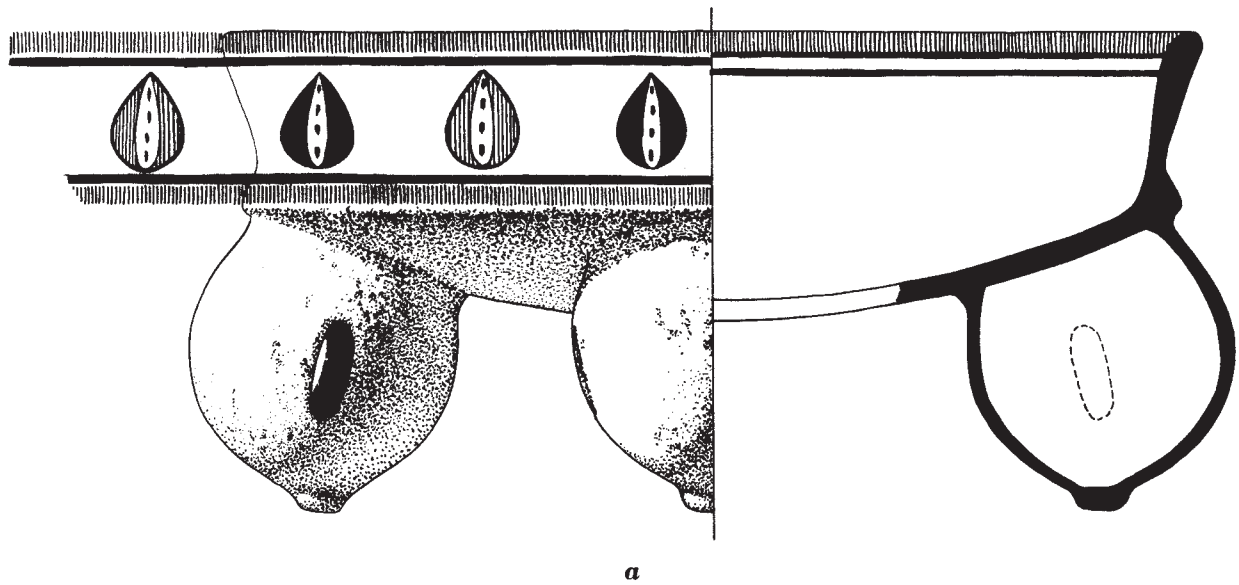
Univalves, uncarved. All of same species as carved specimens.

Sting-ray spines. Very fragmentary. Apparently 9. Unworked.

Also from the Pomona site and illustrated and described in the captions are a fragmentary stemmed flint knife (Fig. 102.5,a) from the surface, and a carved stone slab, presumably from a building (Fig. 102.5b). Tomb I can confidently be assigned to the Early Clas-



102.7. Pottery (all vessels are shown in same relative size): **(a)** basal-flanged bowl; surfaces well-polished and covered with dark red slip on all except center bottom; has square-lipped ring base; paste is very soft and weak; diameter 32 cm, Tomb I; **(b)** basal-ridged bowl; surfaces well-polished with dark red slip covering all except inside of low ring base; a shallow groove occurs on the upper surface of the basal ridge; paste very soft and weak; diameter 36 cm, Tomb I; **(c)** straight-sided bowl, one of three nearly identical specimens; interiors are slipped light red and poorly polished; exteriors have sides polished, bottom rough; paste is soft and weak with a large amount of coarse temper; diameter 20 cm, all from Tomb I; **(d)** high-necked jar; a second similar specimen is fragmentary; a light-colored red slip covers all surfaces except inside of the low ring base; a shallow groove occurs at the juncture of neck and body, as well as one 2 cm above and one 1 cm below that point; paste is soft and weak; height 16 cm, Tomb I; **(e)** plain ware dish, unslipped and unpolished; diameter 11 cm, Tomb I; **(f)** barrel-shaped jar with cover; it is assumed that the cover belongs to the jar because of exact fit and the manner in which breakage occurred; surfaces are smoothed but unslipped; black firing clouds occur; bottom has four short solid legs; height 22 cm, Tomb I; **(g, h)** cylindrical jars; surfaces except bottoms are smoothed but unslipped, mottled brown to black; paste has abundant coarse temper; height 12 cm, Tomb I.



102.8. Pottery: **(a)** polychrome bowl; fragmentary specimen and with surfaces much eroded; decoration is red and black on light orange-red polished slip; presence of four supports clearly indicated; diameter 21 cm; Tomb I; **(b)** decorated bowl; fragmentary specimen; decoration is dark red on a reddish brown slip; further design might possibly have existed on exterior sides; four supports are indicated in the drawing, but this number cannot be certainly determined from the fragments preserved; height of side walls not certain; diameter 32 cm; Tomb I.

sic, the basal-flanged bowl being the "type fossil," so to speak, of lowland Maya sites of that period. Furthermore, the glyphs incised on the large jadeite earplug flare are, in J. E. S. Thompson's opinion, early. The age of Tomb II is problematical. It was above

Tomb I and may have been intrusive. It contained no pottery to date it. Sherds, in the ploughed land about the mound, were so few and so heavily weathered that we were unable to determine whether or not the site had been occupied beyond Early Classic times.

"Loop-Nose" Incense Burners in the Guatemala National Museum

Stephan F. de Borhegyi

In July 1950 the Guatemala National Museum received a donation from Don Guillermo Batres containing many interesting archaeological specimens which originally belonged to the private collection of his brother, the late Lic. Carlos Batres. It is thought that most of this material came from his property which formerly constituted part of the great archaeological site of Kaminaljuyu on the outskirts of Guatemala City. Numbered among the collection are three incense burners of particular interest. These were compared with three similar ones from the Dieseldorff Collection of the Guatemala National Museum., with four in the Chichicastenango Museum, and with four excavated by the Carnegie Institution of Washington at Kaminaljuyu. They appear to form a distinct type and I should like to designate them "loop-nose" incense burners.

The two almost identical incense burners from Kaminaljuyu used in this paper as type specimens, one of which is illustrated here as Figure 103.1a-c, were found when the top of an apparently Esperanza phase mound at Kaminaljuyu was leveled. For this and for other reasons to be discussed later, the incense burners dealt with in this paper have been assigned tentatively to the Early Classic period of the Maya area. However, before going into any further detail, a description of the five most characteristic specimens will be given.

FIGURE 103.1A-C (MUS. NO. 2709)

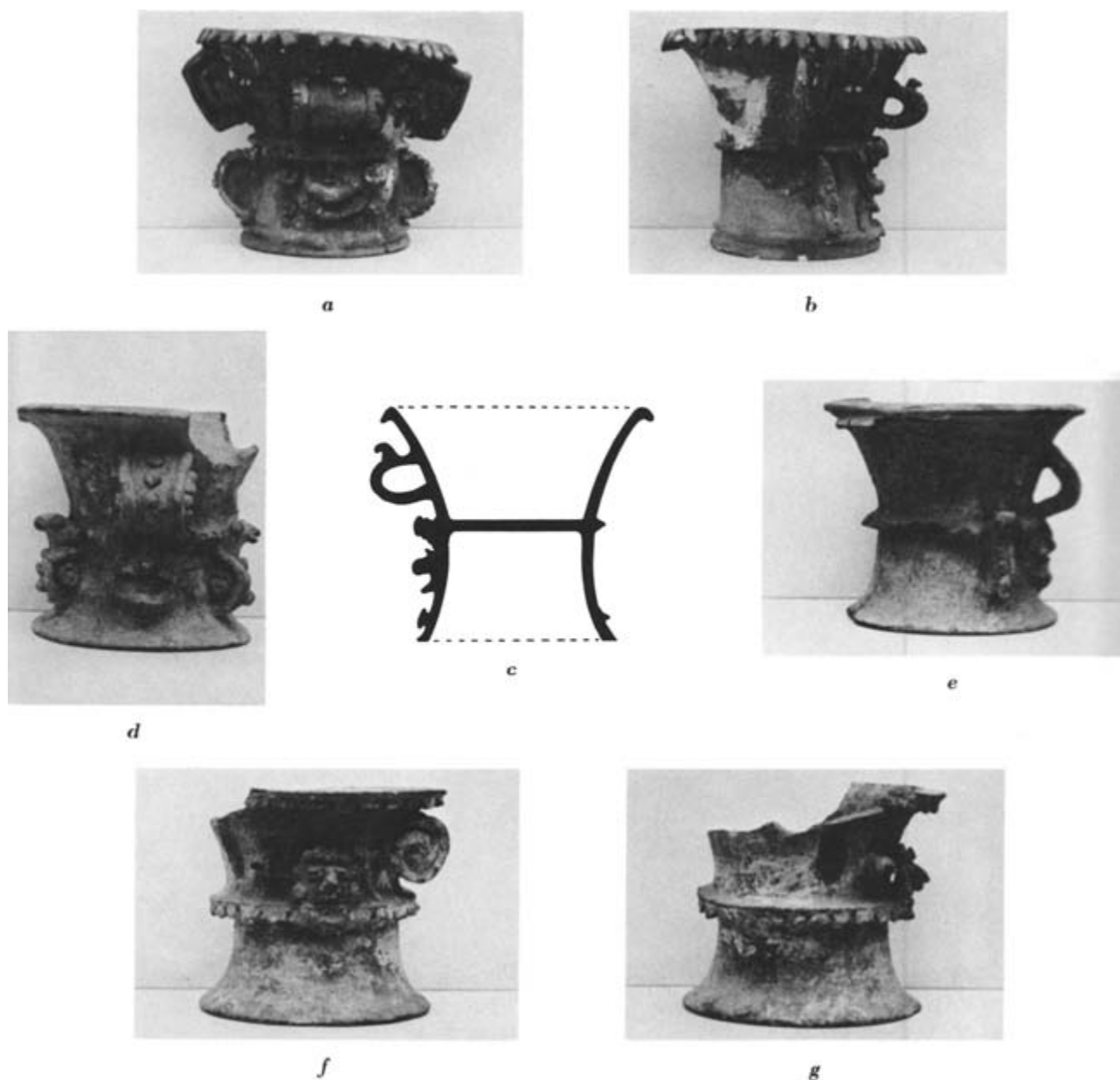
Collection: Excavated by the Carnegie Institution of Washington.

Provenience: Kaminaljuyu, near Mound A (Kidder, Jennings, and Shook 1946:211, Fig. 86).

Paste: Unslipped, coarse reddish brown ware tempered with minute mica particles.

Description: Two-chambered burner consisting of a tall bell-bottomed lower part with basal molding and a flaring sided receptacle. The division between top and bottom is marked on the exterior by a plain medial molding. A grotesque human face with ear- and noseplugs is modeled on the lower part and is flanked by two thin, rounded vertical flanges. The flange is edged with a row of applied clay buttons. Similar but pointed buttons have been applied to the exterior rim of the receptacle, giving it a scalloped appearance. A highly conventionalized, possibly human, face has been modeled on the receptacle above the lower face. It is characterized by two rectangular eyes on either side of a large projecting loop, giving the impression of a nose. Both eyes and nose are bordered with rows of clay buttons and the pupil of the eye marked by a larger applied clay disc. A small x, modeled animal head is applied to the middle of the "loop-nose," the eyes of which are represented by applied clay pellets. The receptacle is also flanked by thin, rectangular, vertical side flanges giving the impression of being the ears of the conventionalized human face. These are decorated with clay rolls. The vessel is partly restored. Traces of red and blue-black paint and traces of a thin white wash are still visible. The interior of the receptacle is smoked.

Dimensions: Ht. 23 cm, diam. 27.5 cm.



103.1. Loop-nose incense burners.

Comparative material: A two-chambered coarse ware incense burner said to be from San Andres Sajcabaja (Dept. of Quiche, Guatemala) similar to this specimen but lacking the "loop-nose" is illustrated by Lothrop (1936, Fig. 85). This incense burner is now in the Chichicastenango Museum (Mus. N o. 477) where it forms part of the Rossbach Collection.

FIGURE 103.1D, E (MUS. NO. 2337A)

Collection: Batres.

Provenience: Unknown, probably Kaminaljuyu.

Paste: Unslipped, coarse reddish brown ware containing mica and quartz particles.

Description: Two-chambered burner with bell-bottomed lower part and flaring-sided receptacle. On the lower part is modeled a grotesque human face with applied clay buttons representing nose-plugs. The circular eyes were made by a deep, even incision, possibly by a bone impression. On each side of this face is a rounded flange bearing in its center an applied bone impressed clay disc representing an earplug. Above each flange is a small modeled

animal-head similar in many respects to the animal head of Figure 103.1a, b.

The vertical side flanges on the wail of the receptacle are now missing but long scars directly above the lower flanges indicate their former presence and position. Although the eyes of a conventionalized face, such as observed on Figure 103.1a, b are present, a "loop-nose" decorated with applied clay buttons protrudes from the wall of the receptacle. The union of receptacle and lower part is marked on the exterior by a medial molding bordered with projecting clay buttons. The rim of the receptacle was bordered with rectangular projections, most of which are now broken off, together with a portion of the rim itself.

Traces of red paint and white wash are present and the interior of the receptacle is smoked.

Dimensions: Ht. 21 cm, diam. 25 cm.

FIGURE 103.1F, G (MUS. NO. 2337B)

Collection: Batres.

Provenience: Unknown, probably Kaminaljuyu.

Paste: Unslipped, coarse, reddish brown ware containing mica and quartz particles. .

Description: Two-chambered incense burner with bell-bottomed lower part and flaring-sided receptacle. The lower part is undecorated.

A grotesque, modeled, flat human face with coffee-bean eyes and nose- and earplugs is applied to the wall of the receptacle. On either side of the grotesque face are applied small animal heads, similar to those already described for Figure 103.1a–e. The one remaining vertical side flange is decorated with a clay roll in the form of a scroll. The rim of the receptacle as well as the medial molding is decorated with applied rectangular protuberances.

The conventionalized face, characterized by rectangular eyes and "loop-nose," such as in Figure 103.1a–c, is missing but instead the modeled, realistic though grotesque, human face is applied in such a way, partly to the wall of the receptacle and partly to the medial molding, that an opening reminiscent of the loop is left between face and wall. A large portion of the receptacle is missing.

Traces of white wash are visible on the exterior of the entire vessel. The interior of the receptacle is smoked.

Dimensions: Ht. 19.5 cm, diam. approx. 25 cm.

Comparative material: A somewhat similar two-chambered incense burner is in the Chichicastenango Museum (Mus. No. 698). Unfortunately it is of unknown provenience.

FIGURE 103.2A, B (MUS. NO. 5841)

Collection: Dieseldorff.

Provenience: Unknown, possibly Alta Verapaz.

Paste: Unslipped, coarse brown ware containing mica and quartz particles.

Description: Two-chambered incense burner consisting of a bell-shaped lower part and a flaring-sided receptacle.

On the lower part is modeled a grotesque human face with coffee-bean eyes and a large noseplug. Originally an earplug had been on either side of the face but one has since been broken off. Behind each ear is a small thin vertical side flange. The division between receptacle and lower part is marked by a plain medial molding.

Although no eyes of a conventionalized face are present, a "loop-nose" protrudes from the wall of the receptacle and is decorated with rows of applied circular clay buttons. The receptacle is flanked by two rounded vertical side flanges decorated with clay rolls in a manner similar to Figure 103.1a–c. On either side of the loop were originally four small modeled animal heads, two now partly and one entirely broken off. The rim of the receptacle is decorated with applied rectangular clay protuberances.

No traces of a paint or wash are visible. The interior of the receptacle is smoked.

Dimensions: Ht. 23 cm, diam. 27.3 cm.

FIGURE 103.2C, D (MUS. NO. 5324)

Collection: Dieseldorff.

Provenience: Unknown, possibly Alta Verapaz.

Paste: Unslipped, coarse brown ware containing mica and quartz particles.

Description: Two-chambered incense burner consisting of a tall cylindrical lower part with basal molding and a flaring sided receptacle.

On the receptacle is a highly conventionalized, possibly human, face, with rectangular eyes bordered with rows of clay buttons. The pupil is marked by a larger applied clay disc. A large "loop-nose" with similar decoration protrudes from the plain medial molding, thus forming a bridge between the receptacle and the otherwise undecorated cylindrical lower part. This face is flanked by two rectangular vertical side flanges. Below each flange is an applied clay disc resembling an earplug and suggesting that the; flanges may represent ears, as already seen to be the case in Figure 103.1a–c. The rim of the receptacle is decorated with applied pointed buttons, many of which are now broken off.



a



b



c



d



e

103.2. Loop-nose incense burners.

Faint traces of red paint are still visible on the exterior of the vessel. The interior of the receptacle is smoked.

Dimensions: Ht. 24 cm, diam. 28.5 cm.

Comparative material: Another incense burner, similar in many respects to the one just described but more elaborately decorated, is illustrated by Lothrop (1936, Fig. 84) and reproduced here as Figure 103.2e. It is said to be from San Andres Sajcabaja (Dept. Quiche, Guatemala). This specimen is now in the Chichicastenango Museum (Mus. No. 588) where it

forms a part of the Rossbach Collection. (cf. also a two chambered incense burner in the same collection, Mus. No. 298, which has a circular decoration on the lower cylindrical part of the vessel similar to that seen on Lothrop's Fig. 84. It is of unknown provenience.)

Although from different geographical locations (Kaminaljuyu, San Andres Sajcabaja, and possibly Alta Verapaz), it is obvious that the specimens described here have a great many features in common. These may be listed as follows:

1. Two-chambers consisting of a tall bell-bottomed or cylindrical lower part and a flaring-sided upper receptacle, the latter used for the burning of incense as indicated by the smoked interior: all specimens.

2. Presence of a medial molding, 'plain or decorated, marking on the exterior the division between receptacle and lower part: a. Plain molding: Fig. 103.2; Lothrop 1936, Fig. 85; b. Decorated molding: Fig. 103.1; Lothrop 1936, Fig. 81.

3. Presence of a grotesque modeled human face on the bell-bottomed lower part (one exception is Fig. 103.1f, g in which it appears on the receptacle): Figs. 103.1a–e; 103.2a, b; Lothrop 1936, Fig. 85.

4. Presence of a highly conventionalized, possibly human, face on the flaring-sided receptacle, consisting of rectangular eyes, projecting "loop-nose" and flange-ears. All features are bordered with rows of applied clay buttons or rolls. a. Projecting "loop-nose" with eyes, Figs. 103.1a–c; 103.2c–e; Lothrop 1936, Fig. 85. b. Projecting "loop-nose" without eyes, Figs. 103.1d, e; 103.2a, b.

5. Presence of small, applied animal heads, the eyes of which are represented by small clay pellets. Lothrop (1936:84) suggests that they may represent birds' heads: Figs. 103.1; 103.2a, b; Lothrop 1936, Fig. 85.

6. Presence of applied, pointed, rounded or rectangular protuberances from the rim of the flaring-sided receptacle, giving the rim a scalloped-edge appearance: all specimens.

7. Presence of vertical, rounded or rectangular, side flanges decorated with clay rolls or rows of clay buttons: all specimens.

As can be seen, the most outstanding feature characteristic of this group is the "loop-nose." In certain cases it definitely forms part of a conventionalized, probably human, face although on other incense burners its original meaning seems to have been lost and it appears alone.

In Figures 1d, e and 2a, b the "loop-nose" is placed directly above the grotesque human face in such a way that it gives the appearance of a headdress. This is especially noticeable in Figure 103.1d, e. On this line of reasoning, figures 103.3 and 103.4 appear here to show a probable later or parallel development. The loop on these specimens appears as a definite headdress and the abundant use of clay

buttons brings about a further resemblance to the former group in spite of the fact that they are not necessarily two-chambered.

FIGURE 103.3A–D (ANTHROPOMORPHIC INCENSE BURNER FOUND AT KAMINALJUYU, MOUND A, TOMB VI, MUS. NO. 2485 [KIDDER, JENNINGS, AND SHOOK 1946, FIGS. 87, 201I, 207G]).

This elaborate and fragile specimen consists of a two-chambered incense burner and a tall anthropomorphic cover. When found, the receptacle was filled with ashes and charcoal. The cover of the incense burner represents a seated figure wearing a tall loop-headdress. The specimen comes from an Esperanza phase tomb. (For color and detailed description see Kidder, Jennings., and Shook 1946:210–12 and Fig. 207g) Total ht. 37 cm, diam. of receptacle 15.5 cm.

A similar incense burner represents a seated figure holding a shallow scalloped-edge pan over its crossed knees (Lothrop 1936, Fig. 101). It is said to have been found near Rabinal, Dept. Baja Verapaz, and is now in a private collection in Germany.

FIGURE 103.3E, F (MUS. NO. 5821; DIESELDORFF COLLECTION)

This coarse, brown ware incense burner is believed to have come from the region north of Coban in Alta Verapaz (Villacorta 1938:261). The features of the modeled effigy face of this tripod incense burner bear, in spite of its realistically represented teeth, a strong resemblance to those of Figures 103.1 and 103.2a, b. The "loop-nose" is here used as a headdress. The rounded, vertical side flanges bordered by clay scrolls; and the rows of rounded or pointed clay buttons outlining the "loop" and the rim, show a further connection with the two chambered group discussed earlier. The major difference is that the flaring-sided receptacle rests on three hollow cylindrical feet instead of on a bell-bottomed lower part.

The specimen bears traces of red paint and white wash. The interior of the receptacle is smoked. Ht. 25 cm, diam. 23.5 cm.

FIGURE 103.4A, B (MUS. NO. 2351; BATRES COLLECTION)

This tripod incense burner is said to be from Kaminaljuyu. It is made from a coarse, reddish brown ware heavily tempered with quartz particles.

The vertical side flanges are edged with rows of applied, perforated clay buttons. The finely modeled, grotesque human face has an open mouth and the



a



b



c



d



e



f



a



b



c



d



e



f

upper canines are sharply pointed. The "loop-nose" appears in the form of a protruding headdress encircled by a realistically modeled snake. Two similar snake heads with applied pellet eyes protrude from the earplugs on either side of the face. The fact that these animal heads represent snakes suggests that the small animal heads already described on the two-chambered incense burners may also represent conventionalized snake heads rather than birds as proposed by Lothrop (1936:84). The hollow, cylindrical feet of the incense burner are open at the bottom.

Traces of red and blue paint and white wash are visible. The interior of the receptacle is smoked. Ht. 21 cm, diam. 19.5 cm.

FIGURE 103.4C, D (MUS. NO. 7560; DONATION OF MRS. NORMAN PUTNAM REAM OF GREENWICH, CONNECTICUT; PURCHASED IN PATZUN, DEPT. CHIMALTENANGO, GUATEMALA, BUT OF UNKNOWN PROVENIENCE).

This two-chambered incense burner is of a coarse brown ware containing mica and quartz particles. The vessel consists of a slightly flaring-sided receptacle with wide everted rim and a tall cylindrical bottom part which is perforated at the back side. The vertical side flanges as well as part of the rim are now broken off.

The skillfully modeled human face with open mouth, nose and earplugs, is applied to the bottom part. The earplugs and a beard-like protuberance are decorated with applied clay discs and the collar is bordered with a clay roll. The "loop" appears as a headdress similar to that on Figure 103.4a, b but it is compressed. The face with its heavy eyebrows, the details of the headdress and the collar are similar in many respects to the corresponding features on Figure 103.4a, b.

Traces of red paint are present. The interior of the receptacle is smoked. Ht. 26 cm, diam. 19 cm at inner rim.

Another vertical side-flanged, two-chambered effigy incense burner with compressed "look-nose" headdress is illustrated by Seler (1901, Fig. 257). It is in the Adams Collection in the Vienna Museum and is said to have come from Alta Verapaz. It is reproduced by Walter Lehmann (1921:8, Fig. 46).

FIGURE 103.4E, F (MUS. NO. 2708; KIDDER, JENNINGS, AND SHOOK 1946, FIG. 202A).

This tripod effigy incense burner with vertical side flanges was found during the digging of a drain north of Mound B at Kaminaljuyu and is believed

to belong to the Esperanza phase. It is of a coarse, reddish brown ware containing quartz particles. The grotesque face with large applied ear- and nose-plugs is modeled on the vessel wall. Although not bearing a "loop-nose" headdress, it is of interest because of the curious flat clay loop that extends from the upper lip of the grotesque human face to the collar. This collar or necklace bordered with a row of applied clay buttons is similar to those seen on Figure 103.3. It is very possible that this flat loop, whatever its purpose, bears a direct connection with the "loop-nose." It is also interesting to note that this skillfully modeled effigy head has an open mouth and what appear to be pointed teeth but from the front, at least, the mouth is completely hidden by the wide loop. This specimen also has hollow cylindrical feet which are open at the bottom.

The vessel bears signs of red and yellow paint and white wash. Ht. 51 cm, diam. 30 cm. It is always hard to say which comes first, the chicken or the egg. That we have a certain type of stylistic evolution is obvious. Whether the "loop-nose" originated as such and evolved into the headdress and finally dropped to its curious location between the nose and the collar or vice versa is the question. The fact that all pieces are presumably Early Classic even presents the possibility of parallel development although this is less likely.

To students interested in style evolution or for the amusement of archaeologists disdainful of such theorizing, I would like to suggest the following stylistic sequence: Figures 103.2c-e; 103.1a-c; 103.2a, b; 103.1d, e; 103.3.e, f; 103.4a, b; 103.4c, d; and 103.4e, f. It is, however, far from my desire to copyright this!

Before closing, I wish to call attention to two hollow, cylindrical pottery objects from Uaxactun (Dept. Peten, Guatemala), each representing a conventionalized grotesque human face (Ricketson and Ricketson 1937, Fig. 191, Pl. 95e-g). They are now in the Guatemala National Museum (Mus. Nos. 293, 295). The nose of each face is a loop-like projection. The vertical side-flanges as well as the rim are decorated with rows of applied clay buttons. Although their interiors show no signs of smoking, Ricketson and Ricketson (1937:282, Fig. 191b) suggests their use as incense burners and compares their features with some of the grotesque masks on Pyramid E-VII-sub. These "loop-nosed" pottery cylinders were found in Cache 13 in the upper part of Pyramid E-VII and are believed to be from the Tzakol phase of the Early Classic period of the lowland Maya.

It has long been realized that a more detailed knowledge of Maya incense burners is greatly needed. Until sufficient examples of these important cult vessels can be studied and classified any attempt at a

typology can be only tentative. The material presented here is but a small contribution to a field which is enormous in its scope and implications. Nevertheless, the recurrence of those features already discussed suggests that they can be used as guides for assigning incense burners of similar stylistic treatment to the Early Classic period of the Maya area.

It is interesting to note that three two-chambered incense burners with many characteristics similar to

those noted in this paper were encountered during the United Fruit Company's excavations at Zaculeu (Dept. Huehuetenango). These vessels were found in tombs under Structure 1 and are believed to date from the Early Classic period. More detailed information concerning these specimens will be forthcoming in the Zaculeu report by Trik and Woodbury.

This study was made possible by a grant-in-aid from the Bollingen Foundation of New York.

GUATEMALA CITY

Ethnological Material from British Honduras

William R. Coe and Michael D. Coe

While excavating not far from the village of Socotz, in the Cayo District of British Honduras, during the summer of 1949, our Maya workmen supplied us with some interesting ethnological material. The story was told to us by Ascension Alfaro, an Indian born in the vicinity of Lake Peten Itza in Guatemala, where he learned the tale. The rest of the material was given us by Jacinto Cunil, our foreman from Socotz.

THE STORY OF THE SNAIL (U TZICBAL IX MAN URICH)

Once upon a time a farmer had a corn shed in his milpa. A bold squirrel came to eat the farmer's corn. In the milpa shed lived Aunt Snail (*Ix Man Urich*) on one of the rafters. When Aunt Squirrel (*Ix Man Cuuc*) suddenly arrived to eat corn, the little snail warned her that the owner of the milpa was coming by singing, "Here comes the owner of the milpa, he has his *jicara*, he has his calabash, he has his *posole*, *thararu*!" But she paid no attention. While this was going on, the owner of the granary came and saw Aunt Squirrel and fired his gun and killed her. The man did this, then he got up a load of corn and returned to his house. He forgot all about Aunt Squirrel.

When night came Aunt Snail began to sing, "Here comes the owner of the milpa, *mamavenita*, he has his *jicara*, he has his calabash, he has his *posole*, *thararu*!" During this Aunt Mole (*Ix Man Bah*) came and began to dance, "*Bahcitinbahcin*, *bahcitinbahcin*!" During this dance the spotted agouti (*tzub*) arrived. It began

to sing, "*Thinthinwegweg*, *thinthinwegweg*!" The deer (*ceh*) came. It started to whistle, "*Pucunpucun pux*, *pucunpucun pux*!" The peccary (*citam*) arrived. It began to sing, "*Cilim thapthah*, *cilim thapthah*!" The armadillo (*weeh*) came. It began, "*Zip zip zip*!" The curassow came, it was already dawning. It began, "*Martha haha*, *tzaten in wenel anha*, *martha haha*, *tzaten in weasel anha*!" The cox (the quail or cojolito; *Penelope purpurascens* Wagl., a black pheasant-like bird) came. It saw while flying that the owner was coming with his shotgun and warned them, screaming, "*Wai wai wai* (here, here, here)!" and it set off in flight.

It was already daylight. The owner came and heard the uproar of the animals which ran and flew. They were watching over Aunt Squirrel who was on the roasting spit.

Among the Maya of Socotz, there is a firm belief in the existence of a monster known as the *zizimit*. This is a huge, hairy, ape-like creature of great strength. It has no knee joints and its feet are turned backwards. There are both male and female *zizimites*. The *zizimit* carries off sinners by persuasion or force to a cave, where it eats the person of its own gender, but only the lower half of the body. There are two ways to avoid capture: (1) When known to be followed, one runs into the bush and hides; the monster will trail one to the spot, but missing the sight and sound of its quarry, it will then notice its own footprints pointing in the opposite direction to those of its intended victim; the *zizimit* turns and hurries back along the trail. (2) When one notices

the *zizimit* close behind, one starts dancing, laughing, and whirling around and around; the monster, liking to dance, will at once copy one's steps, whirling around and laughing until it becomes dizzy and falls; then one escapes.

It is apparent that this monster is the same as the *mahanamatz* or *sisimito* of the Kekchi Maya to the south (see Thompson 1930:67). Among the Kekchi, one avoids it by setting its shaggy coat on fire. It is also quite clear that the *zizimit* is the *Tzitzimitl* of the Aztec. Of the *Tzitzimime* (plural of *Tzitzimitl*) Sahagun says, "... there was a great eclipse of the sun. It was very dark for five hours for the stars appeared and the people were very afraid, and they said that some monsters, which they called *Tzitzimis* had to descend from the sky and eat men and women" (Sahagun 1938, Bk. 8, Ch. 1). Thompson (1950:85) says, "In Mexican belief the *Tzitzimime* were certain stellar deities who had at one time been posted at the four corners of the earth, and supported with upraised arms the heavens. They were believed to fall head first to earth at certain times, notably during the darkness of eclipses, and in the course of these descents to eat men and women." Thompson identifies the Mexican *Tzitzimime* with the Maya Bacabs. The more frightening aspects of the mon-

ster have been passed down into folk belief, but for some strange reason the Maya of British Honduras retain the Mexican rather than the Maya name. The pottery figurines occasionally found in the mounds are regarded as the owners of the mounds and are called by the Indians *ku kat* (clay gods). It is thought that they were made by an ancient race of little men called the *p'uz*. The figurines are extremely dangerous, and if one happens to dig one up and it falls to any other direction but south, then sickness and even death may result (this is somewhat peculiar since south was probably the region of the death god). As a matter of fact, this did happen a few years ago to an Indian named Bruno Dzib. He chanced to turn up in his milpa a little Formative head of clay (these are the most powerful, as evil winds can come from the punched eyes and mouth). The winds entered his body, since the head did not fall to the south, and he died in a few days. We have the head, and the story was told us by several people, all of whom agreed on the cause of Dzib's death. The Indians also speak of the *yumikat*, who are said to be *alux* (little goblins) living in pottery vases in the ruins. No right-minded excavator would dare to dig into a mound without first propitiating the spirits inside with copal incense and prayers.

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Further Notes on Three-Pronged Incense Burners and Rim-Head Vessels in Guatemala

Stephan F. de Borhegyi

During March 1951, I spent a weekend at Finca El Progreso near Chiquimulilla, Department Santa Rosa, at the invitation of the owner, Faustino Padilla. The purpose of my visit was to investigate the spot where a three-pronged incense burner now located in the Guatemala National Museum (Fig. 97.7) was found in 1936. It was discovered, together with another fragmentary specimen, by the members of the Padilla family during the digging of a drainage canal connecting a natural spring with a wash basin. I had hoped that more material could be obtained by further excavation at the same spot and by a survey of the area. This unfortunately was not the case. The soil around the drainage canal where the incense burner was found proved to be sterile. The nearest archaeological site with mounds and surface material was located on the finca property at the west end of the sulphur lake, Ixpaco, approximately 2 km south of the drainage canal. The surface material from this site, called Terreno Dauro, ranged from Preclassic to Late Classic. It therefore seems possible that the inhabitants of this site may have presented the three-pronged incense burners as offerings to the spring, a custom not infrequent among the ancient Maya (Smith and Kidder 1943:144).

More successful was the examination of the private collection of the Padilla family which revealed fragments from two more three-pronged incense burners, one of which (Fig. 105.1, 2) was mentioned in the preceding paragraph. Lic. Padilla kindly presented both of them to the Guatemala National

Museum, where they were later partially restored (Fig. 105.1a, b).

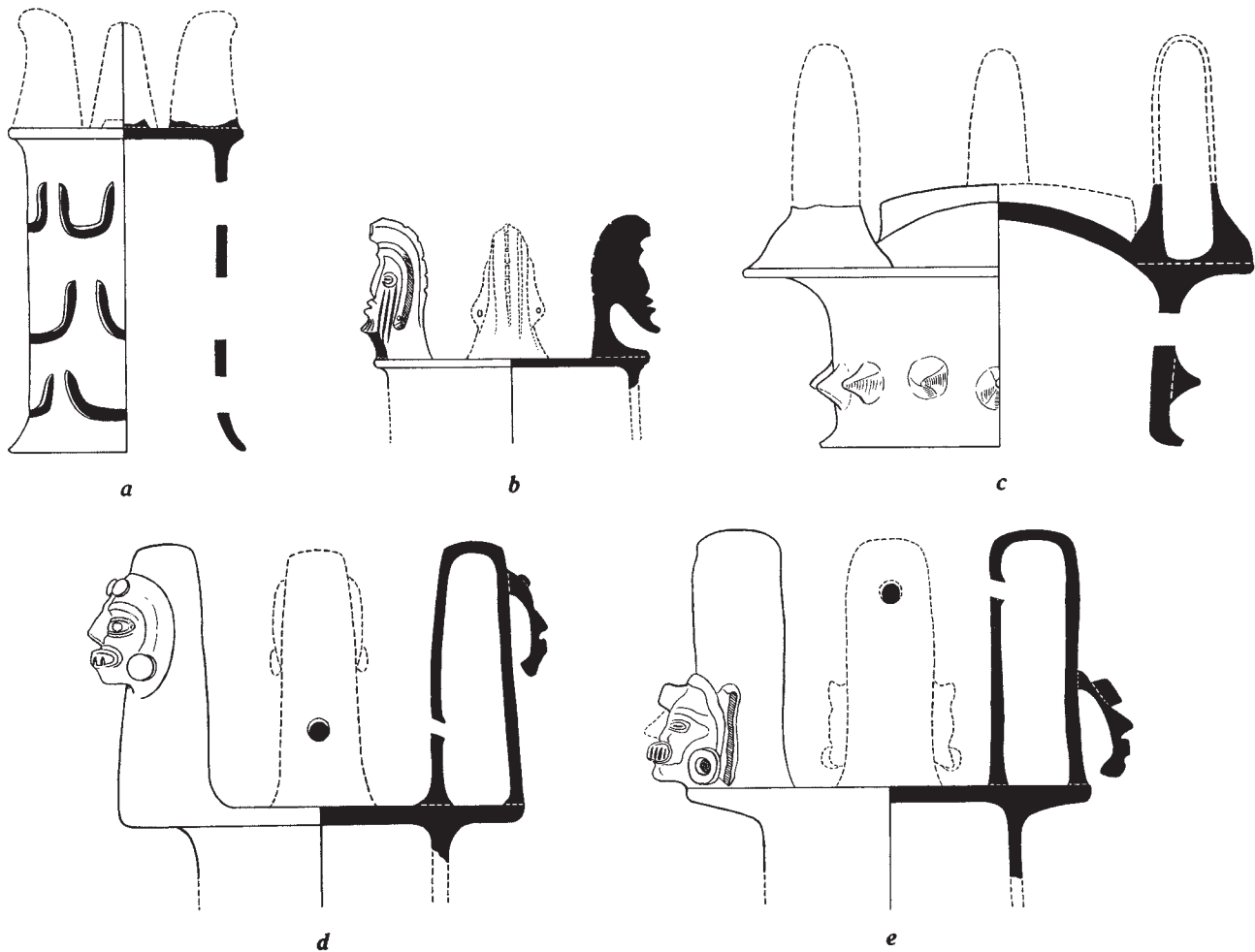
FIGURE 105.1A. CYLINDRICAL THREE-PRONGED INCENSE BURNER, FRAGMENTARY.

Paste: coarse, unslipped and unpolished yellowish-gray ware, thickly sown with quartz and mica particles.

Description: the three prongs are now missing but are indicated by scars on the flat top. The prongs were not encountered during the unearthing of the specimen or later in my supplementary investigation. In the center of the top is a circular indentation, the purpose of which is unknown (cf. Note 101). It may have been used as a container for copal incense. The specimen was very fragmentary and its reconstruction is only tentative. The notches in the cylindrical wall of the censer suggest that it was decorated with a delicate openwork design consisting of three horizontal rows of U-shaped perforations. The fragmentary condition of the specimen can probably be attributed to this decorative technique. Traces of thin, yellowish-white, calcareous wash are present on the exterior. Only the flat top of the incense burner is smoked. It should be noted that in spite of the fact that the specimens were said to have been found near the spring, none of them was water worn.

Dimensions: approximate ht. (without prongs) 26 cm, approximate top diam. 21 cm.

Provenience: Finca El Progreso (Dept. Santa Rosa). Museum Lot E-199.



105.1. Three-pronged incense burners and rim-head vessels.

Chronological position: Early Preclassic.

Associated material: the specimen was found with the three-pronged incense burner illustrated in Fig. 97.7. The two incense burners are very similar, the principal difference being that the openwork design of the latter is made up of triangular rather than U-shaped perforations.

FIGURE 105.1B. CONE-SHAPED EFFIGY PRONG FROM THREE-PRONGED INCENSE BURNER.

Paste: coarse, unslipped and unpolished, yellowish-red ware thickly sown with white volcanic tuff and mica particles.

Description: the head is that of a bearded individual with shallow incisions suggesting tear streaks under the coffee-bean eyes (Kaminaljuyu rain god?). The ears or ear plugs are perforated. Under the chin of the effigy is an opening (diameter 2.5 cm)

made while the clay was wet. Three tool-indented fillets stretch from the top to the base of the prong on the back of the head. The specimen shows slight smudging.

Dimensions: ht. of prong 10.5 cm.

Provenience: Finca El Progreso (Dept. Santa Rosa). Museum Lot E-99A. Surface find from the archaeological site, Terreno Dauro.

Chronological position: Early Preclassic

Comparative material: similar cone-shaped, modeled effigy prongs with tear streaks have been reported from Kaminaljuyu, Guatemala (Fig. 97.5b, e, f).

Later in March I visited the highlands of Guatemala with the purpose of tracking down more examples of three-pronged incense burners. In Quezaltenango in the private collection of Don Vitalino Robles I located three specimens, said to have come from the east bank of the Rio Samala near the town of Salcaja (Dept. Quezaltenango). Sr. Robles

kindly gave permission to publish these specimens (Figs. 105.1c, d, e; 105.2).

FIGURE 105.1C; 105.2A, B. THREE-PRONGED, CYLINDRICAL INCENSE BURNER WITH HOLLOW, PLAIN PRONGS.

Paste: unslipped, unpolished reddish-brown ware with a slightly darker paste thickly sown with particles of quartz and mica temper.

Description: two of the prongs are broken off near the top and the third is entirely missing, its former presence indicated by a scar. A ridge, 10.5 cm long, was applied to the center of the convex top of the incense burner. It lies between but does not connect the frontal prongs as noted on the Late Preclassic incense burners described in Note 101. Around the base of the specimen is a row of horizontally applied clay protuberances generally referred to as "spikes." On either side of the censer is a circular vent 2 cm in diameter.

Dimensions: ht. (without prongs) 8 cm, top diam. 23 cm.

Provenience: east bank of the Rio Samala near Salcaja (Dept. Quezaltenango), Robles Collection.

Chronological position: probably Late Classic.

Comparative material: hitherto unknown type. This is the only Late Classic three-pronged incense burner noted with "spiked" decoration although flaring-sided, flat-bottomed spiked incense burners are common during this period in the Guatemala highlands (Kidder, Jennings, Shook 1946:239), (For Early Preclassic spiked three-pronged incense burners see Note 97).

FIGURE 105.1D, E; 105.2C, D. TWO EFFIGY PRONGS WITH MOLDMADE HUMAN FACES.

A. HOLLOW, EFFIGY PRONG WITH APPLIED HUMAN FACE ON THE SUPERIOR HALF.

Paste: coarse, unslipped, yellowish-brown ware containing particles of quartz and mica.

Description: the features of the face were mold-made but the sharply filed teeth were made by crude incisions. The earrings are represented by applied, flat clay buttons. Three similar but smaller buttons decorate the forehead. A narrow slit is under the chin (cf. Note 101). A circular vent, 1.5 cm in diameter, is on the back near the base. The exterior of the prong is slightly smudged.

Dimensions: ht. 24 cm, basal diam. 7 cm.

Provenience: same as Figures 105.1c; 105.2a, b.

Chronological position: probably Late Classic.

Comparative material: Fig. 101.5a, b.

B. HOLLOW, EFFIGY PRONG WITH APPLIED HUMAN FACE ON INFERIOR HALF.

Paste: coarse, unslipped, reddish-brown ware thickly sown with mica and quartz particles.

Description: the face appears to be that of an old man although part is missing. The sharply filed teeth were made by crude incisions. The peaked headdress is made of a clay roll which borders the face and is decorated with applied clay knobs. The right earplug (left one missing) is represented by a clay button with central thumb impression. A narrow slit is present under the chin. A circular vent, diameter 1.3 cm, is at the back of the prong, close to the top. The tip of the prong shows same signs of abrasion and the exterior surface is slightly smudged.

Dimensions: ht. of prong 23.5 cm, basal diam. of prong 9 cm.

Provenience: same as Figures 105.1c; 105.2a, b.

Chronological position: probably Late Classic.

Comparative material: same as Figures 105.1d; 105.2c.

DISTRIBUTION OF THREE-PRONGED INCENSE BURNERS AND RIM-HEAD VESSELS IN GUATEMALA

In Note 101 an attempt was made to show by means of a chart the distribution and occurrence of three pronged incense burners and rim-head vessels. Although no changes need be made in the material presented at this time, it is far from complete. Now that a thorough survey has been made of the material located in the sherd laboratory of the Guatemala National Museum, an up-to-date list has been compiled of the distribution of this complex according to departments and individual archaeological sites in Guatemala. This is supplemented by a distribution chart (Table 105.1).

Any specimen not excavated under strict archaeological conditions has been placed in a chronological horizon on the basis of typology. All such material is therefore specified in the following list as being of a particular chronological type (such as Late Classic type). Those specimens assignable to a particular period on the basis of stratigraphy or association are placed within the chronological horizon without the use of the word type.

The features characteristic of each period and on the basis of which typological classification has been made were listed and discussed in detail in Note 101, as well as in a chart (Table 101.1). The reader will therefore be referred to this Note for any further information.

*a**b**c**d*

105.2. Three-pronged incense burners and rim-head vessels.

The letters CH, S, and M stand for the Las Charcas, Sacatepequez and Miraflores phases, respectively. The number in parentheses represents the number of fragments of three-pronged incense burners, their deeply scored covers, or rim head vessels. The 22 departments of Guatemala are listed alphabetically.

ALTA VERAPAZ

Chipoc (near Coban), Lot No. C-48, from excavation by R. E. Smith. Three-pronged incense burners: (16) Late Classic; deeply scored incense burner covers: (8) Late Classic.

Santa Elena (near Coban), Lot No. A-29, from surface collection by R. E. Smith. Deeply scored incense burner cover: (1) Late Classic type (?).

BAJA VERAPAZ

Tzalcam (near San Jeronimo), MN 4304, specimen purchased by O. G. Ricketson. Rim-head vessel (?): (1) Late Classic type (?).

CHIMALTENANGO

La Alameda (near the city of Chimaltenango), Lot No. R-21, from ancient pits and graves near school building, excavation by E. M. Shook. Three-pronged incense burner: (1) Early Preclassic (S).

Roosevelt Highway (near the city of Chimaltenango), Lot Nos. R-6, R-6a, from ancient pits and graves on north edge of road, excavation by E. M. Shook. Three-pronged incense burners: (4) Early Preclassic (S); deeply scored incense burner covers: (6) Early Preclassic (S).

CHIQUMULA

No evidence of complex.

ESCUINTLA

El Baul, Lot No. J-21, from various levels of Trench 9 (see Thompson 1948, Figs. 25, 35; and Note 101). Rim-head vessels: (7) Late Classic (San Juan phase).

Tiquisate (1) Ticanlu Farm, Lot Nos. J-11, J-12, from surface collection by E. M. Shook. Rim-head vessels: (7) Late Classic type.

Toliman Farm, Lot No. J-25, from Larrave private collection. Rim-head vessel: (1) Late Classic type. (3)

Tacana Farm, Lot No. J-13a, from surface collection by E. M. Shook. Rim-head vessel: (1) Late Classic type.

Section Z-5, Lot No. J-16, from cut of drainage canal, excavation by E. M. Shook. Rim-head vessel: (1) Late Classic.

Zunil Farm, Lot No. J-9b, from second level, test excavation by E. M. Shook. Rim-head vessels: (4) Late Classic.

Solola Farm, Lot No. E-30, from surface collection by E. M. Shook. Rim-head vessels: (4) Late Classic type.

Texcuaco (near Rio Coyolote), see Note 101. (Pullin collection). Rim-head vessels: (5) Late Classic type.

GUATEMALA

Kaminaljuyu area (near Guatemala City), various C Lot numbers, the bulk of the material from ancient pits and mounds excavated by A. V. Kidder and E. M. Shook (see also Fig. 97.16 in and Figs. 101.1, 101.2, 101.3a, 101.5c). Three-pronged incense burners: (92) Early Preclassic (CH, S); three-pronged incense burners: (204) Late Preclassic (M); three-pronged incense burner covers: (166) Early Preclassic (CH, S); deeply scored incense burner covers: (157) Late Preclassic (M); rim-head vessels: (246) Late Preclassic (M).

Amatitlan (Contreras Yacht Club site), Lot Nos. E-5, E-8, from surface and fill of mounds, excavation by A. V. Kidder and E. M. Shook. Deeply scored incense burner covers: (3) Late Preclassic (M).

Canchon (near Guatemala City), Lot No. E-33, from surface collection from mound group by E. M. Shook. Three-pronged incense burners: (1) Late Preclassic type (M); deeply scored incense burner covers: (2) Late Preclassic type (M).

Finca Barcena (near Guatemala City), Lot No. E-54, from surface collection by E. M. Shook. Deeply scored incense burner cover: (1) Late Preclassic type (M).

El Portillo (Guatemala City), Lot No. E-50, surface collection by E. M. Shook. Three-pronged incense burner: (1) Late Preclassic type (M); deeply scored incense burner covers: (2) Late Preclassic type (M).

Jorgia (near Canchon), Lot No. E-28, from surface collection by E. M. Shook. Deeply scored incense burner cover: (1) Late Preclassic type (M).

Los Arcos (Guatemala City), Lot No. E-48, from surface collection by E. M. Shook. Three-pronged incense burner: (1) Early Preclassic type (CH).

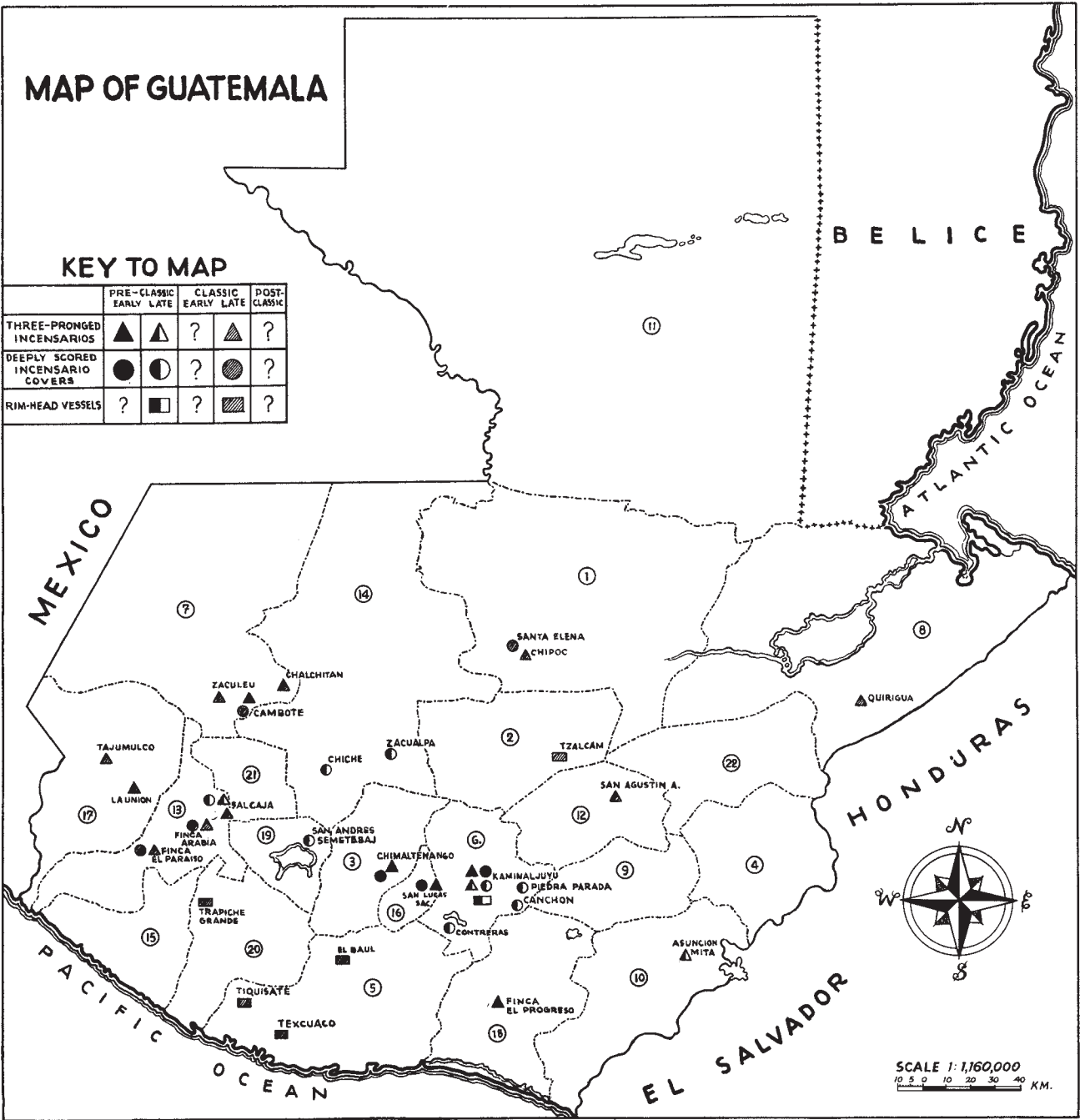
Piedra Parada (near Canchon), Lot No. E-9, from road cut near mound group, collection by E. M. Shook. Deeply scored incense burner covers: (5) Late Preclassic (M).

HUEHUETENANGO

Chalchitan, Lot No. E-71, from below ball-court floor between Structures 23 and 24, excavation by A. L. Smith. Three pronged incense burner: (1) Late Classic.

Cambote, Lot No. E-88, from surface collections by A. L. Smith and E. M. Shook. Three-pronged incense burners: (4) Late Classic type; deeply scored incense burner cover: (1) Late Classic type.

Zaculeu, Lot No. E-109, from Pit X, excavation by A. L. Smith. Three-pronged incense burners: (5) Late Classic.



105.3. Map showing distribution of three-pronged incense burners and rim-head vessels.

IZABAL

Quirigua, Lot Nos. E-117, E-117b, from principal plaza and from Pit 7 in the cobble pavement, excavation by G. Stromsvik. Three-pronged incense burners: (13) Late Classic; deeply scored incense burner covers: (6) Late Classic.

JALAPA

No evidence of complex.

JUTIAPA

Asuncion Mita, Lot No. AM, from Group D, surface collection by G. Strömsvik (see also Note

101 and Figs. 101.3b, b', b''). Three-pronged incense burners: (3) Late Preclassic type (M).

PETEN

No evidence of complex. (A questionable incense-burner fragment with bifurcated protuberance but without smudging is illustrated by Ricketson and Ricketson 1937, Pl. 79d. from the Chicanel, Late Preclassic horizon).

PROGRESO

San Agustín Acasaguastlán, Lot No. E-183, from general excavation by A. L. Smith and A. V. Kidder (1943:143, Fig. 22a-f and Note 101). three-pronged incense burners: (7) Late Classic.

QUEZALTENANGO

Finca Arabia, Lot No. E-116, from surface collection by E. M. Shook. Three-pronged incense burners: (3) Late Classic type; deeply scored incense burner covers: (2) Late Classic type.

Finca El Paraíso, Lot Nos. R-1 and R-2, from surface collection and general excavation of mounds by E. M. Shook. Three-pronged incense burners: (8) Late Classic; deeply scored incense burner cover: (1) Late Classic.

SALCAJA

1. Lot No. N-1, from ancient pits in road cut between Salcaja and San Cristóbal Totonicapán, excavation by E. M. Shook. Three-pronged incense burner: (1) Late Preclassic (M); deeply scored incense burner covers: (2) Late Preclassic (M).

2. Robles collection, from east bank of Río Samalá (Fig. 1c-e). Three-pronged incense burners: (3) Late Classic type.

QUICHÉ

Zacualpa, Lot No. E-150, from Group A, central barranca, excavated by Robert Wauchope. Deeply scored incense burner cover: (1) Late Preclassic (M).

Chiche, see Note 101, surface collection by Robert Wauchope. Deeply scored incense burner covers: (2) Late Preclassic type (M).

RETALHULEU

No evidence of complex.

SACATEPEQUEZ

Sacatepequez site (near Santa María Cauque), Lot Nos. R-3, R-4a-d, from ancient pits along Roosevelt Highway, excavation by E. M. Shook. Three-pronged incense burners: (13) Early Preclassic (S); deeply scored incense burner covers: (20) Early Preclassic (S).

Chacaya, Lot No. C-68, from road cut on Roosevelt Highway 2 km southwest of Santiago Sacatepequez, excavation by E. M. Shook. Deeply scored incense burner cover: (1) Early Preclassic (S).

SAN MARCOS

La Unión, Lot No. K-22, from a gulley near government building, excavation by E. M. Shook. Three-pronged incense burner: (1) Late Classic.

Tajumulco, Lot No. K-21, from general excavation by B. P. Dutton and H. R. Hobbs (not illustrated in their publication). Three-pronged incense burners: (5) Late Classic.

SANTA ROSA

Finca El Progreso, Lot Nos. E-199 and E-199a and MN 1195 (Fig. 97.1a, b; Fig. 97.7a, a'; see also Note 101), from excavation for a drainage canal near finca house and surface collection from Terreno Dauro by Faustino Padilla. Three-pronged incense burners: (3) Early Preclassic type (CH).

SOLOLA

San Andrés Semetabaj, Lot Nos. E-10 and E-10b, from surface collections by E. M. Shook and S. F. de Borhegyi. Deeply scored incense burner covers: (4) Late Preclassic type (M).

SUCHITEPEQUEZ

Trapiche Grande, Coyotenango, Lot No. E-40, from surface collection by E. M. Shook (see also Note 101). Rim-head vessels: (4) Late Classic type.

TOTONICAPÁN

No evidence of complex.

ZACAPÁ

No evidence of complex.

It should be noted that the total count (Table 105.1) represents only the material stored in the Guatemala National Museum from sites that have

been investigated. Certain areas in Guatemala are archaeologically unexplored and our picture is therefore incomplete. Nevertheless, as can be seen in the total count, the vast majority of three-pronged incense burners with their deeply scored covers and rim-head vessels come from Kaminaljuyu during the early and Late Preclassic periods. It must not be forgotten, however, that Kaminaljuyu is the most thoroughly excavated archaeological site in the Guatemala highlands, and because of the great yield of pottery from all periods, the specimens relating to this complex are treated separately in the total counts. Strangely enough, throughout the careful and thorough excavations at Kaminaljuyu, no specimens of three-pronged incense burners, their covers, or rim-head vessels, appeared in the material after the Preclassic period. At sites other than Kaminaljuyu they appear occasionally in the Preclassic and in greater numbers in the Late Classic. No specimen of any kind has been excavated at any site of the Early Classic period (see Note 101). The picture presented by this evidence is too finely drawn to be a matter of coincidence.

It is tempting therefore to speculate on the possible reasons behind the appearance and disappearance of certain traits in this complex; and although a ready-made explanation is not at hand, a working hypothesis would be helpful, if not essential, for further study.

When the complex in its various forms and throughout its history is viewed pictorially on the map of Guatemala, it can be seen that the three-pronged incense burner must have been exclusively a highland trait at the time of its appearance in the Early Preclassic period. The relative abundance of the material at Kaminaljuyu suggests that this area may have been the scene of its birth. Here it was probably connected with a folk-cult related to the worship of fertility and rain. Characteristic of this early manifestation are the grotesque, bearded effigy prongs depicting individuals with tear streaks. In Note 97 I suggested that these prongs may represent the Kaminaljuyu rain god. In the Peten and on the Pacific coast this ceremonial complex was either unknown or avoided. At least, no evidence of it has been encountered in the collections made in these regions.

Sometime during the second half of the Preclassic period, the complex must have spread slowly to the east and to the west, eventually reaching as far as Salcaja and Asuncion Mita (see map). As the years passed, the three-pronged incense burners became more elaborate, the bearded faces on the prongs of the earlier types were replaced by grotesque, open-mouthed jaguars and other monsters on the body of

the censer, and plain prongs took the place of effigy prongs. It would seem, therefore, that they were used in the service of a larger pantheon.

The impetus behind the spread of the three-pronged incense burners is still in question. It could have been brought about by warfare and strife, by a peaceful movement of migratory groups, or, more likely, by a spiritual impulse in the form of a religious cult that radiated from a single source. If the latter is true, this source may have been Kaminaljuyu.

Why, then, did this religious cult, apparently so firmly established during the Preclassic, disappear during the succeeding Early Classic period? Probably new religious ideas from the northwest, in particular those from Teotihuacan, penetrated into the Guatemala highlands about this time and overshadowed or brought about the prohibition of earlier rites. Apparently at Kaminaljuyu and adjacent areas the complex came to an abrupt and final end. It is therefore curious to see the "renaissance" of three-pronged incense burners during the Late Classic period throughout the marginal areas, even as far as Chipoc in the Alta Verapaz, Quirigua in the Department of Izabal, and Copan in Honduras. The exception is again the Peten where they never were the mode. Such a "renaissance" could have occurred among conservative groups, less affected by the foreign religious ideas, or among others who discarded or revolted against them. In either case, the native folk cult must have remained in an "underground," existence throughout the Early Classic period. The Late Classic type of three pronged incense burner usually depicts animals or realistic, sometimes aged, individuals, and they frequently have moldmade features. From this we might suppose that the religious concepts of the Preclassic, with such frequent use of the grotesque, had been lost or definitely modified.

It is interesting that the rim-head vessels, quite frequent during the Late Preclassic period at Kaminaljuyu, disappeared there, to appear some 300 years later in the Late Classic on the Pacific coast. There they must have "monopolized" the region because no three-pronged incense burner seems to have crossed the boundaries. At present, there is no explanation for this curious situation. All that can be said is that they, like their "cousins," underwent similar stylistic alterations. They are also found in both human and animal form and frequently with moldmade features.

The renaissance of the complex was of short duration. New migratory groups claiming Mexican, and in particular Tula, origin appeared on the scene and must have brought it, together with the related religious ideas, to an end. For the middle of the

Table 105.1. Distribution of Three-Pronged Incense Burners and Rim-Head Vessels

a. Three-Pronged Incense Burners					
<i>Periods</i>	<i>Kaminaljuyu Excavated</i>	<i>Other</i>		<i>Total</i>	
		<i>Excavated</i>	<i>Typed</i>		
Early Preclassic	92	19	3	114	
Late Preclassic	204	1	5	210	
Early Classic					
Late Classic		56	10	66	
Post-Classic					
Total	296	76	18	390	
b. Deeply Scored Incense-Burner Covers					
<i>Periods</i>	<i>Kaminaljuyu Excavated</i>	<i>Other</i>		<i>Total</i>	
		<i>Excavated</i>	<i>Typed</i>		
Early Preclassic	166	27		193	
Late Preclassic	157	11	12	180	
Early Classic					
Late Classic		15	4	19	
Post-Classic					
Total	323	53	16	392	
c. Rim-Head Vessels					
<i>Periods</i>	<i>Kaminaljuyu Excavated</i>	<i>Other</i>		<i>Total</i>	<i>Total Count a + b + c</i>
		<i>Excavated</i>	<i>Typed</i>		
Early Preclassic					307
Late Preclassic	246			246	636
Early Classic					
Late Classic		12	23	35	120
Post-Classic					
Total	246	12	23	281	1063

succeeding Postclassic period both three-pronged incense burners and rim-head vessels are lacking from the museum collections.

This study was made possible by a grant-in-aid from the Bollingen Foundation of New York.

NEW HAVEN; CONNECTICUT

NOTES OF MIDDLE AMERICAN
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Carnegie Institution of Washington
Division of Historical Research

No. 106
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Notice to Replace Note 106

FORMERLY MAP OF THE RUINS OF MAYAPAN,
YUCATAN, MEXICO—*Morris R. Jones*

Since the issue of "Map of the Ruins of Mayapan, Yucatan, Mexico," by Morris R. Jones, as Note 106 (December 4, 1951), a new series of papers, *Current Reports*, has been initiated by this Department. These reports will deal at the outset largely with the results of field work at Mayapan. Constant reference will be made to the map of the ruins, which is, of course, an important document in support of the work there. It

consequently seems advisable that the map should become Current Report 1 of the new series.

Report 1 is a re-issue of the text of Note 106, which now becomes pages 2–5 of the new series, with the addition of an editor's note. It is requested that you destroy the old text pages and insert the present notice in their place. The map should be transferred to accompany the text of Current Report 1.

The Ruins of Cotio, Department of Guatemala, Guatemala

Edwin M. Shook

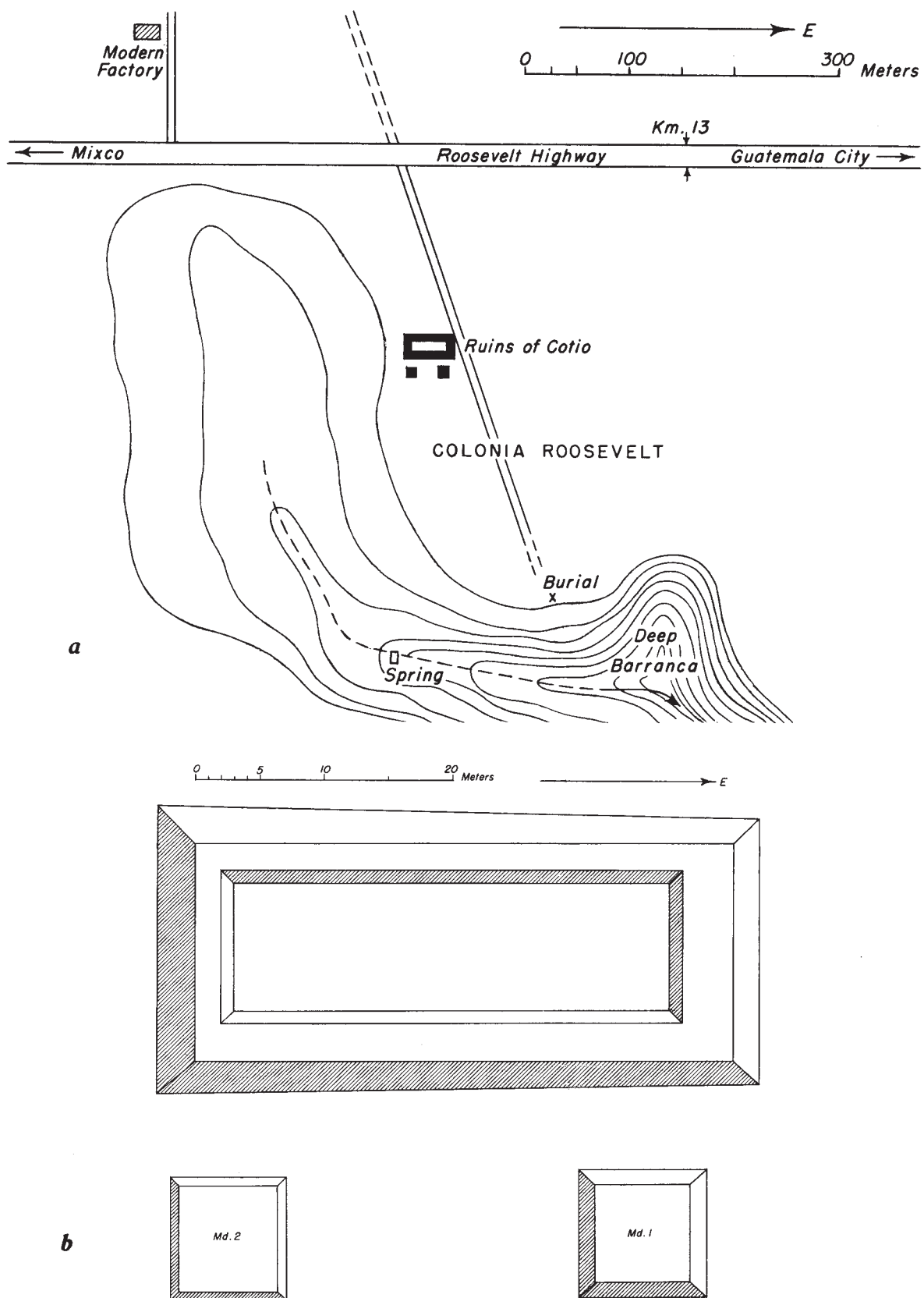
Throughout the Guatemala valley there are known at present over 50 scattered archaeological sites. The largest, Kaminaljuyu, on the southwest outskirts of Guatemala City, is more or less centrally located; spreading out in all directions from this great ceremonial center are others ranging in size from a single isolated mound to clusters of 20 or more. Surface collections of pottery from, and observations of, these valley sites strongly indicate that Kaminaljuyu was the seat of civic, cultural, and political power during the long Preclassic, Early Classic, and Late Classic periods. Thereafter all major activities apparently ended here and elsewhere in the valley. A lacuna exists in our knowledge of the area during the Early Postclassic period, suggesting that it may have been unoccupied or very sparsely populated. The final period before the Spanish conquest, the Late Postclassic, witnessed the growth of Chinautla, a site 2 km southwest of and above the modern town of the same name. Also, at this late date, throughout the Guatemala valley are indications of a thinly distributed population perhaps rural and engaged in subsistence agriculture.

Thus, by the close of the Late Classic period, the valley's long history as a center of major cultural influence in the highlands of Guatemala seems to have come to an end. Kaminaljuyu remained pre-eminent throughout but many small towns and villages flourished in the valley, undoubtedly under the jurisdiction of that center.

One of these ruined villages, Cotio, several kilometers west of Kaminaljuyu, is fairly typical of the

smaller Late Classic sites. It is located near the head of a deep southward-draining barranca (Fig. 107.1a) about 175 m south of Kilometer 13.3 on the newly constructed Pan-American or Roosevelt Highway running west from Guatemala City toward Mixco and the western highlands. The lands on which the ruins are situated pertain to the Aldea Cotio, in the municipality of Mixco, and have recently been subdivided for a real estate development called Colonia Roosevelt. A street branches off the highway and runs southward to the barranca head, passing the east edge of the Cotio ruins. I first visited the site April 23, 1950, before the destruction of its mounds began for the purpose of leveling and obtaining building material. Their complete obliteration within a short time appears certain, as has already happened, and continues to happen—to so many archaeological monuments near Guatemala City. It therefore seems worthwhile to record the ball court, two mounds, and a minor grave found at Cotio.

The ball court is a long rectangular enclosure with surrounding walls of even height (Fig. 107.1b). They maintain an elevation of 1.5 m above the level playing court and range above outside ground level from 1.5 m at the east to 2.5 m at the west end. This is due to the long east-west axis of the court being at right angles to the gentle westward slope of the terrain. The interior of the court has been cultivated for corn so that the original profile now has been lost. If there were side benches, they have long since been chopped away by the farmers hoe until almost vertical faces remain on all four



107.1. Ruins of Cotio, Guatemala: (a) sketch-map showing location of Cotio in the Guatemala valley between Guatemala City and Mixco; (b) sketch-plan of the ruins of Cotio.

sides, exposing a fill of mixed rubbishy topsoil and brown clay. No stones were used in the construction. Surfaces apparently had been faced with adobe plaster. This Cotio ball court, completely enclosed, is typical of 35 others in the Guatemala valley, 12 of which are in Kaminaljuyu.

Mound 1, squarish, flat-topped, and 2.25 m high, was built of the same material as the ball court and Mound 2. The only architectural features observable on the surface were lumps of burned adobe showing casts of small poles. These suggest that Mound 1 served as a substructure for a thatched roof building whose walls were of thin poles daubed with mud.

Mound 2, about 1.5 m high, was also flat on top and square in plan. Scattered on its surface and around its edges were chunks of burned adobe bearing small pole impressions.

Mound 3 (?). The ball court closes the north side of a miniature plaza on which face, from the east and west sides, Mounds 1 and 2. The plaza's south side now appears open, although here may formerly have been a third low platform mound. Intensive hoe cultivation in modern times has thoroughly disturbed the area. However, fragments of burned adobe from floor and wattle-and-daub wall construction, and a concentration of potsherds and obsidian chips, suggest the existence at one time of a small substructure.

The surface of the mounds, ball court, and surrounding terrain was littered with fragments of pottery and obsidian flake-blades; there were also pieces of a few manos, metates, and greenstone celts. None of the pottery observed on the site and in the small representative collection made and deposited in the Guatemala National Museum (Lot C-92) was older or younger than the Amatlé phase of the Late Classic period. Most of the sherds were of Amatlé hard wares: tall-necked jars; cylindrical vases; bowls with simple silhouette, simple silhouette with pedestal or annular base, and others with flaring rims. Also present were sherds of San José Plumbate cylindrical vases, of specular hematite Red-on-Brown cylinders, Red-on-Buff bowls, and Coarse Brown ware comales with high, straight-flaring walls. Several fragments of bail handles may have been from these comales.

Just west of the Cotio site begins a low area which drains southeast. Approximately 250 m from the ruins it drops off rapidly into a very deep barranca with almost vertical sides (Fig. 107.1a). Around the ravine's less abrupt slopes issue springs providing a year-round water supply for the local inhabitants and their stock. These springs had very likely also served the ancient people and may have been a factor which led to the settlement of Cotio.

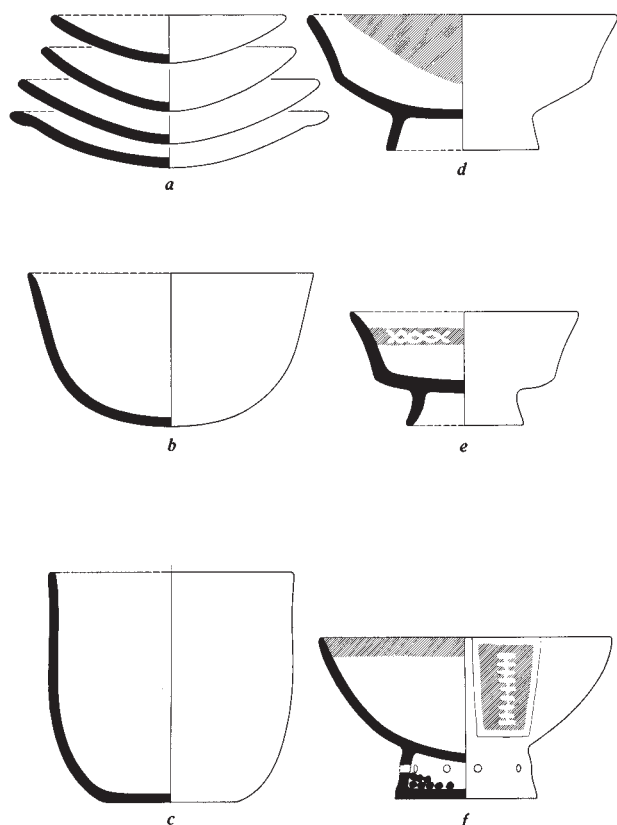
Workmen, in April 1950, while digging topsoil, brown clay, volcanic ash, and underlying semi-solidified material (locally called *talpetate*), unexpectedly encountered on the north edge of the barranca the grave of a young (10–14 years) individual. The body lay on the floor of an intrusive pit about 2 m deep, which penetrated the surface soil, sterile brown clay, and volcanic ash, to the level of the *talpetate*. The grave furnishings included nine pottery vessels, a fragment of greenstone celt, and, according to the laborers, four highly polished stones, probably jade ornaments. The last were kept by the workmen; when I discovered the excavation, the broken vessels and celt fragment lay on the edge of the grave pit with scattered human bones and teeth. The vessels and celt were repaired and deposited as Lot C-93.

All nine pottery vessels appear to have been made of the same medium-textured, dark brick-red paste. Six are almost identical, small flatfish dishes of coarse unslipped, unpolished red ware (Fig. 107.2a). They range from 14.4 to 19.5 cm diameter, average 17.0 cm; from 3 to 4 cm high, average 3.5 cm; with walls consistently measuring 6 mm thick. These dishes were formed in a manner similar to the Coarse Brown ware shallow bowls of the preceding Early Classic Esperanza phase (Kidder, Jennings, and Shook 1946:206). The wet clay was pressed into a rough-surfaced mold, the marks of which remain on the bottom of each specimen. Only the two largest show a slight bending over the edges, simulating a rim. All have a flattish to rounded lip, unsmoothed exterior, cursorily smoothed unpolished interior to the lip's outer edge. The dishes were fired relatively hard. Surface color ranges from Munsell's 10R 4/4, 5/4, 4/6 to 5/6.

One bowl (Fig. 107.2b) of simple silhouette has a light brownish orange (5YR 6/6) slip on the exterior and over the lip to 5 mm down on the interior. The interior from this point nearly to the floor has a white (10YR 8/2) slip, carelessly applied, leaving horizontal streaks where the white is so thin that the reddish color of the paste shows through. Floor is unslipped, unpolished; slipped areas have low polish.

Figure 107.2c illustrates a deep bowl slipped red (10R 5/6 to 2.5YR 5/6) on the interior and down 3 cm on the outside. The remainder of the exterior bears the same streaky white as the former bowl. Also, as the white was either being applied or smoothed, it was smeared or stained by some of the red slip which adhered to the smoothing tool. The exterior and the upper half of the interior wall have a low polish.

The ninth vessel is a pedestal-base bowl (Fig. 107.2d). It has a slip, probably the same white as on the two just described, but in this case the firing



107.2. Pottery: (a) Four of six coarse redware dishes from grave at Cotio; these illustrate minimum and maximum size and range of form; (b) simple-silhouette white and light brownish orange; Cotio grave; (c) white and red vessel, Cotio grave; (d) specular hematite Red-on-White vessel, Cotio grave, diameter 19 cm; (e) White-on-Red-on-Orange pedestal-base bowl from Kaminaljuyu, Amatle phase; (f) White-on-Red-on-Orange pedestal-base bowl with hollow, closed bottom and punched-in rattles, Amatle phase; reportedly from Asuncion Mita, Dept. of Jutiapa, Guatemala.

produced colors ranging from white to orange 2.5YR 9/0; 7/6, 7/8 to 5YR 8/4). The slip covers the interior and the exterior to below the shoulder. Subsequently, specular hematite red (7.5R 3/6) was added in a single triangular area on the interior wall (half of this shown in hachure). The part of the bowl bearing slip took a low polish; the lower part of the exterior wall and pedestal base remained unslipped and unpolished red.

These nine vessels belong to the Late Classic Amatle phase of Kaminaljuyu and the Guatemala valley. This was proved not by the coarse red ware dishes which have not been identified previously in Amatle deposits, but by the three pieces last described. Sherds and vessels of the same ware and form as these have been recovered with other Amatle



107.3. Pottery: (a) bowl (Fig. 107.2e), painting by Antonio Tejada F; (b) bowl (Fig. 107.2f), painting by Antonio Tejada F; natural size.

material at Kaminaljuyu (Lots C-31 and C-38) and Amatitlan (Lot E-23). Another ware closely resembling and possibly identical to that of the bowls from the Cotio grave, varying principally in surface treatment, is White-on-Red-on-Orange or Orange-Red. Two examples are shown here, one from Kaminaljuyu and another reportedly from Asuncion Mita, Dept. of Jutiapa, in southeast Guatemala. The pedestal bowl (Lot C-13) from Kaminaljuyu (Figs. 107.2e; 107.3a) was collected with other Amatle specimens at a brickyard near Mound D-III-16, where workmen, digging earth and clay for brick making, tossed aside the pottery and artifacts encountered. This bowl has an all-over orange (5YR 6/6) slip except on the interior of the pedestal base. On the inner wall is painted a dark red band with four decorative elements in superimposed white. The slipped area has a low polish.

The example said to be from Asuncion Mita (Figs. 107.2f; 107.3b) now in the Guatemala National Museum (Cat. No. 1222) has an all-over orange-red (10R 5/6) slip, evenly smoothed and low polished. A specular hematite red band encircles the top of the interior wall, and four equally spaced vertical panels adorn the exterior wall. These are framed by heavy

white paint lines; the center of each panel is further ornamented with a design superimposed in white paint. This vessel has another feature relatively rare in Mesoamerica, a closed pedestal base, the sides of which are perforated with nine circular holes. These were punched through horizontally from the exterior after sealing the base, the clay pellets from the holes remaining inside as rattles.

The Cotio ruins are one of the many minor archaeological sites with ball courts in the Guatemala valley centering around Kaminaljuyu. The grave, although of an individual probably too young to have gained prominence in local affairs, was well stocked with offerings. It is our only example to date of the burial customs practiced at Kaminaljuyu and the immediate vicinity during the Amatlé phase.

A Possible Early Classic Site in Northern Yucatan

William R. Coe

While recently in Valladolid, I heard of the discovery of ruins near Colonia Yucatan, the center of the Yucatecan plywood industry. As they are in an area little known archaeologically, a visit promised to be of some value. The site is approximately 1.5 km south of Triplay, which in turn is said to be 31 km south of El Cuyo, a coastal port, and 48 km north of Tizimin. A good road connects all three points.

The five principal mounds constituting the site (though workers in the area report scattered, relatively insignificant mounds peripheral to the main group) are arranged as two parallel mounds to the north (the only ones considered here) and three others approximately 100 m to the south. There is some evidence that the intervening area was paved with small square cut stones. The group is uncleared but removal of surface rubble (perhaps a structure) for purposes of local road building has exposed in the north mounds an architecture somewhat unlike types usually found in adjacent areas. Unfortunately, only a brief study of the ruins was possible.

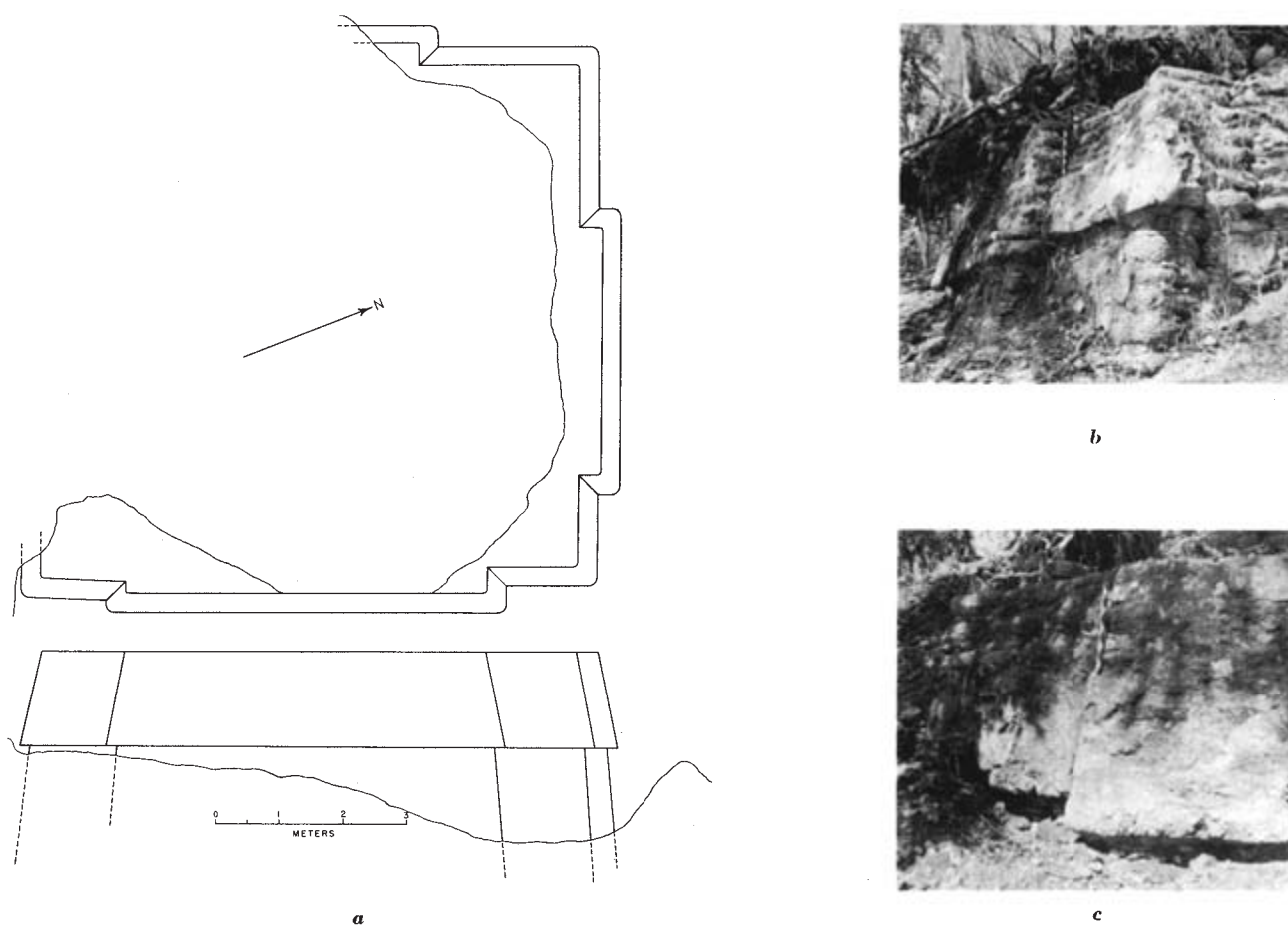
The removal of rubble towards the north end of one mound was sufficient to disclose the following distinctive elements: non-veneer masonry with a heavy smooth stucco overlay, inset corners, receding upper wall zones of a building or terrace which decidedly project beyond lower wall zones, and lower zones which appear to be set on a noticeable batter (Fig. 108.1). The corners of upper and especially lower wall zones are rounded. Moldings, other than the broad aprons formed by the upper wall zones, are absent as far as could be determined. No

ornamentation was found, but an exposed section in the other mound showed black and red striping on the lower wall zone of a buried structure, which, although there was little to go on, is identical perhaps in type to that just described.

If doorways, windows, or "vents" do exist, the visible sections fail to show them. Their absence, together with the quantity of surface rubble and the generally square plan of the structure, suggests that this was a substructure; resting on ground level, with a lower wall zone depth of about 1.5 m. This conjecture is very indefinite as exposures were relatively slight.

The traits associated with both Puuc and Mexican period architecture are almost surely absent here. Certain resemblances are noticeable in receding upper and lower wall zones of substructures between Colonia Yucatan and Uaxactun, Holmul, Naachtun, Calakmul, and La Muñeca. Inset corners of substructures are found at Coba, Piedras Negras, Tikal, Calakmul, Uaxactun, and elsewhere. The most apparent similarities, perhaps, are those found at Acanceh, particularly the large pyramidal substructure that stands just off the town's plaza. Andrews (1942:258) mentions that this structure contains rounded inset corners; and, from a photograph, it is further characterized by receding upper and lower zones of the apron type on the terrace walls (Fernandez 1947, Fig. 1).

With due regard to the inadequacy of information on Colonia Yucatan, about all one can say is that its architecture suggests stylistic and perhaps



108.1. Early Classic site in northern Yucatan: (a) ground plan and elevation of structure principally described; (b) north-east corner; (c) southeast corner.

temporal affiliation with Classic sites in both central and northern areas. If there is any truth in this, the Colonia Yucatan material may possibly represent a northern Early Classic site far closer in type to Acanceh, thought by many probably to be Early Classic, than, say, to the pre-Puuc architecture of Oxkintok (Shook 1940:168–69, Fig. 3). It is worth noting that Acanceh, on ceramic evidence, was occupied in Late Formative times (Brainerd 1951).

Though the evidence is admittedly shaky, Colonia Yucatan, as now exposed, does seem, to represent an Early Classic site of the northern area. Two distinct types of architecture may have co-existed in this area during Early Classic times, namely,

that represented by Colonia Yucatan and, perhaps, Acanceh in the northern and central parts, and bar Oxkintok in the west. During Late Classic times, the former style may possibly have perpetuated itself at Coba, to be superseded by the East Coast style; that of pre-Puuc Oxkintok clearly eventuated in typical Puuc architecture.

A superficial surface search for sherds revealed none. Needless to say, a conclusive find of a basal-flanged bowl would have been quite welcome.

Measurements in this paper are approximately correct; orientation was obtained with a simple but reliable pocket compass. "Stick" in Figure 108.1b, c is one-half meter.

PHILADELPHIA, PA.

Waxen Idols and a Sacrificial Rite on the Lacandon

J. Eric S. Thompson

In documents referring to a little-known entrada, under the leadership of Juan de Morales Villa Vicencio, into Lacandon territory in 1586, published in *Boletín del Archivo General del Gobierno* (Reducción 1937), there are interesting references to the use of waxen idols by the Lacandon. These are the only references which I know to this custom among the lowland Maya of the sixteenth century, although the high ceremonial importance of black candles of native beeswax, as compared with those of white wax sold commercially, would indicate an important use of beeswax in prehispanic ceremony.

After the inglorious retirement of Villa Vicencio's army, baffled by the Fabian tactics of its Lacandon opponents, who, as usual, refused to engage in regular battle, a small group was sent to observe what signs of activity there might be around the lake (Miramar?) on which the island fortress had stood. The group had orders to return with tangible evidence that they had carried out their orders, and one of the things they brought back was this idol of wax. In the deposition of the scribe the package is described as "a bundle of pine torches tied up, and with a small idol of wax on top, of the kind which the Lacandon make for their sacrifices." In the testimony of the Bachajon leader, from Jujuicapa, the waxen idol becomes plain wax but is still on top of the bundle of pitch pine, and the whole had been placed on the ground in an open area close to the lake. There are printing errors in this series of reports, and it is not unlikely that the scribe, Gaspar de Molina, might have dropped words. Accordingly, little importance

attaches to the absence of the words "*el idolillo de*." Two of his assistants from the same village (also spelled Xuxueapa), in a point deposition, describe the finding of the bundle of pine torches "with the little idol of wax which was placed upright on the ground." The last could refer either to the bundle of tea, or to the idol, or to both.

The testimony of Anton Gomez, leader of the detachment from Ocosingo, is more explicit: "Close to where the canoes were kept [*el estero de las canoas*] they found the bundle of pine torches with the little idol of wax and rubber, and it seemed to him that it had been placed there only a short while before, because it was new and did not seem to have been rained on." In answer to questions he continued that "it seems that [the offering] signifies that it had been offered to the demon so that he would obstruct the road should the Spaniards pass over it again, and their [the other objects] signify the difficulties in which they [the Lacandon] find themselves, because the pot for [of?] maize, which was next to it signifies hunger, and the hairs stuck in the said wax signify the number of men whom they have killed. And this he understands according to their ancient rites as a man who grew up among them [*ellas* misprint for *ellos*?]."

Apart from the introduction of rubber as a component of the little idol, the testimony of Anton Gomez is of interest because of his statement that he grew up amid paganism. He declared his age to be fifty-five, and in that connection it is interesting to remember that following the capture of Pochutla in 1559, Lacandon from there had been settled at

Ocosingo in 1564. Accordingly, he may have been a christianized Lacandon and well acquainted with their rites. On the other hand, there may not have been much difference between pagan Tzeltal and Lacandon in such matters.

Two other Indians of Ocosingo were witnesses in a point deposition to the finding of the bundle of pine torches "*con el idolillo e hule*." Here *e* might be need incorrectly as a conjunction before *hule*, or it might be a misprint for *y* or for *de*. The employment of rubber in the making of idols is well known. Indeed, idols partially of rubber have been dredged from the sacred cenote at Chichen Itza.

In this same series of papers dealing with this 1586 entrada of Villa Vicencio there is mention of an unusual rite. During the pursuit of the Lacandon, there was found on the road a place for sacrifices together with the body of a boy of about five years of age. He had had his breast cut open down to the middle, and it seemed that his heart had been removed through that opening. "His right foot and his feet [sic] had been burned, and he had three wounds, as though made with lance thrusts, in his right foot, and the left arm stripped entirely of flesh from wrist to elbow, and with the bones of the arm stinking out (*las canillas de fuera*)." The boy was a Christian child, son of a *vecino*, who had been captured by Lacandon in some previous raid.

On another occasion members of the expedition found the desecrated grave of a certain Monterrey, who had been killed shortly before with a stone hurled down on him by a Lacandon. The Lacandon had broken a cross put over the grave, and with that they had dug up Monterrey's body, and had removed all the flesh of the left arm from wrist to

elbow. The removal is said to have been the same as in the case of the child.

One body was that of an enemy slain in battle, and the other that of a youthful prisoner taken after a raid on the enemy. It would seem, then, that the removal of the flesh from the left arm represents some magical rite to bring victory. Conceivably, the eating of the flesh of the left forearm, used in war to carry the shield, made the enemy lose his ability to defend himself, or gave to the eaters increased defensive abilities. In that connection it is worth bearing in mind that Aztec warriors sought the middle finger of the left hand of a woman who had died in childbirth; with such or the woman's hair placed in his shield, he had greater courage, and no one would succeed in taking him prisoner. The left arm and hand of a woman that died in childbirth was sought by robbers, for it would take away all courage from the lawful owners of a house so that they would not resist when the robbers entered with such an arm. The point in these cases is that in Aztec eyes a woman who died in childbirth was a warrior; she shared the daily task of accompanying the sun with the souls of male warriors, and she may be represented with shield and weapons. Accordingly, she used her left arm to carry her shield. It will be remembered that the Aztec goddess Ciuacoatl always carries a shield.

Obviously, this Lacandon rite is not directly comparable to the preparation of trophies, the enemy's jawbone or other bones, as described by Bishop de Landa, but it is of interest to note that the jawbone of the dead enemy was worn on the arm. It is possible that these jawbones were not only trophies but had magical powers to help their wearers in battle.

The Introduction of Puuc Style of Dating at Yaxchilan

J. Eric S. Thompson

In a study of dating which yields a month coefficient of a Calendar Round date one less than in the normal system (e.g., 1 Kan 1 Pop in place of the normal 1 Kan 2 Pop) it was noted that this style is followed on two monuments at Yaxchilan (Note 79). To describe that system of dating the term Puuc way suggested because from present evidence the style is most prevalent in that area, and possibly originated there. At least, the earliest known examples (9.12.0.0.0 and 9.13.0.0.0) are on monuments at the Puuc site of Edzna.

The two monuments at Yaxchilan with Puuc-style dates are Stelae 18 and 20, and in the paper cited the senior author noted that both monuments have certain stylistic affinities with Campeche and Yucatan.

Many years ago Teeple showed that the introduction of a new method of recording lunar data was marked at Piedras Negras, Naranjo, and perhaps Yaxchilan by recording on different stelae the lunar calculations for a given date in both the new and the old system. The purpose of this paper is to examine evidence for analogous double dating at Yaxchilan to record the intrusion of the Puuc system at that site.

Stela 18, Yaxchilan, carries the date 3 Eb 14 Mol, a clear example of the Puuc system. The middle and right dots of the day coefficient are how somewhat irregularly shaped, but that all three are numerical is not, I believe, open to serious question. Indeed, Bowditch (1901:2:19) and Morley (1938:2:34), who had no axes to grind, read the coefficient as 3, although they wrongly identify the day as Cimi.

At Y5-X6 of the upper step of the southeast doorway of Structure 44, Yaxchilan, there is a date which is quite clearly 2 Chuen 14 Mol, and which almost certainly has the Long Count position 9.14.16:15.11 2 Chuen 14 Mol (Note 71). This date is one day before that on Stela 18:

Standard System		Puuc System
Str. 44 (9.14.16.15.11)	2 Chuen 14 Mol	(2 Chuen 13 Mol)
(1)		
Str. 18 (9.14.16.15.12)	3 Eb 15 Mol	3 Eb 14 Mol

Data in parentheses are supplied. Although the Long Count position of 2 Chuen 14 Mol is reasonably secure, that of 3 Eb 14 Mol is open to question. Miss Proskouriakoff (1950:198) dates Stela 18 by trait incidence at 9.16.14.0.0 plus or minus two katuns. It is, however, well known that there is a tendency at several Maya cities to inscribe important dates on monuments erected from one to three katuns later. Thus the date 9.14.16.15.12 3 Eb 14 Mol might have been carved on a monument erected at: 9.16.0.0.0 or 9.17.0.0.0, particularly if it had the important role of marking the introduction of the short-lived system of Puuc dating at Yaxchilan.

However, the association of the date on Stela 18 with that in Structure 44 rests on far stronger evidence than the fact that they represent sequent days in the two systems. Each date is followed by six identical glyphs, only one of which occurs in any other text at Yaxchilan, although in most cases the main elements are not uncommon at Yaxchilan and

elsewhere. The glyph found on other monuments is the first of the six, and follows immediately 14 Mol in both texts. The main sign is the burden element, to which are attached the comb and lunar affixes as postfixes. The compound, which also occurs in the codices, commonly follows Calendar Round dates at Yaxchilan, and probably means the charge (fortune or burden) of the count. That the comb here, as elsewhere, has the value *xoc*, "count," is shown by the fact that at L'3 on Lintel 33 a head, almost surely that of the *xoc* fish, replaces the comb in the same compound.

The following five glyphs form clauses similar in sequence and in every essential on Stela 18 and the step of Structure 44 (Figs. 110.1.1, 110.1.2). They are: jade glyph with unusual prefix, "Chuen," hatched spot with death manikin prefix, Mol with unusual postfix which includes an inverted Ahau, and Ben-Ich Zotz' with comb and flared tau postfixes. All five main elements occur elsewhere at Yaxchilan, but none of them is common, and they are never found with the same affixes or associated with one another. Whereas there are clauses which are repeated time after time at Yaxchilan, there does not seem to be any other clause at that site which appears only twice. Accordingly, the presence of this clause with its unusual component glyphs with only these two dates greatly strengthens the probability that the dates are intimately related and, accordingly, treat of the shift to the Puuc system. As the shift is presumably marked by sequent logs falling on 14 Mol, it is interesting to note the presence of a Mol sign in the accompanying clauses. The Mol element is not uncommon, but nowhere else at Yaxchilan or at other sites (Palenque, Copan, Quirigua), the glyphs of which have been indexed for my glyph dictionary, is it supplied with the same unusual postfixes. One might hazard, purely as a speculation, that this Mol compound in some way declares that the shift is in that month. So far as I know, the month sign Mol nowhere appears with a single circle in the center; it normally has the twin jade-bead symbol there. Nevertheless, there is ample evidence that the two elements are interchangeable (e.g., in the Muluc glyph).

The second Puuc style date at Yaxchilan is 6 Ix 16 Kankin recorded on Stela 24. It cannot be matched by the previous day in the standard system, as was the case with 3 Eb 14 Mol, but it is related to a date which appears twice in that same Structure 44, namely 9.14.1.17.14 5 Ix 17 Kankin. This latter date is given as a much damaged Initial Series on Lintel 46, which spans the northwest doorway of Structure 44, and it is also reached by calculation (the date itself is not now visible, although it probably is hidden

under masonry at X1-Y1) an the same upper step of the southeast doorway of this same structure. Indeed, it is connected with the date 2 Chuen 14 Mol by a distance number:

(X1-Y1)	(9.14.1.17.14	5 Ix 17 Kankin)
Y4-Y5	15.15.17	Count forward to
Y5-X6	(9.14.16.15.11)	2 Chuen 14 Mol

Morley (1938:2:428, 455) follows Bowditch in identifying the month sign of Lintel 46 as Mac, and then accepts that of Stela 20 as also Mae because of its resemblance to that of Lintel 46. Nevertheless, there can be no doubt that in both cases the personified form of Kankin is depicted. This is proved by the suffixes which in both cases are the "*ak*" element. This is always postfixed to Kankin, but never to Mac. Furthermore, the absence of the "down-ball" affix which is always a prefix or infix of Mac is evidence that these signs can not be those of Mac (Thompson, 1950, Fig. 18). That these signs are Kankin is beyond reasonable doubt, but even were they Mac, the relationship between the two dates would remain the same, for that of Stela 20 in the Puuc system is just 40 vague years after, or 12 vague years before, the date of Structure 44:

(9.14.1.17.14)	5 Ix 17 Kankin
2.0.10.0	(40 × 365)
(9.16.2.9.14)	6 Ix 16 Kankin (17 Kankin in normal system)

In this case, too, unusual explanatory glyphs indicate that the two dates are linked, for the two passages in Structure 44 which treat of 5 Ix 17 Kankin and the passage on Stela 20 which treats of 6 Ix 16 Kankin share a two-glyph clause found nowhere else at Yaxchilan (Figs. 110.1.3–110.1.5). This consists of expiration (or its personified form, the death manikin), Kan cross te (2) and a lunar glyph with an unusual prefix which is commonly found as the postfix of Kayab. The Kan cross compound occurs in a few other texts at Yaxchilan, but in no other case followed by this lunar compound, which, in fact, does not appear elsewhere at Yaxchilan, and. I have not encountered it at Copan, Palenque, or Quirigua.

It is possible that a third glyph belongs in this clause. In the two texts of Structure 44 this two-glyph clause is followed by a most unusual cauac and Ben-Ich winged cauac compound. Unfortunately, the corresponding glyph block of Stela 20 is damaged. The outlines of two elements are recognizable, and both show the characteristic frame of the cauac element, but there is certainly, no Ben-Ich prefix. The



110.1. Hieroglyphic clauses at Yaxchilan.

wing is also absent, but that is probably not of significance. What remains of the interior of the main element rather suggests the caban sign, which has the same asymmetrical frame as cauac, and in weathered examples is hard to distinguish from cauac. It is possible, but far from certain, that this damaged glyph on Stela 20 is a variant of the cauac compound found in Structure 44. Should that be the case, the clause shared by these three texts would consist of three unusual glyphs.

As to the meaning of these glyphs we must remain in the dark for the present. The lunar glyph might refer to a lunar calculation, beat one must

remember that it frequently has a derived meaning, that of a possessive, for in Yucatec a means both moon and possession. Cauac compounds are extremely common in Maya texts, but nowhere else at Yaxchilan, nor in Copan, Quirigua, Palenque and codical texts, is it found with a Ben Ich prefix. There is evidence on Copan U that the regular tun sign could be used also to record the 365-day year, and that raises the possibility of these cause compounds having a similar extended usage.

The shift to the Puuc system, of course, involves the 365-day year and the year bearers, but one may wonder why a gap of 40 years of 365 days exists

between the two records (a backward shift of 12 years seems less probable). One must count forward 40 years (or back 12) to advance the coefficient of the same day sign on the same month position by one. This is the "foot" of the round of the vague year functionally corresponding to the foot of the year of the Jacalteca (La Farge and Byers 1931:158) and to the apparent foot of the katun (Thompson 1950:248). The text of Stela 20 may therefore be intended to record that after 40 vague years, the foot of the vague-year round, a date which has been changed to the Puuc system will show an increase of one in the day coefficient and a decrease of one in the month coefficient. This is just the kind of numerological juggling which seems to have preoccupied the Maya. Whether that is the true explanation or not, I think that the 5 Ix 17 Kankin and 6 Ix 16 Kankin dates are deliberately associated, both because of the explanatory clause with all three entries and because the first of the pair is linked to the first of the 14 Mol pair by a distance number orb the step of Structure 44.

I have previously suggested that Structure 44 was probably dedicated at 9.15.0.0.0, and that dating is preferred by Miss Proskouriakoff (1950:234). If that is so, and if the Long Count position of the date on Stela 20 is 9.16.2.9.14 6 Ix 16 Kankin and was not far in the future when the monument was erected, it follows that a katun must have elapsed between the carving of the long texts of Structure 44 and the short one of Stela 20. However, if the Mol compound and the cauac compound do refer to a shift to the Puuc system, the texts of Structure 44, Stela 20, and Stela 18 must have been carved or, at least, planned about the same time, otherwise there would be no purpose in recording these clauses with dates in the normal style. Unless we can assume that texts on monuments were planned a katun or more in advance, the presumed interval between the erection of Structure 44 and the two stelae, Miss Proskouriakoff has trait

differences which call for it, would be a strong argument against the very tentative meanings suggested for those two explanatory glyphs; it would not invalidate the thesis that the texts together mark by old and new entries the short-lived shift to the Puuc system.

An interesting feature of the text of Stela 18 is the presence at E2 of a glyph not found elsewhere at Yaxchilan, nor at Palenque, Copan, or Quirigua, but which is quite common at Piedras Negras. This stela then hints at new ideas reaching Yaxchilan not only from the Puuc country, but also from Piedras Negras. At about the same time another Piedras Negras glyph makes its appearance at Palenque. There is, therefore, some evidence of an intellectual exchange of ideas in the Usumacinta Chiapas region about this time. As compilation of the dictionary of Maya glyphs advances, such interchanges will be more readily detected.

The shift to the Puuc system of dating was short-lived at Yaxchilan, as were Yucatecan and Campechan influences on sculpture. The causes for their acceptance and subsequent rejection are mysteries; their solution should throw light on inter-city relations during the Classic period.

HIEROGLYPHIC CLAUSES AT YAXCHILAN

110.1.1. Southeast doorway, Structure 44, X6-Y7.

With date (9.14.16.15.11) 2 Chuen 14 Mol.

110.1.2. Stela 18, A4-A8. With date (9.14.16.15.12) 3 Eb 14 Mol.

110.1.3. Lintel 46, Structure 44, F'3-G'4. With date 9.14.1.17.14 5 Ix 17 Kankin.

110.1.4. Southeast doorway, Structure 44, X2-Y2.

With missing date (9.14.1.17.14) 5 Ix 17 Kankin.

110.1.5. Stela 20, E3-E7. With date (9.16.2.9.14) 6 Ix 16 Kankin.

Zutugil Dugout Canoes

Samuel K. Lothrop

Some time ago we published a brief account of the unique type of dugout canoes employed by the Quiche, Cakchiquel, and Zutugil Indians who dwell on the shores of Lake Atitlan, Guatemala (Lothrop 1929). Several years later, while dwelling in the town of Santiago Atitlan and excavating in the vicinity for the Carnegie Institution of Washington, we chartered one of these vessels to transport our men from the town to the various places where we worked. Although we used an outboard motor, which more than doubled her speed even with a dozen people on board, there were various occasions when the motor failed to function and our men paddled the canoe in their usual fashion in all kinds of weather.

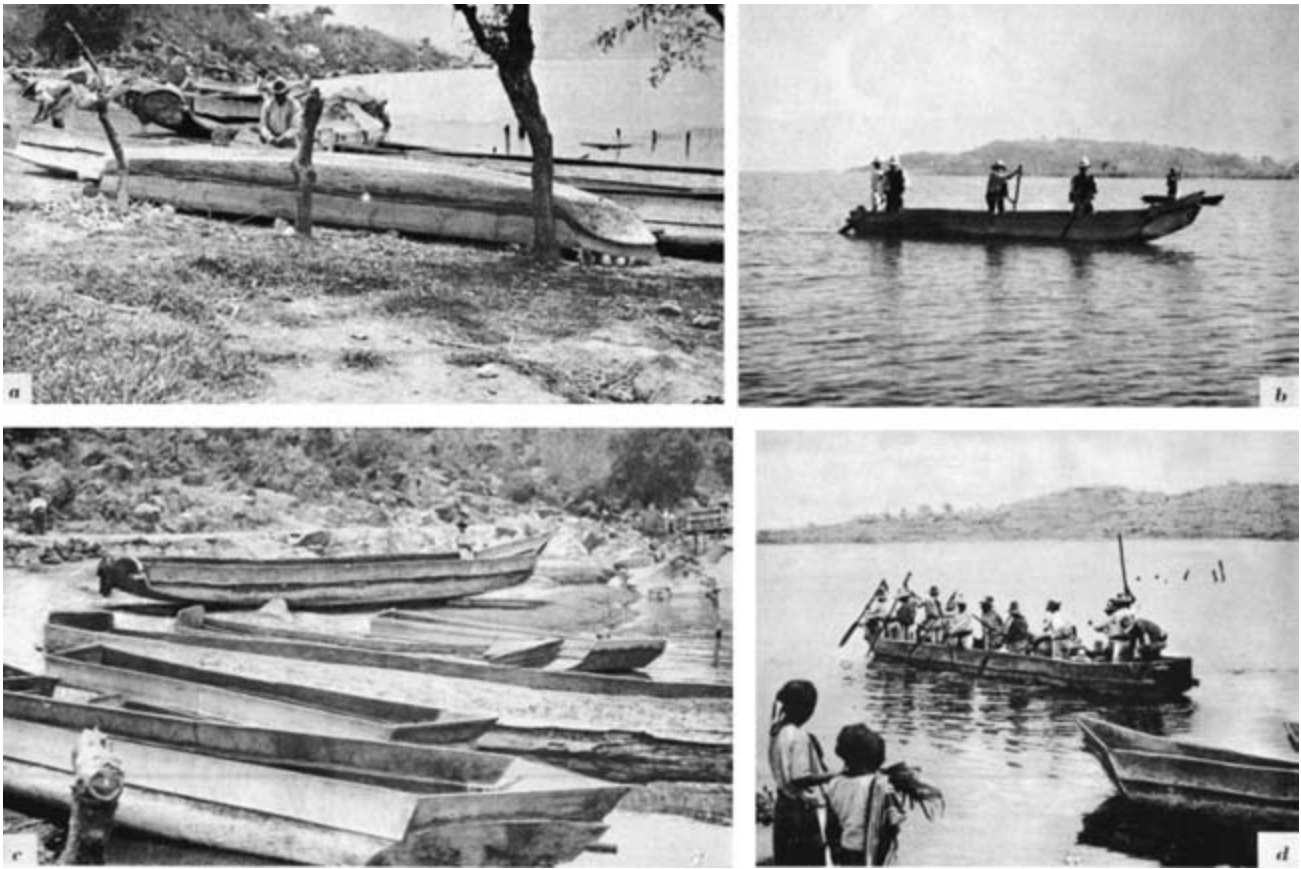
Lake Atitlan is 1550 m. above sea level. It measures about 40 km from east to west and 16 km from north to south. On the south side are two great volcanoes; on the other three sides are steep cliffs well over 300 m high. Most navigation is at night as almost every afternoon there are strong winds known as *chocomil* and *panumul*, and the gales known as northers may blow for days at a time and no native ventures offshore (McBryde 1933:71, 76). Santiago Atitlan and the other towns on the south shore of the lake are located on more or less sheltered harbors but even the largest canoes might be weatherbound. Not only does the lake get rough but the surrounding topography causes sudden and erratic gusts which may swing a canoe broadside into the trough of the waves. These conditions call for sturdy vessels and expert watermanship. Lake Atitlan is as much as 300 m deep, and, owing to its precipitous shores, one

would not expect reefs to add to the perils of navigation. Off Cerro de Oro, however, we hit one, of which the men on board had no previous knowledge.

Atitlan canoes are paddled exclusively by the men, who always stand erect, regardless of the size of their barque (Fig. 111.1b, d). This method of paddling was noted in 1586 on Fonseca Bay by Ciudad Real (San Juan and Ciudad Real 1873:1:376). As his crews came either from Nacaome in Honduras or from Isla Teca, they probably are Choluteca Indians. When we first crossed this bay we photographed a boat rowed by a crew standing erect, perhaps a survival of the ancient method of paddling (Lothrop 1926:1, Fig. 7).

The Zutugil women spent many hours in Lake Atitlan washing their clothes and their hair; and as children they learn to swim. The men never wash in the lake but in small sweat houses. Hence, like the sea-faring Yahgan men of Tierra del Fuego, they do not learn to swim. When sober, the Zutugil men are excellent watermen, but all too often they start home drunk from their principal market at Solola on the north shore. Embarking in calm waters under the shelter of the cliffs, they encounter high seas in the middle of the lake. If the canoe broaches to and is capsized, the crew may drown. If the bodies are not recovered, the family and friends hold a wailing ceremony on the edge of the lake (Fig. 111.2c). This happened at least twice during our period in residence at Santiago Atitlan.

The Zutugil canoes are dugouts of cedar with raised wash-boards of pine. The largest canoe we saw belonged to the municipality of Santiago Atitlan



111.1. Tzutuhil dugout canoes: (a) repairing the dugout of Pedro Mendoza at Santiago Atitlan; (b) the same dugout, equipped with an outboard motor, off Tzanjayam peninsula; (c) miscellaneous dugouts on the north beach at Santiago Atitlan; (d) the municipal dugout of San Pedro Laguna.

and had been built several years prior to 1928, when A. V. Kidder, G. C. Vaillant, and I traveled in it (Fig. 111.2b–d). It was 10.7 m long and 1.6 m broad. It was still in existence in 1932 but had been replaced before 1936 by one measuring 10.05 m by 1.06 m (McBryde 1947:99, Pl. 24). In 1932 the municipality of San Pedro Laguna also owned a large dugout (Figs. 111.1d; 111.2a). A small canoe we measured was 3.7 m long and 66 cm wide. Some are even smaller (Fig. 111.1b, background). These small canoes are used principally by farmers to reach their lands inside Santiago harbor but some of them venture across the lake. Most drownings happen from this class of vessel.

Santiago Atitlan has by far the largest fleet on the lake. McBryde (1947:99) estimates that there were over 250 canoes at this town in 1936 and states that most of the other canoes on the lake had been built there. We may note that in 1524, when Pedro de Alvarado (1924:71) conquered the Zutugil, his Cakchiquel allies produced over 300 canoes.

The boat we chartered, at \$6.67 a month, may be regarded as a typical lake-going canoe of moderate

dimensions. We took more than 50 measurements on her hull so the plan in Figure 111.3 should be reasonably accurate. She also appears in Figure 111.1a, b. Her length was 5.8 m and her beam was 1.2 m. The owner, Pedro Mendoza, an intelligent Indian, one of the few who could read and write Spanish, was our next-door neighbor and friend.

The wood for the hull, we were told, was from a cedar tree cut near the top of San Pedro volcano, across the harbor from Santiago Atitlan (Fig. 111.2a, background). As shown in Figure 111.3c, the bottom of the feel-less hull came from the greatest diameter of the tree. This insured maximum buoyancy; the insloping sides increased stability and made the boat drier in rough weather.

Such tumble-home sides were common on European sailing ships for several centuries, especially on men-of-war which carried heavy cannon as far above the water as possible. It is a sporadic trait in the New World. The barques in which Alonso Ponce crossed Fonseca Bay measured 1.37 m across the bottom but narrowed to little over two palms' width at



111.2. Tzutuhil dugout canoes: (a) San Pedro Laguna dugout leaving Santiago Atitlan; (b, d) the municipal dugout of Santiago Atitlan in 1928; photos from Museum of the American Indian, Heye Foundation; (c) wailing ceremony on the beach at Santiago Atitlan.

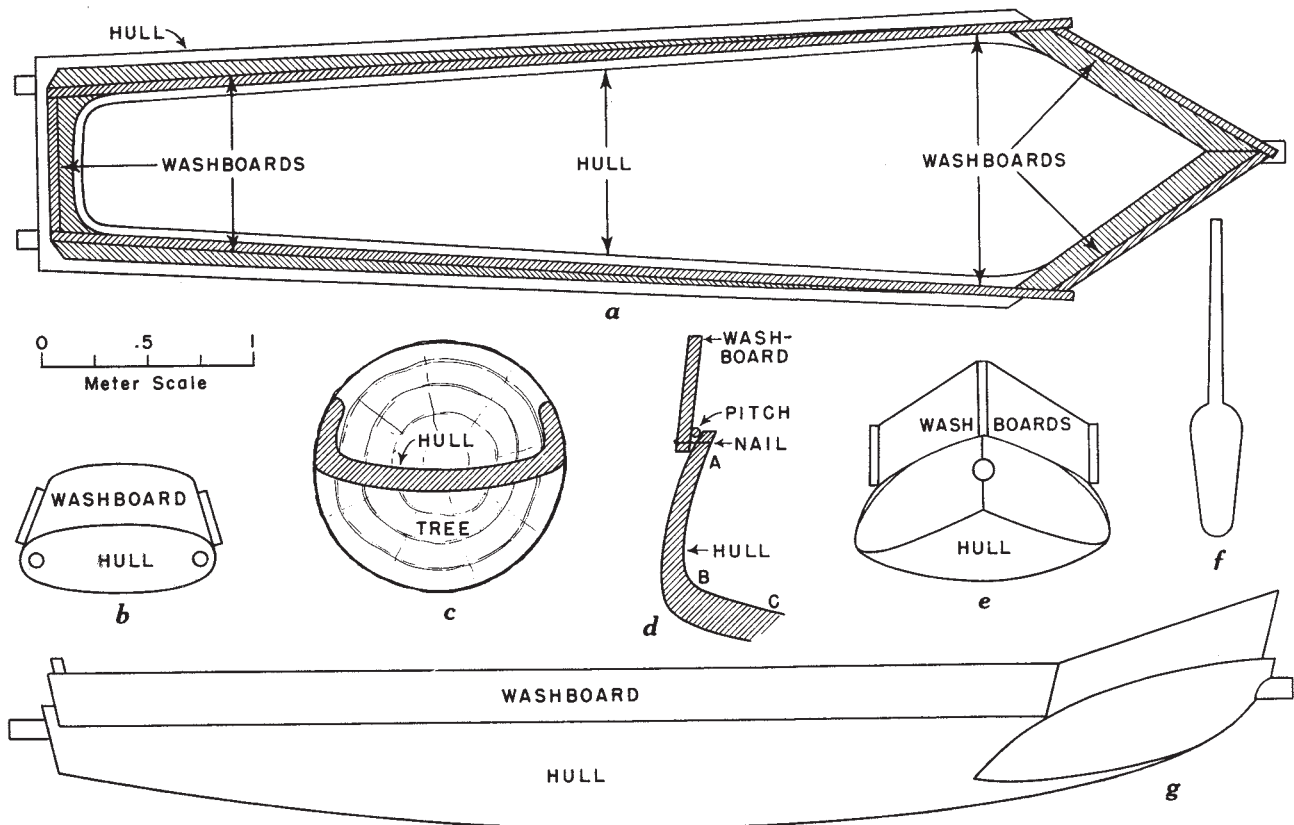
the gunwale (San Juan and Ciudad Real 1873:1:375–376). The Timbu Indians of the lower Parana had a tumble-home which narrowed the forward half of their dugouts in equally extreme fashion (Marquez Miranda 1930:70, Lam. I). Outrigger canoes in the Pacific often have tumble-home sides (Mitman 1923, Fig. 94).

The hulls of Atitlan dugouts have two features we have not seen elsewhere. One is the flat V-shape bows (Fig. 111.1c). In ordinary use, unless the canoe is heavily loaded, this element is entirely above water (Fig. 111.1b), but when paddled into a heavy sea these bows give added buoyancy forward. Another unusual characteristic is the handles, which are not inset but are cut from the same piece of wood as the hull itself. All canoes have a pair at the stern; the larger vessels have an additional one at the bow. They are used to beach the vessel. The dugout in Figure 111.3 did not in fact have a bow handle, but

we have added one as it appeared on another of the same size.

Apart from the flat bows and square sterns, Atitlan hulls are rounded with relatively flat bottoms. There is a slight sheer at the bow and stern, partly concealed by the straight edge of the gunwale. The ideal thickness of the hull is shown in Figure 111.3d. Point A should be one finger thick; point B two fingers, and C, the bottom, should be three fingers in thickness.

It will be noted in Figure 111.3a that the greatest beam is just behind the bows. This indicates that the bow end of the tree was nearest the ground and the hull tapers as did the tree trunk. This results in a partially streamlined hull. With only one or two people on board and propelled by a small outboard motor, this massive vessel rode high in the water and was surprisingly fast. At half-throttle, we could cover the 16 km to San Lucas Toliman in an hour.



111.3. Tzutuhil dugout canoes: scale plans of a Zutugil dugout from Santiago Atitlan. Note: All photos not otherwise acknowledged are from Carnegie Institution of Washington, Department of Archaeology.

An unusual feature of Atitlan dugouts is the presence of washboards from 15 to 38 cm wide and about 2.5 cm thick. They are sawed pine planks secured with nails. The seams are filled with pitch. Although the boat is protected by up-sloping washboards, we shipped a good deal of water in rough weather.

Inasmuch as the entire construction is done with ordinary carpenter's tools and the washboards are nailed in place, they should perhaps be regarded as a European innovation. This is not necessarily so. As Dixon (1928:196) points out, dugouts with raised sides were manufactured by the interior Athabascan tribes of British Columbia and Alaska as well as by the Carib of Venezuela and the Antilles. They also were known on pre-Spanish balsas of the Peruvian coast and present-day balsas on Lake Titicaca (Lothrop 1932, Pl. Xvii, b; Xviii, d). Some of the canoes shown in Maya codices and frescoes have bows and sterns raised so high that it is scarcely possible that they were carved from the same tree as the hull (Thompson, 1949:70).

The Atitlan dugouts have no interior fittings. There are neither seats, thwarts, nor braces. Sometimes a little straw is spread on the bottom for the

convenience of passengers (Fig. 111.2d), but this is a doubtful asset as it usually houses a colony of fleas. The equipment consists of gourds for bailing and paddles, which may number from one to eight. We have never seen an Indian use a sail, in spite of the fact that a few local ladinos have sailboats (Fig. 111.2c). Our outboard motor, probe first ever seen on an Atitlan dugout, aroused little interest except among our workmen who, without it, would have had several hours of hard paddling daily.

Atitlan canoes must be sturdy to survive, for they encounter rough water and rocky shores. It is not uncommon for the hull to split. In that case the hull is turned bottom up on the beach and the leak is plugged with tar (Fig. 111.1a). An interior batten may be nailed over the crack.

The owner of the dugout we chartered used the following Zutugil terms to describe his vessel:

dugout canoe: <i>jukúa</i>	bow: <i>rutzám jukúa</i>
hull: <i>canoj</i> (Sp.)	stern handle: <i>jári rechajukúa</i>
gunwale: <i>ruchi jukúa</i>	bow handle: <i>jári rutzamjukúa</i>
stern: <i>rechajukúa</i>	paddle: <i>tzaj</i>

The Survival of the Maya Tun Count in Colonial Times

Tatiana Proskouriakoff

On pages 124 and 125 of the Codex Perez, now in the possession of the Escalante family of Merida, Yucatan, there is a table which consists of a list of 17 Christian years beginning with 1758, correlated with data of the Maya calendar. This table, as it is reproduced on pages 246 and 247 of the translation of the

codex by Dr. Ermilo Solis Alcala, differs in important particulars from a photographic copy of the original obtained for the Carnegie Institution of Washington by Sylvanus G. Morley in 1936. The following is transcribed from the photographic facsimile (tz' is substituted for the inverted c of the original):

1758	Bolon muluc	1 pop	9-3	9 hiix	16 Zec
1759	Lahun hiix	1 pop	10-4	10 men	11 Zec
1760	Buluc cauac	1 pop	11-5	11 cib	6 Zec
1761	Lahca kan	1 pop	12-6	12 Caban	2 Zec
1762	Oxlahun muluc	1 pop	13-7	13 Etz'nab	16 Zootz'
1763	Hunil hiix	1 pop	1-8	2 ahau	6 Zootz'
1764	Cabil cauac	1 pop	2-9	3 imix	2 Zootz'
1765	Oxil kan	1 pop	3-10	4 Yk	(16) Zip
1766	Canil muluc	1 pop	4-11	5 Akbal	(11 Zip)
1767	Hoil hiix	1 pop	5-12	6 kan	6 Zip
1768	Uacil cauac	1 pop	6-13	7 Chicchan	(1) Zip
1769	Uucil kan	1 pop	7-1	8 Cimi	16 Uoo
1770	Uaxac muluc	1 pop	8-2	9 Manik	10 Uoo
1771	Bolon hiiz	1 pop	9-3	10 amat	6 Uoo
1772	Lahun cauac	1 pop	10-4	11 Muluc	7 Uoo
1773	Buluc kan	1 pop	11-5	12 Oc	(16) pop
1774	Lahca muluc	1 pop	12-6	13 Chuen	(11) pop
(1775)	Oxlahun hiix	1 pop	13-7	1 Eb	6 pop)
(1776)	Hunil cauac	1 pop	1-8	2 Ben	1 pop)

The entries in parentheses have been added by the author. In the Solis Alcala transcription, the table begins with 179, nine years earlier, and in the last two columns, 1 Cauac and 11 Zootz' are interpolated opposite the year 1763, moving the remainder of the entries one year down in the table. The last entries, 13 Chuen and (11) pop, are omitted. Apparently this is an attempt on the part of the translator to correct errors and omissions which he attributes to the copyist. Here, however, we follow the copy made by Perez, since there may be significance in the fact that his table does not extend over a complete katun, and since even its internal discrepancies may be useful in furnishing clues as to the manner of its construction.

The first two columns of the table give a correlation between Maya and Christian years. Such correlations occur in various native sources, but do not all agree. Nor do separate dates given for events always give the same correlation. This particular one, however, occurs repeatedly in independent parts of the Perez codex and in the Tizimin, and is one which many scholars accept as correct. It is perfectly regular, and if we extend it back into the sixteenth century, the year 1553 will be correlative with the year 12 Kan, Landa's "typical year," which he shows beginning on July 16.

On page 66 of the Chronicle of Oxkutzcab, which forms the basis of Thompson's correlation of Maya and Christian chronology, is given a similar year table, which, if extended, places the year 12 Kan opposite 1554. Thompson considers this displacement, however, as due to a difference in notation, and explains that in this chronicle the Maya year is placed next to the year in which it ended (Thompson 1927). If this is true, the discrepancy between the two tables involves no discontinuity in the actual count of years.

After the year bearers in the Perez table, we are given the coefficients of the days that begin Pop and Uo in each year. The sign Ahau, which follows, is repeated without coefficients. The next column seems to consist of consecutive days, beginning with 9 Ix. 1 Cauac, which would normally fall between 13 Etz'nab and 2 Ahau, is omitted, but though all subsequent days are moved up in relation to the years, their correlation with the last column remains intact, for in this column there is a similar omission. The function of the column of days in the table is not clear to me. There may be some significance in the fact that the 2 Ahau of this series is a tun ending. In the year 1 Ix, with which it occurs, it would fall on 7 Zotz', one day after the entry in the last column. Moreover, as we shall see, its coefficient, 2, is the same as that of the expected katun.

Although the last column contains many irregularities, its general pattern is that of month positions at tun intervals, and we surmise that these month positions are the positions of Cauac, the last or penultimate day of the tun, the day preceding the tun Ahau. It is surprising to find a list of tun endings recorded as late as 1774, when there was apparently already much confusion as to the length of the katun and the mechanics of its count. Offhand, one might suppose that this list was copied at random from some earlier manuscript. This cannot be the case, however, for it is in as perfect concordance with the earlier record on page 66 of the Chronicle of Oxkutzcab as the irregularities and errors in both texts allow.

Ignoring these irregularities for the moment, we note that the last four tun endings given in the Oxkutzcab table run in perfect sequence:

1542	13 Kan on Pop 1	5 Ahau on 16 Tzec
1543	1 Muluc on Pop 1	1 Ahau (the tun) on 11 Tzec
1544	2 Ix on Pop 1	10 Ahau on 6 Tzec
1545	13 Cauac on Pop 1	6 Ahau the tun on 1 Tzec

In this case also, the month positions given are those normally associated with the day Cauac preceding the Ahau of the tun. Nevertheless, there is essential agreement between the tun end and the year in which it occurs. Thus, for example, in the year 13 Kan, 16 Tzec would be 4 cauac, and the next day, 5 Ahau, is designated as the tun. In the following year, the tun ends five days earlier, on 11 Tzec, which is 13 cauac, the day before 1 Ahau. Since 73 tuns are exactly equal to 72 Maya years, after the lapse of such a period, the end of the tun will return to the same month position. If in 1542 it was on 16 Tzec, 72 years later, in 1614 it would be again on 16 Tzec, and again in 1686, and in 1756. In perfect agreement with this, the Perez table gives 16 Tzec as the tun ending for 1758, and continues the count in regular sequence for four more tuns except for 2 Tzec in place of 1 Tzec. These first five tuns must have been calculated in some such way from an earlier record, for if they are month positions of Cauac, each falls, not in the Maya year with which it is given, but in the previous year. This dissociation probably would not have happened were the count a current one. It may be due to the fact that in the earlier source, as in the Oxkutzcab, the year bearers were placed opposite the Christian years in which the Maya year ended, and that the tuns, linked to the year bearers, suffered an even greater displacement. The omission in the Perez table of the tun 11 Zotz', which would have fallen in 1763, serves to restore the last 12 tuns

to their proper relation with the Perez year bearers: This was probably a deliberate correction, rather than a careless error, as Solis Alcala apparently believed it to be. It may be significant, too, that this correction is made at the point when the day series in the next to last column reaches the day 2 Ahau.

Both the Oxlutzcab and the Perez series of tuns contain other irregularities. In most cases, the month position given is that of Cauac, but sometimes it corresponds to Ahau, as, for example, 2 Yaxkin for 1537, 2 Xul for 1541 in the Oxlutzcab, and 2 Tzec for 1761, 2 Zotz' for 1764 in the Perez. The four occurrences of the same deviation at the beginning of the month suggest a pattern; but this pattern, if it is real, is largely obscured by other irregularities, some of which no doubt were errors of the copyist, as, for instance, the notation of 10 Uoo for 11 Uo in 1770.

Despite many errors and minor discrepancies, it is fairly clear that the tun series recorded in the Chronicle of Oxlutzcab was still understood and was being used in the middle of the eighteenth century; The long persistence of this particular count, whether it was continuous or not, should serve as strong confirmation of its authenticity, and should carry some weight in favor of correlations of Christian and Maya chronology, such as that of Thompson, which are based on its data.

If the compiler of the Perez table, however, was also the writer of the paragraph which follows, it is clear that he himself was not versed in the mechanics of the tun count, and that he did not understand fully the implications of the information he was imparting. In this paragraph, he gives explicit directions for finding the Ahau of the katun. The Solis translation gives the statement as follows: "El Ahau viene así: Cauac primer día de Pop, día del año nuevo. Al día siguiente empieza el Ahau Katun, cuyo día le da nombre. No hay que equivocarse, viene años tiene cada uno." This is followed by a somewhat equivocal explanation of the "nameless" days.

Throughout the codex, it appears that the native scribes, as well as Perez himself, accepted this statement as applicable to all katuns, which, according to their view, began on a day Ahau following the first day of Pop on Cauac years 24 years, apart. The original statement, however, could have been merely a specific instruction for finding the coming Ahau from the above table. In that case, the Cauac mentioned is obviously not one of the year bearer series, since here a Cauac occurs on 1 Pop every four years, and could not serve to indicate the katun. The reference is probably to the series of month positions in the last column. We are told that when Cauac in this column falls on the first of Pop, the next day will mark an Ahau katun. The fact that this Cauac is also

a year bearer is incidentally mentioned, but it is not necessarily relevant. As can be seen from the extension of the table, Cauac would fall on 1 Pop in 1776, and the next day, 2 Ahau 2 Pop is the katun date. Unfortunately the compiler did not continue his table far enough to discover this.

The statement seems to imply that katun 2 Ahau began rather than ended on this date. This is inconsistent with standard Maya practice. In Maya inscriptions, the katun day is almost invariably associated with the period preceding it, and it is generally believed that katuns were named for their final days. The naming of the katun by its initial date is strongly linked to the belief in the 24-year katun. One wonders, therefore, if the implication that 2 Ahau began at this time was part of the original information, or if there was a distortion of meaning caused by the paraphrase of an ignorant compiler. In any case, if 2 Ahau 2 Pop fell on the turn of a katun, its Long Count position must have been 12.8.0.0.0. This is in agreement with the Goodman-Martinez-Thompson correlation, as would be expected, since the latter is based on an identical tun series. In the Oxlutzcab version of the series, however, no katun is mentioned, whereas here it is expressly pointed out. A statement confirming the fact that a katun ended in 1776 is found on page 128. "El presente Ahau Katun lleva corridos 7 años y faltan trece para que termine. Su. año inicial paso en 1776" (Solis Alcala translation). Unfortunately the name of the katun is not given.

On page 126 the author states that he began his work in 1756 on the 10th of May, which was 19 Muan of a year 7 Cauac. This is not strictly accurate. Even if we accept the current practice of beginning the Maya year on July 16 (which probably was the primary cause of confusion about the calendar in colonial times), May 10 of 1756 would fall on 19 Muan of the previous Maya year, 6 Ix. If the year was 7 Cauac, then the author must have begun his writing in 1757. I am inclined to think this is more likely, for had he taken an interest in calendrical affairs before the autumn of 1756, he probably would not have missed the passing of 4 Ahau katun. The first tun he records, however, is 16 Tzec, which probably fell in September of 1757. Of the 4 Ahau 3 Xul which passed the previous fall, he apparently had no knowledge.

Possibly he accumulated his data for a number of years, for when he calculates the date of katun 8 Ahau on page 127, he states that it began in 1392, 384 years before the current date, which would then be 1776. His calculation is by 24-year katuns with 2 Ahau, 1776, as the primary datum. This probably is also the datum for the two katuns, 4 Ahau and 2 Ahau, recorded on pages 130–131. Twenty-one years

beginning with 1776 are listed for 2 Ahau, and the 20th is designated as its end. 4 Ahau, however, is projected back to 1752, when the Ahau coefficient corresponds to the day after the year bearer. 1771 is marked as the end of the katun, and the next four years are said to be “without name.”

It is tempting to think that this calculation was based on a misinterpretation of the specific instructions for finding 2 Ahau on page 125, and that it represents the invention of the 24-year katun on which later calculations were based. The tun series and the 24-year katun converge every 72 years, but the true katun and the 24-year katun could coincide only once in 1440 years, and if we accept the correlation which makes 2 Ahau the katun in 1776, it seems very unlikely that the Perez calculations should fall exactly at this convergence by mere chance. The possibility that the 24-year katun was already in existence, however, should not be overlooked. Roys (1949:92) cites in support of this view the series of katun prophecies that appear on pages 150–166 of the Perez Codex. These were copied in 1689 by Diego Chi, and accompanying them are lists of the 24 years which comprise each katun. Although these

lists and other references to the 24-year katun stand apart from the texts of the prophecies and could be separated as later additions, if they should prove to be contemporary another cogent possibility must be considered. If we project the Perez-Oxkutzcab series of tuns, the first tun of katun 9 Ahau would end on 7 Ahau 2 Pop in 1560. If this was chosen as the beginning of the 24-year katun 7 Ahau, then, 9 24-year katuns later, in 1776, 2 Ahau katun would begin on 2 Pop, just as the true katun was ending. The fact that the 24-year katun is said to begin on its Ahau date would satisfactorily account for ‘the choice of a first tun date, rather than the katun date as a base for the count.

Whatever the case may be, there is evidence that the 24-year katun did not supersede the older katun count, which seems to have persisted at least until 1796. Roys has recently called my attention to a table in the Kaua manuscript, which is similar to that in the Perez, and which covers the years from 1797 to 1824. The following is taken from a photographic copy in the library of the Peabody Museum of Harvard University (ch’ has been substituted for ch with crossed h in the original, and tz’ for the inverted c):

		Muluc Xaman	
1797	~~bolon~~ ti uuc Ahau	9 Muluc;	Cate Mac
1798	Ox Ahau	lahun oc	Uacлахun ti Ceeh
1799	Laca Ahau	buluc chuen;	bulucte; ti Sac
1800	Uaxac Ahua	lahca eb;	Uacte ti Yaax.
1801	Can Ahua	oxlahun ben	bulucte Ch'en
		Hyx Chikin	
1802	Oxlahun Ahau	hun Hix,	uacлахun; Mool
1803	bolon Ahau	ca men,	bulucte; tz'eyaxkin,
1804	hoô Ahau	ox Cyb,	uacte ti Xuul;
1805	Cabil Ahau	can caban,	caate ti Seec,
1806	buluc	Ho Etz'nab,	uacлахun ti (Zotz')
~~1807~~			
		Cauac Nohol	
1807	hun Ahau	uac Cauac	uacлахun ti Sip
1808	lahun Ahau	uuc Ahau	bulucte ti Uo
1809	Uac Ahua	Uaxac Ymix	uacte ti Poop
		1810	
1810	uuc Ahau	bolon Yk	caate ti Cunku;
1811	ox Ahau	lahun Akbal	bulucte ti Kayab;
~~1812~~			
		Kan lakin	
1812	Lahca Ahua,	buluc Kaan;	uacлахun Paax;
1813	uaxac Ahau,	lahca chicchan,	bulucte, Moan,
1814	Caan Ahua,	oxlahun Cymi,	uacte, Kankin,
1815	oxlahun Ahau,	hun Manyk,	bulucte, Maac,

1816	bolon Ahua	Caa lamat, Muluc ti xaman Cusut tucaten	caate, Ceeh,
1817	hoo Ahau,	ox Muluc,	cate, Saac,
1818	Cabil Ahau,	can ôc	bulucte, Yaax
1819	buluc Ahau	hoo chuen	uacte, Ch'en,
1820	hun Ahau	uac eb	uaclante, Mool;
1821	lahun Ahau	uuc been Hyx ti chikin	bulucte, tz'eyaxkin,
1822	uac Ahua	uaxac yix	bulucte ti Xul;
1823	oxlahun Ahau	bolon men	Cate, Sec
1824	uuc Ahau		
1825			
1826			

This table gives Christian years, a list of Ahau dates in partially regular tun sequence, a list of consecutive days as in the Perez, and finally a list of month positions. The latter are apparently intended as tun endings. Actually their distances are irregular and correspond roughly to a hotun series. The prevailing order of the coefficient series, however, seems to be similar to that in the Perez: 16, 11, 6, 2, 16, 11, etc. In spite of numerous exceptions, we note the descending order of numbers and, curiously enough, the use of 2 in place of 1 in the order. The month names are arranged in consecutive reverse order, changing every year, instead of every four years as in a proper tun series. Accepting this general scheme without regard to its meaning, we find that its starting point, that is, the notation that would normally precede 2 Mac in 1797, would be 6 Kankin in 1796. As we have seen, according to the Perez table, 1 Cauac 1 Pop was the day preceding the katun Ahau in 1776. One katun later, in 1796, this day would be 12 Cauac 6 Kankin, and the katun would be 13 Ahau 7 Kankin. This evidently was the datum used for the Kaua calculation, however erroneous it is in other respects. The first eight Ahaus of the Kaua table, beginning with 7 Ahau, are arranged in regular tun sequence. The next five notations are irregular, but the series correctly resumes with 7 Ahau in 1810 and repeats the pattern. The first notation of the Ahau in the original manuscript reads "bolon ti uuc Ahau." The "bolon" seems to have been crossed out and does not appear in the copy made by Gates about 1920. Since the first tun after katun 13 Ahau in 1796 is 9 Ahau, it appears that the compiler of the Kaua table used this datum, but made a change in the Ahau series. This is easily explained if we assume that he shared the common belief of his times that the day of its beginning named the katun. He may have had before him a statement to the effect that in 1796 the katun changed from 13

to 11 Ahau: "Bolon ti uuc Ahau" would be the corresponding Ahaus one tun later, and the compiler, believing that the f1 Ahau of the current katun fell at its beginning in 1796, continued his series of Ahaus from 7 Ahau rather than from 9 Ahau.

It is significant that the datum 13 Ahau 7 Kankin, 1796, could not have been calculated on the basis of the Perez manuscript, which assumes that katuns always began after a year bearer. Moreover, the compiler of the Kaua was obviously too ignorant of the mechanics of the tun count to calculate this datum himself from earlier information. This clearly points to a contemporary source of information uncorrupted by the prevalent ideas about the 24-year katun appearing in the manuscripts of the eighteenth and nineteenth centuries. Is it conceivable that as late as 1800, there were still Chilams who kept a record of the passing tuns by verbal tradition, or perhaps even in hieroglyphic writing? This question merits further investigation, for it now appears that the scribes of the books of Chilam Balam were not the best-informed sources of their time. Modern survivals of the Maya calendar, if they stem directly from verbal tradition, may be more closely related to the ancient count than are the notations appearing in nineteenth-century manuscripts, and the hope that colonial hieroglyphic records may yet be found is encouraged by the thought that the aboriginal katun count survived for at least two and a half centuries after the conquest.

This count, which is entirely consistent wherever series of tuns are given, agrees with the Goodman-Martinez-Thompson correlation. If we assume any of the other correlations proposed, we must also assume that the Maya calendar was changed before colonial times either deliberately or by error of the sole native authority which understood and preserved the ancient calendar system.

A Decorated Vessel Support from Acapulco, Mexico

Hasso von Winning

In recent years explorations in Mexico have yielded a type of vessel support previously unknown in prehispanic pottery. These supports are up to 20 cm high, plano-convex, and hollow. The flat exterior bears a stamped decoration. Although, as far as I know, no complete vase or dish has been recovered, it is generally assumed that they were tripods. Their occurrence has been noted at several points west of Acapulco (Ekholm 1948:99). The purpose of this paper is to supplement the few extant pieces with a rather elaborately decorated dish support purchased some 15 years ago at the Embarcadero in Acapulco (Fig. 113.1a, b).

It is 16 cm high and 6.5 cm wide, of brown, fine paste showing specular reflection. The front has a reddish brown slip and is lightly burnished, but the convex back remains unslipped. It therefore can be grouped in Ekholm's "Acapulco Brown" ware. There are two oval and one longitudinal vent holes in the back. The leg is hollow and does not contain pellets. Its original position on the vessel must have been slightly slanted so that the lower part projected outward. The bottom of the leg is smooth and shows almost no wear from usage. The leg belonged to a tripod dish with a 9 mm thick bottom, and flaring sides probably not more than 15 mm high. A reddish brown slip covers the interior surface of the dish. Very likely the supports were manufactured separately and attached to the dish before firing in a similar fashion to that followed in other areas where slab supports occur.

The relief decoration on the exterior was stamped; some details remain blurred. An attempt at description is based on an analysis of the component parts and their arrangement in comparison with stylistically similar motifs on classical Teotihuacan pottery. The person, in profile with a speech scroll, wears a feather headdress attached to a row of scrolls which are reminiscent of Teotihuacan-style wave crests. Below the scroll is a disc placed rather low as if intended for an ear ornament. However, the entire composition shows considerable disregard for proportions. Beneath his elbow the figure has a double disc, which is probably the *tezcacuitlapilli*, an ornament known from the codices, which, although worn on the back, is frequently shown frontwise on profile representations of priests. From his forearm and hand hangs a pouch, only half of which is shown to save room for a row of rectangular objects (probably grains of seed corn falling from the extended hand). Pouch and corn grains would characterize the image as a priest associated with fertility rites. The legs are over-simplified and ostensibly shown from the front. On the left side is an ornament resembling the *xicalcolihqui* (stepped fret) or possibly the symbol of a seat or temple turned 90 degrees to the right, to make it fit. The lower part shows a geometric design arranged in a rectangle, in similar fashion as the *cipactli* symbols on Toltec stone sculptures.

The arrangement of the different components, especially the face, bears marked resemblance to Teotihuacan style as represented on a molded design

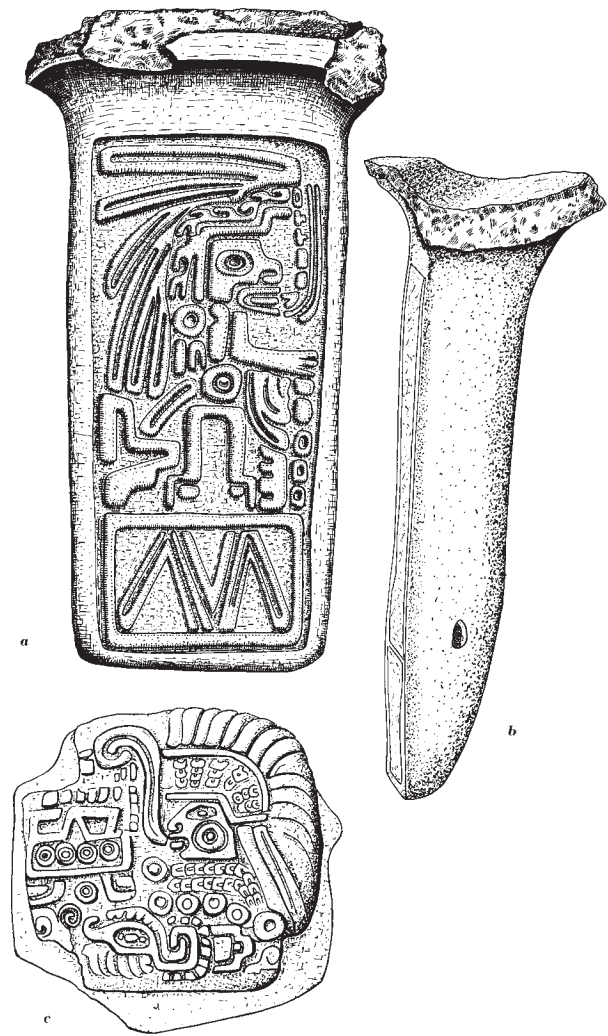
113.1. Hollow slab supports: (a) from flat-bottomed tripod dish; Embarcadero, Acapulco, Earl Stehdahl Collection; (b) profile view of a; (c) molded design on exterior of jar (after A. M. Tozzer 1921a: pl. 16a).

of thin orange appliqué from Ahuizotla (Fig. 113.1c) illustrated by Tozzer (1921a, Pl. 16a). In both cases, isolated stylized motifs were assembled into a compact whole without using connecting lines or links. A fragment with an identical design, probably from the same mold, is in the Stehdahl collection.

Of the long slab legs found by Ekholm at Tambuco, near Acapulco, one specimen has a geometric design; another is too defaced for recognition, Weitlaner (1944; 1948) discovered at Coyuca de Benitez, some 25 km northwest of Acapulco, similar hollow slab supports with stylized animal heads. One shows a human head *en face* with the body in profile, in a style which he compares with the "Danzantes" of Monte Alban; another has a motif of drooping eyes. At the same locality he also found one small molded vessel support with Tlaloc symbols of typical Teotihuacan III type.

To date, surveys of the west coast of Mexico indicate that long hollow slab legs are characteristic of the Acapulco area. This leg form, together with several other traits in the same area, denote relations with the Teotihuacan culture complex, as pointed out by both Weitlaner and Ekholm. The latter cautions against dumping to the conclusion that the Teotihuacan site be regarded as the center of distribution.

LOS ANGELES



The Language of the Archaeologic Huastecs

Morris Swadesh

The Huastecs of the region of northern Vera Cruz have spoken a Maya language from earliest historic times. How long has this tongue been in the area? When and where in the ancient past did the forerunners of the modern Huastecs form part of a linguistic community with the other Maya? The problems raised by the linguistic connections are stated by Gordon F. Ekholm (1944:330):

“... Huastec is unique in being geographically isolated from all other members of the stock to which it belongs and which are distributed in a single block in Guatemala, Yucatan and adjacent regions. Between the Maya and the Huastec is a large area occupied by Totonac speaking peoples in central Vera Cruz and by peoples speaking various Nahuatl languages in southern Vera Cruz, Tabasco and Chiapas. This isolation of Huastec is usually considered to indicate that Maya-speaking people formerly extended up the eastern Gulf Coast from Central America and that a northern group was isolated at some remote time by the intrusion from the west of the now intervening languages... On the other hand, the linguistic affiliation is so close that it is assumed that the separation could not have taken place at a very remote time.”

Ekholm gives here a plausible culture-historical explanation which conforms with the archaeological evidence, but he has the impression that the linguistic evidence goes against his theory. Actually, the difficulty arises only from the vagueness which has sometimes characterized discussions of linguistic relationships. Huastec may be like lowland Maya

in some details and any such similarities would of course be striking in view of the great geographic separation, but they do not necessarily imply recency for the common period of Huastec and Yucatec. One may be struck by the close parallelism between contemporary Spanish and Russian verb endings (Spanish *ve-o, ve-s, ve-mos*; Russian *vyizh-u, vyidye-sh, vyidye-m* for “I see, thou seest, we see”), but both languages can be traced through centuries of recorded history, with gradually increasing similarities as one goes back in time, but with no period of identity and community within 22 centuries of Spanish and Roman history. Although it is not customary to speak of close relationship in such a case as Spanish-Russian, where much of the history is known, this sort of vague description based on partial similarities crops up more easily in the case of exotic languages. It is only thus that one can explain the supposed dilemma mentioned by Ekholm.

What is needed here is some relatively objective measure of linguistic divergence. This is provided by the method known as glottochronology or lexical statistics (see Swadesh 1952:452–453; Lees 1953). Since languages change with time and the changes accumulate in proportion to length of time, it follows that the splitting-up of a language community will be followed by diverging changes in the new communities proportional to the amount of time after separation. It has been found, in studies of historically known control cases, that noncultural vocabulary changes at a relatively steady rate which is not seriously altered by fluctuating cultural influences.

The index used in these calculations is 66 percent of common retention per 1000 years. That is, if a speech community becomes separated into two parts and the language therefore develops in two independent lines, eventually becoming two distinct languages, those two languages will still have about 66 percent of their basic vocabulary in common after 1000 years of separation. After a second 1000 years, the common vocabulary will be further reduced in similar proportion, so that it now amounts to 66 percent of 66 percent, or 44 percent. The mathematical formula is $t \text{ equals } \log C \text{ divided by } \log 66 \text{ percent}$; indicated divergence time in thousands of years is equal to the logarithm of cognate vocabulary percentage divided by the logarithm of 66 percent.

The cognate count is based on a standardized test list, consisting of 200 items of meaning, stated in English or any other convenient translation language. First, the most natural equivalent for each item is found in the two compared languages. Then the equivalent words are scored plus for cognate, minus for non-cognate, cognates being fudged by reference to the established comparative phonology of the two languages.

The third step is to obtain the percentage of cognates over total matched pairs. And, finally, the percentage is translated into divergence time by the use of the formula.

The method can be illustrated with a historically verifiable instance, that of English and German. Aligning the test vocabularies of the two languages, Lees (1953) found 58.5 percent cognates. This is somewhat less than the 66 percent which is retained after 1000 years and implies that the time of separation is somewhat longer than 1000 years. It works out to about 13 centuries of divergence (Lees, using a slightly different index and a formula for the 9/10 error, calculates it as 1236 plus or minus 246 years). This invasion and settlement of England by Teutonic peoples took place over the period between A.D. 450 and 600, and the latter date may be regarded as marking the full separation from continental Teutonic. Thus, the time of separation as calculated from common vocabulary retention proves to be very close to the actual historical time.

Applying this method to Huastec-Yucatec, we find 47 cognates in 178 matched pairs, or 26 percent, and calculate the time of separation at about 32 centuries ago. This is fully consistent with the theory of a very ancient continuous spread of Maya all along the coast, as suggested in the passage quoted from Ekholm.

The placement of Maya features in Huastec archaeology is given by Ekholm (1948:505):

“The speculation that the Huastec language is as old as Period II in the Huasteca best explains certain general characteristics of the archaeology of the area. Such a connection would have existed during the time of the Mamom and Chicanel phases of the Lowland Maya area when the culture there was relatively simple and the great period of the development of Maya culture had not yet begun. Dated monuments, polychrome pottery, and the use of the corbelled arch were yet to appear, accounting for the fact that none of these elements of ‘typical’ Maya culture are found in the Huasteca.”

Our lexicostatistic evidence thus confirms Ekholm’s conclusions and we can feel reasonably confident that the language of the archaeological Huastecs has been Maya at least as far back as Tampico-Panuco Period II. Details of the ancient language, in phonetics, in grammar and vocabulary, can be reconstructed by comparative linguistic methods to enrich the picture of ancient culture given by the archaeology.

The problem of Huastec-Maya separation as discussed in the foregoing is independent of the special connections which Franz Termer (1930) correctly points out between Huastec and Chicomuceltec. The latter is a close sister language of Huastec, related to it approximately as English is to German. It is therefore evident that the Chicomuceltec separated from the Huastec in relatively recent times, long after the Totonac moved in to separate the Huastec-Chicomuceltec from the main Maya area.

The linguistic disparity between Chicomuceltec and its immediate neighbors confirms its recent rejoining the main area.

The Huastec test list was kindly furnished by Norman A. McQuown, the Yucatec by Alfredo Barrera Vasquez. The scoring of cognates was checked by McQuown.

The 47 items scored as cognates, given in the order Huastec/Yucatec with diagonal-line separation, are:

ashes, tay’ / ta’an	louse, uts/uk
at, ti/ti’	many, yaan/ya’ab
bird, tsitsin/chiich	narrow, shuyat/shut
blood, shits/ kikel	one, huun/hun
bone, beklek/bak	road, beel/noh-be
burn, ta’iy/tab	scratch, lotsiy/la’ach
cold, tsamay/ke’el	seed, iilab/i’
come, taal/tal	sit, kwahat/kutal

day, kiichaah/kiin	skin, ot/ot
die, tsemets/kimil	deep, wayits/ wenel
dog, piko'/ peek	small, tsakam/chichan
drink, utsa'/uk	snake, tsan/kaan
ear, shutsun/shikin	stick, te'/che'
fire, kamal/ka'ak	sun, kiichaah/kiin
foot, akan/ok	there, tiwa'/te'lo'
four, tsee'/kan	thou, tataa'/tech
green, yashni'/ya'ash	three, oosh/osh
hand, kubak/ kab	tooth, kamab/ko
heavy, aal/aal	two, tsaab/ka'l
here, tehe'/te'la'	water, ha'/ha'
I, nanaa'/teen (common element-n)	white, thakni'/sak
kill, tsemtha'/kinsik	wind, ik/ik
laugh, te'en/che'eh	ye, shashaa'/te'esh
leg, akanlek/ok	

Items somewhat similar but considered probably not cognate are:

leaf, sheklek/le'	tongue, lekaab/aak
play, ubat/bashal	where, hu'tah/tu'ush
tie, wika'/kashik	

The words for father, taatah/taataa, may be due to relatively recent borrowing from a third language, perhaps Aztec or Mexican Spanish.

Items clearly non-cognate, indicated by giving only the English equivalent, are:

all	flower	name	star
and	fly	near	stone
animal	fog	neck	suck
back	fruit-berry	new	swell
bad	give	night	swim
bark	good	nose	tail
because	grass	not	that
belly	guts	old	they
bite	hair	other	thick
black	he	person	thin
child	head	pull	think
cloud	hear	rain	this
count	heart	right (hand)	throw
cut	hit	river	turn
dirty	hold	root	warm-hot
dry	how,	rope	wash
dust	hunt	rotten	we wet
ear	husband	rub	what
earth	if	salt	when
eat	in	sand	who
egg	know	say	wide
eye	lake	sea	wife
fall	left	see	wing
far	live	sharp	wipe
fat-grease,	liver	sing	with
feather	long	sky	woman
few	man	small	woods
fight	mear	smell	worm
fis	mother	smoke	year
five	mountain	some	yellow
flow	mouth	stand	

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A Stela at San Lorenzo, Southeastern Campeche

J. Eric S. Thompson

The small site of San Lorenzo lies 4 km north and slightly west of the chicle camp and water hole of the same name. These, in turn, are about 30 km in a direct line west by south of Aurora (Rio Bec) and about 8 km south by east of Hormiguero (Ruppert and Denison 1943, Fig. 1). It was visited by J. C. Harrington, Conrad Kratz (now Father Lawrence, O.S.B., and myself in 1936. The map was made by Harrington. The presence of a hieroglyphic stela in this region, where Peten and Rio Bec styles of architecture interlock, gives importance to the ruins.

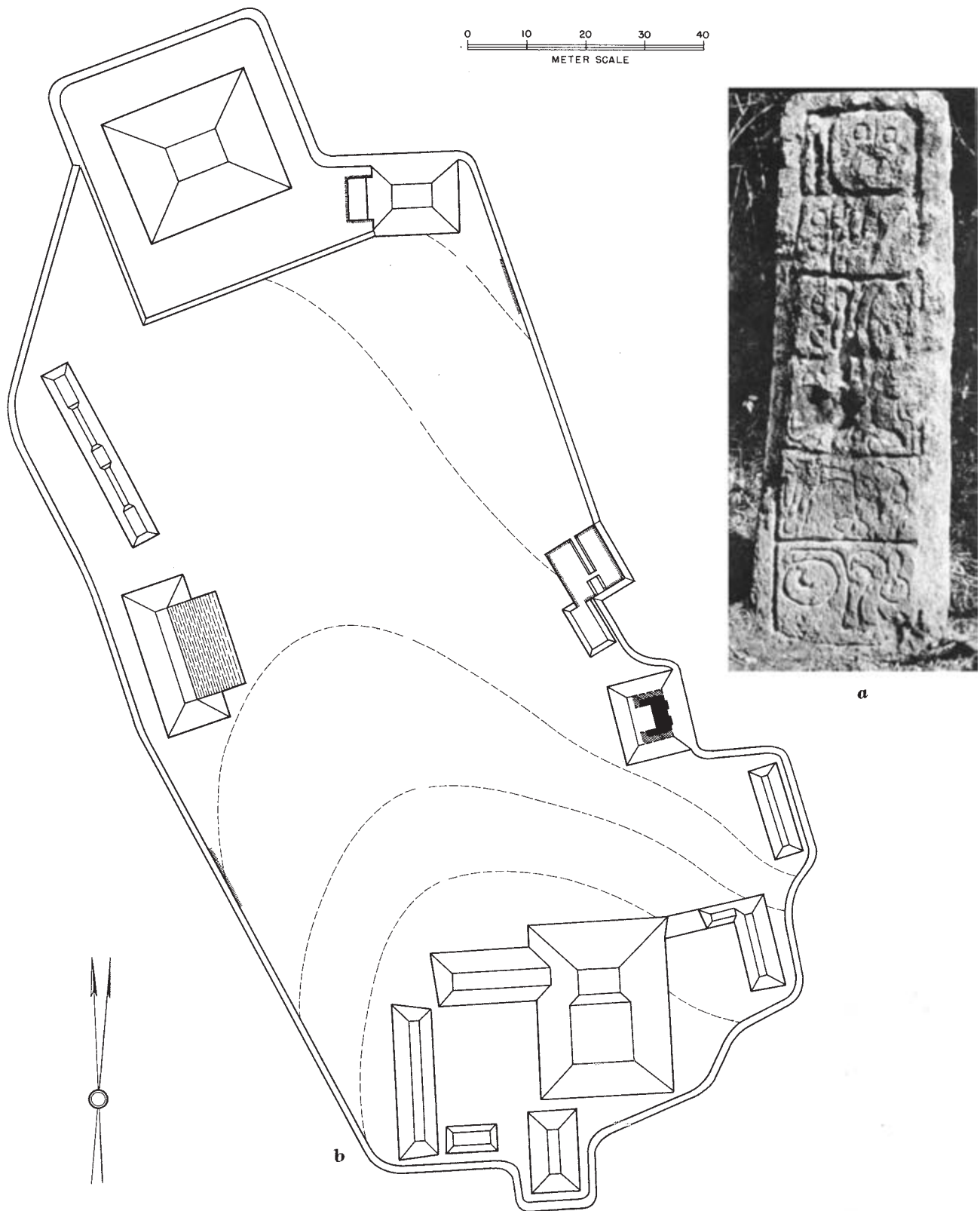
The structures stand on an irregular, raised area, which follows the natural slope of the terrain and is bounded by a retaining wall of undressed stones laid dry. At its highest point this retaining wall stands 1.75 m, but removal of accumulated debris and fallen stones might increase this figure to 2.25 m or even 2.50 m. The general plan seems suggestive of Peten rather than Rio Bec usage, but the only standing superstructure is of Rio Bec type.

The whole of the front (west) of this one-room vaulted building has collapsed, but part of the lower zone at the back stands. This is faced with excellent veneer stonework of Rio Bec style. The stones are carefully dressed and fitted, and laid in rows averaging 19 cm high (an occasional stone is the height of two rows. In length the stones vary from 17 cm (exceptional) to 52 cm. They are turtle-backed. My only depth measurement is 23 cm, but that came from a stone of double height; to judge by similar masonry at nearby No Te Metas, stones of average size would be about 15 cm deep at the thickest point.

In contrast to the veneer masonry of the exterior, interior walls are faced with roughly dressed and irregularly quadrangular blocks averaging 20 cm high (17 cm and 27 cm are rare extremes) and 50 cm long (range 32–71 cm). Vault stones are around 9–13 cm high and 40–49 cm deep. Only part of the vault was standing. There was a cupboard (49 cm broad, 43 cm high, and 42 cm deep) in the east wall, 1.34 m below the spring of the vault.

The two buttress-like projections in the rear wall recall Rio Bec architecture, although nothing exactly comparable seems to be known. Together with the type of veneer masonry, it serves to classify the building as of Rio Bec style, in contrast to the plan of the site, which, as noted, is more suggestive of the Peten. It would appear, then, that both styles of architecture were used at this site either at the same time or one after the other. This problem, of course, has bearing on the cultural position of the stela, which is asymmetrically placed on the platform supporting the tallest pyramid at the site.

The stela stands to a height of 2.66 m above the platform, is 87 cm wide and 52 cm thick. Only the front is carved; this carries six large glyph blocks which retain considerable areas of red paint. The plain border has patches of blue paint. Some badly pitted areas are impregnated with paint in a manner suggesting that the stela might have been painted after it had been exposed for a long time to weathering. This is not certain, for the paint might have sunk deeply into the stone before it started to weather.



115.1. (a) Stela; (b) plan of San Lorenzo, made by J. C. Harrington.

Glyph 1 records 10 Ahau. The treatment of the features and the absence of a cartouche suggest late decadence (cf. paintings of Ahau on the Santa Rites murals). The absence of a month position strengthens the belief that this is a very late monument.

Glyph 2 is badly eroded. There is a u-bracket to the left. The remaining glyphs are illegible save the last, which is of unknown meaning.

A day Ahau without accompanying month position normally records the end of a katun since a katun was named for the day Ahau on which it ended. Furthermore, this small site, which apparently erected only one stela in its whole history, would almost certainly choose a katun ending for commemoration. In view of these factors and the apparent decadence of the glyphs, it is likely that this monument records the date 10.5.0.0.0 10 Ahau 8 Muan.

The features of the Ahau face and the absence of a cartouche around it make a reading of 9.12.0.0.0 10

Ahau 8 Yaxkin, the previous katun 10 Ahau, almost impossible (cf. records of this date on Stela 9 at Calakmul, and on Stela 6 at Uxul, illustrated in Ruppert and Denison 1943, Pls. 48, 58).

The late date proposed for the San Lorenzo stela finds some support in the late monuments at nearby La Muñeca, recording the dates 9.18.0.0.0, 9.19.0.0.0, 10.2.10.0.0, and 10.3.0.0.0. Recently, Proskouriakoff (1950:152) has suggested that a reading 10.3.10.0.0 for the date on Stela 5 at that site is worth serious consideration. This is only 30 years before the proposed date for the San Lorenzo stela. A jade bead from Tzibanche, to the east, is inscribed with the date 10.4.0.0.0.

In this remote area of southeastern Campeche and southern Quintana Roo the practice of erecting hieroglyphic stelae may have continued after it had ceased to the south. It must be emphasized, however, that the suggested reading for the San Lorenzo date is, at best, only a probability.

Ceremonial or Formal Archway, Uxmal

A. L. Smith and Karl Ruppert

During the latter part of April 1953, we spent several days, by invitation of Dr. Alberto Ruz Lhuillier, at the Mexican Government's archaeological headquarters at Uxmal for the purpose of investigating house mounds at the site and its environs.

While exploring south of the main group, we came upon the badly fallen remains of an unreported archway (Fig. 116.1) about 3 km south of the Governors Palace. It faces north and south and rests on a large platform. No evidence of a raised road or sacbe could be found associated with it. On the south side, 11.2 m from the base of the archway, four steps lead to the top of the platform. The masonry of the archway is of nicely cut stone laid in courses. At the level of the offset at the spring of the arch a single-member vertical molding, 22 cm wide and projecting 6 cm from the wall, extends around the outside. The walls were probably plastered and painted red as traces of red-painted plaster adhered to the under part of the molding and to the wall below.

Standing alone, unassociated with any other buildings; this structure appears to be a ceremo-

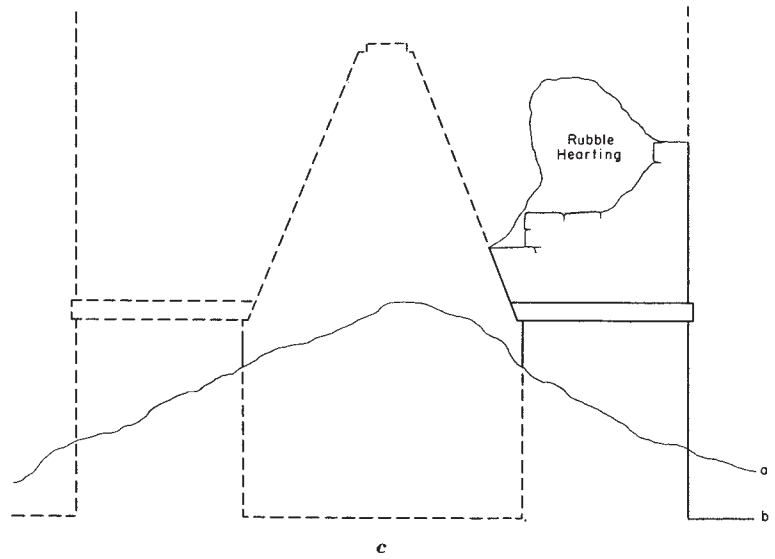
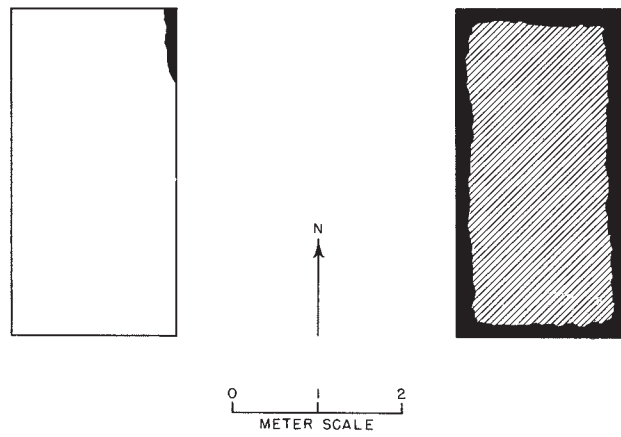
nial or formal archway, perhaps a triumphal arch. In possible function as well as in general appearance, it is very similar to the archway at Kabah. Stephens (1843:1:399–400) mentions this construction and shows a drawing of the archway at Kabah. Morley (1946:342, Pl. 56b) also mentions and illustrates it. The two arches are almost the same size: the one at Uxmal has a span of 3.3 m whereas the one at Kabah has a span of 4.1 m; however, the total breadth of the Uxmal structure is only 40 cm less than the one at Kabah. The length through the Kabah arch is 10 cm less than the former; the height from floor to capstone was probably about the same. Another archway of this type has been reported at Xculoc, a site 25 km south-southwest of Uxmal (E. M. Shook's 1940 field notes, and Carnegie Institution, Department of Archaeology, photographic files). This archway faces approximately north and south, measures 4.77 m through and has a total breadth of 8.01 m and a span of 3.89 m. Arches of this type standing alone are not common in the Maya area.



a



b



116.1. Ceremonial or formal archway, Uxmal: (a) looking northeast at archway; (b) looking northwest at archway; (c) plan and south elevation; (a) debris line; (b) ground level.

Miscellaneous Archaeological Specimens from Mesoamerica

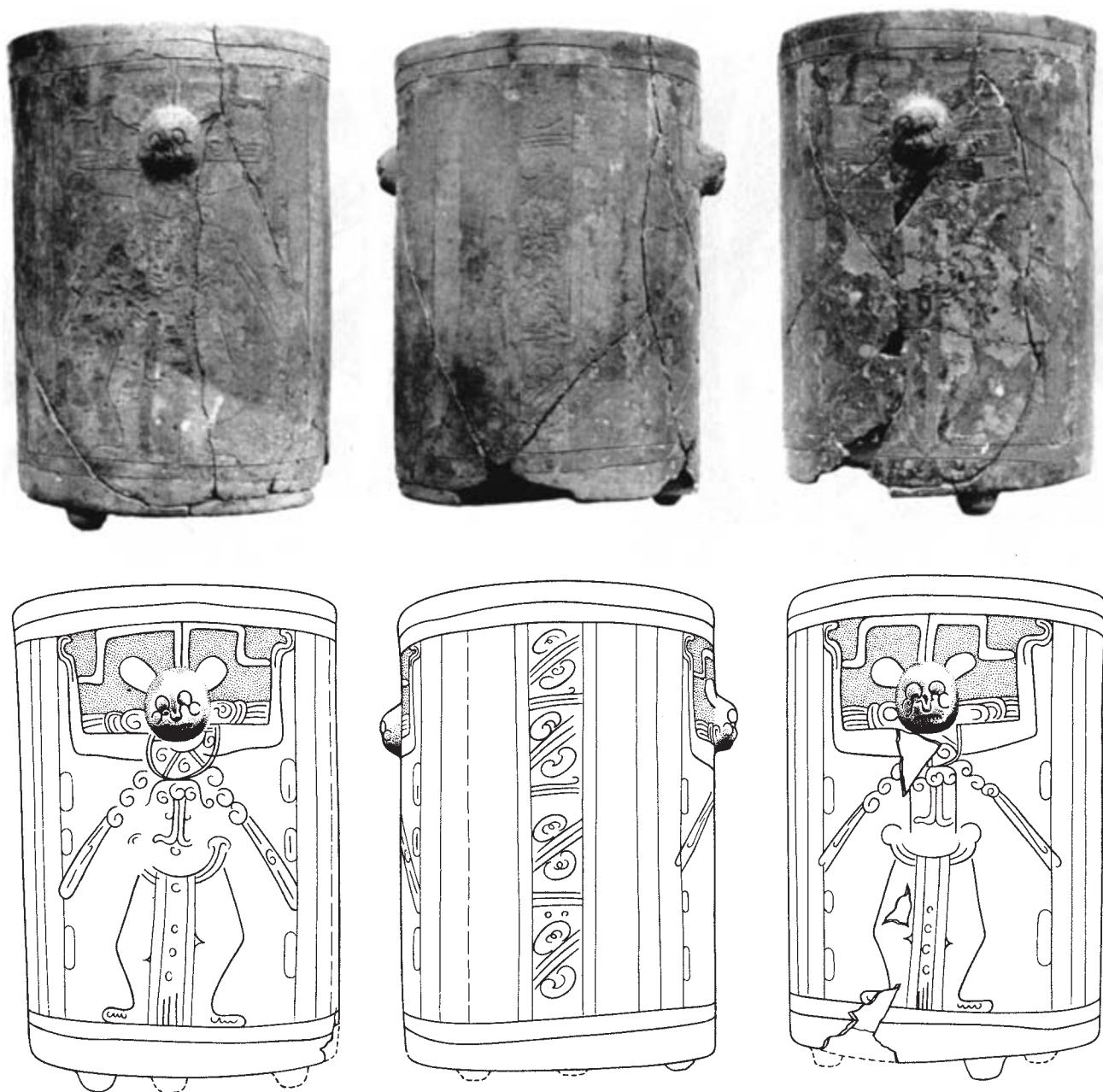
A. V. Kidder

In the present Note are included various objects that do not form part of collections made in the course of Carnegie Institution's excavations, and therefore fail to find publication in reports on the Institution's field work. Although the exact provenience of few is known, all are of interest in one way or another. Some of the pottery vessels are of types hitherto unrecorded or ordinarily found only in fragmentary condition; some vessels and artifacts of stone and metal are of superior craftsmanship; others illustrate unusual or little-understood technological processes. Unless otherwise noted, all are from Guatemala and in the Museo Nacional de Antropología e Etnografía in Guatemala City. With certain exceptions, photographs were made under grants from the Colt Archaeological Foundation (1952) and the Wenner-Gren Foundation for Anthropological Research (1953).

Cylinder, tripod (Fig. 117.1). Dieseldorff Coll., M.N.A.E. no. 5433. Light gray paste. Interior and base unslipped, well smoothed; interior apparently smudged. Solid rounded feet. Exterior with low-gloss slip which has been brought to dark gray shade by the application of some liquid (see lighter gray band in central photo, an area not so treated; its right-hand edge shown in the drawing by a broken line). The slip has flaked extensively, exposing the previously smoothed surface, but from the areas between the upraised arms of the two bat (?) figures (stippled in drawings) it was purposely removed, throwing into very low plano-relief the large ears

and the ornament that rises from each head. The incising was done after slipping and polishing while the clay was in leather-hard condition. Ht. 21.5 cm.

The enormous collection that contains this and certain of the following specimens was made over many years by the late Erwin P. Dieseldorff of Coban, Alta Verapaz, who excavated extensively in that region, particularly at Chajcar and Chama, many of the finest pieces going to the Museum für Völkerkunde in Berlin. Certain of these and also a number retained in Guatemala that now form part of the Dieseldorff collection were illustrated in his *Kunst und Religion der Mayavölker* (1926, 1933), in which their provenience is recorded. Other objects from the above-mentioned diggings, together with the thousands purchased during his travels in the highlands and on the Pacific coast of Guatemala, were unfortunately never catalogued. In certain cases, to be mentioned below, it is possible to be reasonably certain as to place of origin; in others one can make a fairly good guess; in still others one is entirely at sea. The present vessel is in the guesswork class. It's straight, rather than gently concave, walls serve to differentiate it from the general run of Early Classic cylinders, which it resembles in possessing tripod support, although the Early Classic tripods usually have slab, not "nubbin," feet. In shape, its nearest analogues are straight-walled, "nubbin" footed vessels in the Rossbach Collection, now in the municipal museum at Chichicastenango (Lothrop 1936, Fig. 9 and Pl. 6). They were said by Padre Rossbach to be from Zacualpa, in the Dept.

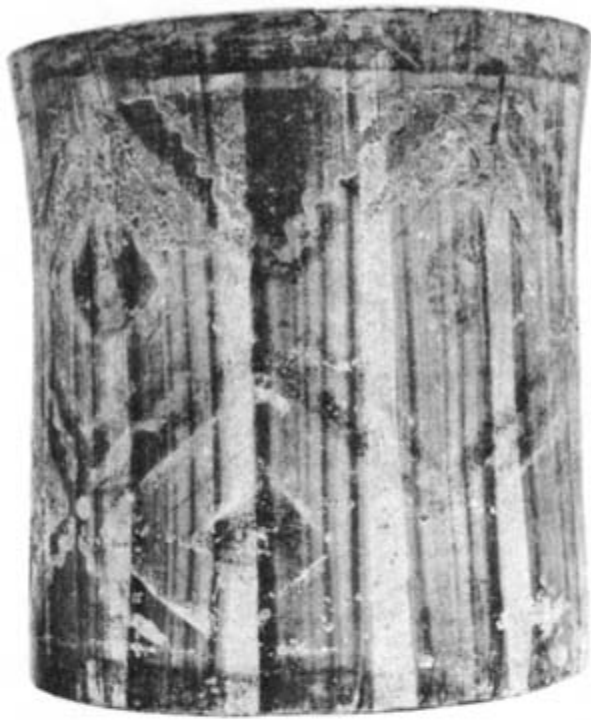


117.1. Miscellaneous archaeological specimens from Mesoamerica.

of Quiche, not far to the west of Chama, but their period is uncertain. On the whole I would guess that the present Dieseldorff piece is of Alta Verapaz or eastern Quiche origin, both on the evidence of the specimens figured by Lothrop and because I think it likely that it was recovered by Dieseldorff himself, as he had done much excavating in that general region and, being a lover of fine pottery, would have saved and mended a vessel so badly smashed that few pothunters would have bothered with it.

I have indulged in this long discussion in order to illustrate the problems involved in locating important specimens in private collections, important because, as in the present instance, they are often complete examples of types either unknown or represented only by small fragments.

Cylinder with secondary decoration (Fig. 117.2a). Dieseldorff Coll., M.N.A.E. no. 5223. Matte interior, apparently smudged; well-smoothed flat base



a



b

117.2. Miscellaneous archaeological specimens from Mesoamerica.

slipped brown. Exterior bears creamy white slips very even medium-gloss finish. On this were painted bands vertically streaked with reds of varying intensity (all evidently applied with same brush) set 1 cm apart, leaving bands of that width reserved in the white slip. Secondary decoration probably completely obscured the primary, but has now so nearly disappeared as to re-expose it almost entirely. It seems to have been laid out with lightly painted hair-thin black guide-lines that served to place the small black inner diamonds. The larger black diamonds appear to have been drawn around the smaller. This may account for the irregularity of the pattern as a whole, its elements having seemingly been developed outward around the small diamonds instead of inward to fill a preliminary framework of crossed zigzags. The small diamonds, with central dots, were surrounded with white; on the black of the large diamonds were waved white lines. Both black and white were thin, unfired, and have lasted badly. Ht. 18 cm.

The bad condition of this unique vessel renders the method of its secondary decoration uncertain, i.e. whether the white elements were painted on a black ground, or were produced by some resist operation. Being a straight-sided cylinder without feet, it is probably Late Classic and, I would guess, from Alta Verapaz.

Cylinder with incised and resist decoration (Fig. 117.2b). Provenience unknown, M.N.A.E. no. 4646. Light orange paste. Matte interior apparently smudged, rim not blackened; flat base unslipped. Exterior slipped grayish cream. Very even, low-gloss finish, after which the incised lines were drawn with a sure hand after the vessel was nearly dry, for there is no burring and their edges are slightly abraded. The thin black pigment has nearly disappeared. Ht. 20.3 cm.

The combination of incising and resist and the frieze of serpent heads may ally this vessel to a bowl found by A. L. Smith at Nebaj, Dept. of El Quiché (Smith and Kidder 1951, Figs. 28; 74s). The latter, in turn, was thought perhaps to have come from Alta Verapaz (see Smith and Kidder 1951:66). It was accompanied in the Nebaj tomb by Early Classic vessels.

Tripod cylinders (Fig. 117.3a-e). Specimen a, private collection, Antigua, Dept. Sacatepequez, but provenience unknown; b, c, d Dieseldorff Coll., M.N.A.E. nos. 5230, 5702, 5703; e, purchased by E. M. Shook at Salcája, Dept. Quezaltenango. a. Feet open-bottomed. Reddish brown slip, rounded low-relief ornament on either side outlined with post-

finish scratch incising. Ht. 18.5 cm. b. Feet open-bottomed. Dark red, low-gloss slip from just within rim to and over basal molding, also covers outer surface of feet. Decoration of this and c, d, e, scratch-incised, post-finish and apparently post-drying; in each case repeated on opposite side; lines of c, d rubbed with white powder for photographing. Ht. 16.3 cm; c. Slightly "humped" feet, round 4 mm vents on each side of each foot, no rattles. Light brown to buff, low-gloss slip from just within rim to a band of thin, very light buff paint; medium gloss red slip from below latter band to edge of basal molding and over outer surface of feet. Ht. 15.3 cm. d. "Humped" mammiform feet, two round 4 mm vents on each side of each foot, no rattles. Dark red, medium-gloss slip from 4.5 cm down from rim on interior, covers most of exterior, including incised panels, to edge of basal molding and outer surface of feet; wall between panels is slipped orange (these areas with low, horizontal ribbing). Ht. 19 cm; e. Open-bottomed feet. Lowgloss orange slip, bands of thin light buff paint above basal molding, low boss on either side between decorations. Ht. probably about 19 cm.

These vessels are characterized by squat bodies, relatively large and often open-bottomed feet, low double moldings below rim, sharper basal molding, and post-finish scratch-incised decoration repeated on opposite side. Shook believes them to date from the early part of the Early Classic and to come from the vicinity of Salcája, a region in which great numbers of mortuary vessels have been dug by pothunters and sold to private collectors: Dieseldorff's collection also contains many pre-Classic pieces that surely came from the Salcája country. It is evident that he bought extensively there.

Tripod bowl, resist decoration (Fig. 117.5d), Dieseldorff Coll., M.N.A.E., no. 5155. Rounded rim; "humped" mammiform feet, each with a single round 6 mm vent on inner surface, no rattles. Interior and base evenly smoothed, matte, unslipped buff. From just within rim to lower edge of low moldings on exterior below orifice is well-polished deep red slip; a second band of same red, 1.5 cm, wide, encircles body above feet and carries down to cover their outer surfaces. Resist decoration, thrice repeated, in black on orange slip, between upper and lower red areas (see drawing). Ht. 13 cm.

Because of its low, rounded moldings at the rim and the slipping red of the upper exterior of its "humped" feet, I think there is little doubt that this vessel is from the Salcája region and contemporary with the tripods just described (Fig. 117.3a-e).



117.3. Miscellaneous archaeological specimens from Mesoamerica.

Effigy whistles (Fig. 117.6a-e), Kaminaljuyu. Dept., Guatemala. Mouthpiece with large opening through which air passes into almost spherical body, thence upward through a narrow cylindrical opening in a conical protuberance that extends down into the body, to strike against the sharp upper edge of a round 5 mm hole in the back of the hollow head, producing a high, piercing note. In drawing the section of d, the conical protuberance, not visible in the complete specimen, was reproduced from that of the detached head (see Fig. 117.6c, c'). All specimens of light brown paste with thin, matte buff wash. Traces of polished red decoration on b. As in most other pre-Classic whistles at Kaminaljuyu and elsewhere, birds are probably represented, although b and c are shown with earplugs; wings apparently indicated by appliqué lumps on both complete specimens. The two latter and some 20 heads were purchased; a was found in a late pre-Classic (Arenal phase) pit; c,

in a mixed deposit (Miraflores and Arenal phases). Ht. of d 6.3 cm.

Spouted tray (Fig. 117.5c). Found by resident at Copan Village, Copan, Honduras. Not from controlled excavation. White paste, red slip; three mammiform cascabel feet with single vents; length about 20 cm. Photo from G. Strömsvik. Specimen in municipal museum, Copan. A second, also from Copan, light brown, no feet, length 17 cm, is in Peabody Museum, Harvard.

Example of an uncommon but very widespread form, apparently confined to the pre-Classic. Records: *Mexico*. Gualupita, Morelos (Vaillant 1934, Fig. 23m), Gualupita II, mortuary piece, "granular" white ware, apparently no feet. Tlatilco, D. F. (Porter 1953, Fig. 13). Three from graves. White slip, no feet. Guatemala. Salinas de Istan, near Champerico, Dept. of Retalhuleu (Kidder 1940:10m). Weathered

red slip, head and legs of animal in applique, no feet, length 16.5 cm. Chimaltenango, Dept. of Chimaltenango, white ware, no feet. Alta Verapaz (locality?), Usulután decoration, no feet (two latter in Museum of the American Indian, Heye Foundation). Kaminaljuyu, Miraflores phase, two, Tomb I, Mound E-III-3, unslipped, no feet, length 10 cm. From same tomb one of chlorite schist, one of marble, both with three feet (Shook and Kidder 1952, Figs. 47a; 77e). I have record of only one fragment, Usulután, probably Miraflores phase, from among the hundreds of thousands of pre-Classic Kaminaljuyu sherds. This, and the fact that all specimens found under controlled conditions are from graves, suggests that this impractical-seeming form, it could not hold a liquid, was specially made for use in some mortuary rite.

Moldmade covers (?) (Fig. 117.3h). Collected by Kidder. Left, from Chontal ruin, Dept. Alta Verapaz; right, from Chuitinamit Atitlán, Dept. Solola, both late post-Classic, probably 14th or 15th century, sites. Very similar. Interior and exterior of rounded rim with polished red slip; rest of interior unslipped; unpolished brown; unslipped, decorated part of exterior worked over with smoothing tool that has softened edges of impressed design, most strongly on left specimen. Smooth bases slightly flattened; broken edges show them to have been perforated by round 3 mm holes, probably four to each. Diams., left 19, right 18 cm. Nature of relief decoration indicates that these bowl-like objects were made in molds similar to four illustrated by Ricketson (1935). They are of coarse, unpainted ware of the same size range and shape as these; his nos. 3 and 4 have running decoration much like that from Chuitinamit. The unfinished interiors of the present specimens and their perforated bases suggest that they may have been covers with string handles.

Red ware jar, dentate-stamp decoration (Fig. 117.5e). Collected by Shook at Finca Arabia, Dept. Quetzaltenango, at a Late Classic site, so identified by presence of San Juan Plumbate sherds. No material of earlier or later periods noted. Evenly surfaced, low-gloss, Dragon's Blood Red slip (Ridgway; Munsell reading 7.5R4-7) from interior base of neck, over rim, and to slightly below strap handles (mark on body of missing second handle). Pre-polish decoration done with seven-toothed implement whose marks measure 2.5 cm across curve. Ht. 40 cm. I know of no other case of similar decoration from Guatemala, nor any of rocker stamping.

Incised jars (Fig. 117.5a; detail photo shows part of largest sherd). Quirigua, Dept. Izabal. Coarse, unslipped, buff to grayish-buff ware with much white temper, some particles up to 1 mm. Outcurving rim, rounded edge, interior of rim flattish. This surface of largest sherd shows traces of red paint. Interior of all necks well smoothed; exteriors evened with tool that has left horizontal striations. Post-finish incising with three-pointed implement, two of the round-ended points being close together except in case of sherd at left center where the three were evenly spaced. Edges of lines slightly burred. Different tool used on each piece. Nature unknown but points evidently held firmly in position, as shown by even spacing of lines. Lip-to-lip diams. of jars 22–25 cm. Sherds collected (1934) by E. H. Morris and G. Stromsvik in excavating about butts of stelae in main plaza. Probably Late Classic. Unslipped, incised ware also occurs at the not distant and approximately contemporary sites of Copán (Longyear 1952, Fig. 30) and San Agustín Acasaguastlán (Smith and Kidder 1943, Fig. 39) but decoration is in multiple, parallel or criss-cross, usually individually drawn, lines.

Textured pottery (Fig. 117.5b). Quirigua. Coarse, unslipped, pinkish buff ware, 0.9–1.5 cm thick; from large jars or beaker-shaped vessels. Texturing of upper three seemingly done with bunch of stiff elements, perhaps grass-stems; a sherd from San Agustín Acasaguastlán apparently similarly treated (Smith and Kidder, 1943, Fig. 39c, second from left, top row); lines on lower Quirigua sherd individually drawn. Provenience same as foregoing incised sherds.

Thin Orange effigy vessel (Fig. 117.3f). Acalán, District of Tepeaca, Puebla, Mexico. Coll. Miguel Covarrubias. Ht. about 18 cm. Flat base, high-shouldered body, low rim and position of head are typical of this ware, but applique fillet arms and legs are so far unique, those members normally being naturalistically modeled (cf. Kidder, Jennings, and Shook 1946, Figs. 192–195).

Ornate incense burner (Fig. 117.4b). Thought to be from Chiptic, near San Carlos de Ococingo, Chiapas, Mexico; Hun Chabin is also said to have been its provenience. Specimen in Regional Museum, Tuxtla Gutiérrez, Chiapas. Mr. Giles G. Healey, to whom I owe the photograph, states that it is of brown ware with traces of fugitive blue paint. It is 92 cm high, and weighs some 80 lb. The fine preservation of this remarkable specimen makes it almost certain that it was found in a cave.



117.4. Miscellaneous archaeological specimens from Mesoamerica.

Cover of incense burner (Fig. 117.4c). Poptun, Dept. Peten. Light brown paste, matte surface; exterior is more carefully smoothed than interior. Remnant of cream-colored slip, or possibly stucco, on flat tap between forefeet of deer and on basal outcurve of wall; man and deer apparently unclipped; Traces of fugitive red on neckband of man. Antlers of deer and central element of man's headdress missing. Deer's body, neck, head, man's body, and head are hollow. Total ht. 26.5 cm.

The flat edge of the outcurving lower wall and the several vents in both deer and human figures indicate that this unique piece was the cover of an incense burner. Its excellent preservation suggests that it was found in a cave or a tomb. Period uncertain. Joyce (1933, Pl. VI, 12) illustrates a fragment of a moldmade figurine-whistle from Lubaantun, British Honduras, of a man with a spear about to plunge a knife into the neck of a crouching deer.

Flamed incense burner (Fig. 117.4a). Provenience uncertain, purchased in Antigua, Dept. Chimalten-

ango. Arrott Coll., photo by Mrs. Charles Arrott. Unslipped brown ware. Missing upper part probably flaring. Serpent heads appliqué. "Hourglass" type, i.e. with septum dividing annular base from receptacle proper, of which it forms the floor. In this case only base remains; septum at level of top of unusually short vertical side-flanges. Serpent heads appliqué, back plain. Ht. "as is" about 15 cm.

Stamp-decorated, hollow slab feet (Fig. 117.3g). Rio Coyolate, Dept. Escuintla. Coll. Raul Moreno. From probably shallow, doubtless tripod, bowls with dark red very highly polished floors. Feet unslipped, unpolished; single vent roughly cut through back wall with sharp-edged implement (obsidian flake-blade?) while clay soft; no rattles. Left: light brown; round 3 cm vent. Center: black; oval 2 by 1.3 cm vent. Right: round 2.5 cm vent; width across base 5.7 cm. Late Classic. Similar feet from San Jose, El Baul, and Tiquisate have been illustrated by Shook (1949, Figs. 9, 38) and Thompson (1948, Figs. 27, 46).

Tohil Plumbate toad effigy (Fig. 117.6f). Wild Cane Cay, British Honduras. Coll. Mr. Cabral, Wild Cane Cay. Front legs hollow, open at bottom; hind legs solid. Color orange with gray clouds. Ht. 14 cm. Cf. very similar effigy from Tecpan, Chimaltenango, Guatemala. (Shepard 1948, Fig. 14f): one of the only two other recorded vessels of plumbate from British Honduras is also from Wild Cane Cay, the head of a turkey effigy, Amer. Mus. Nat. Hist. (Shepard 1948:112).

The stone stamp shown in Figure 117.7e surely, the copper head in Figure 117.10c almost certainly, came from this little island off the south coast of British Honduras. Its several small mounds, of which only parts now remain, have produced a surprising number of unusual artifacts mostly, it would seem, from graves. Gann (1918:135) lists several copper objects and the carved femur of a deer. In 1950 Ekholm, Stromsvik, and I examined Mr. Cabral's present small collection. In addition to the Plumbate vessel there were shell beads, rings, pendants, an *Oliva* "tinkler," pottery ladle handles ending in human heads, and hollow moldmade animal-head feet from bowls (CIW. photo file nos. 50-1-23 to 31). The feet and ladle handles are of post-Classic types, Tohil Plumbate is post-Classic. We found no identifiably earlier sherds on the island.

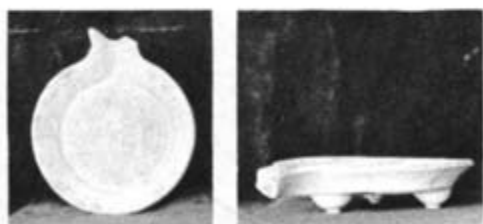
Unit-stamp pottery decoration (Fig. 117.7). Sherds, a, b, f. from Poptun, Dept. El Peten; c Lubaantun, d. Mountain Cow district, British Honduras (c, d, in Belize Museum). From upper part of exterior of jars and large bowls with slightly constricted orifice (Fig. 117.7d, two upper). Three sorts of stamps were



b



a



c



d



e

117.5. Miscellaneous archaeological specimens from Mesoamerica.



117.6. Miscellaneous archaeological specimens from Mesoamerica.



117.7. Miscellaneous archaeological specimens from Mesoamerica.

used: a triangular-ended object to make lines of impressions along incised lines encircling the vessel (only on Poptun sherds); a dentate object with from three to seven points (Fig. 117.7c; only on sherds from British Honduras; see also Joyce 1925, Pl. XXVI, Fig. 2; and Mason 1928, Fig. 4); a stamp with a small round, square, or oval end bearing a carved device that was impressed in single or multiple horizontal lines. This was done after slipping and finishing but while the clay was still fairly soft. What is doubtless a stamp of this sort is in the Cabral Collection from Wild Cane Cay (Fig. 117.7e). It is of mottled brown stone, accurately shaped, round in section, square end with incised device. Length 9.4 cm.

The pottery from both Poptun and British Honduras is slipped red, reddish brown, or black (Fig. 117.7a); evenly smoothed, low-gloss. It is probably Late Classic or early post-Classic. Has not been found in north-central Peten (Uaxactun), on the Usumacinta (Piedras Negras), or in the Guatemala highlands.

Metates and mortar. Honduras. Coll. Melhado Bros., Trujillo. Tripod metate (Fig. 117.8a) of gray igneous rock and mano said to have been found with it on the Betulia Farm, 16 km west of Trujillo. Very evenly finished by pecking. Grinding surface shows slight lateral cupping by wear; mano considerably worn. Decoration of paired legs same, single leg undecorated. Length of grinding surface 77 cm, width at center 49 cm, length of mano 74 cm, greatest diam. 8.5 cm. Small tripod metate (Fig. 117.8c) believed to be from neighborhood of Trujillo. Gray igneous rock; upper surface slightly convex, no wear, presumably ceremonial object. Length, including head, 26 cm. Tripod mortar (Fig. 117.8e) vicinity of Trujillo? White marble, surfaces somewhat pitted, probably by earth acids. Total length 46 cm, ht. to rim of basin 22 cm.

Incised slab (Fig. 117.8d). British Honduras. From mound site near Santa Ana, 53 km from Belize on road to Corozal, Belize Museum. Nature of gray stone not noted. Greatest width 48 cm.

Stone carvings (Fig. 117.8b, g). Chutixtiox, Quiché. Late post-Classic. Specimens from tomb looted in prehistoric times, as unbroken floors pass over hole through which robbers entered (A. L. Smith 1955). Small human head, hard greenish white stone (note Jade); finely finished; perforated biconically above level of eyes; complete object, i.e. not broken from body; ht. 2.4 cm. Found in loose earth in tomb. Bearded figurine, soft grayish white, mottled stone; back flat; ht. 8 cm, thickness 2 cm. Animal carv-

ings; white stone, unpolished; carving same on both sides; thickness of both 1.7 cm; length of larger 8 cm. Found with the stone figurine in cut-down, flanged, hourglass incense burner that lay in tomb entrance. Also in entrance was a plain copper ring (Smith and Kidder 1951, Fig. 88f).

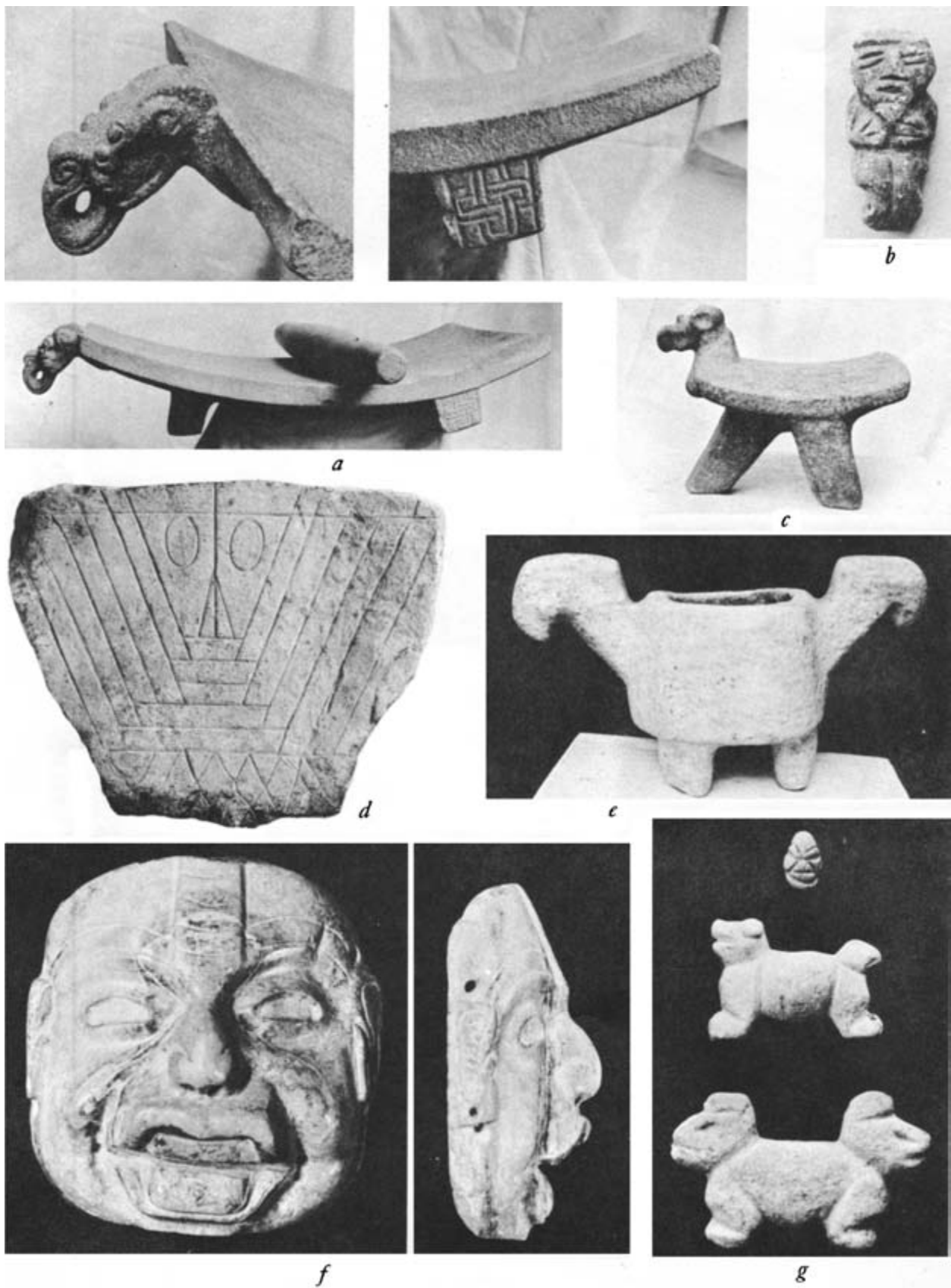
Stone face (Fig. 117.8f). Purchased in Mexico City, said to be from Valley of Mexico. Following data kindly supplied by Stanley Stubbs of the Laboratory of Anthropology, Santa Fe, where specimen bears no. 30-2620. Banded. light apple-green and gray serpentine; well polished all over; back slightly concave; traces of red pigment in pairs of biconically drilled a holes and at corner of right eye. Ht. 9.6 cm, thickness 3.8 cm.

Stone figurine (Fig. 117.9b), bearded man holding jaguar. Dieseldorff Coll., provenience unknown, presumably Guatemala. Dark green, apparently jade. Flexed left hind leg of jaguar appears under man's right forearm, tail paralleling right leg (central photo). Ht. ca. 18 cm.

Carved jade (Fig. 117.9a). Wax cast in University Museum, Philadelphia, no. 12518; gift of R. H. Lam-born, 1894. Provenience and whereabouts of original unknown. Was apparently in Boban Coll., no. 229 in sale catalogue, which reads: "Impression in wax of an antique Mexican cameo. See descriptive note by de Waldeck at back. 15 by 10 cm." The de Waldeck label now illegible. Information kindly supplied by J. A. Mason.

It has seemed worthwhile to make record of this specimen because it is so fine an example of an important class of carved jades of the late Classic period (for discussion of these jades see Smith and Kidder 1951:35).

Copper bells (Fig. 117.10a). Set found by native in casual digging in the Motagua Valley across the river from Quirigua, Dept. Izabal. Several are badly distorted by pressure from within (Fig. 117.10a) lower left and. lower right, and a'. S. K. Lothrop (1952, Fig. 8) illustrates the one figured here at lower left of a, turned to show the actual bursting-out of the wall. He believes (Lothrop 1952:25) that this was caused by steam generated in molds that had not sufficiently been dried. He also believes, I think rightly, that this is evidence of local manufacture, because such very defective pieces would hardly have become articles of trade. The bells are of Lothrop's Type B-3. Ht. of a, lower left, 5 cm; others to same scale.



117.8. Miscellaneous archaeological specimens from Mesoamerica.

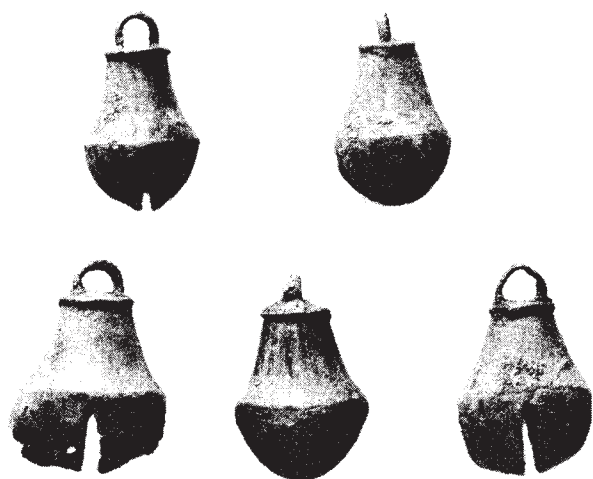


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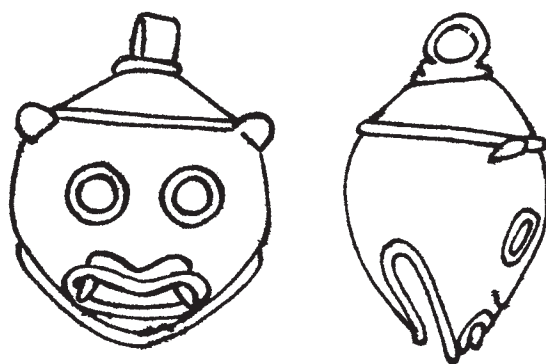


b

117.9. Miscellaneous archaeological specimens from Mesoamerica.



a



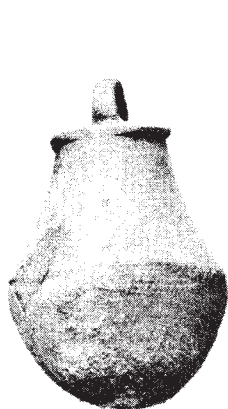
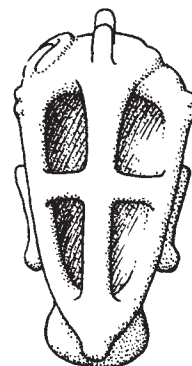
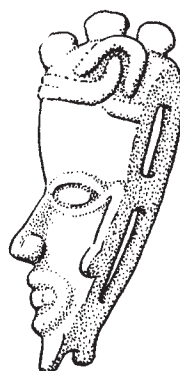
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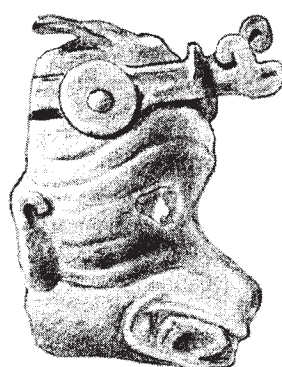
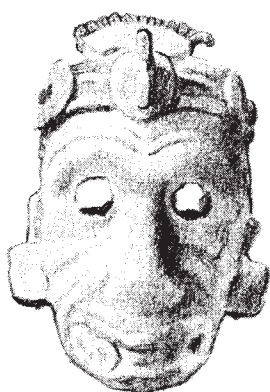
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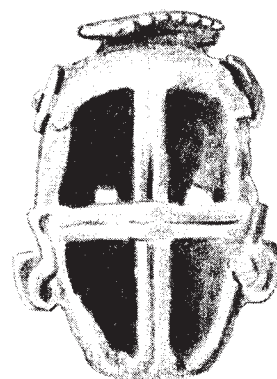
c



a''



d



117.10. Miscellaneous archaeological specimens from Mesoamerica.

Copper bell (Fig. 117.10b). One of six found in grave at Ixbobo, near Poptun, Dept. El Peten. Jaguar head seems to be represented, apparently in relief. I have not seen this or the other pieces in the set; present whereabouts unknown. Drawing, presumably natural size, shows it to belong to Lothrop's Type E. A bell of his Type B is in the National Archaeological Museum at Tegucigalpa, Honduras.

Copper heads (Fig. 117.10c, d). Specimen c is the best preserved of three very similar pieces in the collection of O.N.D. Phillips of Stann Creek, British Honduras, who is quite sure his late father acquired them at Wild Cane Cay. This hollow object still retains much of the tightly packed powdered

charcoal core over which the face was modeled in wax for casting *à cire perdue*. Drawing, natural size, by Mrs. Eugene C. Worman. Another almost identical copper head was found in a grave on Wild Cane Cay (Gann 1918:136, Fig. 83). Specimen d, formerly in collection of Hector Montano, present whereabouts unknown, was said to have been found on the island of Flores, Lake Peten, last stronghold of the Itza. Its close relationship to the foregoing is obvious. Natural-size drawing by Antonio Tejeda. Hollow copper death's-heads, like these in having no suspension rings, but unlike in that they have side-slits rather than open back crossed by bars, are illustrated by Lothrop from the Sacred Cenote (1952, Fig. 70).

Pottery Specimens from Guatemala I

Robert E. Smith

All save three (Fig. 118.4a-c, at present in the National Museum of Archaeology and Ethnology of Guatemala) of the 50 specimens herein illustrated came from the collection of General Frederico Ponce, who was at different times Jefe Politico of the Departments of Peten and Progreso. In 1944 Sr. Frederico Gonzalez acquired the collection, and that year I published an article (Smith 1944:39) in which were included five specimens reported to have been found on the north shore of Lake Peten Itza. These belonged to the Ponce collection; four of them (Smith 1944, Figs. 2g, h; 3a, b) undoubtedly came from the Department of Progreso, not from the Peten as I had been informed. They are typical of pottery from San Agustin Acasaguastlan (Smith and Kidder 1943). In the present lot, besides the three outside the Gonzalez collection, are a few that do not conform to our knowledge of Peten pottery; these (Fig. 118.1j, Antigua; 1, Progreso; Figs. 2e; ?; 3,k, ?) are given other possible sources or are questioned.

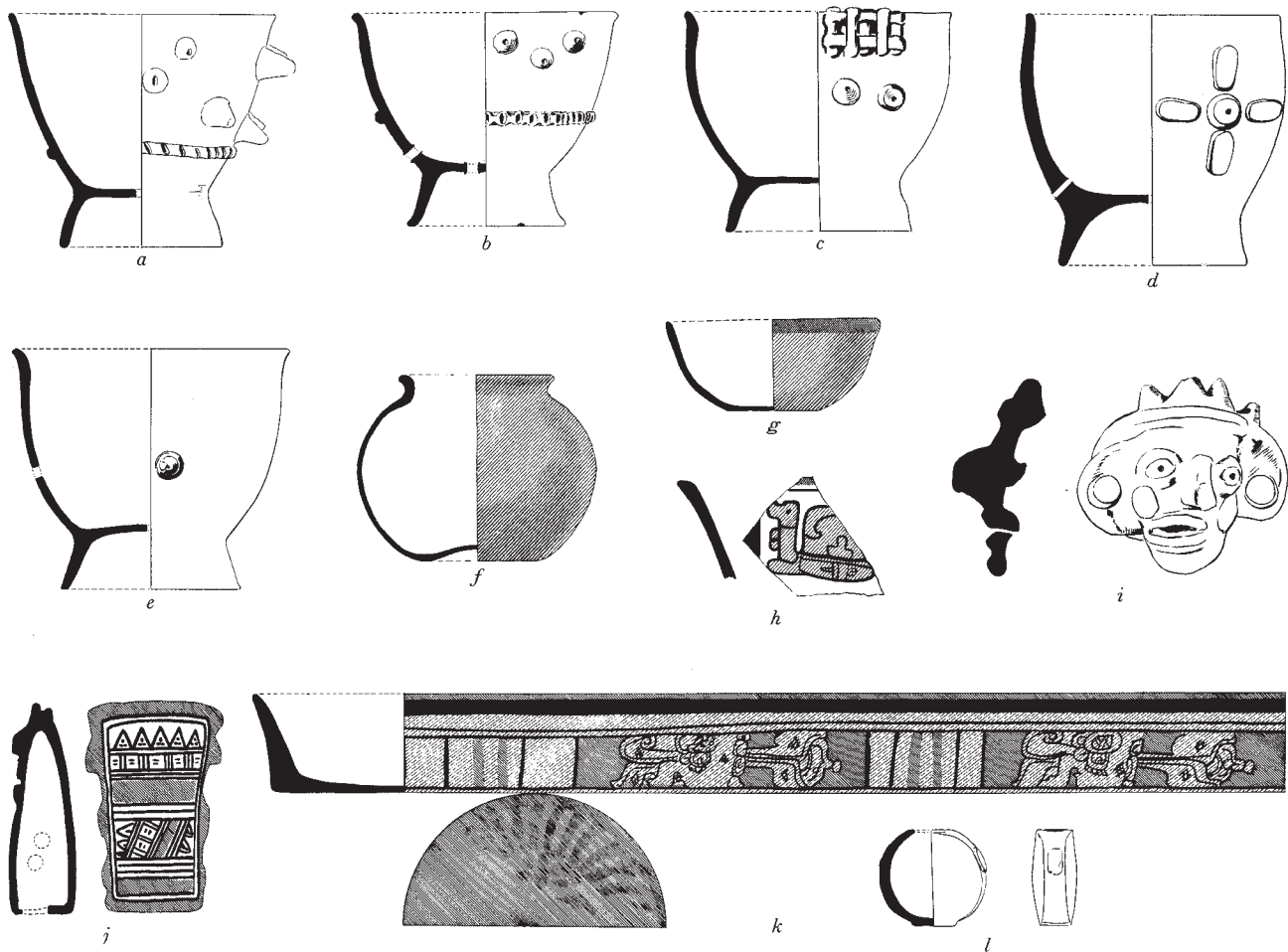
In spite of the lack of precise data as to the circumstances under which most of these specimens were discovered, the proveniences assigned them by their owners usually are correct. Furthermore, their cultural affinity generally is apparent. Among them are pieces that throw light on the technological processes or provide well-preserved examples of types hitherto known only in fragmentary condition. Consequently it is considered important to place these specimens on record.

Paintings and drawings are by Antonio Tejeda F. Scale of illustrations: Figs. 118.1 and 118.2, 1/4; Figs. 118.3 and 118.4, 1/3.

Fig. 118.1a-e. Unslipped gray to buff pedestal-based incense burners which resemble a Tepeu 3 type from Uaxactun (Smith, in preparation, Fig. 13m) more closely than they do similar examples from San Agustin Acasaguastlan (Smith and Kidder 1943, Fig. 22c-e, j). a. wall has appliqué spikes below which there is an encircling thumb-impressed fillet. While the clay was plastic, a circular hole was punched through the center of the floor; b. wall has a cluster of three appliqué spikes on at least two sides below which there is an encircling thumb-impressed fillet; and while the clay was plastic, circular holes were punched through the sides and the center of the floor; c. wall has appliqué spikes and a matlike ornament on one side (information lacking as to other sides), d. wall has an appliqué quatrefoil on one side (information lacking as to other sides). Circular holes were punched through center of floor and lower sides while the clay was plastic, e. wall has evidence of one spike (information lacking as to others), Circular holes were punched through center of floor and sides while the clay was plastic.

Fig. 118.1f. Jar, orange slip, low outcurving neck, globular body and a concave base. Atypical of the pottery of the Peten and Progreso save for slip color, which is more like that of the Peten.

Fig. 118.1g. Bowl, red-on-orange, flaring sides rounding to a flat base. Decoration consists of a broad red lip stripe on exterior.



118.1. Pottery specimens from Guatemala, I.

Fig. 118.1h. Probably a tripod dish, red on exterior and red orange-and-black-on-cream on interior. Decoration may be a broad glyph-like band on interior. This is a typical Tepeu 2 example (Smith, in preparation, Figs. 56o; 58b,7).

Fig. 118.1i. Probably the face of a Lacandon incense burner. It most closely resembles a type usually found to the south or east of Yaxchilan (Tozzer 1907, Pl. XVII; Fig. 2).

Fig. 118.1j. Rear view and profile of a hollow painted figurine (front view, Fig. 118.4d). There are vents in the side and base. This specimen, although from the original Ponce collection, probably came from nearer Guatemala City or Antigua, since it appears to be a Chinautla Polychrome type, as are two smaller specimens not of this collection (Fig. 118.4b, c).

Fig. 118.1k: Bowl (Fig. 118.2g) red-and-black-on-buff, outcurving sides which thicken considerably at base. Interior has broad red lip stripe on an orange slip; exterior has two panels with Serpent X and attached face (Ahau?) separated by parallel vertical stripes. The base has parallel stripes in contrasting red tones. This is a typical Tepeu 2, Uaxactun-style bowl. The Serpent X motif is usually associated with Tzakol and the Early Classic period, whereas the Ahau is a Late Classic feature.

Fig. 118.1l. Flask without neck, badly weathered. Has ornament on side and a ring base. Flasks are rare in Peten and therefore this specimen is more likely to have come from the Progreso region (Smith and Kidder, 1943, fig. 52).

Fig. 118.2a: Cylindrical vase, multicolor-on-cream. Interior has broad red lip stripe with a band



118.2. Pottery specimens from Guatemala, I.

of brown beanlike objects below. Exterior has a possibly functional glyph band and ceremonial scene with personage seated on throne conversing with two seated individuals facing him. An outstanding feature of this vase is a black background with decoration reserved in cream slip like that of the quetzal-decorated vase from Copan (Longyear 1952, Fig. 108a). Remarks: It is perhaps premature to say where this specimen originated. It has been suggested that the Progreso area is the most likely. I favor the Peten with the Alta Verapaz as second choice. There is the possibility, however, that these figure-painted vases were manufactured in only a few places specializing in this art and were widely traded throughout the lowland Maya area, western Alta Verapaz, and western Quiché. Uaxactun had a great variety of figure-painted cylindrical vases but none exactly like this. The Alta Verapaz, Quiché, and Motagua Valley vessels of this type each have a different style of interior decoration or slip. In this respect they all differ from Uaxactun, where various other interior decorative styles were encountered and among these one (Smith, in preparation, Fig. 2d) which has an almost identical interior border. Oddly enough, much of the exterior background of the Uaxactun vase is black with clusters of discs reserved in the cream slip.

Fig. 118.2b. Pottery drum. Orange polished slip all over exterior but thinner and less polished near larger orifice end. Interior unclipped. Exterior has horizontal red stripes framed by black lines. Vessel shows no wear. Late Classic, Tepeu 1, type a. Data on the distribution of drums will be contained in R. E. Smith's monograph in preparation on the pottery of Uaxactun.

Fig. 118.2c. Bowl with rounded sides. Orange polished slip all over. Interior has red lip stripe. Exterior has a black rim stripe with horizontal black line below, and a red and black central motif consisting of the "twist and bud" design also found in a cave at Pusilha on vessels of similar form (Joyce, 1929, Pl. XLIII, b, h). Late Classic, Tepeu 1 type.

Fig. 118.2d. Jar with outcurving neck. Orange polished slip. Interior has a broad lip band. Exterior has a red and black glyph band encircling the neck framed by red and black lines. Late Classic Peten type.

Fig. 118.2e. Jar with high neck, globular body and ring stand base. Buff polished slip on exterior. Horizontal red stripes and lines and a band of dotted arcs

on shoulder are all that remain of the decoration. The ring-stand base and high neck suggest a plumbate form. No good comparative material available.

Fig. 118.2f. Bowl, red-and-black-on-cream, with outcurving sides which thicken considerably as they approach the concave base. Interior has orange slip with broad red lip stripe and vertical stripes below. Exterior has a central band of S-shaped figures and dot-outlined ovoids framed with black lines and stripes. The base is bordered by a black stripe and encircled by a red stripe joined by a series of vertical red stripes (Smith, in preparation, Fig. 2m). Late Classic, excellent Tepeu 2 type.

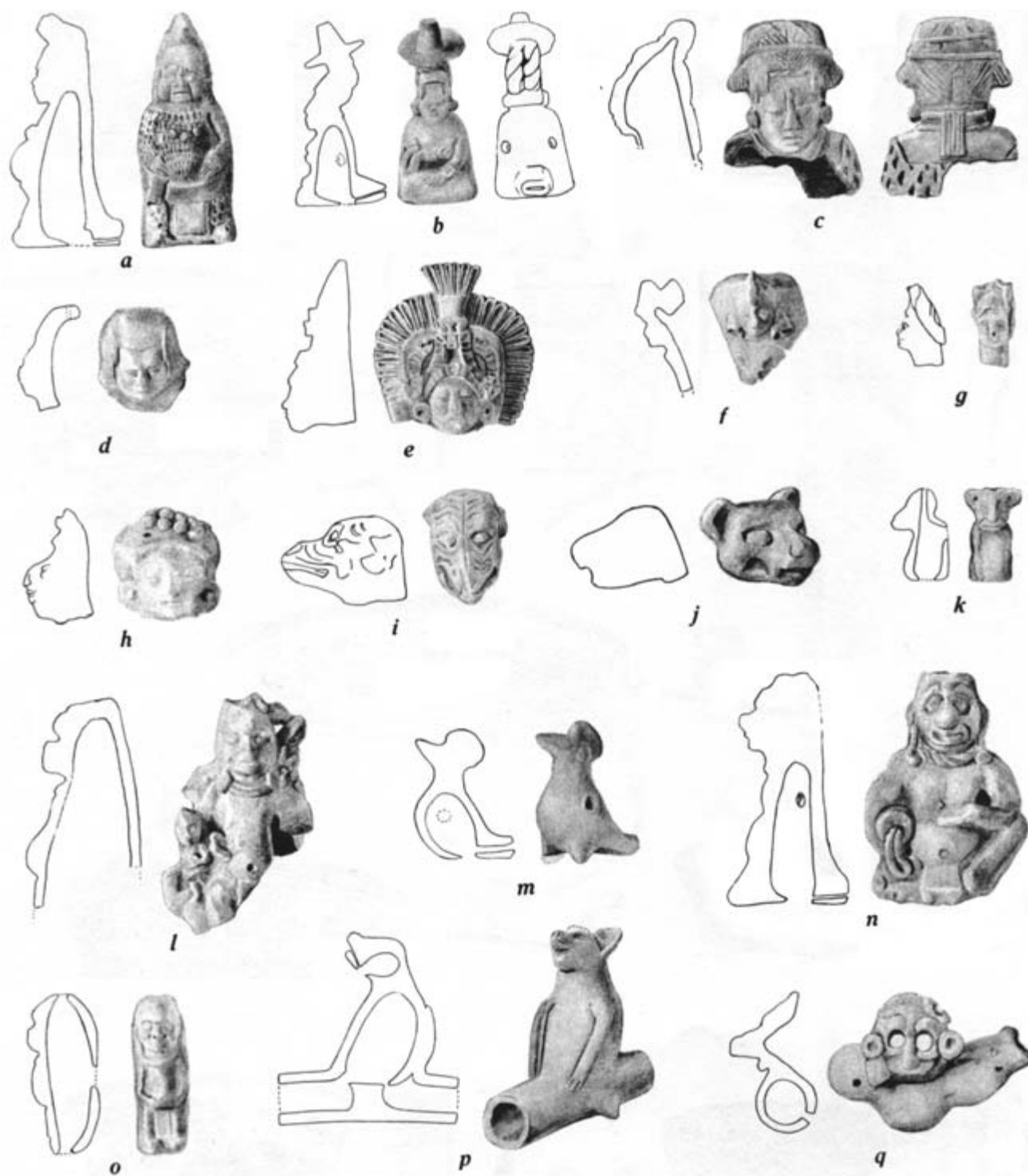
Fig. 118.2g. See figure 118.1k for profile and extended design.

Fig. 118.2h. Bowl, red-and-black-on-cream, with outcurving sides which thicken considerably as they approach the concave base. Interior has orange slip with broad red lip stripe. Exterior wall has a broad band of alternating forms of the kin glyph reserved in the cream slip and framed by black lines. Base has parallel stripes in contrasting red tones. Late Classic, excellent Tepeu 2 type.

Fig. 118.2i. Bowl, red-and-black-on-orange, with flaring sides. Interior has black lip followed by a broad red band. Exterior wall has broad band of alternating red and black bracket designs, and base has parallel stripes in contrasting red tones. Late Classic, excellent Tepeu 2 type.

Fig. 118.2j. Same as Figure 118.2f in form save for size and design except for minor details.

Fig. 118.3a-h: Unslipped and weathered mold-made human figurines, often whistles, Late Classic. A. whistle figurine of fat man wearing what may be quilted apparel. This type was found in Guatemala at Uaxactun (Smith 1936, Fig. 17, no. 5), Chisec (Dieseldorff 1926, Fig. 48), Temal near Chama (Dieseldorff 1926, Fig. 49), in British Honduras at Lubaantun (Joyce 1933, Pl. VIII, 19), and in Mexico at Cintla, Tabasco (Seler 1915:150, Fig. 17, upper center); at Oxkintok, Yucatan, a similar figure occurs sculptured on a stone doorway column (Shook 1940, Fig. 7). b. whistle figurine of seated woman wearing wide-brimmed conical hat, a type often encountered in the Peten at Uaxactun (Smith 1936, Fig. 17, no. 4) or Poptun (Smith 1950:13) and more rarely elsewhere at such sites as Copan, Honduras (Longyear 1952, Fig. 87h), and in the Comitán Valley of Chiapas, Mexico



118.3. Pottery specimens from Guatemala, I.

(Blom and La Farge 1926–1927, Fig. 348c); c. figurine, probably whistle, of woman with Classic features, stepped hairdo, and blouselike garment reminiscent

of a figurine from the Dieseldorff collection considered to be of Coban style (Smith 1952, Fig. 23b), d–h are all possible Peten types.



118.4. Pottery specimens from Guatemala, I.

Fig. 118.3i. Probably figurine headdress similar to one from Uaxactun (Smith 1936, Fig. 16, no. 16). Late Classic.

Fig. 118.3j. Solid jaguar head which might be part of headdress (Smith 1936, Fig. 16, no. 14) or the head of a jaguar figurine. Late Classic.

Fig. 118.3k. Small modeled animal figurine.

Fig. 118.3l. Moldmade monkey and young, possibly a figurine whistle. Late Classic.

Fig. 118.3m. Modeled bird whistle figurine, similar to one from Uaxactun (Smith 1936, Fig. 17, no. 8). Late Classic.

Fig. 118.3n. Moldmade grotesque, a whistle figurine. Late Classic.

Fig. 118.3o. Modeled monkey figurine.

Fig. 118.3p. Modeled doglike figure seated on a possible flageolet. Late Classic, Flageolets were found at Uaxactun (Smith 1936, Fig. 16, nos. 13, 18; Fig. 17, no. 14).

Fig. 118.3q. Modeled grotesque head attached to an ocarina. Probably Late Classic.

Fig. 118.4a. Cylindrical vase, black-on-gray, incised monkey panels separated by rectilinear guilloche panels. This vase was reported to have been found at Flores, Peten. It is similar to a Tepeu 3 specimen (Smith, in preparation, Fig. 43a, 6).

Fig. 118.4b. Hollow figurine, probably Chinautla Polychrome. Acquired in Antigua, Guatemala. Late post-Classic.

Fig. 118.4c. Hollow figurine, probably Chinautla Polychrome. Belonged to Sr. Luis Martinet of Guatemala City. Late post-Classic.

Fig. 118.4d. Hollow figurine, probably Chinautla Polychrome. Late post-Classic. For further information see Figure 118.1,1.

Fig. 118.4e. Tripod (?) plate, red-and-black-on-cream. Interior wall has red rim stripe and basal stripe outlined with black lines which frame a black glyph band. Exterior, vertical stripes in contrasting red tones, Typical Tepeu 2 style (Smith, in preparation, Fig. 56m-p).

Fig. 118.4f. Tripod (?) plate, red-and-black-on-orange, but otherwise very like e.

Fig. 118.4g. Fragment of plate floor, orange-and-black-on-cream showing. Design appears to be stars outlined with black, Tepeu 2 motif (Smith, in preparation, Fig. 39x,7).

Fig. 118.4h. Effigy bowl. The face and loop between the eyes is reminiscent of like features associated with vessels from Uaxactun in the Peten (Smith, in preparation, Fig. 75b,3), Rocnima and Panzamala in the Alta Verapaz (Dieseldorff 1926, Figs. 175 and 176 respectively). Late Classic (?).

Fig. 118.4i: Flageolet (?) with effigy human head at one end. Late Classic.

Fig. 118.4j. Cylindrical stamp. Possible roller stamps were found at Uaxactun in Mamom refuse (Kidder 1947, Fig. 59c; Ricketson and Ricketson 1937, Fig. 145e, f).

Fig. 118.4k. Small jaguar-face mask (?) No trait suggestions as to its provenience or cultural period.

Drawings of Glyphs of Structure XVIII, Palenque

Miguel Angel Fernandez

WITH NOTES BY HEINRICH BERLIN

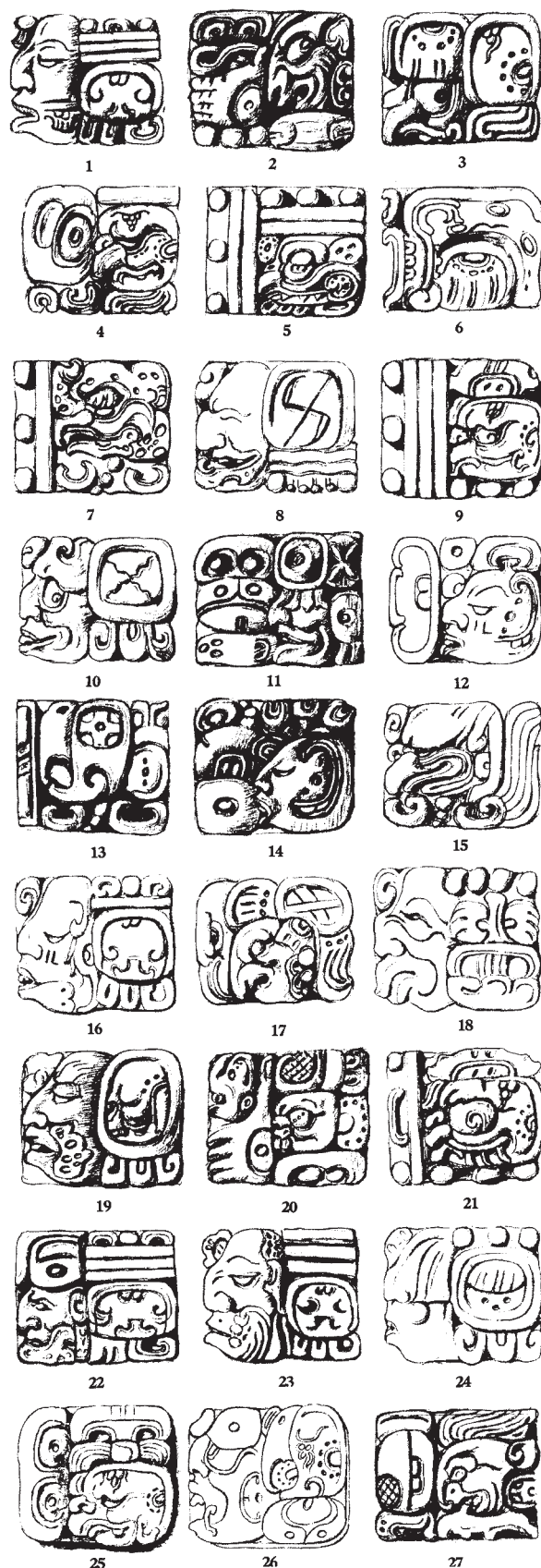
During his ten years' work at Palenque from 1935 to 1945, the late Miguel Angel Fernandez, artist rather than notebook-filling archaeologist, used his pencil primarily for drawing new finds. Through the courtesy of his heirs it is possible to present his drawings of the glyphs of Structure XVIII at Palenque; photostats of a few drawings of material from other parts of Palenque are on file at Carnegie Institution's Department of Archaeology, but many are still missing. The publication of those of Structure XVIII will furnish the student of glyphs with fresh material and at the same time fix permanently the exact location where they were found.

These 54 stucco glyphs (Fig. 119.1-3) were found in the debris by me in 192 (Berlin 1944). They measure 13 by 14 cm. To establish their positions, the glyphs in Blom's drawing (Blom and La Farge 1926(1), Fig. 135) were labeled, from left to right, A, B, and so on. Thus each glyph is named first with a letter referring to the one of Blom's series under which it was found. Glyphs found farther to the left of A were named A/. Of the two numbers which follow, the first measures in centimeters the vertical height from the glyph to the inset step of the vault; the second measures the distance from the rear wall to which the glyphs originally adhered.

I studied the numerical part of Glyphs 33, 37, and 49, and suggested in Note 33 of this series that it was

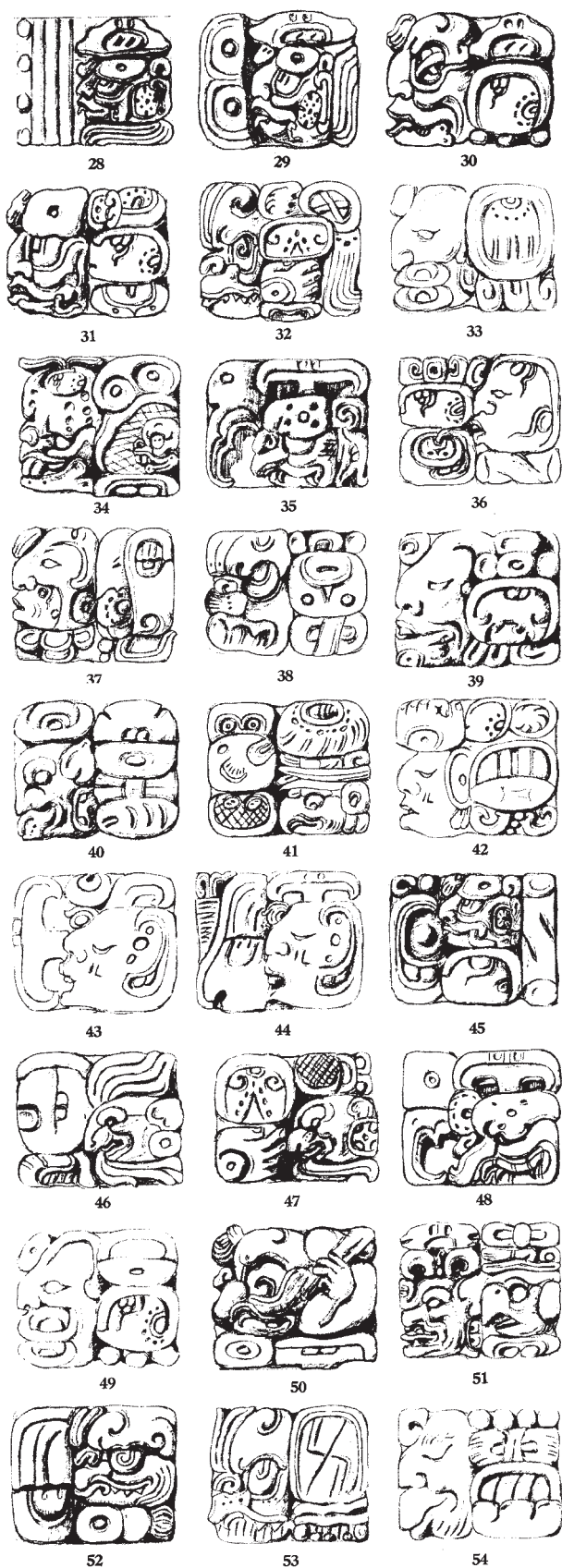
a head variant of number 11. Later, J. E. S. Thompson (1950:135) established as distinctive of number 11 the presence of the Caban glyph. Now, the drawing of Glyph 37 shows the rings (which I thought to be the distinctive features) and, on the cheek, the Caban sign, not shown on my previous illustration (1944, Fig. 1c), which was drawn from a poor photograph. Hence the tentative identification made ten years ago is now definite for this particular case. I am, therefore, of the opinion that despite the absence of the Caban sign in the three other cases discussed in my earlier paper, they still may stand for number 11.

Of the glyphs in Structure XVIII found *in situ* by Blom, only sketches have been published. Most of these are now in the storeroom at Palenque, and were photographed, together with those found in 1942 and here illustrated, by J. Eric S. Thompson. As details of some of Blom's drawings are not too clear and fail to illustrate the beauty of their delineation, I include photographs of those that survive (Fig. 119.3, nos. 55-73). For identification purposes those grouped below the main band are given the corresponding letters in italics with numbers corresponding to the vertical position. Those illustrated are: B, C, D (part), E (part), F, I (part), K, L, M (part), A, B, D, E1, F1, G1, G3, H1, 12, L2 (reversed in Blom's drawing). It will be noticed that several have been damaged since Blom drew them.



119.1. Glyphs of Structure XVIII, Palenque.

1.	A/-270-20	Distance number 17.2
2.	A/-250-15	
3.	A/-240-80	13 haab
4.	A/-270-40	15 haab
5.	A-270-60	Distance number 13.13.
6.	B-250-30	
7.	B-260-20	Distance number 8 tuns
8.	B-260-65	18 Yax
9.	B-255-25	Distance number introductory glyph.
10.	E-170-0; B-200-30; C-190-0	Found in three fragments, 4[?] Etz'nab.
11.	D-255-0	
12.	E-205-10	
13.	F-270-90	5 Kayab
14.	F-250-45	
15.	F-240-40	
16.	F-260-75	Distance number 6.18
17.	F-250-40	
18.	G-250-40	
19.	H-215-20	9 Eb or 9 Cimi
20.	H-210-25.	
21.	H-245-40	7 Yax
22.	I-260-55	Distance number 16.15
23.	I-200-80	Distance number 15.9
24.	I-255-60	Forward to 3 Ix.
25.	I-245-20	
26.	I-255-50	4 Kayab?
27.	I-255-30	



119.2. Glyphs of Structure XVIII, Palenque.

28.	J-250-60	19 Yaxkin
29.	J-250-20	0 Yaxkin
30.	J-250-30	16 Yax
31.	J-250-30	
32.	J-250-65	
33.	J-240-30	11[?] Imix
34.	J-255-70	
35.	J-250-85	
36.	K-?-?	
37.	K-250-45	11 Kayab
38.	K-250-60	2 kins
39.	K-250-70	Distance number 0.0
40.	K-260-30	
41.	L-240-0 (?)	
42.	L-210-60	Distance number 2 katuns
43.	L-250-10	
44.	L-260-55	
45.	L-240-10 (?)	
46.	M-245-30	
47.	M-250-50	
48.	M-250-40	
49.	M-250-0	11 Ch'en
50.	M-250-20	
51.	O-235-40	
52.	?-?-?	Count forward to.
53.	?-?-?	Distance number introductory glyph
54.	?-?-?	



55



56



57



58



59



60



61



62



63



64



65



66



67



68



69



70



71



72

Memoranda on Some Dates at Palenque

J. Eric S. Thompson

In a discussion of lunar systems at Palenque, Heinrich Berlin (1943) argued that Palenque had adopted the uniform system of reckoning moons. The evidence was not entirely satisfactory because of the two dates which he used to support his idea: one (Templo Olvidado) fell outside the period of uniformity with an IS 9.10.14.5.10 3 Oc 3 Pop (Berlin 1944), and the other was incomplete.

This incomplete record was a fragmentary text found in 1942 by Miguel Angel Fernandez in clearing the substructure of the Temple of the Sun. Berlin suggested that it be restored as 9.12.19.14.12 5 Eb 5 Kayab. In that case, as he pointed out, the lunar date (3C 11D) would conform to the uniform system. Unfortunately, there was the doubt as to whether the 5 ? Kayab which alone survived of the date could be amplified to 9.12.19.14.12 5 Eb 5 Kayab.

In the course of a visit to Palenque, as guest of Senor Alberto Ruz and the Instituto Nacional de Antropologia e Historia, in July 1951, I noticed in the archaeological storeroom a fragment of stone with eight glyph blocks on it (Fig. 120.11), and this fitted to the piece already described and illustrated by Berlin.

The first fragment ends with Glyph X4 of the lunar series. The new piece commences with Glyph B, next in sequence in the lunar series, and this is followed by Glyph A9.

A distance number of 1.7.11 leads to 1 Imix 19 Ch'en, the juxtaposed glyphs indicating in abbreviated form that this is a basal position in the 819-day cycle. The only position in Baktun 9 which this CR

can hold as a basal position in that cycle is 9.12.18.7.1. Accordingly, the text can be restored:

9.12.19.14.12	5 Eb 5 Kayab (moon age 3C, 11D, A9)
1.7.11	Subtract
9.12.18.7.1	1 Imix 19 Ch'en

The discovery of this fragment fully authenticates Berlin's reading, and shows that he was right in his supposition that there was a period of uniformity at Palenque. Actually, his opinion has been since proved by the discovery of records in the uniform system on the tablet recently discovered by Ruz (Thompson 1952).

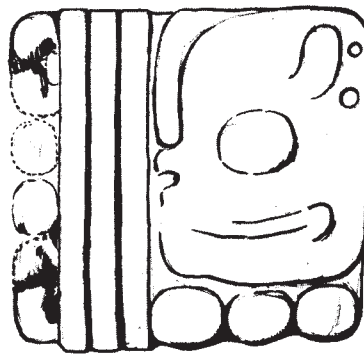
As in other cases, there is a count backward of less than two tuns to reach the basal date. Only three interpretative glyphs are recorded.

I believe that it is possible that the same IS, but this time with a lunar series perhaps not in conformity with the uniform system, may have once been recorded on the two outer pilasters of the Temple of the Sun.

Among the drawings of Miguel Angel Fernandez in the possession of his heirs (see Fernandez and Berlin 1954) are several of stucco glyphs recovered from the debris at the foot of the north and south pilasters (Fig. 120.1, nos. 2-13), and in that connection I am indebted to Berlin for reminding me that Waldeck's drawing of the front of the temple (Brasseur de Bourbourg 1860, Pl. 26) shows four of the glyphs of the IS *in situ*.



1



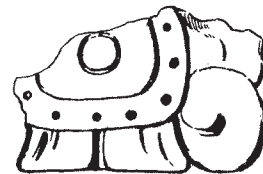
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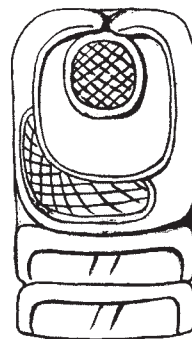
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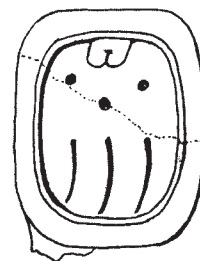
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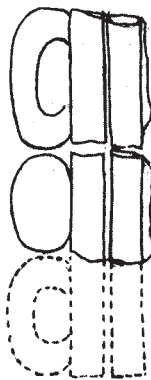
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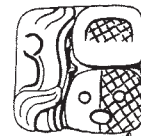
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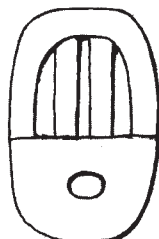
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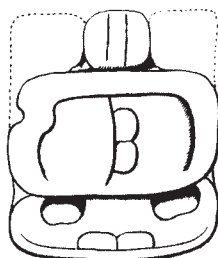
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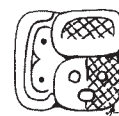
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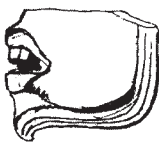
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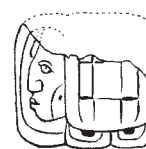
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19



20



21

The Waldeck drawing illustrates two medallions one above the other, each containing four glyph blocks, but Catherwood's drawing and Maudslay's photograph make it clear that there were six glyph blocks in the lower medallion. Waldeck shows an IS introductory glyph (A1-B2) with a youthful face as the variable element, a clear baktun sign with a coefficient which is probably meant to be 9 (A3), and a katun sign with a coefficient which is 12, 13, or 14 (B3).

The only glyph in the lower medallion is the tun sign occupying the first glyph block (A4). Waldeck drew it with three bars to the left and then crescent, dot, crescent, dot. Such an arrangement would be most irregular. Luckily, we have Fernandez' drawing of this glyph (Fig. 120.1, no. 2). The numerals had clearly suffered in the century between these two drawings. He restores Waldeck's second crescent as a dot and his second dot as a crescent. However, from what original remains in Fernandez' drawing, both his crescents are open to question, and a combination of Waldeck's and his drawing would fit either 17 or 19.

Fernandez also recovered from the south pilaster debris the following glyphs and fragments: two damaged coefficients restorable as 12 and 14 respectively, and part of a glyph which might be G3 (Fig. 120.1, nos. 3–5).

From the debris at the foot of the north pilaster Fernandez recovered Glyphs X4, B, and A10 of the lunar series, an Imix, a tun sign, a Muluc compound, a coefficient restored as 11, and part of a head, conceivably that for number 5 (Fig. 120.1, nos. 6–13).

Fernandez' glyphs are either to scale or half scale, and are so marked. It is clear that the glyph block was 22 cm high and 22–24 cm wide, and that Glyphs X4, B, and A10 occupied half a glyph block each.

The present heights of the Imix and tun signs (16 cm and 15.5 cm respectively) show that neither is complete. Fernandez tentatively attached the coefficient of 11 to Imix, but that requires restoring the pedestal of Imix as 6 cm high. I believe that the Imix was not a day sign at all, but formed part of an Imix compound, perhaps the Imix comb–Imix sign. Similarly there is room to place a large coefficient to the left of the tun sign and the katun element above.

A serious difficulty is that, according to Fernandez, the detached coefficient of 14 from the south pilaster has a height of only 15 cm. As there is room on the south pilaster for only three glyphs or glyph blocks in addition to the IS, and those were probably the day sign, month sign (?), and Glyph G3, it is hard to see how this coefficient can be anything except a period or month sign coefficient. Unless it fell from the adjacent pilaster, which had an inverted L of glyphs, Fernandez must have made an error in the scale.

The youthful head in the IS introductory glyph strongly favors a position in the month Kayab, although Zec and Mac are weak possibilities. To derive the IS from what we have can not be more than a guess, but I would suggest the reading: 9.12.19.14.12 5 Eb 5 Kayab G3 11D, 3 or 4 C, X4, B, A10. The parts [italicized] have some support in Waldeck's or Fernandez' drawings. The IS, as we have seen, occurs on a stone tablet from the substructure of the Temple of the Sun, and appears as a CR on the Death Head monument; on Blom's Tablet 1, discovered at the back of the Pyramid of the Sun; on Blom's Tablet 2, found on the west side of the Pyramid of the Foliated Cross and correctly assigned to its present position by Berlin (1945), and by the stairway of the Temple of the Cross. The fact that this date is a slogan, to use Teeple's vivid term, at Palenque makes it more probable that the IS has been correctly interpreted.

Accepting the date as correctly read, let us compare its lunar series with that on the stone text from the substructure:

Stucco text, Pilasters of Temple of Sun	G3, 11D, 3 or 4C, X4, B, A10
Stone text, substructure of Temple of Sun	G3, 11D, 3c, X4, B, A9

As Glyph A usually has a coefficient of 10 when Glyph C has an odd-number coefficient (approximately 8 to 1 chance during the period of uniformity; slightly less than 3 to 1 chance outside that period), it is probable that in the stucco text the missing Glyph C had a coefficient of 3.

Apparently, then, we have two lunar series for the same date which differ only in that one, which conforms to the moon numbering of the period of uniformity, has A9 instead of A10 which one would normally expect. The other (the stucco text) has the more usual A10, but because of the disappearance of Glyph C, we do not know for certain that its coefficient was 3, although it must be 3 or 4, and inherent probability calls for 3C.

If the stucco inscription is correctly read, these two texts may record the adoption of the uniform system at Palenque. Copan recorded the adoption of the new system with the IS 9.12.8.3.9; Piedras Negras and Naranjo chose respectively 9.12.2,0.16 and 9.12.10.5.12, and both cities recorded their starting date twice, once in the uniform system and once in the system each previously used. Palenque, if our decipherment is correct, chose 9.12.19.14.12. All four fall in Katun 13 (the double date at Yaxchilan seems too late to record the introduction of the uniform system there). As each city seems to have had its

own system of grouping moons prior to the period of uniformity, the nature of the change involved in a shift to the uniform system varied. At Piedras Negras the coefficient of Glyph C and the age of the moon both decreased by one and the coefficient of Glyph A dropped from 10 to 9. At Naranjo the coefficient of Glyph C increased by one and the moon age decreased by a day, and there was a rise of Glyph A from 9 to 10. At Palenque, if our ideas are correct, the change was accompanied only by a substitution of A10 by A9 (or vice versa), and conceivably by a change from C4 to C3. Unfortunately, because of the uncertainty surrounding the defective stucco text, it is not possible to place much reliance on this as an example of double-dating to usher in the uniform system. If the missing Glyph C on the stucco inscription recorded C3, as is probable in view of the record of A10, both the independent system at Palenque and the uniform system happened to agree at that particular date on the number of moons. Such an agreement does not occur in other double dates, but there is nothing to rule out chance agreement between the two systems. In that case, it is not possible to say which of the two combinations, C3 and A9 or C3 and A10, represents the uniform system.

A matter of some interest is that if the fragmentary glyph is correctly identified as G3, the same mistake of recording G3 instead of G4 occurs in both texts. The fragmentary tun sign is perhaps restorable as 13 katuns.

One small glyph, a tun sign or perhaps an irregular version of Beyer's serpent segment, was also found in the debris near the south pilaster. As it is only 9 cm high and 9 cm wide, I suppose it fell from the adjacent pilaster. This and detached glyphs from the central pilasters are illustrated (Fig. 120.1, nos. 14–21).

The defective stucco inscription on Pier A of House A of the Palace has attracted the attention of both Beyer (1936) and Berlin (1945). The identification of the head numeral for 11, made since these decipherments were published, throws fresh light on the subject, for the head attached to the katun sign of the IS is clearly that of the number 11. The decipherments offered in the two papers must, accordingly, be rejected.

Berlin noted the faint outline of the hooked nose and tun headdress of the god of number 5 in the head attached to the kin sign, but he believed that a jawbone, converting the head to that of 15, was not present. I, on the contrary, felt strongly that that element was discernible in Maudslay's published photo. After the decipherment, given below, had been made, Berlin, with whom I had discussed the matter, re-examined the head in the course of a

recent visit to Palenque. He informs me that he is now convinced that the jawbone is present. We have, then, the following:

9.11.?.?.15	? Men 8 Zec
-------------	-------------

There is a further check. Glyph D of the lunar series (here the up-ended frog found elsewhere at Palenque in replacement of the normal forms of Glyph D) appears without a coefficient. Accordingly the moon age must be from 20 to 29 days, or, possibly, 0 days.

There are only two dates in Katun 11 with Men on 8 Zec with moon age between 20 and 29 days or at Maya new moon:

9.11.6.12.15	9 Men 8 Zec, moon age 23.8–26.3
3.9	
9.11.6.9.6	5 Cimi 19 Pop

and

9.11.14.14.15	4 Men 8 Zec, moon age 20.3–22.8
3.9	
9.11.14.11.6	13 Cimi 19 Pop

The higher figures for moon age are calculated from the table compiled by Lawrence Roys (1945); the lower figures are computed from the moon age of 19 days given at Palenque for the IS 9.12.6.5.8.

The little that remains of Glyph Block A5 might indicate G3F, in which case the first reading must be correct. However, the identification is far from reliable. It may or may not be significant that 9.11.6.9.6 corresponds to March 19, A.D. 658 in the 584283 correlation.

The dates following the IS of the hieroglyphic stairway of the Palace are somewhat eroded. The most acceptable reconstruction would appear to be:

A1-A4	9.8.9.13.0	8 Ahau 13 Pop
B5	12.9.8	
	9.9.2.4.8	5 Lamat 1 Mol
A6	2.12.3.3	Add to IS
A6-C1	9.11.1.16.3	6 Akbal 1 Yax
C4	9.11.6.16.11	7 Chuen 4 Ch'en

The reading of the IS and of the 5 Lamat 1 Mol date has been generally accepted for many years. Date 3 appears to follow the practice common in other parts of Chiapas of counting from the IS, not from the date last reached.

Snares and Traps in Codex Madrid

Jose Luis Franco

Codex Madrid contains several divinatory almanacs (pp. 42c, 44–49, 90a–92a2, 92a3–93a2), with illustrations of animals in traps. Of the 76 animals pictured, 20 are deer, two are peccaries, two are turkeys, and two are armadillos. I follow the usual identification of the animals, a topic extensively discussed and, I believe, settled by now. The matter of traps, though, has hardly been considered, the only detailed discussion, to my knowledge, being that by Cyrus Thomas (1882:97). Thomas correctly identified the snares (Fig. 121.1, nos. 1–4), but only suggests the necessity of some kind of triggering device. Contradicting Brasseur de Bourbourg, he thinks the trigger might be the curved element in the lower part of 121.1, no. 3. He explains 121.1, no. 10 as a pitfall “lined around the sides with upright pieces of wood.” We shall see that this is not correct.

In the belief that such knowledge could perhaps be helpful in the interpretation of some glyphic matters, I have had a special interest in the functioning of these traps, but the high conventionalization of the drawings in the codex was a very great obstacle to successful analysis.

Some years ago I was fortunate enough to meet Juan de Dios Rosales, who was then completing a very exhaustive ethnological investigation of his native region in the Tzutujil country of Guatemala. This study, “La cultura material de un pueblo Tzutujil: San Pedro de la Laguna,” will be published by the government of Guatemala.

Rosales asked me to draw the illustrations for his book. On accepting, I found that his “trampas,

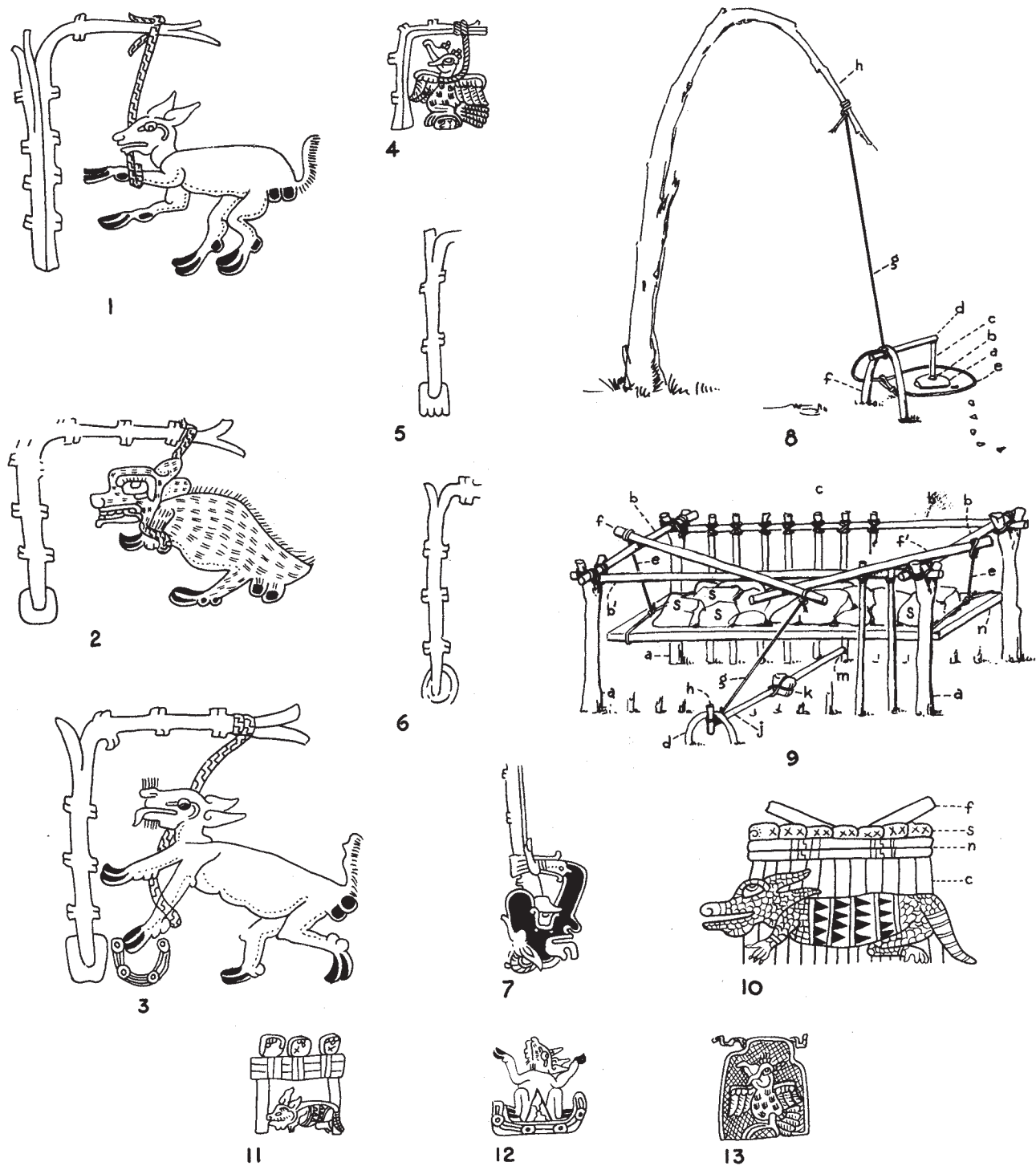
instrumentos de caza y pesca, recoleccion y armas” contained the data for which I had been searching, although subsequently I discovered similar material in Blom and La Farge (1926–1927:352), Wisdom (1940:74–77), and Thompson (1930:87).

There is nothing very special about the traps under discussion, they are very common ones, but in order to reduce to a minimum the imaginative factor of the analysis I needed what I now have: a precise, comparable, and well-illustrated documentation containing material analogous to the codex, and coming from an ethnic group known to be more or less directly related to the makers of the manuscript.

There are four types of traps in Codex Madrid: snares (using as a motor agent a sapling), deadfall traps, pitfalls, and nets.

Snares. Most of the snares in the codex have caught a deer (Fig. 121.1, nos. 1, 3). In two instances the captured animal is a peccary (Fig. 121.1, no. 2 and Madrid 93a1) and in the remaining one a turkey (Fig. 121.1, no. 4). These traps, as well as all others, picture only the most indispensable elements sufficient for their ready identification by people who knew them in their daily experience. Another factor contributing to the oversimplification is the very small space allotted to the illustrations in several of the almanacs. For this reason, the smallest and most complicated component, the trigger mechanism, had to be eliminated.

Among the Tzutujils, Rosales found in use the snare illustrated in Fig. 121.1, no. 8. As in the case of



121.1. Snares and traps: (1–6) snares; Madrid 45b, 49a, 49b, 91a3, 44a, 49c; (7) the god of hunting supports the sapling on his head; Madrid 45c; (8) snare used by present-day Tzutujil; (9) Deadfall trap used by present-day Tzutujil; (10, 11) deadfall traps; Madrid 48a, 91a1; (12) pitfall trap; Madrid 92a1; (13) net trap; Madrid 93a2.

Fig. 121.1, no. 4, this was for catching fowl. We may then, at least for this particular case, safely infer that the ancient Maya traps worked similarly.

Fig. 121.1, no. 8a, is a little flat stone, in the direction of which the bird is lured by a row of corn grains. The trigger proper is a short stick c, maintained in

position by the downward pressure exerted by d, which is tied with the cord g to the bent sapling h; f is a tough stick bent and solidly implanted in the earth. Between c and a, is another grain, b, which serves as bait. When the bird tries to eat b, c slips sidewise, permitting d to pass through f. This action sets free h, which pulls g, closing the noose around the neck of the prey and lifting it off the ground.

In Codex Madrid some of the saplings have a more or less round object at the foot, which perhaps is simply an indication of the ground, but this is only a possibility (Fig. 121.1, nos. 2, 3, 6; I include also Fig. 121.1, no. 5, which has a different attachment). In Fig. 121.1, no. 7 the black god of hunting supports the sapling on his head. Elsewhere in the codex the sapling is transmuted into a scorpion (e.g., Madrid 48c), which we know to be one of the aspects of the black god through other indications in the same manuscript (Madrid 79a; Thompson 1950:76, 77).

For the capture of quadrupeds this trap cannot be used as it is, but there are many ways in which the trigger can be placed horizontally (as in Fig. 121.1, no. 9). It can be set on the path used by the animal, so that when it is sprung it will catch the animal by the leg, as in Figs. 121.1, nos. 1, 2, and 3. Gann (1918:24) mentions another snare from Maya territory. His description, which is not very clear and is not illustrated, runs as follows:

“... A path frequented by game in going to and from watering places is found; along this is dug a shallow trench opposite a good springy young sapling; two stakes are driven in, one on each side of the trench, the one farthest from the tree being crooked at the top. A piece of henequen cord, provided with a noose at one end, and with a stick long enough to extend from one stake to the other firmly tied by its middle above the noose, is attached to the top of the sapling by its other end. The sapling is then bent down and held in place by the stick above the noose, which is fixed lightly between the crook in one stake opposite to it, the loop hanging suspended between the two. Lastly, a number of sticks and leaves are scattered lightly over the trench and beside the stakes and loop. Animals coming along the run are very apt to put their necks in the loop, and by pulling on this, to release the cross stick, whereupon they are immediately suspended in the air by the jerking back of the bent sapling. Animals of all sizes, from rabbits to tigers, are caught in traps of this kind...”

This description is very useful because, I think, it explains very neatly the element at the right of the tree in Fig. 121.1, no. 3, as the trench above mentioned. A foot of the deer is in it. This device has commonly been understood as “running water.” I do not

accept this interpretation; I believe it means “a cavity in the ground, a hole,” and in a future paper I shall discuss this matter in some detail.

Deadfalls. There are two illustrations of these in Codex Madrid, and in both of them an armadillo is the prisoner. One is drastically simplified (Fig. 121.1, no. 11), but the other (Fig. 121.1, no. 10) is drawn with sufficient detail to permit a safe identification with the Tzutujil trap in Fig. 121.1, no. 9.

This trap is basically a cage with a falling roof, open at the two shortest opposite sides. The bars c are partially suppressed at the front of the drawing to expose the mechanism. The Maya draftsman also took the same measure in order to show the captured animal.

The trigger system of this trap is based on the same principle of the snare trap. The stick j, which has the bait k tied to its center, is precariously supported by the pressure exerted through it by h, against one of the bars c at the point m. A cord g connects h to the lever f. This lever f rests on the stick b, supporting one end of the board n, which is weighted with several heavy stones s. The other end of n is supported by the other lever f', which is simply put under f. When the animal which may enter at either end tries to eat the bait, is caused to slip out of position. This unlocks h, causing, by the release of the levers, the loaded board to fail upon the intruder.

Once the trap closes, it is evident that the levers may look as in Fig. 121.1, no. 10. The recognizable elements of Fig. 121.1, no. 10 are marked with the same letters as in Fig. 121.1, no. 9. In a future paper I shall discuss the important point that the stones on top of the trap are represented by Cauac glyphs.

Pitfalls. There is only one pitfall illustrated in Codex Madrid (Fig. 121.1, no. 2). A hole is dug in the ground large enough to hold the hoped for prey; then, to refine the trap, one or several pointed stakes are erected at the bottom of the pit, and the whole is covered with frail sticks and sufficient foliage. The cavity in the ground is represented as in Fig. 121.1, no. 3, but a pointed stone (the triangular *edz'nab* penetrating the deer), is used instead of the stake, a substitution practiced by other peoples.

Net trap. In Fig. 121.1, no. 13 is reproduced the only one of this type in Codex Madrid. To my knowledge, no net trap from the Maya area which could be correlated with that of the codex has been described. What is clearly a different device is described by Rosales:

“... to catch doves, partridges, etc., they build a small square corral with sticks driven in the ground. It is about 50 cm on each side, and of equal height. They roof it similarly with sticks, and one of the sides, which has been left open,

is covered with a loose net woven of horse hair. The bait is placed inside the corral, near the net. When the bird tries to reach the bait, squeezing his head through the net, he is caught. These traps are placed around the cultivated fields.”

Two New Gallery-Patio Type Structures at Chichen Itza

Karl Ruppert and A. L. Smith

While at Chichen Itza, April 5 to 14, 1954, for the purpose of locating and examining house mounds, we found two new gallery-patio type structures. Thirteen structures of this type are now known at Chichen Itza, but so far none has been reported from any other site.

In looking for house mounds it was necessary to examine inconspicuous terraces and platforms where no large mounds are indicated or identified by numbers on the map (1952, Fig. 151). Thus some areas that had not been seen since the map was made in 1924 were examined with considerable care.

One of the new structures lies 187 m east and 238 m south of the northwest corner of grid 5D. It has been given the number 5D7 (Fig. 122.1a). The other lies 182 m east and 432 m south of the northwest corner of grid 4E and has been given the number 4E3 (Fig. 122.1b).

STRUCTURE 5D7 (FIG. 122.1A).

PLATFORM

Condition. No platform indicated, although a low one may be present and now covered with debris.

GALLERY

Condition. In poor state of preservation. No end walls seen. Gallery indicated by miscellaneous column drums apparently not in position. Small amount of debris. No vault stones seen.

PATIO

Condition. Only traces of walls exposed.

Size. Interior 10.2 m by 11 m. Average thickness of walls 60 cm.

Façade. None exposed.

Interior. Some column drums lying about. Doubtful if any are in position. Diam. of drums 60 cm. Area in middle of patio may be slightly lower than around edges.

SHRINE ROOM

Condition. In poor repair.

Location. On north side of patio.

Size. Interior 2.60 by 3.50 m.

Interior. No vault stones seen.

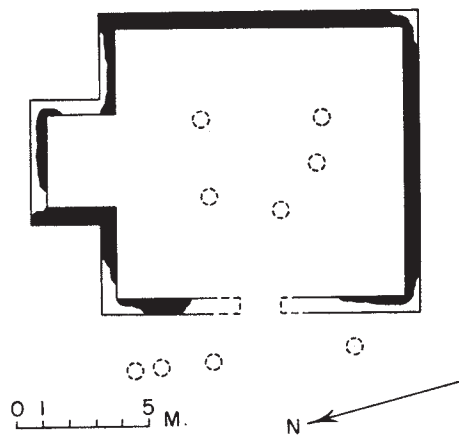
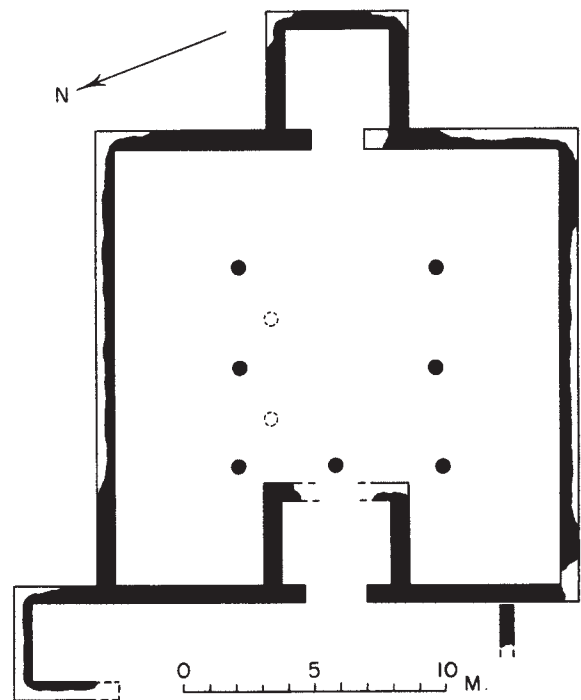
STRUCTURE 4E3 (FIG. 122.1B)

PLATFORM

Condition. Presence of platform not definitely indicated, although gallery is slightly higher than terrace to west.

GALLERY

Condition. In poor state of repair. End wall at north. This wall turns inward toward south, giving the gallery an interior width of 3 m. No column drums seen. Near south end of back wall of gallery, a fragment of a secondary wall projects 1.6 m.

**a****b**

122.1. Gallery-patio type structures: (a) Structure 5D7, Chichen Itza, plan; (b) Structure 4E3, Chichen Itza, plan.

PATIO

Condition. Fair, with much wall exposed.

Size. Interior 16.5 by 17 m. Walls 70 cm thick.

Façade. None exposed.

Interior. Entrance from gallery, 2.40 m. wide, leads into an antechamber measuring 3.25 by 4.20 m. Opening into the patio proper from this chamber must have been on east side, although jambs of a doorway were not found. Area in center of patio lower than around edges. Some column drums, 50 cm: diam., seem in position.

SHRINE ROOM

Condition. In poor state of preservation. No façade exposed.

Location. On east side of patio.

Size. 3.7 by 4 m.

Interior. No vault stones noted.

Before the discovery of the two new buildings, eleven structures of the gallery-patio type were known at Chichen Itza.

Of the thirteen now known, eight face west, three south, one east, and one north.

No definite information is available as to platforms supporting the new structures, but it seems

likely that the latter rose slightly above the great supporting terrace. In one structure the gallery is definitely of greater length than is the patio; this is the ninth example of a T-shaped building plan, the gallery forming the crossarm of the T.

Str. 4E3 has an antechamber opening from the gallery and built into the patio. Excavations would be necessary to determine whether it is contemporaneous with the gallery or is a later construction. The nearest counterpart to this antechamber is in Str. 5B7. The latter has an antechamber, 2.2 m wide, extending across the entire end of the patio (1943, Fig. 3, d).

Each of the newly identified structures has a shrine room. In Str. 4E3 this room opens from the back wall of the patio, so that it is on the east side of the building. In Str. 5D7 it is on the north side of the patio, making this building the one exception among the nine structures of the gallery-patio type that have shrine rooms. All others have the shrine room on the east side regardless of the direction in which the building faced.

A number of uses have been suggested for these buildings, but so far no definite function can be assigned to them.

Easter Ceremonies at Santiago Atitlan in 1930

Elsie McDougall

The ceremonies of Easter week at the Zutuhil village of Santiago Atitlan are a strange blending of Christian and pagan rites which have briefly been described by S. K. Lothrop (1929a, 1929b) and E. B. Lothrop (1948).

The relatively large village lies at the foot of Volcano Atitlan, on an inlet of the lake of the same name, and is dominated by the seventeenth-century church, once imposing but now badly damaged by repeated earthquakes.

When I reached the village on the morning of Wednesday of Holy Week (April 16, 1930), the main door of the church was open, and a few men were busy on the terrace in front. The crudely rebuilt façade had been freshly whitewashed. An arch of two upright cedar poles and a cross pole had been erected at the foot of the broad flight of stone steps leading to the church, and a second arch stood opposite it on the north side of the plaza. Men were decorating the two arches with boughs of cedar and pine. Twenty-five years ago the village was very isolated, and I was the only outsider at the Easter ceremonies.

The two-roomed municipal building, diagonally across from the church, on the north side of the plaza, was also the scene of activity. The main room, raised a few feet on wooden posts, is the council room and courthouse of the native administration, headed by an elected president, who, as *alcalde segundo*, is, is all dealing with the national administration, subordinate to the ladino *alcalde mayor*, appointed by the national administration. The office

of the *alcalde mayor*, the smaller of the two rooms, adjoins the courthouse.

There was a small crowd, mainly of boys, at the foot of the porch steps, which were directly in front of the door of the main room. The door was open, and native officials were arriving at a brisk pace along the paths radiating from the plaza. Apparently acting officials as well as ex-officios were assembling in the room, arriving individually, invariably serious, some carrying their official wands with them. The door of the large room was at the end, where long benches were set against the wall, and, presumably in preparation for the reception, three or four chairs had been placed between the lines of benches. Officials, as they entered, deposited wands on a rough desk set to one side before ceremonially saluting the native *alcalde* and certain other officials, particularly those of greatest age.

About noon the ladino *alcalde mayor* and his ladino secretary arrived, exchanged greetings with the native *alcalde*, who stood before one of the chairs, and seated themselves. The writer, courteously greeted by the native *alcalde*, sat next to the *alcalde*, who had invited her to enter, and who from time to time volunteered information likely to be of interest. Apparently the *alcalde mayor* was principal guest and had arrived when the assemblage of native officials was about complete. Through the open door, part of the plaza could be seen, and the assembled officials faced the main part of the relatively large room, which had been strewn with fresh pine needles and decorated with cedar and pine boughs.

The ceremony for which the officials had assembled was evidently well organized, and timed for minimum delay. Almost immediately after the entrance of the *alcalde mayor*, a native brought a large palm-woven mat which he quickly unrolled in the center of the floor. The boom of a big drum (*tun*), rapidly crescendo, announced the approach of a procession to the courtroom. Drummer and flutist remained on the porch, as a double file of young men, intent solely on their mission, entered the room at a brisk pace. Each wore the typical Atitlenco wide cotton drawers, European-type coat of indigo-dyed woolen cloth, and palm-woven hat. They bore traditional products of the Pacific lowlands which, according to information volunteered by the *alcalde mayor*, they had been officially commissioned to fetch from the coastal area. The produce was inspected on the return of the young men, and any imperfection punished. The men of one file carried on their shoulders oval brown spathes (sheathed florescence) three to four feet long of *corozo* (cohune) palm. These open during the climactic ceremonies of Easter week, scattering their wealth of thousands of tiny sweet-smelling blossoms of cream white. The men in the parallel file bore on their shoulders large, shallow woven tray-baskets in which were carefully arranged such produce as cacao pods, small bunches of bananas prepared for hanging as decoration, sprays of a bromelia with scarlet flowers (*pie de gallo*), and mahogany-colored squash. The young men promptly deposited deposited their burdens on the floor, at both sides of the part of the room where the mat had been spread, and then departed, again in double file, with big drum and flute at their head.

As the young men departed, other youths of the group employed as court messengers and police (a *uaciles*), starting from the end of the benches, served each of the seated officials, in turn, a small glass measure of *aguardiente*, which the official took and drank at a gulp, without interrupting quiet conversation with a neighbor. The *alcalde* informed me that the drink would be served three times in the course of the ceremony, and that to refuse it would be regarded as a serious breach of courtesy. The invited *alcalde* and secretary conformed to the custom.

This part of the ceremony had scarcely ended when the boom of the drum announced the rapid approach of another procession. This time the two files of young men were a bodyguard for a group of older men, wearing the traditional *gaban* and head scarf, who bore high on their shoulders a queer-looking effigy. This was obscured by fumes from a censer vigorously swung by a man who, facing it, managed to walk backward rapidly. The brownish, rough mask "worn" by the effigy with its slanting eye slits had a

sinister expression. The strange figure was dressed in a coat and the wide cotton trousers of the men of Santiago Atitlan, leather shoes, and several hats, one above the other. Surplus articles of apparel and silk kerchiefs which floated from it, as the bearers rapidly passed, helped to make the figure bulky. This is the effigy known as *Maximon*, described and illustrated by Lothrop (1929). Immediately to the rear of the group followed women dressed in very ample white cotton huipils and with bowed heads. Most of them carried large candles, the upper part of which was sheathed with flowers, a leaf or corn husk protecting the flame; some bore fuming censers. These women were members of the religious sodality (*cofradía*) to which the men bearing the image belonged. The *cofradía* Santa Cruz had charge of the effigy, which was kept concealed in the loft of the lodge except during the two or three days of Easter week before the resurrection ceremony. Rapidly and entirely concentrated on their undertaking, the participants entered the courtroom. The men, as they deposited the effigy in recumbent position on the palm-woven mat were shrouded in fumes from censers. The women (*chahalas*) quickly formed a kneeling semi-circle in front and to the sides of the image. The flickering light of the large candles revealed their heads bent in devotion. The men who had borne the effigy (the *alcalde* qualified them as "priests") remained standing near it, serious and watchful. During the period that the effigy was exposed, native incense was burned before it, including the censer swung by a member of the Santa Cruz *cofradía*, standing, confronting the effigy.

The performance, suggestive of a religious "wake," lasted approximately an hour. During this time, two attendant women twice served a small gourdful of drink (maize gruel one supposes) to each kneeling *chahala* in turn. The drink was immediately taken and consumed without interrupting the attitude of absorbed devotion. During the devotional ceremony a second and third serving of a small measure of *aguardiente* was given to the official spectators. The officials, as far as the writer could see, paid no especial attention to the enacted ceremony, remaining serious, and often conversing in low tone with a neighbor.

The ceremony ended with the prompt, well-organized action which had characterized it throughout. The bearers lifted the effigy to their shoulders (their actions shrouded in incense fumes as, simultaneously, the women arose and, forming a double file, closely followed the bearers of the effigy. The young men of the bodyguard, taking up the fruit or flower offering temporarily deposited on the courtroom floor, flanked the procession. The mat was again

rolled up and carried away, and other young men carried off the pine and cedar boughs which had served as background for the ceremony, to decorate the two temporary arches in the plaza. The big drum and flute again headed the procession, which rapidly crossed the plaza in the direction of the church. Thereupon the assembled officials quietly dispersed after each had courteously bowed with bent left knee before the *alcalde mayor*, and simulated touching his right hand with their lips.

Meanwhile, young men were decorating the two arches on the plaza. The greenery tied to the arches was a background for the offerings brought from the Pacific lowlands. In addition, one or two stuffed rodents were attached. The arch near the northern side was the one under which the procession bearing the resurrected Christ would eventually pass in its course around the village, on *Sábado de Gloria* (Saturday of Holy Week). It was also the arch under which the effigy would be swiftly and unceremoniously carried when the period of devotional worship was at an end.

Custodians of the effigy had secured it to an old post on the terrace of the church, to the (observer's) right of the main entrance. At the base of the post various-sized boulders and stones, including some which had served as club heads in pre-Spanish times, were grouped, in a way suggesting an altar place. Candles, including large ones affixed to the stone club heads, and native incense were burning. The *thurifer*, swinging his censer, was directly in front of the effigy, and custodians were evidently watchful near by. No one approached the effigy closely, but all who entered the church brought it offerings. These included uncommon, relatively costly, articles of dress. Silk kerchiefs, white or purplish red, were most conspicuous, possibly because, attached by one corner to the shoulders or headcloth of the effigy, they floated spectacularly. *Toallas*, such as in everyday life are used by men as neckcloths, sweat cloths, and to lessen the friction of backborn burdens, together with incense, cigars, and candles were among the gifts. Both the candles and incense were burned during the entire period that the effigy remained exposed, and during that period the cornhusks in which the small cakes of resin incense had been wrapped accumulated as a small mound bordering the crude altar. The women *chahalas* also brought offerings of cooked food, which they placed among the candles, flowers, and other offerings (including large cobs of maize brought both by men and women) in front of the image.

During these proceedings, villagers—largely women—drifted quietly into the church for, apparently, more or less brief periods of devotion. All

gave some offering for the effigy to the custodians before entering the church. During the afternoon an increasing number of small boys settled on the wide flight of church steps, some playing a game in which they threw "counters" contrived of disks of crude rubber.

As dusk approached, women and girls, including infants, came in growing numbers from their homes and settled on the steps; more and more candles flickered before the strange effigy on the church terrace, always partly shrouded in incense fumes. Shortly after nightfall, when I left the plaza, the church steps were filled with Indian men, women, and children, including bundle-wrapped babies. The seated throng settled, calmly, quietly waiting below the terrace where, near the main door, the light from numerous candles illuminated the effigy. The custodians were nearby dark forms; the one before the effigy vigorously swung a fuming censer. Evidently a custodian maintained the supply of burning candles and incense. I returned to the plaza about nine o'clock and again shortly before midnight; the scene was unchanged.

By about eight o'clock the next morning (Maundy Thursday), the church steps were largely bare. The custodian group was smaller, but censer swinging and offering of candles and incense before the effigy were continuous. The part of the terrace around the effigy was unsightly; the boulders on which candles and incense continually burned were covered with wax; a mound of discarded maize-husk wrappings added to the litter.

At the far end of the church a few men were polishing silver objects which were on a crude table of refectory-table size. These comprised a large, ornate reliquary, two processional candle holders (battered and bent), and four slim poles attached to the corners of a faded, worn brocade canopy. From time to time, a *chahala* brought to the improvised altar in the church an offering to place in the forefront of the grouped images of saints. The offerings now included extra large maize cobs, some of them with black or speckled black-and-white grains. They were, one may conjecture, prized cobs, the grain intended for the next planting. The church floor had been thickly strewn with fresh pine needles, and pine and cedar boughs decorated the crude wooden pillars of the nave. By midmorning, villagers, mainly women, silently drifted in through the main door, and came to the altar or knelt, more or less briefly, facing it. The women, as they knelt, quickly scooped a small mound of pine needles as cushion for knees.

Toward noon *chahalas*, one by one entering by the front door, crossed the church and went out by

the side door to the corridor. They carried earthenware dishes covered with white cloths. Shortly before midday two younger men quietly cleared the church of occupants (including myself). Evidently the small boys who had scrambled into the cloister patio to watch the activities of the few men were also ousted, and the entrance was guarded, for one of the men remained near the closed main door. Conjecturally, the midday ceremony at the long crude table in the corridor, at which only members of a particular *cofradía* participated, included the enactment of the "Last Supper" and the washing of the disciples feet. One of the *chahalas* who had entered the church and passed through the side door in late morning hours had carried a shallow earthenware bowl and an olla. At San Lucas Toliman I had witnessed, the previous year, the ceremonial enactment of the Last Supper and the washing of feet as an integral element of the Easter week ritual.

In the early afternoon the main door of the church was again open and villagers, mainly women, entered. Youths rang the cracked church bells, and more people assembled. Women and girls wore new huipils, but were barefoot. Some of the women and girls could be identified as from nearby villages, by differences in the decoration of the huipil. Girls were dressed like their mothers, the wrapped skirt cloth secured by a narrow belt until the girls were old enough to tuck in the fold securely at the waist. Some women carried babes and infants, the boys wearing pullover caps covering the face. Some boys of toddler age wore only a shirt.

Within the church unmarried girls assembled in the center of the nave, evidently self-conscious and more amused than serious. Youths, boys, and some men were alongside the broken masonry in what had been the side aisles. Older men entered as small parties; *cofradías* were headed by a leader carrying a staff on which the emblem of the particular saint was mounted. The staffs were elaborately decorated with flowers, *bougainvillea* being most conspicuous. The *cofrades* went directly to the improvised altar, and stood in reverence for a moment while the leader deposited his staff there; the party then settled on knees at the front of the concourse of girls. The church was well filled when three women in the left aisle near the side entrance, directed by an aged man wearing a white head scarf, commenced to sing a service, presumably, in Latin. The girls in the center of the nave were evidently a choir, expected to make the responses, but their performance was irregular, garbled, and not in unison.

When the service had ended, a procession was formed with the image of the Virgen de Dolores, under a canopy, at the head. Onlookers, youths

and boys first, gradually dispersed as the procession passed around the inside of the church. As it returned to the altar, the image of the Virgin was tilted to salute in turn, or be saluted by, the assembled images of the saints before being reinstalled among the group.

It was fairly late in the afternoon when the ceremony ended. At that time the convent (or cloister) patio, the part near the church wall, was the scene of activity which had excited the interest of a crowd of boys. A party of younger men had brought pine saplings and larger trees from a forested tract high on the mountain, and were splitting and trimming them to make huge torches. The flare parts, composed of pine slabs two feet long, were found firmly in position around the tops of the poles, which were, in turn, some five to six feet long. At dusk, when I left, the work of preparing these torches had not ended.

I did not see the ceremony which took place in the main plaza from near midnight to early morning, except for brief periods of observation from the west side of the plaza. It was evident, though, that the pile of pine chips and bark from the torch-making in the convent patio served for a bonfire in which the great torches were lighted. Commencement of the night ceremony was hailed by jubilant shouting in which boys had a large share. It took place along the full length of the north side of the plaza. Two parties, each of four youths, each carried on their shoulders the shafts of a rectangular platform to which the image of a saint was secured, and, starting simultaneously from opposite sides, ran the course swiftly, passing each other midway not far from the courthouse. One of the images was that of a woman, who seemed to me to resemble Mary Magdalene; the other was evidently the one which was familiar to the villagers as St. Nicholas. He wore a peaked hat which men of the village had plaited of green palm strips for this ceremony. As it ran, each bearer group was flanked by torchbearers and followed by a crowd of shouting boys. Each starting place had a rustic shelter presumably constructed for the Lenten processions. Between the running events there were pauses at the shelters. The whole ceremony probably did not last more than two hours.

At about eight o'clock on Good Friday morning, men, presumably of the one or more *cofradías* responsible for the enactment of traditional ceremonies, were quietly and briskly at work in the church. Five or six of them, using white cotton cloths (*toallas*) to cover their hands as they worked, were gradually lowering a large cross, thoroughly wrapped in palm woven matting (*petates*), from the upper part of a wall on the left side of the nave, not far from the

main entrance. Two notched planks served as ladders, and forked poles supported the cross as it was gradually and reverently lowered to the shoulders of the men, who placed it on an improvised support for unwrapping. None of the men touched even the wrapping with bare hands, and it was constantly wreathed in fumes from a swung censer. Each man kissed it before it was slowly unwrapped. With the matting carefully removed, the cross was seen to be painted with heavy sinuous black lines on an olive green ground. The design vaguely suggested a snake's skin.

While the cross was being prepared, some men excavated the hole, in the center of the nave immediately in front of the altar, for "planting" the cross. I could not approach at all closely, and the actions at the hole were shrouded in incense fumes, but evidently two men gradually removed from the whole stones and other filling, which others carried away through the side door of the church. Preparations included the lowering of lighted candles into the hole, and the offering of incantations. Something was poured into the hole, and a fuming censer was lowered for a short time. I could not observe what offering, if any, was placed in the hole, but libations were definitely poured. Throughout the ceremony three chahalas, in voluminous white huipils and each holding a large ceremonial candle in her right hand, knelt facing the hole and the altar behind it.

The erection of the cross, carried on shoulders of men with hands covered with the white cloths, was reverent, as was the attachment of the image of the crucified Christ, bought from the sacristy. A wreath of greenery and flowers was placed on the head of the image, and a long spray across the loincloth.

It was nearing noon before the preparations were completed. By that time the villagers, especially women, had gradually entered the church, the women settling on the floor, girls and younger (marriageable?) women in the center, as on the previous day. From noon onward more and more people came, women with infants and young children, men, youths, boys, until the church was filled to capacity. The men were crowded at the rear; youths and boys climbed onto heaps of masonry and to the tops of broken walls for a view of the proceedings. Late-comers hurried across the plaza. Many men carried crude bull-roarer rattles of various sizes, but kept them inconspicuous, silent. Many of the women held lighted candles. The cofrades, with leader, staff in hand, knelt in the forefront of the assembly, as did the cofradas in their voluminous white huipils. There was notable seriousness and particularly silence when, with the assembly complete and impressively expectant, two men wearing long, wide

white tunics and, as headdress, miter-shaped hats came from the sacristy to the rear of the cross. Using supports already in place, they manipulated what appeared to be a long, rolled white cloth so that it passed under the outstretched arms of the image. Then they slowly detached and lowered the right arm, which loosened, and gradually fell, pointing forward. The lowering of the arm was the signal for a sudden, overwhelming outburst of noise, in which bull-roarer rattles, church bells, and the big drum had part. Simultaneously with the outburst of the noise, the onlookers dispersed, paying no attention to the actual removal of the Christ image from the cross. The atmosphere of tense, quiet watching changed to one of normal behavior, even suggestive of relief. At the end of the church ceremony a procession of men bearing images of saints on litters formed inside the church, but was unheeded by the crowd.

Small boys and youths had already climbed down from their vantage points and were joyously and noisily in pursuit of a group of men who were swiftly running across the plaza, bearing the effigy of Maximón on their shoulders. Evidently the effigy had been loosened from the old post and had been shouldered and borne away by the custodians as soon as the noise announced the evident "resurrection," the vitality, of Christ on the cross. It was out of sight and may have reached the Santa Cruz lodge by the time the ill-organized and largely unheeded church procession started through the main door of the church. It passed under the arch at the foot of the long flight of steps, and crossed the plaza on a brief course, during which some of the relatively few images of saints were taken elsewhere, presumably to the lodges or dwellings of leaders of *cofradías* with special devotion to the image in question. With the departure of the procession, the church door was closed. The celebration for that day had ended in an atmosphere of normality, if not gaiety.

About midmorning of Saturday (*Sábado de Gloria*) villagers, mainly women, came into the church by the main entrance, settling in the nave, in preparation for what was traditionally a service. Apparently other women, accompanying girls presumably their daughters, aged about ten to fifteen years, assembled in the convent patio; then, as a large group including about thirty girls, they entered the church by the side door and settled in the center forefront of the nave.

An old man, apparently reading from an old missal, conducted the service. In the middle of the ceremony there was a sudden, noisy interruption by a group of mirthful boys who ran into the church by the main doorway, brandishing switches. The boys,

not in Atitleco dress and therefore probably not villagers, were immediately ousted by men who had organized the sequence of church ceremonies, and the main door was closed and guarded. Evidently entrance to the patio had already been guarded, and the patio cleared.

At the end of the service, all participants other than the group of girls, who remained kneeling, left by the side door. The women who had brought the girls stayed as a quiet group in the corridor of the patio, as others returned to their homes.

The group of girls remained quietly for possibly a half hour, by which time the church was empty. One of the men organizers of the ceremonies then came to the side door and signaled to them. They arose and, passing in single file to the patio corridor, entered a small, partly restored room to the left of the side door of the church. On entering, each girl kissed a hand of the three most aged among a group of about fifteen mature and older men seated on a bench along one side of the room, and, passing the benches, turned to the open door by which they had entered. At the door stood one of the men, holding a plaited thong whip. As each girl reached the door, she turned her back toward him, hiding her face with upturned arm. The man gently lashed the lower part of her back three times, giving the youngest of the girls the mildest lashes. Clearly the ceremony was taken seriously, for none of the girls smiled. As it was about to end, two or three girls who had evidently been allowed to enter by the patio entrance ran swiftly to the small room, in turn, kissed the hand of the man with the whip, and turned to receive the desired lashes. I was conscious of being watched by the assembled men as I observed the ceremony from the doorway. At its close, after the girls had departed with their mothers, one of the younger men asked me jokingly if I would accept the treatment. I immediately turned my back toward the man with the whip and received three light lashes, to the evident diversion of some of the younger men. Tactful inquiry as to the reason for the ceremony brought as reply, "Para que se

crecen buena." The incorrect Spanish might indicate that the object was to ensure either moral or physical growth.

There were no more ceremonies that day, to the best of my knowledge. Easter Day was a complete anticlimax; there was no activity in the church or in the plaza. On the outskirts of the town a very small group staged an apathetic dance.

The name of the effigy is Relaj-Hacha or Ralaj-Acha, the j having the Spanish aspirate sound. One version was written down for me by the *alcalde segundo*, the other by one of his councilors. I did not hear the effigy referred to as Maximon or by any name in the village, and I should suppose that the term Maximon is of mestizo origin. I find that in my notes I once refer to the effigy as Mom, but I cannot recall where or when I read or heard that name. It is barely possible that two men who overheard my request for the name to the *alcalde segundo* used the name Mom, but I only recollect that they said that the figure was "muy, muy mal."

The *alcalde mayor*, in an aside, told me that a very old and much revered piece of *palo de pito* wood forms the core of the effigy, and this is said to be washed prior to the ceremonies of Easter week by the custodian priests of the Santa Cruz *cofradía*, who then drink the water in which it has been washed. The annual offerings to the effigy are wrapped in mats, I was told, and kept through the year in the same loft of the lodge of the Santa Cruz *cofradía* that conceals the effigy itself.

Rosales (1949), apparently summarizing the ideas held in San Pedro La Laguna concerning the cult among their fellow Zutuhils at Atitlan, reports that Maximon is a saint of the Santa Cruz *cofradía* of Santiago Atitlan. His figure is crudely made of *palo de pito* and is never visible, for it is kept always in a box. At night he wanders around all the towns in the region, wherever he is called. He converses only with shamans and native prayer-makers, and tells them what they must do. He is very much revered by all the people; when there is just cause, he chastises mercilessly (*sin remedio*).

Pottery Specimens from Guatemala II

Robert E. Smith

The thirteen specimens described here belong to the Montano collection, and all, save one (Fig. 124.1a), are in the National Museum of Archaeology and Ethnology of Guatemala. The donor, the late Dr. Hector Montano Novela of Guatemala, was an enthusiastic amateur archaeologist and collector.

The items illustrated are reported to have originated from three different parts of Guatemala: a-f, Ilón, northwestern Quiché; a-j, Panajachel, on Lake Atitlan, Solola; k-m, La Flojera, on the Rio Salinas midway between Delicias to the north and Caribe to the south and not far from the northern border of Alta Verapaz.

Fig. 124.1a-f. Vessels from Ilón, all early Late Classic (Tepeu 1) types save e, which is not familiar to me.

a. Red-and-orange-on-buff deep bowl. *Form:* nearly cylindrical, slightly flaring sides, direct rim, rounded lip, flat base. *Size:* lip diam. 13.6 cm, base diam. 4.5 cm, ht. 14.2 cm, wall thickness 0.4–0.5 cm. *Finish, color, decoration:* interior, smoothed unslipped dark gray; exterior, slipped and polished buff with red and orange decoration consisting of central wall band of vertical stripes and lines, in alternating red and orange groups.

b. Red-on-orange gloss ware deep bowl. *Form:* nearly cylindrical, slightly rounded sides, direct rim, rounded lip, flat base. *Size:* lip diam. 13.6 cm, max. diam. 14.2 cm, base diam. 6.5 cm, ht. 13.6 cm, wall thickness 0.4–0.5 cm. *Finish, color, decoration:* interior, dark (?); exterior, slipped and pol-

ished orange with light and dark red rim band of steps-and-angular-scrolls.

c. Red-and-black-on-orange gloss ware deep bowl. *Form:* nearly cylindrical, slightly recurving sides, direct rim, rounded lip, disc impressed base. *Size:* lip diam. 13.6 cm, max. diam. 14.2 cm, base diam. 7.4 cm, ht. 14.2 cm, wall thickness 0.3–0.5 cm. *Finish, color, decoration:* interior, polished light orange slip; exterior, well burnished orange slip decorated with panels of single standing figure (in profile) carrying standard done in red and black. *Remarks:* an unusual style of figure painting, so far not noted elsewhere.

d. Red-and-black-on-orange gloss ware bowl. *Form:* rounded sides, direct rim, rounded lip, slightly concave base. *Size:* lip diam. 12.4 cm, max. diam. 14 cm, base diam. 6.2 cm, ht. 11.5 cm, wall thickness 0.3–0.4 cm. *Finish, color, decoration:* interior, slipped orange, lightly polished, with 2 cm, broad red rim stripe; exterior, slipped and polished orange with red and black encircling stripes framing a line of birds painted black which form a rim band resting on a line of black dots. *Remarks:* comparable in shape and ware to two vessels from Xacbal close to Ilón (Termer 1931, Figs. 9, 10).

e. Incised black tripod bowl. *Form:* recurved sides, parenthesis rim, rounded lip, flat base, 3 hollow feet (all broken off). *Size:* lip diam. 14 cm, max. diam. 1 cm, body ht. 10.1 cm, wall thickness 0.3–0.5 cm. *Finish, color, decoration:* interior, weathered, may have been unslipped; exterior, slipped and polished black with central incised band consisting of cross-



124.1. Pottery specimens from Guatemala II.

hatched panels. Remarks: a most unusual specimen. The parenthesis rim in Yucatan is usually a late Mayapan or more recent ceramic feature.

f. Red-and-black-on-orange gloss ware bowl. Form: rounded sides, direct rim, rounded lip, disc impresse base. *Size*: lip diam. 14.2 cm, max. diam. 15.4 cm, base diam. 7 cm, ht. 11.1 cm, wall thickness 0.3–0.4 cm. *Finish, color, decoration*: interior, slipped and lightly polished part way down with 2 cm red rim stripe; exterior, slipped and polished orange with red and black encircling stripes framing a line of birds painted black which form a rim band. *Remarks*: same as d.

Fig. 124.1g–j. Specimens from Panajachel, of various types.

g. Unslipped buff-colored, hollow, moldmade Classic type figurine. Form: standing warrior holding shield on left arm; a whistle with two stops and mouthpiece at rear base. *Size*: ht. 13.7 cm, max. (depth) at base 5.1 cm, wall thickness 0.3–1.0 cm. *Finish color, decoration*: smoothed with carved and applied adornment and modeled features all reproduced in mold.

h. Dark brown cylinder tripod. Form: outcurving sides, both rim and basal moldings, rounded lip, slightly convex base, three hollow cylindrical feet. *Size*: lip diam. 18 cm, base diam. 16.2 cm, bowl ht. 8b cm, overall ht. 13.5 cm, wall thickness 0.4–0.5 cm. *Finish, color, decoration*: interior and exterior, slipped and polished dark brown; exterior, incised braid band just below rim molding, negative painted central wall band of circles and vertical lines, applied death's-heads on basal molding.

i. Reddish brown cylinder tripod. Form: outcurving sides, basal molding, direct rim, rounded lip, flat base, three hollow rounded-bottom cylindrical feet.

Size: lip diam. 18.2 cm, base diam. 16 cm, bowl ht. 10.1 cm, overall ht. 15 cm, wall thickness 0.4–0.7 cm. *Finish, color, decoration*: interior and exterior, slipped and d dark brown; exterior, vertical body fluting, applied screwheads on basal molding.

j. Black cylindrical bowl. Form: slightly rounded sides, direct rim, rounded lip, flat base. *Size*: lip diam. 12.4 cm, base diam. 7 cm, ht. 9.2 cm. *Finish and color*: interior upper wall and exterior, slipped black and polished.

Fig. 124.1k–m: Sherds from La Flojera, all Late Classic types.

k. Red-and-black-on-cream basal-flange tripod (?) dish. Form: flaring sides, thickened rim, rounded lip, terraced flange. *Size*: not measured. *Finish, color, decoration*: interior, slipped cream and polished, geometric decoration in red and black; exterior, unclipped and unpolished.

l. Red-and-black-and-white-on-orange basal-flange tripod (?) dish. Form: flaring sides, thickened rim, rounded lip, notched basal flange. *Size*: not measured. *Finish, color, decoration*: interior, slipped orange and polished, two wall bands including "dress shirt" and step-and-scroll designs in upper band and "comb" and "double-yoke" elements bracketing a cartouched element in lower band; exterior, unclipped and unpolished, rim groove and diagonal slashes between flange notches.

m. Red-and-black-on-orange basal-ridge tripod plate. Form: flaring sides, slightly everted rim, rounded lip. *Size*: lip diam. 32.4 cm, body ht. 4.8 cm, wall thickness 0.4–0.7 cm. *Finish, color, decoration*: interior, wall band of bracketed glyph-like cartouches separated by diagonally hatched triangles, floor design badly weathered; exterior, unclipped and unpolished.

Pottery Vessels from Campeche

Robert E. Smith

In 1949 I paid a brief visit to the small but well-organized Archaeological and Ethnological Museum of Campeche, Mexico. Among the many handsome Maya objects on exhibit, the nine pottery vessels here illustrated were of special interest to me. The director of the museum, Raul Pavon Abreu, was most co-operative. He not only supplied the information that all these specimens, save Figure 125.1e (from the Chenes area), were found in a single mound bisected by the highway from Champoton to Escarciga, a mound later completely destroyed, but was kind enough to have the museum artist, Hipolito Sanchez, make paintings of the vessels.

All the vessels but f belong to the Lowland Maya Late Classic tradition. Five examples (a, c, e-i) are decorated with figure painting, and in two of these (c, i) the painting depicts pottery vessels, unfortunately without sufficient detail to suggest an exact time of manufacture or place of origin. The brown ware tripod bowl (f) with gouged-and-incised panels may be a type of Slate ware, but having seen it only under glass, I cannot be certain.

The misfortune of the key's not being available to open the cases prevented an inspection of the bowl interiors and vessel bases. In spite of this lack of data, it is considered best to make this material available with the information at hand.

Fig. 125.1a. Red-and-black-on-orange bowl. *Form:* nearly vertical sides, rounding to flat base, direct rim, pointed lip. *Size:* lip diam. 17 cm, base diam, 8 cm, ht. 10.2 cm, wall thickness 0.5-0.9 cm.

Finish, color, decoration: exterior, slipped orange and well polished, below black basal stripe the wall is gray from firing, above the black basal stripe is a broad band of alternating red and black birds with long beaks.

b. Black-on-orange (buff?) deep bowl. *Form:* vertical upper wall gently rounding to flat base, direct rim, rounded lip. *Size:* lip diam. 17.5 cm, base diam, 6 cm, ht, 9.5 cm, wall thickness 0.5-0.7 cm. *Finish, color, decoration:* exterior, upper wall slipped orange, lower wall buff color, upper wall decorated with band of "sausages" and related elements.

c. Polychrome ring-based bowl. *Form:* slightly recurving sides rounding to ring base. *Size:* lip diam. 16.7 cm; base diam. 11 cm, ht, 9.2 cm, wall thickness 0.5-0.8 cm. *Finish, color, decoration:* exterior, slipped cream to buff and polished, main wall decorated with encircling band consisting of alternating pottery bars and seated human figures separated by vertical fish-scale-like bands.

d. Black-on-orange deep bowl. *Form:* vertical upper wall gently rounding to flat base, direct rim, rounded lip. *Size:* lip diam. 18.6 cm, base diam. 6 cm, ht. 10.8 cm, wall thickness 0.5-0.8 cm. *Finish, color, decoration:* exterior, slipped orange and polished, upper wall decorated by *encircling band* with alternating ilhuictl-like and unknown symbols.

e. Red-and-black-on-orange bowl with solid disc base. *Form:* vertical sides rounding to base, direct rim, rounded lip. *Size:* lip diam, 15.5 cm, base diam. 10.5 cm, ht. 10.6 cm, wall thickness 0.6-0.8 cm. *Finish, color, decoration:* slipped orange and polished,



125.1. Pottery vessels from Campeche.

decorated with horizontal encircling black and red lines, stripes, and bands, the upper band containing a diamond and triangle pattern, the lower a succession of black ovoids;

f. Brown (possibly Medium Slate) tripod ring-stand, jar. *Form*: globular body, outcurving medium high neck, direct rim, three solid slab feet joined to ring-stand. *Size*: lip diam. 12 cm, base diam. 11.5 cm, ht. 11 cm. *Finish, color, decoration*: exterior, slipped and polished, decorated with a gouged-and-incised glyph band and two somewhat differently designed panels, each enclosing a central human head surrounded by a variety of elements. *Remarks*: this is to me a unique specimen in both form and panel design.

g. Red-and-orange-and-black-on-buff tripod plate. *Form*: flaring sides, wide everted rim, rounded lip, flat base, and 3 hollow conical feet with single circular vent in each. *Size*: lip diam. 27.8 cm, base diam. 22 cm, body ht. 4.6 cm, overall ht. 6.1 cm. *Finish, color, decoration*: interior, slipped buff and pol-

ished, everted rim decorated with geometric band, floor has red deer shown with black details.

h. Red-and-black-on-orange tripod plate. *Form*: outcurving sides, direct rim, pointed lip, slightly concave base, and 3 hollow cylindrical feet with two circular vents in each. *Size*: lip diam. 31 cm, base diam. 24 cm, body ht. 4.8 cm, over all ht. 9.6 cm. *Finish, color, decoration*: interior, slipped orange and polished, re rim band of solid black rectangles separated by two vertical black lines, red and black design on floor too weathered to decipher.

i. Red-and-black-on-orange tripod plate. *Form*: outcurving sides, direct rim, rounded lip, slightly concave base, 3 cylindrical feet with rounded bottoms and a single ovoid vent in each. *Size*: lip diam. 32 cm, base diam. 24.4 cm, body ht. 4.8 cm, overall ht. 9.6 cm. *Finish, color, decoration*: interior, slipped orange and polished, red rim and floor stripes framing red and black glyph band, floor has seated human figure holding a large plate, all done in red and black.

Selected Pottery from Tabasco

Heinrich Berlin

The pottery and other artifacts here illustrated were found during two field seasons of survey of Tabasco in 1953 and 1954. For the "setting" of the specimens and the location of the sites, the reader is referred to Berlin (1953). Most of the material excavated during the two seasons consisted either of untempered Fine Paste wares or of pottery closely associated with them, and will be published separately. There remained, however, some pieces which because of their peculiar shapes or because of their distribution should be placed on record. Capitalized color readings are taken from Ridgway (1912) and are followed by Munsell equivalents (Hamly 1949). Drawings are by Alberto Garcia Maldonado. The scale of d, j, k is 1/8, that of the rest is 1/4.

FIG. 126.1A-L: BELLOTE, TABASCO.

a. Plan of explored mound with stucco-decorated walls on top. A and B indicate later and earlier phases of substructure. I, II, III show successive phases of temple platform. See Berlin (1953:107-08).

b. Dish. Dark brown paste, heavily tempered. Dark red all-over slip, well polished. Wide everted rim with one preslip groove. Period: pre-Classic.

c. Large cylinder. Light brown crumbly paste, medium fine textured, with temper. Light brown all-over slip. Preslip grooves encircle upper wall; below these the wall is decorated with geometric designs in medium to coarse incising. This decoration is reminiscent of the blackbrown fine and coarse incised wares of Kaminaljuyu (Shook and Kidder 1952). Period: pre-Classic.

The two foregoing pieces (Fig. 126.1b, c) were in Pit 2, dug through the uppermost terrace near the southwest corner. Six successive terrace floors of lime cement, with a total depth of 20 cm, overlay a solidly packed shell fill in which were these two vessels. The cylinder was upside down, the red dish inverted over it.

d. Large deep vessel. Untempered fine orange Salmon-Buff (7.5YR 7.8/6.0) paste. Exterior probably slipped in same color, but too weathered to be certain. Short 0.3 cm-deep vertical gashes around the base. Period: uncertain. Small bowl. Tempered brown paste. All-over polished slip in the same color. Gray to black firing clouds on the interior. Period: uncertain.

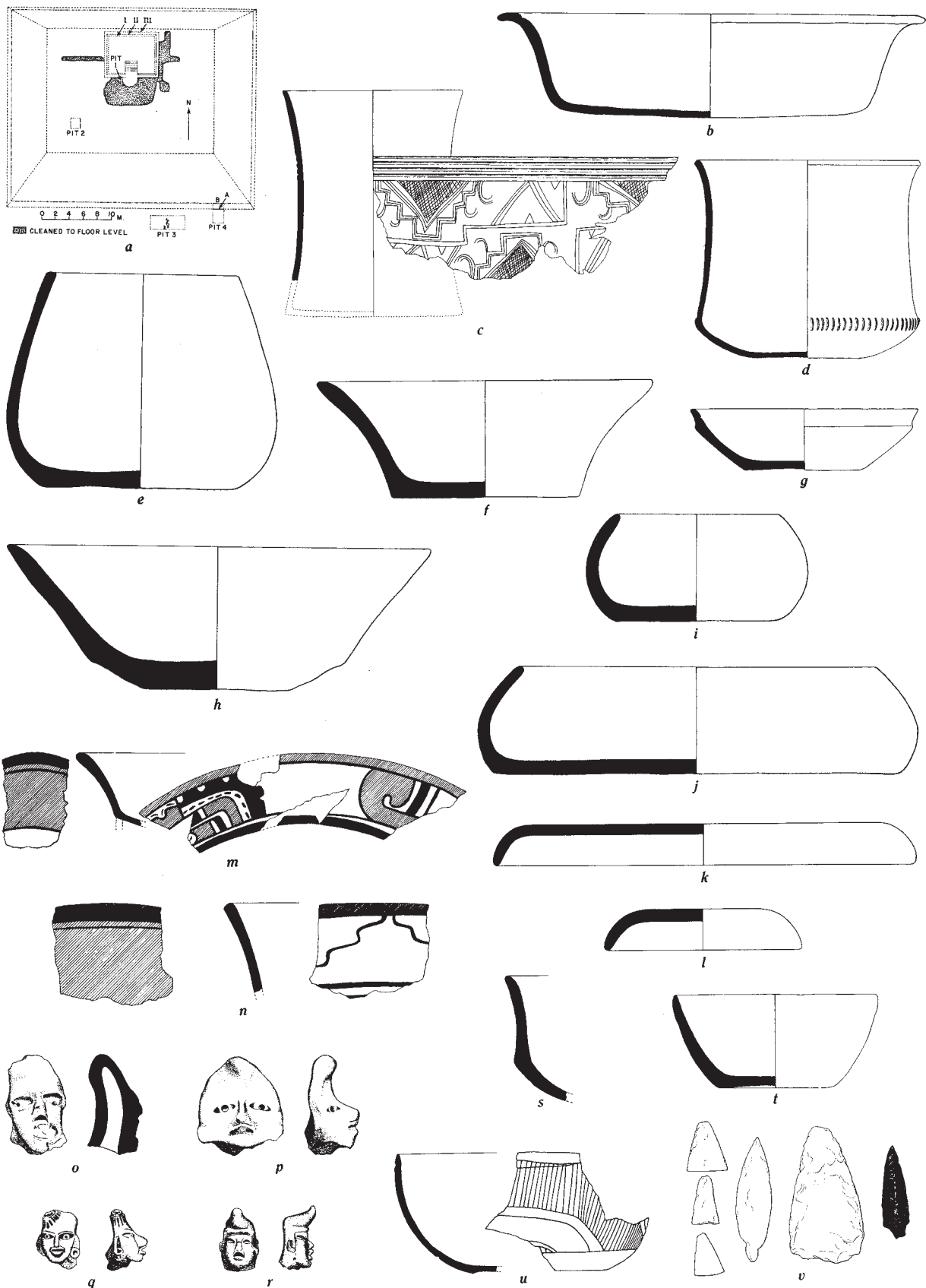
e. Large restricted orifice vessel.

f, h. Flaring-sided bowls.

i, j. Cross and longitudinal section of oval basin.

k, l. Longitudinal and cross section of cover for oval basins.

The last five specimens (e, f, h-l) belong to very thick-walled, pinkish-red or brick colored ware with medium textured, tempered paste. Surfaces are cursorily smoothed and apparently have an all-over white lime coating, perhaps a slip. More than twenty-two of these vessels and covers, together with those shown in d and g, were in an incompletely excavated grave (Pit 3) in front and at the base of the pyramid. Normally each basin had a cover, and each of the large deep vessels of the form shown in a had a bowl with flaring sides inverted over it as a cover. In other examples two flaring-sided bowls were lip



126.1. Selected pottery from Tabasco.

to lip. Nothing was inside these vessels. With them were at least two skeletons, one of which was of a female between 21 and 35.

The age of these pieces is uncertain. Stratigraphically they were sealed by the uppermost of three floors which joined a vertical terrace wall (shown as Line A in Pit 4) of the last phase of the pyramid. A basin with cover, similar to those just described, was found at San Jose, British Honduras (Thompson 1939, Fig. 37) and was assigned either to San Jose I or to San Jose II, that is to say either to pre-Classic or to Early Classic.

FIG. 126L, M, N, U: EL TREN, CHIAPAS.

m. Footed polychrome bowl. Rim diameter 24 cm. Tempered paste of fine texture. Dark gray core with light brown edges. Designs in black and orange (shown in oblique hatching) painted on a primary all-over cream slip. The number of feet is uncertain (a weathered polychrome tetrapod has been found at the site). Period: Early Classic.

n. Flaring-walled bowl. Rim diameter 40 cm. Same paste as above. Primary all-over cream slip. Mars Orange (10R4.5/10.0) band (shown by narrow oblique hatching) covers the lip. Exterior: black lines on cream. Interior: secondary orange color (shown by wide oblique hatching) with black horizontal lines below the lip. Period: Early Classic.

u. Incised round bowl. Rim diameter 18 cm. Medium fine textured, light brown, tempered paste. Well polished Orange-Rufous (2.5R5.0/10.0) all-over slip. Darker areas on interior bottom and exterior apparently due to firing. Pre-slip incised decoration. Period: Early Classic.

Surface sherds (*u*) and the material from a small test pit (*m*, *n*) were exclusively Early Classic.

FIG. 126.1S, T: ISLA DE CHABLE, TABASCO.

s. Sherd of composite silhouette bowl. Rim diameter 21 cm. Medium to coarse textured, brown, heavily tempered paste. Exterior and interior slipped a mottled Vinaceous-Rufous (10R4.5/9.0) color. Slip is conspicuously crazed. All surfaces bear a glossy finish, waxy to the touch. Period: pre-Classic or Early Classic (?).

t. Heavy-walled bowl. Fine dark gray untempered paste. Because of weathering one cannot say whether the bowl was once slipped. The upper part around the rim is whitish to light gray, the remainder of the vessel uniformly gray. Period: pre-Classic to Early Classic.

Both specimens were collected from a beach. Ceramic types similar to these have been found by Drucker at Cerro de las Mesas (1943a:44), Tres Zapotes (1943:59), and La Venta (1952:92). Our specimen, however, is different in shape, color, and temper. Only at La Venta did Drucker find an untempered Fine Paste Gray-Blackware with white (mottled) rim. It would seem that we are dealing with a specific technique of firing rather than with a uniform ceramic ware. This firing technique has been found, as far as I know, only in southern Veracruz and northwestern Tabasco.

FIG. 126.10–R. HAND MODELED PRE-CLASSIC FIGURINE HEADS.

o. Slipped (?), light brown, medium textured paste. Hollow. Eye formed by two opposed lateral gashes with blunt tool, and a central punch for the pupil which penetrates to the hollow interior. Head damaged around the mouth. Surface collection, Bellote.

p. Weathered. Tempered paste, fine textured and buff colored. Solid. Two lateral and one central punch to form eye, as in *o*.

q. Buff ware as above. Solid. Distinct ear plugs. Incisions above right eye giving bonnet effect, but top broken off.

Heads in *p* and *q* were found by Sr. Manuel Pavon Jasso at Finca Tierra Blanca, near Emiliano Zapata.

r. Unslipped buff ware as above. Solid. Remarkably Olmec in style. Said to have come from near Emiliano Zapata.

FIG. 126.1V. STONE ARTIFACTS.

The point of black obsidian (0.8 cm thick) is from El Tortuguero, Tabasco; the rest, of opaque gray-white flint, are from Tiradero, Tabasco.

Chronological Decipherments from Uaxactun, Naranjo, and Ixlu, Peten

J. Eric S. Thompson

Stela 14, Uaxactun, is broken in many pieces, and Morley (1938:1:215) despaired of wresting its dedicatory date from it. It is difficult to make much of the published fragments (Morley 1938:1, Pl. 64; note that d is inverted). On stylistic grounds, Morley favored a late placement, and very tentatively suggested the position 9.19.0.0.0. Proskouriakoff (1950:125, 197) saw no late traits and opted for a date around 9.1.0.0.0. The reading here advanced was made before I had consulted Proskouriakoff's study; its close agreement with her stylistic dating of the monument is yet another confirmation of the accuracy of her system, were such needed, and, reciprocally, Proskouriakoff's dating strengthens the proposed decipherment.

While sorting papers left by Morley I came across a sheet of tracing paper with drawings by him of the glyphs on three fragments of Stela 14 (Fig. 127.1). The fragments correspond to those in the photographs of this stela lettered c, d, and perhaps part of that labeled b, on plate 64 of Morley's book. For some reason these drawings were not included in that work.

Examining afresh Morley's plate 64c with the aid of the newly discovered drawing, I concluded that the last glyph was, in all probability, the form of the half-period glyph in which the shell element is prefixed to, not infixed in, the completion element with "down-balls" affix (Thompson 1950, Fig. 32).

The superfix of the penultimate glyph is almost surely that corresponding to the month Cumku, and the defective coefficient of two dots can safely be

restored as 3. The partly destroyed glyph which precedes this is a day sign, and must be Ahau if this is a half-period ending. The coefficient, as Morley noted, is 7. The whole, therefore, reads (9.13.10.0.0) 7 Ahau 3 Cumku, half period.

There is a distance number on this same fragment 3.?.?. The uinal coefficient is gone; that of the kin is 4, 9, 14, or 19. At Al-B1 Morley saw a day sign with certain coefficient of 5 and a month sign with coefficient of 2 or 4, the former being preferable. In the photograph it is hard to make out details. Possibly the arrangement is:

(9.13.6.17.6)	5 Cimi 4 Cumku
3.0.14	
9.13.10.0.0	7 Ahau 3 Cumku

This reconstruction, except for the period ending, is decidedly dubious, as is the 9 Ahau 18? which Morley saw at B9-B10 (I find it impossible to identify in the photograph the glyph blocks in question).

On the reasonable assumption that 9.13.10.0.0 was the dedicatory date of Stela 14, we now have one certain date to fill the puzzling gap from before 9.10.0.0.0 to 9.1.0.0.0 in the Uaxactun (and Tikal) sequence.

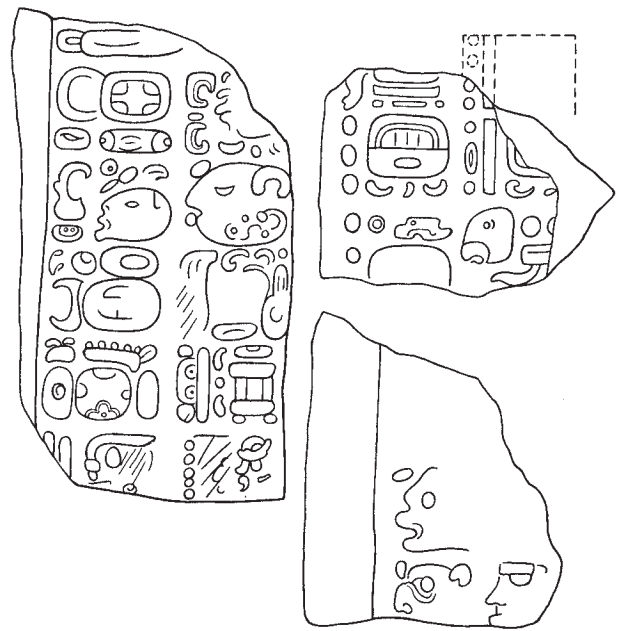
For Stela 28, Naranjo, Morley (1938:2:104-110) hesitatingly offered a series of readings, but he made it clear that he had doubts about his interpretation of the framework of dates, as, indeed, he might in view of the damaged condition of the text. His sequence of dates depends entirely on the correct decipher-

ment of the IS. The most serious objection to his suggested reading of 9.12.4.10.2 1 Ik 10 Pax is that the lunar data do not agree with it. Morley thought that they did, because, falling into a strange aberration, he supposed that the lunar record of 2D represented a count of 12 days, whereas, of course, it marks a moon age of 2 days. The date in question calls for a moon age of about 14 days. Andrews (1951:135) has proposed the reading 9.11.4.10.2 3 Ik 5 Zip as offering agreement between IS and lunar data, but expressed doubt as to its reliability by adding a question mark.

The lunar series is not easily read, but Glyph C appears to have a coefficient of 3 and Glyph D of 4 (Glyph Blocks D5, C6), although Morley read 5?C 4D, a reading accepted by Andrews. Little can be made of Glyph X. For the IS, I should suggest the reading 9.14.4.7.1 1 Imix 9 Zip. Stela 30 gives a moon age of 4C 4D for the IS 9.1.3.0.0 7 Ahau 18 Kankin. This date is 501 days (17 moons less 1 day) before the suggested reading of the IS of Stela 28, and conforms to the period of uniformity. One would, therefore, expect a period-of-uniformity moon age of 3C 3D for 9.14.4.7.1. As the reading appears to be 3C 4D, the agreement is very close. Eight moons of 30 days and nine of 29 days would span the interval of 501 days and produce readings of 4D in both texts. The proposed reading of the IS finds support in other dates in the text. I should propose the following arrangement:

C1-C4, C8, C13	9.14.4.7.1	1 Imix 9 Zip
	3	
D13, C14	9.14.4.7.4	4 Kan 12 Zip
E4	5.4	
F4, E5	9.14.4.12.8	4 lamat 16 Mol
F9	1.13	
E10, F10	9.14.4.14.1	11 Imix 9 Yax
E14	2.16	
F14, E15	9.14.4.16.17	2 Caban 5 Mac
G8	12	
H8, G9	9.14.4.17.9	1 Muluc 17 Mac
I11, J11	5.0.11	
J12, I13	9.14.10.0.0	5 Ahau 3 Mac
I14, J14	1.5.0.0	
I15, J15	From anterior date (suppressed 9.13.3.0.0) count forward to	
A1, A2	(9.14.8.0.0)	13 Ahau 13 Mac

For a review of problems involved and the many alternative readings, the reader is referred to Morley's



127.1. Part of inscription, Stela 14, Uaxactun.

discussion (1938:2:108–109). The date 9.14.4.12.8 4 Lamat 16 Mol is 1 day after the IS of the companion Stela 31, which also commemorates 9.14.10.0.0. The final distance number of 1.5.0.0 and the date on the front of the monument are shots in the dark. I assume a suppressed 9.13.3.0.0 and numerical classificatory elements which make the distance number look like 6.10.0.0. The date 9.13.3.0.0 was obviously important at Naranjo. As its first katun anniversary is given on both Stelae 29 and 30, in the latter case as an IS, it is not illogical to expect to encounter its 25-tun anniversary. At least, the two final glyphs on the back of the monument appear to be the posterior and anterior date indicators, and should, therefore, connect the last record on the back of the monument with the 13 ? 13 ? CR on the front of the stela.

In passing, it should be noted that the distance number on Stela 31 at 16, 17 is not 8.0.2.0, as Morley believed, but 8.0.0.0. The arrangement is:

I6, I7	8.0.0.0	
J7, I8, J8	9.6.10.0.0	8 Ahau 13 Pax Seating Haab?
I13-J14	9.14.10.0.0	5 Ahau 3 Mac, completion of haab, half period

Katun anniversaries are by no means unknown at Naranjo. Apart from those commemorating 9.13.3.0.0, Morley has noted that 9.13.1.3.19 5 Cauac 2 Xul, an IS on Stela 21 and declared also on Stela 22, has its katun anniversary on Stela 30, where the CR (9.14.1.3.19) 3

Cauac 2 Pop is followed by a completion glyph in the form of a hand followed by a weathered glyph which presumably records 1 katun.

On the Hieroglyphic Stairway the best reconstructions of two dates suppressed or, more probably, on missing blocks are 10 tuns apart. Morley's suggested readings are:

9.9.17.11.14	13 Ix 12 Zac
9.10.7.11.14	12 Ix 2 Ch'en

Stela 22 records the date 9.13.1.13.14 5 Ix 17 Muan, and the katun anniversary of this, 9.14.1.13.14 3 Ix 17 Yax, appears on Stela 30. The glyph block (G3) immediately following this date, where one might expect to find a record of the first katun anniversary, is not legible. The various katun anniversaries on Stela 25 have received comment (Thompson 1950:195). It is interesting to note that on Stela 3, of much later date, a distance number 7.9.3.15 leads back to 9.6.12.0.4 4 Kan 7 Pax, which is given on Stela 25 as the first katun anniversary of 9.5.12.0.4. This fact not only confirms a brilliant piece of decipherment by Morley, but also warns that these occasional retrocessions of several katuns into the past do not necessarily record calculations made at the time the monument in question was to be erected.

The priests of Naranjo seem to have sought occurrences of 13 Ahau. We find among Morley's readings: 9.14.2.4.0 13 Ahau 3 Uayeb, 9.19.4.10.0 13 Ahau 13 Mol, and 9.19.9.15.0 13 Ahau 8 Zip I have suggested the reading 9.14.8.0.0 13 Ahau 13 Mac for the front of Stela 28. This is not only the 25-tun anniversary of the important date 9.13.3.0.0, but it also recovers the position 13 Ahau, a detail that fortifies the proposed decipherment.

The round altar at Ixlu is associated by Morley (1938:3:443) with Stela 2, although in the map of the ruins prepared by Blom (1926–1927, Pl. 210a) it is shown immediately in front of Stela 1. Morley associated it with the nearby Stela 2 because he thought that the two monuments recorded the same date, 10.2.10.0.0 2 Ahau 13 Ch'en. He was led to that conclusion partly through his failure to recognize that the element of two circles with a cross between was an affix indicating expiration, and not, as he supposed, the numerical coefficient 2.

This was attached to the sign for 10 tuns, and he supposed the whole should be read as 2 katuns, 10 tuns, marking the end of 2 katuns and 10 tuns after 10.0.0.0.0. Actually, the coefficient of Ahau in B1 (Blom 1926–1927, Pl. 159a) cannot be 2, as Morley supposes, for the two dots still visible occupy only half the height of the day sign. The coefficient must be 4, or just conceivably 3. The month sign is clearly the head of an animal, either that of Xul or the personified form of Kankin. The "ak" suffix shows that this must be Kankin, for on the monuments that suffix occurs only with the month signs Pop, Zec, and Kankin (in Codex Dresden also with Kayab). Glyphs B2 and A3 inform us that the date marks a half period and the completion of 10 tuns. With further redundancy, B3 adds that the date marks the completion of a tun. The variant of the expiration affix with the X element already mentioned did not come into use until after 9.17.0.0.0, and so we have an additional check on the decipherment. The only decipherment that will meet these conditions is 10.1.10.0.0 4 Ahau 13 Kankin.

This date is the same as that of Stela 1, with which the altar is associated by position. There can, accordingly, be not the slightest doubt that this monument is the altar of Stela 1 and carries the date 10.1.10.0.0 4 Ahau 13 Kankin.

Notes on the Use of Cacao in Middle America

J. Eric S. Thompson

INTRODUCTION

Cacao attracted the keen interest of the first Spaniards to reach Middle America partly because of its importance as a beverage, partly because of the unusual method of cultivation dependent on the shade-giving "mother" tree, but principally because it was to Europeans, forgetful of the 'origin of the Latin petunia, that novelty, a perishable currency. Thus, in one of the earliest (1525) accounts of the fruit we meet with a philosophical attitude: "But it is very needful to heare what happie money they use, for they have money, which I call happy, because for the greedie desire and gaping to attaine the same, the bowelles of the earth are not rent a sunder, nor through the ravening greedinesse of covetous men, nor terrour of warres assayling, it returneth to the dennes and caves of the mother earth, as golden, or silver money doth. For this groweth upon trees" (Martyr 1612, Dec. 8, Ch. 4).

There are many accounts in sixteenth- and seventeenth-century writings of the cultivation of cacao and of the preparation of chocolate. One of the best is that of Oviedo y Valdes, written before 1555 (1851-55, Bk. 8, Ch. 30). Thomas Gage (1677:238), the renegade Dominican friar who lived in Mexico and Guatemala from 1625 to 1637, has left a lengthy account in well flavored English of the period. In all discussions of cacao it is essential to distinguish between the pod and the individual bean, of which there are nearly thirty in each pod. The usual Spanish name for the pod is *mazorca* (used also for an ear of maize); the bean is called *almendra* (almond).

CACAO AS CURRENCY AND ARTICLE OF TRIBUTE

Cacao was an important article of trade and of tribute, largely because conditions favorable for its cultivation are not found in many parts of Middle America, for it requires a damp climate, shelter, and low altitude. Large areas, such as the Mexican plateau, the highlands of Guatemala, and Yucatan, are unsuitable. Typical of its importance in commerce are statements that Yucatan exchanged salt, cotton textiles, and slaves for the cacao of Tabasco and Veracruz (Tozzer 1941:94-95) and of Honduras (Oviedo y Valdes 1851-1855, Bk. 32, Ch. 8). Much cacao was shipped in ancient times from Soconusco to the Mexican plateau, and even from Guatemala (Sahagun 1938, Bk. 10, Ch. 13). With the decline in the Soconusco plantations, a few decades after the Spanish conquest, more cacao was brought to Mexico from Guatemala (Ponce 1875:1:293; Vasquez de Espinosa 1942, §638). Merchants went from Xiu territory to the Rio Hondo and Bacalar to buy cacao, which probably came from the banks of the New River or even the Belize River (Roys, in press).

As an article of tribute, cacao is prominent in the tribute list of Codex Mendoza. Soconusco paid 400 loads to the Aztec confederacy (Codex Mendoza 1938:47). The total from all provinces was 980 loads each year (Molins Fábrega, 1954-1955). According to Lopez de Cogolludo (1867-1868, Bk. 4, Ch. 3), the scant tribute paid to Mayapan in its period of dominance included cacao sent by the area that produced it. Unless Chetumal, a large producer of cacao, was

subject to Mayapan, as Roys believes, this must have been the Province of Cupul, where a certain amount of cacao was grown in the many cenotes in that region (Sanchez de Aguilar 1892:98); north-west Yucatan appears to be too dry for its successful cultivation. Traditionally, the migrating ancestors of the Cakchiquel paid cacao as tribute to Tula, whence they had migrated (*Annals of the Cakchiquels* 1953:48). In colonial times cacao continued to be an article of tribute (*Relation de Zapotitlan* 1579). In Tabasco alone the 1660 Indian tributaries who had survived the Spanish conquest and its accompanying plagues paid annually about 1500 loads of cacao to their new masters, considerably more than the Aztec confederacy received from all its tributaries (*Relaciones de Yucatan* 1898–1900:11:330–41).

There is no published information on the worth of cacao in pre-Colombian times, but in a paper now in press Scholes and Adams give information on tribute values of cacao in terms of *mantas*; for the colonial period there is a considerable body of material. Cacao was counted by beans and in the vigesimal system. The standard measure was the load (*carga*) a man carried, and this consisted of 3 *xiquipils* (each of 8,000) of beans, that is to say 24,000 beans. A *xiquipil* comprised 20 *zontlis*, each of 400 beans. The *carga* of maize in present-day Yucatan is approximately 90 pounds, but the *carga* of cacao weighed only a little over 50 pounds (2 *arrobos*), although in pre-Colombian times the weighing scale was unknown. Cacao transactions were principally by counting, although cubic measures presumably were used for handling large quantities. The use of measures but absence of scales in the market place of Tenochtitlan was remarked by Cortes (1908:1:259).

Rates of exchange in terms of Spanish currency have fluctuated with the centuries. Motolinia (1914, *Trat.* 3, Ch. 8), who wrote in 1541, informs us that a load of beans was then worth 5 to 6 gold pesos in the center of production. A gold peso was the equivalent of 12 ½ silver reales (the ordinary *real*, 8 of which made a peso). At the higher price this works out at nearly 9 ½ silver pesos for a load, and 320 beans for a real. That was the price in Soconusco, Guatemala, or Tabasco; the price in Mexico City was nearly double that, and one can suppose that it was about 16–18 pesos.

The probanza of the cacique of Xicalango, dated 1552 (Archivo General de Indias, *fide* Berlin 1956:110), lists the tribute as 40 *xiquipils* of cacao, or its equivalent of 100 pesos. This gives a rate of 7 ½ pesos for a load. On the assumption that these are the usual silver pesos, this rate is somewhat lower than that which Motolinia gives. Moreover, Xicalango, although an important depot for Tabasco and Yucatan

trade, was somewhat distant from the cacao plantations, whence the crop presumably was brought by water. I have seen cacao plantations near Teapa, from which point Xicalango must be about 250 km. distant by water, so that a haulage charge is to be added to the plantation price.

The Quijada papers (Scholes and Adams 1938:2: 104, 214, 217) throw some indirect light on cacao transactions. One of the charges against Diego Quijada, Alcalde Major of Yucatan, was that he, together with a certain Melchor de Herrera, paid the Maya Indians working on the cathedral at the rate of 100 cacao beans to the real, whereas he had bought the cacao at a much cheaper rate. If the charge was true, Quijada certainly profiteered, for at 100 beans to the real, a load would have been valued at 30 pesos. This charge referred to the year 1562, at which time the price of cacao was probably less than the 18 pesos per load mentioned below as the price at which cacao had been stabilized for some time prior to 1576. From this same source we learn that Indians bringing provisions to Merida were paid only 20 cacao beans a trip in 1553, a price considerably below the laborer's daily pay of 8–11 *maravedis* (a maravedi was 1/34 of a real, approximately the value given it in *Iolanthe*) The Quijada papers also tell us that the wives of Yucatecan Maya condemned for relapses into paganism were themselves fined sums of 30, 40, or 50 cacao beans for having been in communication with their husbands, an early example of guilt by association.

From the *Relation de Soconusco* (Ponce de Leon 1882) we learn that by 1574 the value of a load had risen to 20–22 pesos, and that figure seems to represent the price in Mexico City. Production then in Soconusco had fallen to only 4000 loads, and another 1000 loads passed through en route from Guatemala to Mexico City. Ponce de Leon noted that the total Indian population had dropped to 1800, and he suggested bringing Indians from other parts to increase production. This decrease in the crop came at a time when demand was increasing. Garcia de Palacio (1860:37, 39), whose letter to the Spanish monarch is dated 1576, commenting on cacao production in Izalcos, western El Salvador, and apparently referring to prices at the plantations, notes that 200 beans were worth a real, and a load was worth 10 gold pesos, or slightly over 15 ordinary silver pesos.

Because of easy transportation by water from Tabasco to Yucatan, a survival of a pre-Colombian trade route, cacao prices in Merida were somewhat lower than in Mexico City. Miss Eleanor Adams has kindly placed at my disposal unpublished material on this subject. From two petitions of Francisco Palomino, Defender of the Indians in Yucatan (Archivo

General de Indias, Mexico, 103 and 101), we learn that a load of cacao in Merida was valued at 18 pesos in 1576, and that that had been its price for a long time past, but by 1579 the price had risen to about 20 pesos.

Sudrez de Peralta (1878, Ch. 24), who completed his book in Spain in 1589, but was describing conditions of a few years earlier, says that a load of cacao brought 28–30 pesos in Mexico City, and 80–100 beans were worth a real. However, a load of the highly esteemed Guatemalan cacao fetched 3 or 4 pesos more, whereas a load from Colima or Huatulco was quoted at less than the standard price. Of about the same time is a statement that in Jalisco 100 beans were valued at a real (Herrera 1728, Dec. 4, Bk. 9, Ch. 13). At that rate the load was worth 30 pesos.

The anonymous chronicler of Father Ponce (Ponce 1875:1:296) puts the cost of a load around 1588 at 30 *reales de á cuatro* on the south coast of Guatemala, but at least 50 *reales de á cuatro* in Mexico City. The *real de á cuatro* is not a real, but a peso of 4 reales, that is to say one worth half the regular peso. Quotations of 15 ordinary silver pesos on the plantation and of at least 25 ordinary pesos in Mexico City are in agreement with the rise in prices observable in the Suarez de Peralta figures.

Torquemada (1723, Bk. 14, Ch. 42), writing in the first decade of the seventeenth century, supplies us with the information that at the time of the conquest a load at the plantation was worth only 4–5 pesos, and in Mexico City only 10–12 pesos, but later it had risen to 15 pesos at the center of production and to 25–30 pesos in Mexico City. He stated that at the time at which he wrote the price in Mexico City never fell below 50 pesos and sometimes rose above 60. He noted that this steep rise reflected supply and demand: there had been a great decrease in population and consequent fall in production in the cacao-growing districts, but consumption had grown with the popularity of the beverage among the Spaniards of Mexico, and the heavy demand in Spain was a factor.

Vasquez de Espinosa (1942, §642), writing apparently of conditions in 1621, puts the price at the source of supply in southern Guatemala at 200 beans for a real or less. A further statement that a load was worth at least 10 ducats agrees with this; the ducat was 11 reales, which gives a price of just under 14 pesos a load. The Mexico City price may have been about 25 pesos. This considerable drop from Torquemada's closing price is supported by Thomas Gage's statement indicating that when he was in Mexico (1625) the price was 22–25 pesos a load. As demand can hardly have fallen enough to cause such a marked recession in price since Torque-

mada wrote, it is perhaps best to assume that a sharp decrease in production at the turn of the sixteenth century, presumably due to disease among the trees or those that tended them, caused a temporary rise in prices. It was of short duration, and brought other producers, Venezuela and perhaps Ecuador, into the field. Vasquez de Espinoza (1942, §272) gives 1615 as the start of Venezuela as a large-scale producer of cacao. This competition may have deprived Mexico of her Spanish market, and thus led to overproduction and falling prices.

Miss Eleanor Adams has kindly supplied me with an important entry for the mid-eighteenth century, which, as she notes, discloses a marked recession in price. The entry refers to a sale in 1753 of 150.5 loads from the provinces, of 60 pounds' each, which sold at 12 pesos a load, as well as some which sold at 10 pesos, "these being the current prices for the said fruit at those times" (Archivo General de la Nación, Mexico, Civil, 753).

Humboldt (*fide* Garcia Payon and Monreal y Jimenez Embun 1936) reports that in his time 80 beans were worth a real, which would have been 37.5 pesos a load, not much different from prices over 250 years earlier, but a big rise from the mid-eighteenth century price just quoted. For the last decades of the nineteenth century, when cacao was ceasing to be a currency, we have the statements of Stoll (1886:103) that 16 beans were worth a *cuartillo*, which gives a rate of 64 beans to the real, and of Habel (1878:4) that 100 beans were valued at a real, then worth 3 American cents, but these were retail prices for small transactions in Indian markets; reckoning wholesale cacao by xiquipil must long have ceased.

With regard to purchasing value, Oviedo y Valdés (1851–1855, Bk. 8, Ch. 30) informs us that in Nicaragua a slave cost approximately 100 beans (one suspects a mistake here) a rabbit was worth 10 beans, the hire of a prostitute was 6–10 beans, and a *munonzapote* fruit was valued at half a bean. From Motolina (1914, Trat. 3, Ch. 8) we have the important statement that the daily pay of a *cargador* was 100 beans.

Sahagun (1938, Bk. 10, Ch. 18) has left an interesting account of cacao merchants which I give below in rather free translation:

"The dealer in cacao generally has inherited properties of cacao and has large supplies which he takes long distances to sell, or he buys to sell retail. A good dealer in this merchandise sells beans which are all picked over for size and weight, and he keeps the grades apart, in one lot those which are of best quality in size and weight, and in another those which are of

little value, not well filled out or broken, and he keeps the remainder also in a separate lot. He also separates the different varieties, namely those from Tochtepee, those from Anahuac, those from Guatemala, those from Guatulco, and those from the Xolotec country. He also keeps separate those that are whitish, ash-colored, or reddish-brown."

"The bad merchant sells falsified beans, for he cooks them and even toasts them to make them look all right, and sometimes puts them in water to make them swell, and he makes them counterfeit the ash-colored or dark beans, which are the best. A trick he has is to toast the poor and almost worthless ones in hot ash and then cover them with clay or damp earth so that they look new and well filled. Another way he has of cheating is to insert within the skin of the bean a blackish dough or black wax which resembles the soft interior of the bean, and sometimes he breaks avocado rind into pieces and cuts these into round shapes which he inserts under the empty skins of the beans. Those which are small or almost worthless he mixes in with the ash-colored and new beans. He even does the same with the other pseudo-cacao beans or those called *quauhpotlaxtli* [patlaxtli], and all these tricks he plays to deceive the customer."

These falsifications must have been highly ingenious, for samples of them were sent by the Viceroy Mendoza to the Spanish court (Icaza 1928:171), although it is possible that the viceroy merely wished to emphasize that counterfeiting was not confined to coinage of the realm. Cacao was falsified also in Nicaragua; Oviedo y Valdés (1851–1855, Bk. 8, Ch. 30) describes the process in which earth was substituted for the meat of the bean, and the outer skin of the bean so carefully rearranged that the fakes could be detected only by feeling the beans one by one with the finger. The existence of an Otomi term for falsified cacao beans shows that the practice was widespread.

REPRESENTATIONS OF CACAO IN ARCHAEOLOGY

Archaeological material bearing on cacao is rare. A stone jar at Copan carries in relief sculptured objects that seem to represent cacao pods. On Monument 4, El Baul (Thompson 1948, Fig. 5a), the most important Pipil city and a former center of cacao cultivation, one of the sacrificial victims is in jaguar guise and has what seem to be nine cacao pods attached to his arms, legs, and tail. One is reminded of the necklaces of cacao beans worn by the sacrificial victims in rites of the Pipil of Nicarao (Garcia de Palacio 1860:74).

Monument 21 at nearby Santa Lucia Cotzumalhuapa (Thompson 1948, Fig. 6d) carries another sacrificial carving. The scene is wreathed in a vinelike plant, to which are attached similar pods. The markings speak for cacao pods, but the tendrilly stalks have little resemblance to trunks of cacao trees. Cacao seems to have a connection with human sacrifice apart from what these monuments would appear to indicate. In the song to Otontecutli recorded by Sahagun there is a reference to the cacao pod which led Seler (1902–1923:2:1043) to conclude that, like the tuna fruit, the cacao pod was a ritualistic term for the human heart torn out in sacrifice. This ritualistic term might have arisen because of the vague resemblance in shape between the two objects, but more probably because both were the repositories of precious liquids, blood and chocolate. This assumption is fully confirmed by a passage in the series of riddles in the Chilam Balam of Chumayel, for, in one of those tests that only a true chief could pass, chocolate is the symbolic term for blood (Roys 1933:128).

A magnificent sculptured panel at El Tenn, in northern Veracruz, a former region of cacao production, has as its background a tree with oval attachments growing from its trunk and branches. Garcia Payon (1936), who illustrates the piece, was, I believe, the first to identify it as a cacao tree laden with pods. The tree of the south in Codex Fejervary-Mayer has been recognized as a cacao because of the pods on its trunk (Seler 1901:13), and one of the world-direction trees carved on the Temple of the Wall Panels, Chichen Itza (Ruppert 1931, Pl. 11b), may also be a cacao plant, for there is a group of four pod-shaped elements attached to its trunk. The conclusion that one of the world-direction trees could be the cacao finds some support in the mention of *balamte*, *Theobroma bicolor* or patlaxtli together with the jaguar, in the period of darkness before the creation of light and the setting up of the world-directional trees as recorded in the Chilam Balam of Chumayel (Roys 1933:111). Caso (1942) believes that the cacao tree is identifiable on the Teotihuacan mural representing Tlalocan, the paradise of the rain gods.

To conclude the archaeological evidence, we may note that a pottery vessel from Cotaxtla, Veracruz, shaped like a cacao pod attests to the importance of cacao in that region (Melgarejo 1943, unnumbered plate at end). Shook informs me that a second pottery vessel in the form of a cacao pod, which is said to have been found at Iximche, Guatemala, is in the collection of Father Celso Narciso Teletor. Kidder (1943:89o, q) illustrates two pottery vessels with pods, which he believes to be of cacao, in relief. They come from Texcuaco, Escuintla, deep in the cacao zone of the Pacific coast of Guatemala.

RITUALISTIC IMPORTANCE OF CACAO

Cacao was, and still is, of considerable ceremonial importance in Middle America. Landa (1941:164) briefly describes a festival held in the month Muan by those who owned cacao plantations, although this may have been a festival within the 260-day almanac (9 Manik or 8 Cauac?) which happened to fall in the month Muan the year Landa recorded his calendar. As little cacao was produced in Yucatan, and that largely or entirely in dry cenotes, where only a few trees could be grown, one wonders whether he had in mind ceremonies in the eastern part of the peninsula, particularly in the province of Chetumal, where conditions were more favorable. However, Landa's use of the term *heredad*, 'parcel of fertile land,' for the scene of the ceremony, surely the cacao grove, perhaps points to a ceremony in a dry cenote.

At the ceremony each official who took part received a cacao pod, a somewhat trivial gift. A dog with cacao-colored markings was sacrificed, and blue iguanas and other game, as well as plumes and copal, were offered to the deities most directly interested. These were the Chacs and Hobnil, general gods of rain and fertility, whose co-operation was, of course, essential, and Ek Chuah. The last was the god of the cacao, and because he had in his keeping the universal currency of Middle America, he was worshipped also by the merchants. God M of the Maya codices has been identified as Ek Chuah, an identification which is open to question (Thompson 1950:76-77), Ikchaua, surely the same as Ek Chuah, was one of the five principal gods of the Acalan Chontal (Scholes and Roys 1948:57) who were very active in commerce and also growers of cacao, and Chua, who may be the same deity, is named as a leading god of the Lacandon Chol (Tozzer 1913).

There is no evidence that Yacatecutli, god of Aztec merchants, had any connection with cacao, but that the merchants recognized the importance of cacao in their lives is shown by the gifts offered to guests at a banquet given by a merchant returning from foreign parts. Each guest received 200 cacao beans, 100 grains of *teonacaztli* (a highly aromatic yellow flower often ground up with cacao), a sort of spoon of tortoise shell to mix the cacao, and one or two calabashes, presumably to hold the cacao (Sahagun 1938, Bk. 9, Ch. 6).

No information on gods of cacao has survived elsewhere except among the Nicaraos, who raised large quantities of cacao. According to Oviedo y Valds (1851-1855, Bk. 42, Ch. 11) they performed the volador ceremony in honor of Cacaguat, the god of cacao, and an image of him was placed on the platform on top of the pole. Elsewhere the volador cer-

emony does not seem to be associated with cacao, and nothing more is known of this Nicaraean personification of the cacao crop.

An important ritualistic association of cacao which also bears on the question of the directional trees already discussed is found in the lists of the aspects of the 20 Maya days as given in the books of Chilam Balam of Kaua and Mani (Barrera Vasquez 1943). The "tree" of the days Manik and Cauac is said to be "the cacao, the true cacao." The least reliable list has *cacao che* instead of *cacau u che*, possibly changing the meaning, for *cacauche* is a different plant. Nevertheless, there can be no serious doubt that it was cacao which was the "tree" of those two days. The significance of associations with these two days is not clear. Manik, apparently a day connected with hunting, is under the protection of the god of number eleven, an earth deity who has the Caban sign on his cheek; Cauac is closely connected with storms and deities of rain. It is dust possible, though improbable, that Ek Chuah, the god of cacao, is connected with the day Manik (Thompson 1950:76).

Turning from theocratic concepts to everyday ritual, we may note that the present-day Bachajon Tzeltal use cacao beans, gourds, and pine branches to decorate their altars (Blom and La Farge 1926-1927:363). Cacao is frequently offered by the present-day Lacandon to their gods; commonly it is mixed with posole or even with balche (Tozzer 1907:102-103). Their predecessors, the Lacandon Chol, gave animal fat and ground cacao to their idols to eat, putting the latter on the mouth of the idol (Tozzer 1913:505). Cacao or cacao flowers were offered in Aztec ceremonies (Sahagun 1938, Bk. 2, Ch. 35; Bk. 4, Ch. 21), but not with the frequency found in Maya rites, presumably because cacao was not a native plant. The Zapotec still make offerings of cacao, usually together with bread, to crosses, and cacao is offered in sorcery rites (Parsons 1936:121, 301, 452). The Mopan Maya offer cacao in rituals for successful fishing (Thompson 1930:90), and the Mam hierarchy drink it ceremonially as they eat sacrificial turkeys (Oakes 1951:228). Icaza (1928:71) notes that the bell ringers of Mexico City cathedral had a statue of Christ called *El señor del cacao*. It was placed in the portico of the cathedral, and, beside it, baskets to receive offerings from the poor of cacao beans, which were exchanged for candles.

The ceremonial presentation of cacao to village officers when they take office and the handing down of cacao beans from one incumbent to his successor are prominent in Mam ceremonies (Wagley 1949:90, 93, 94). Oakes (1951:63) describes how Mam *rezadores* for the incoming year formally signify acceptance of their post by taking a ball of maize dough, cacao,

and sugar, which has been censed with copal, and placing it in hot water to make the ceremonial drink of chocolate called *bebida*. At the Mam town of Todos Santos, Miss Susan Miles tells me, cacao is served to the prayer makers every 20 days on the return of the year-bearer day name. It is always drunk from decorated gourds, never from European cups, at this and all other ceremonies.

Cacao is rather widely associated with the crises of birth, marriage, and death. At Todos Santos, again according to Miss Miles, it is served at the little feast held on the 20th day after a baby's birth. Among the present-day Chorti of Quezaltepeque a mother customarily sends gifts of bread and cacao to the godparents before and immediately after the birth of the child, and also after its baptism (Wisdom 1940:292). Among the Pipil, cacao, birds, and copal were offered when a child was named, 12 days after birth (García de Palacio 1860:81). In prequest Yucatan, children at a puberty rite were anointed with virgin water in which flowers and powdered cacao had been mixed (Tozzer 1941:105). In present-day Yucatan, bread, cacao, and rum are ceremonially consumed on the very important occasion of a man's consenting to act as godfather (Redfield and Villa Rojas 1934:193). Exchange of presents of cacao, bread, and accessories when a marriage is being negotiated is also a Yucatec custom (Redfield and Villa Rojas 1934:189). That this is an ancient rite is shown by the expression *tac haa*, roughly translatable as 'serve chocolate,' which the Motul dictionary translates as 'to invite the father of a girl whom one's son wants to marry to discuss the marriage and serve him drink.' Clearly, the cacao was of paramount importance in this ceremonial opening gambit. Among the Lacandon Chol, groom and bride exchanged presents; he gave her skirts and 5 cacao beans, whereas she gave him a stool and 5 cacao beans (Tozzer 1913:507). Herrera (1728, Dec. 3, Bk. 7, Ch. 5) writes of an unspecified group in Honduras that in concerting a marriage the go-between presented 160 cacao beans to the family of the girl on the first visit and a similar amount the following day. The offering consisted of 4 *tucas* of beans, and Herrera tells us that a *tuca* comprised 40 beans. *Tuc* is a Maya word for 40 used by the Kekchi, Pokomchi, and Quiché. The use of *tuca* in this passage would indicate that the group in question was Maya, presumably Chorti or, just possibly, Pokoman.

Among the Mam of western Guatemala it is customary to make a gift of a spray of wild flowers, 4 reales, and 4 cacao beans to the parents of a girl whose hand is being requested in marriage (Wagley 1949:129). Here, as among the Lacandon Chol, the cacao beans might be a survival from the days when

a token payment in cacao currency was made. Atole de cacao plays an important part in marriages at Mitla (Parsons 1936:105, 456). The offering of cacao and maize or bread to the dead occurs among the Zapotec (Parsons 1936:281, 381) and among the Maya of Yucatan (Redfield and Villa Tojas 1934:152). Page 67 of the Mexican Codex Magliabecchi (1903) illustrates the preparation of the dead, and the text declares that the deceased was supplied with cacao for his journey to the next world. Page 72 of the same codex shows an offering of cacao in a pedestal vase made to the dead in their feast in the month Tititl.

These citations bring out the rather general association of cacao with maize and perhaps, more recently, with wheat bread. This combination surely derives from pre-Columbian practice; at least, we find that, in a sacrificial rite performed in Yucatan only two decades after the conquest, the foods offered comprised deer cooked *chirimole* style, three heads of deer, much bread, that is maize, and cacao in *posole* (Scholes and Adams 1938:1:139).

MEDICINAL PROPERTIES OF CACAO

Medical properties have been assigned to cacao at various times. The Chontalapa of Oztoman used the bark of the tree as a cure for bloody stools (*Papeles de Nueva España*, 1905, ser. 2, vol. 6, p. 111); in Yucatan it was prescribed for abdominal pains and for poisoning (Roys 1931:222); the Badianus Aztec herbal recommends cacao flowers as one of the ingredients for potions to remedy such diversity of illnesses as cuts on the feet, mental apathy, and marked timidity (Badiano and de la Cruz 1939:65, 97, 98). In Nicaragua cacao fat was used as a disinfectant on cuts, and Oviedo y Valdés (1851–1855, Bk. 8, Ch. 30) bears personal witness to its efficacy. Cacao was also regarded by the Indians of Nicaragua as a sovereign remedy against snake bite and any kind of poison, and it was believed that a person who had drunk cacao in the morning would not die if bitten by a poisonous snake that day.

According to Fuentes y Guzmán (1932–1933:2, Bk. 2, Ch. 7), doctors in Guatemala prescribed application of cacao fat for burns and for the liver and lungs. We are not told whether these remedies were taken over from the Indians or were post-Colombian discoveries.

Oviedo y Valdés in the passage cited describes a peculiar custom of the Indians of Nicaragua. Both men and women smeared chocolate paste, either plain or mixed with annatto, over their faces, and they regarded this as a way of enhancing their good looks. From time to time they rubbed a finger on this

mixture smeared on their faces and licked it, thereby assuaging their hunger. Gage (1677) mentions that Mestizas, apparently in Chiapas, used cacao fat on their faces.

Garcia de Palacio (1860:37) reports that the Pipil of Izalco, El Salvador, performed libidinous rites including sexual intercourse when they planted cacao seed. The planting was at full moon, and the best seed was first exposed for four nights to the night dew.

In some parts cacao could be drunk only by those of high rank. The common people of Cuicatlan, Oaxaca, were not allowed to drink cacao (*Papeles de Nueva Espana* 1905:4:186); in Nicaragua, according to Oviedo y Valdes (1851–1855) only the powerful people drank it; poor people either did not dare to drink it or could not afford thus to consume wealth.

There is an inferior variety of cacao called patlaxtli or patlachtli. It was given as alms to the poor (Icaza 1928:7). Fuentes y Guzman (1932–1933:2, Bk. 2, Ch. 7) says that it was liked by the Indians, but that the Ladinos found it harmful. From the south coast of Guatemala it was shipped to Yucatan. Wisdom (1940:292) remarks that it is not much liked by the Chorti and Torquemada (1723, Bk. 14, Ch. 42) says that it was mixed with regular cacao, adding that it caused headaches. Patlaxtli is *Theobroma bicolor*, which grows wild throughout the Maya lowlands.

Names for patlaxtli in several Maya languages mean jaguar or jaguar tree; it is tempting to see a connection here with the jaguar apparently decked with cacao pods on the relief at El Baul already mentioned.

PREPARATION OF CHOCOLATE

Within the space of this paper it is impossible to enter into all the ways in which chocolate was served. The commonest recipe in most parts of Middle America called for cacao, ground maize, and annatto. Cacao and annatto figure in the interrogation of the chiefs in the Chilam Balam of Chumayel (Roys 1933:95–96). Chile is a frequent ingredient; the Mopan Maya of San Antonio, British Honduras, have substituted the black pepper of the Old World for chile, and serve this with cacao and ground maize, a truly foul mixture. The many recipes for the serving of chocolate are to be found in various entries listed in the references at the end of this paper, notably in the book of Archbishop Leon Pinelo (1636), who gives 120 recipes. Popenoe (1919) enlivened the pages of the *American Anthropologist* with others. Garcia Payon (1936) delightfully covers the social aspects of chocolate drinking in all ages.

ORIGIN OF THE WORD CACAO

The origins of the words cacao and chocolate are not easily found. There has been a considerable amount of speculation on the subject, but it is to be doubted that any conclusion satisfactory to everyone will ever be reached. Both words certainly derive immediately from Nahuatl, but Nahuatl-speaking peoples probably borrowed in turn from some other language, for Nahuatl-speaking peoples penetrated to cacao-growing areas presumably long after the plant had been brought under cultivation, and then in relatively small numbers.

It has been suggested that the Yucatec use of the term *cacao* is a post-Colombian borrowing from Nahuatl, but there are arguments against this theory. The word *cacao*, with slight variations in pronunciation and spelling, occurs in the following Maya languages or dialects: Yucatec, Mopan, Palencano Chol, Manche Chol, Chorti, Chontal, Tzeltal, Tzotzil, Chanabal, Pokomchi, Kekchi, Quiché, and Cakchiquel. One may safely assume that the term occurs in all or nearly all the remaining Maya languages or dialects, but I have not been able to verify the assumption. In the case of Chontal there is evidence that the term *cacao* was in use in the sixteenth century, and probably much earlier, for, with the locative *tah* before it, the word appears as the name of a Chontal village in Document II of the Paxbolon-Maldonado papers, which is a copy of an original probably drawn up in 1567 (Scholes and Roys 1948:362). Furthermore, in Mopan and Palencano Chol the term is *cucu* and *cucuo*, respectively, these two forms reflecting the shift from an a to a u sound like the a in nurse. From this we can conclude that the word *cacao* was in common usage in those two tongues before the sound shift, of uncertain date, took place. Again, the occurrence of the word *cacau'* as a Chorti family name (Wisdom 1940:252) suggests that that group had a long acquaintance with the term, although a few Chorti names are post-Colombian.

In contrast to the apparently uniform distribution of the term *cacao* throughout the Maya area (it occurs also in the variants form *cacaua* among the Zoque, who are neighbors of the great growers and traders of cacao, the Chontal Maya), most non-Maya and non-Nahuatl-speaking peoples have terms for cacao which are completely unrelated to the Maya *caco* or *cacao* or to the Nahuatl *cacauatl*. A cursory examination of vocabularies shows that observation to be true of Zapotec, Mixtec, Matlatzinca, Otomi, Mazahua, Tarascan, Chiapanec, Xinca, Paya, and Mangue. Not only are the terms in those languages unrelated to cacao; they are also distinct from one another.

As the neighbors of the Aztec, who live for the most part in territories unsuited to the production of cacao, did not use for this alien product terms related to the Nahuatl *cacauatl*, it seems highly unlikely that the distant Maya, who do live in a cacao-producing country, would have discarded their own name or names for the tree in favor of one derived from the Nahuatl. Conceivably, this could have happened in one or two Maya linguistic groups, but certainly not in no less than thirteen Maya languages or dialects, all about which I have been able to gather information. Accordingly, it is surely more reasonable to suppose that the Nahuatl term *cacauatl* derives from the Maya *cacau* rather than the reverse. Possibly the term originated among some other group in the cacao-producing area. As we have noted, the Zoque use the term *cacaua*, but Zoque territory by and large is not cacao-producing.

For chocolate there is no general Maya term. The Yucatec term was *chacau haa*. *Chacau* means hot; *haa*, apparently with a strong h, may have no connection with *haa* or *ha*, 'water,' the h of which is not *recia*, although the difference between simple and strong h must have been slight, for it is now lost. As chocolate was drunk cold, and as *chacau haa* was also used for solid chocolate, the term probably refers neither to hot nor to water. In that connection it may be of significance that the word *haa* occurs in the Quiché term for cocoa butter, *vuihaa*. It is tempting to suppose that *chacau* is the lowland equivalent of highland Maya *cacau*, just as lowland *chac*, 'red,' pairs with highland *cac*. Were that assumption to be validated, it would be evidence that cacao was first cultivated on the Pacific slopes of the Guatemalan highlands, but one would have to explain why the shift appears only in the Yucatec name for chocolate, while the commercial bean continued to be known everywhere as *cacao*. Needless to say, such reasonings are highly speculative.

CACAO'S PART IN CULTURAL DEVELOPMENT

Cacao certainly stimulated trade throughout Middle America and, with trade, the spread of ideas; it may have been partly responsible for the great development of arithmetic and, concomitantly, the growth of that whole framework of time that distinguishes the Maya from all other civilizations. The Maya never learned to measure by weight, and, although measures of capacity were undoubtedly used in large transactions, they served merely to facilitate business deals, they did not supplant the ancient system

of reckoning which had as its unit the single bean. Such transactions surely accustomed the Maya and their neighbors to handle large numbers and perhaps paved the way for the Long Count and later developments in that wide field comprised in the philosophy of time.

If we be permitted to carry this speculation a step further, we should perhaps seek the beginnings of lengthy time calculations, such as the Initial Series, in an area suitable to cacao plantations, namely the belt stretching from the north coast of Honduras westward to central Veracruz, and the lowland strip on the Pacific coast of El Salvador, Guatemala, and Tehuantepec. It may be no more than coincidence that the highlands of Anahuac and of Guatemala, which are unsuited to cacao cultivation, have no Long Count texts, whereas the cacao-producing areas have yielded most of the very early calendrical inscriptions that appear to have progressed beyond the Calendar Round.

ADDENDUM

Ruth Bunzel (1952:25, 44, 113–15, 239–242) emphasizes the importance of cacao in many ritual patterns, but particularly in the ceremonies of requesting a girl in marriage. The petitioners ask for a table for the gift of 25 or 30 cacao beans, and if that is refused, negotiations are at an end. The first gift contains, in addition to the cacao beans, *sapuyul*, a condiment used in the preparation of the cacao drink. Acceptance of this gift indicates the willingness of the girl's family to consider favorably the petition. Other food gifts, together with more cacao beans, are made on subsequent visits. These include atole made with toasted cacao. The expression "bread and chocolate" is used.

Cacao, says Bunzel, is the taboo tree (Spanish *pecado arbol*; Quiché *ahuas che*). It is said that when Christ was pursued by His enemies, He took refuge under a cacao tree, and the tree let fall a blanket of blossoms to hide Him. Christ blessed the tree and decreed that it should never be used for firewood and that its beans should be on the table at all ceremonies, "... whenever my children's children take wives and husbands, they will see you upon the table," and "... you shall always be there to remind them of my sufferings in all the holy ceremonies."

In some ceremonies, such as that of the commemoration of the dead, offerings of coins are now made. It is possible that these have replaced cacao beans in this region which produces no cacao.

Tohil Plumbate and Classic Maya Polychrome Vessels in the Marquez Collection

Robert E. Smith

This collection, located in Merida, Yucatan, Mexico, belonged to the late Alberto Márquez, a collector for twenty-five years. It consists for the most part of Maya archaeological material. At present there is a preponderance of ancient Maya and Mexican pottery, including several thousand Jaina figurines both modeled and moldmade, some 200 X Fine Orange vessels, about 100 fine gray specimens, over 50 Tohil Plumbate pieces, a dozen or more Classic Peten-like Polychrome examples, and some miscellaneous ceramic types. This note has to do with 53 Tohil Plumbate and 12 Classic Peten-like Polychrome vessels.

The exact provenience of the specimens is uncertain. In all probability the great majority came from somewhere along the coast of Campeche, from such sites as Jaina, Huaymil, Isla de Piedra, Campeche, Champoton, and even Isla del Carmen. Since nearly all the objects are whole, they presumably came from tombs or caches. In no instance, however, is the complete contents of a grave known, nor is it even certain that any two vessels were found together. The associations of these valuable finds are lost forever. Today the value of such collections is simply typology; large groups of the same ware or type can be analyzed, and the variety of shapes, techniques of decoration, and styles of design within those groups can be recorded.

TOHIL PLUMBATE VESSELS

Plumbate, a ware with a hard lustrous surface attributable principally to the use of a fine-textured clay

of high iron content and to a reducing atmosphere at temperatures around 950° C. (Shepard 1948:99), may be separated into three main types. The earliest of these is San Juan Plumbate (Shepard 1948:91), possessing a distinctive paste and made up of simple shapes such as the cylindrical vase and the squat, collared jar with little decoration. The most recent type is Tohil Plumbate, thoroughly described and illustrated by Shepard and composed of effigies, jars, tapered vases, barrel-shaped vessels, and bowls, most of them well decorated. A third type, Robles Plumbate, may be placed chronologically between San Juan and Tohil. It is less well known than the other two, and is notable in that much of the design is moldmade (Shepard 1948, Fig. 12n).

In this assemblage of 53 plumbate vessels from the Marquez collection we deal only with the Tohil type. Shepard's valuable plumbate study gives illustrations of all the forms in this collection except two: a double body-bulge jar (Fig. 129.2l) and a recurved-sided tripod jar (Fig. 129.1g), Shepard also reproduces all the decorative techniques found in this group of vessels: grooving; incising and punctuation; modeling, including all effigies; and gadrooning. The last process is described as follows: "The elevation of parts of a surface to produce ribs, lobes or bosses is a common plumbate decorative technique used on bodies of jars and pyriform vases, on bulging necks of jars, and on barrels. The effect is produced by pressing out the vessel wall, or by deep grooving usually combined with modeling and slicing or trimming" (Shepard 1948:17). Shepard also

illustrates all the design motifs found in this collection. All the styles of design recorded here are abstract, including scroll meander, simple scrolls and related elements, rectilinear and simple curvilinear, reverse curve, elaborate scroll bands, and the loop and scroll motifs.

CLASSIC MAYA POLYCHROME VESSELS

The 13 vessels of this type included in the collection are all Classic Maya Polychrome gloss ware (Smith 1955) save one specimen of Classic Maya Dichrome gloss ware (Fig. 129.7d). The exact period or phase to which each example belongs, however, is not always clear. Some have a design style of one phase and the form of another (Fig. 129.6b), or the design style of one period and the form usually belonging to a different period (Fig. 129.7b). Most of the tripod vessels have forms unusual or unknown at such sites as Uaxactun, Piedras Negras, or San Jose; yet most of the associated design styles are typical of those places. Apparently, design style was diffused more widely than vessel shape, and many of these non-Peten-like forms may have originated somewhere in Campeche but with design styles representative of the Peten.

Fig. 129.1. Tohil Plumbate (a–g) and Classic Peten-like Polychrome (h–j) Vessels.

a. Jar, griddle shoulder tripod with rim molding and medial molding; gray with few orange spots.

b. Pyriform pedestal-based vessel with horizontal rim, basal grooves and a grooved band of semi-circles, oblique lines and short pendant lines framed by horizontal grooved lines; orange and dark gray. See Figure 129.3b.

c. Pyriform pedestal-based vessel with rim and medial moldings (made from interior by pushing out); rim ovoid in plan; gray and cinnamon color.

d. Pyriform pedestal-based vessel with rim molding and grooved band of elaborate scrolls and related elements; mottled orange and gray. See Figure 129.3f.

e. Pyriform tripod with wall-base angle and decorated with a grooved *ilhuitl* sign band framed by moldings and horizontal grooves; orange with dark spots. See Figure 129.3j.

f. Pyriform tripod with wall-base angle and decorated with rim molding and two grooved bands, the upper of semicircles, vertical lines, and short pendant lines, the lower of a scroll meander; red and a few gray spots.

g. Recurved-sided tripod jar with two grooved bands, the upper of step-frets, the lower of hand bells and hooks; dark gray to almost black.

h. Tripod basal-flange bowl with solid conical feet; red-and black-on-orange; slipped and burnished all over save base; interior black semi-disk rim band, exterior decorated with upper glyph-like band of repeated heads and lower band of terraces. Tepeu 1 design, but shape unusual. See Figure 129.7a.

i. Tripod, wide-everted rim dish with hollow conical feet; orange-and-black-on-buff decoration on interior only with glyphlike rim band and human figures with corn (?) plants shown on floor; feet have circular side vent. Tepeu 2 (?) type. See Fig. 129.6e.

j. Tripod basal ridge wide-everted rim plate with hollow conical feet; red-and-black-on-orange decoration on interior only with glyphlike rim band and floor design showing two seated human figures and two deer (?), a presentation reminiscent of Ulua-Yojoa Polychrome. See Figure 129.7c

Scale is 1/4.

Fig. 129.2. Tohil Plumbate Jars.

a. Standard jar with slight rim molding and flat base; orange and dark gray evenly distributed; overall ht. 12 cm.

b–d. Standard jars with vertically gadrooned (all worked from exterior) bodies. **B.** slightly concave base; grooved neck band of simple scrolls and related elements; red and some gray; overall ht. 17.5 cm. **c.** concave base; mottled gray and orange; overall ht. 14 cm. **d.** flat base; orange, brown, and dark gray; overall ht. 16.6 cm.

e–g. Bulging-neck tripod jars with hollow oven-shaped feet. **E.** gray and orange; overall ht. 15 cm, brown with gray areas; overall ht. 17.1 cm. **g.** orange with gray patches; overall ht. 14.6 cm.

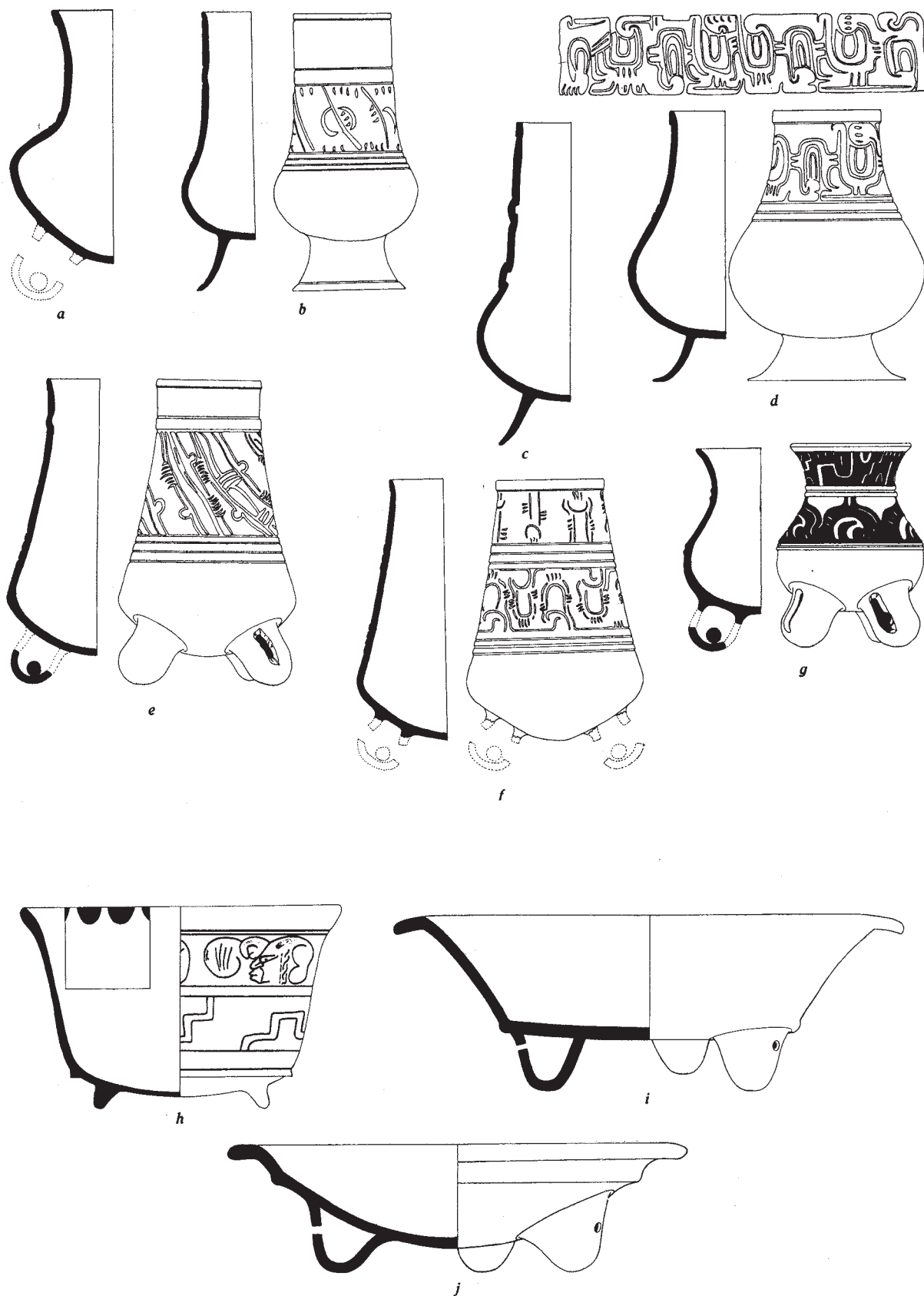
h. Bulging-neck pedestal-based jar; drab gray and light brown; overall ht. 12.7 cm.

i. Griddle shoulder jar with concave base; neck and body grooving; gray with orange edging; overall ht. 17.7 cm.

j. Standard tripod jar with hollow oven-shaped feet; decorated at body-neck junction with three lateral ridges; red with black fire-clouded areas; overall ht. 17.2 cm.

k. Standard pedestal-based jar with horizontal grooves at neck-body junction and at mid-body; orange neck and body with dark gray areas on body base and pedestal; overall ht. 16 cm.

l. Double body-bulge jar with rim molding and dimple base; red and dark gray or almost black area on one side of body and over most of neck interior; overall ht. 11.5 cm, wall thickness 0.3–0.5 cm.



129.1. Tohil Plumbate and Classic Peten-like polychrome vessels.



a



b



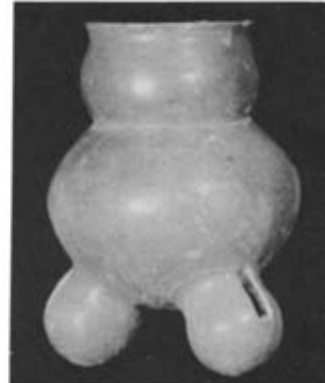
c



d



e



f



g



h



i



j



k



l

129.2. Tohil Plumbate jars.

Fig. 129.3. Tohil Plumbate Pyriform Vessels.

a–h. Pyriform pedestal-based vessels, a, horizontal grooving and widely spaced petal-shaped gadroons; gray with copper tints; overall ht. 17.6 cm; b. see Figure 129.1b. c. grooved elaborate scroll band framed by lateral moldings; mostly orange and some gray; overall ht. 21.3 cm; d. grooved elaborate scroll band framed by lateral moldings, gadrooned lower body, and potter's mark on base (Shepard 1948, Fig. 9, fourth from left); drab and gray; overall ht. 21.3 cm; e. two sets of three horizontal grooves above gadrooned lower body; orange and drab; overall ht. 18.3 cm; f. see Figure 129.1d; g. grooved band of simple scrolls and related elements; orange and green-gray; overall ht. 20.6 cm; h. rim molding and upper body gadroon above grooved scroll meander framed by horizontal grooving and gadrooned (worked from exterior) lower body; pedestal has grooved scroll meander; dark gray with orange edging; overall ht. 21.4 cm.

i–l. Pyriform tripods with hollow oven-shaped feet; i. grooved band of simple scrolls and related elements framed by lateral moldings; orange plus gray areas; overall ht. 18.7 cm; j. see Figure 1.29e; k. two sets of three grooves (may be chamfered; greenish copper color; overall ht. 19.8 cm; l. rim molding and two body moldings; mostly green-gray with orange areas; note crack mending holes (3 sets of 2 each); ovoid orifice with lip diam. 6 by 6.7 cm, overall ht. 15.2 cm.

Fig. 129. 4. Tohil Plumbate Animal and Human Effigy Jars (Styles According to Shepard 1948, Figure 13).

a, b. Style I, head alone; a. human; brownish red with gray to black spots; crazed; concave base; overall ht. 17.5 cm; b. Jaguar and gadrooned (worked from interior) body; red with few black or dark gray areas; concave base; overall ht. 12.8 cm.

c–i. Style III, crouching; c. Jaguar; potter's mark y; concave base; overall ht. 15 cm; d. frog; gray with orange edging concave base; overall ht. 12 cm; e. frog; gray with orange edging; concave base with four frog feet; overall ht. 13 cm; f. Jaguar; rim molding; gray with orange edging; concave base; overall ht. 11.5 cm; g. Jaguar; gray with orange spots and edging; concave base with potter's mark ø; overall ht. 13.8 cm; h. monkey; brown and gray in spots; concave base; overall ht. 14.5 cm; i. pisote; orange with dark gray areas; legs hollow and open at bottom; overall ht. 14.8 cm.

j. Style IV, standing; frog; all gray save orange head and feet; rim molding; overall ht. 7.8 cm.

k, l. Style VIII, standing with forelegs in round; k. Jaguar with human head in mouth; orange and

gray; dimple base; lip broken off; overall ht. 12.5 cm; l. animal with hollow front legs open at bottom and solid slab rear legs; dark gray; neck cut down; overall ht. 13.7 cm.

m, n. Style IXa, realistic body; m. jaguar; gray with orange edging; some crazing; neck cut down; overall ht. 14 cm; n. animal; orange with gray areas; overall ht. 15.7 cm.

Fig. 129.5. Tohil Plumbate Anthropomorphic and Bird Effigies.

a–g. Anthropomorphic styles according to Shepard (1948, Fig. 17); a. Style I, bearded head; rim molding; concave base; gray with reddish areas; overall ht. 10.8 cm; b. Style I, old bearded man; orange plus dark gray areas; overall ht. 15.9 cm; c. Style I, front and side view; rim molding; bronze with dark gray or black areas; overall ht. 17.9 cm; d. Style IVb, entire figure, kneeling; gray; overall ht. 20 cm; e. Style IVb, entire figure, kneeling; reddish brown; concave base; overall ht. 14.9 cm; f. Style IVb, entire figure, kneeling; gray with orange edging; overall ht. 17.2 cm; g. Style IVb, entire figure, kneeling old man with spiked birdlike tail; overall ht. 15.8 cm.

h, i. Bird effigies (Shepard 1948, Fig. 16,k); h. jar; concave base, orange and dark gray; overall ht. 8.5 cm; i. miniature effigy; flat base; rim molding; gray and orange; over all ht. 8.5 cm.

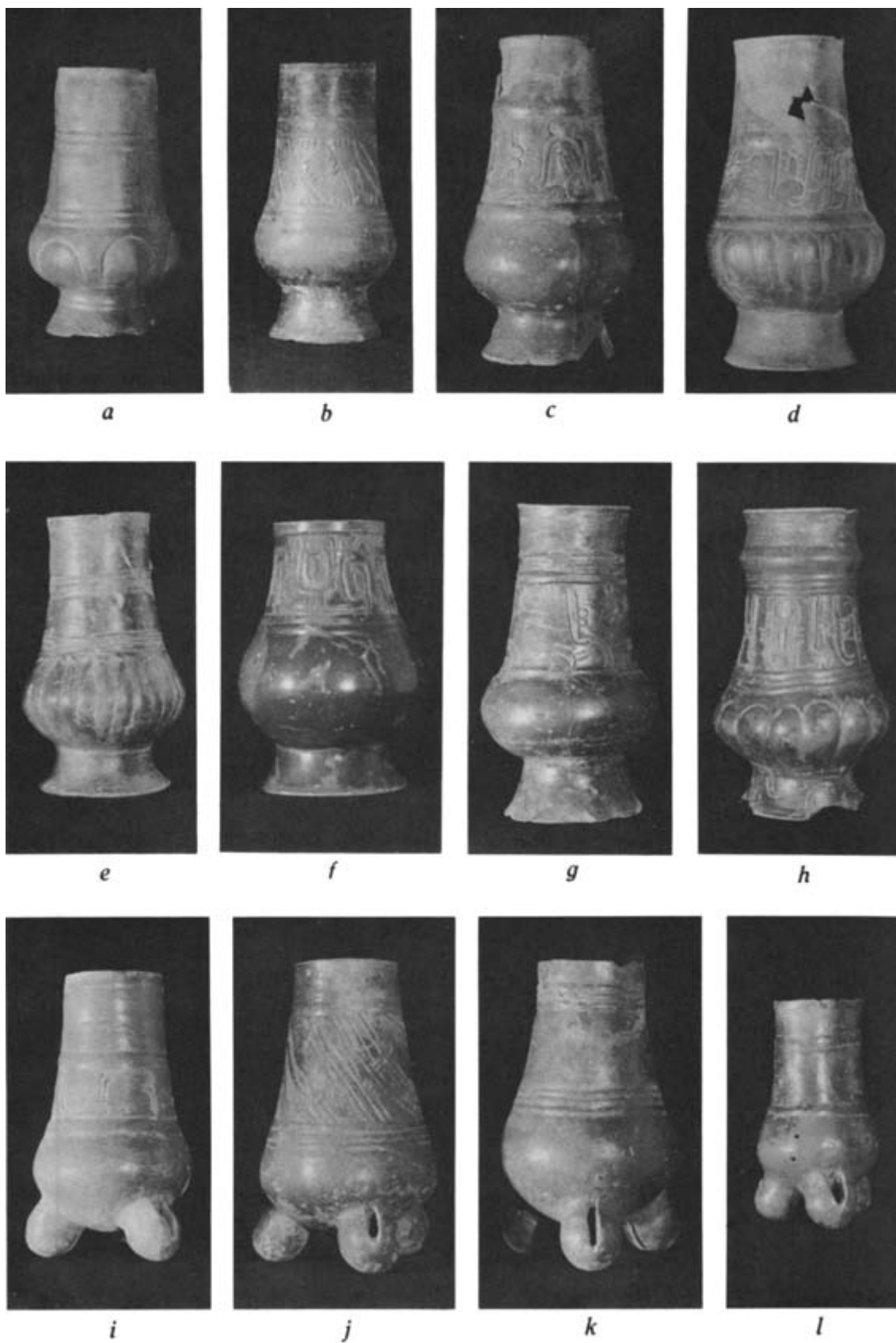
Fig. 129.6. Classic Peten-like Polychrome Tripods.

a. Wide everted-rim tripod plate with three solid oven-shaped feet; red-and-black-on-orange; exterior slipped lightly and burnished, interior both slipped and burnished and decorated with encircling rim band of black hand bells and floral floor design; lip diam. 22.8 cm, wall thickness 0.5–0.7 cm. Tepeu 2 type.

b. Tripod plate with three solid nubbin feet; red-and-black-on-orange; slipped and burnished on interior and exterior down to base and partly on feet; only interior decorated with encircling glyph band of repeated heads and seated human figure as floor motif; lip diam. 26.2 cm, wall thickness 0.7–1.0 cm. Tepeu 2 form and Tepeu 1 design style.

c. Tripod convex-based dish with hollow cylindrical feet open at base; red-and-black-on-orange; exterior lightly slipped and burnished on upper half; interior slipped, burnished, and decorated with encircling band of crosshatched ovoids framing a deerlike figure on floor; mending holes; lip diam. 31 cm, wall thickness 0.5–0.8 cm. Tepeu 1 (?).

d. Tripod flat-based plate with hollow oven-shaped feet; red-and-black-on-orange; exterior lightly slipped and burnished to base, interior slipped, bur-



129.3. Tohil Plumbate pyriform vessels.



a



b



c



d



e



f



g



h



i



j



k



l



m



n

129.4. Tohil Plumbate animal and human effigy jars (style according to Shepard 1948: fig. 13).



a



b



c



d



e



f



g



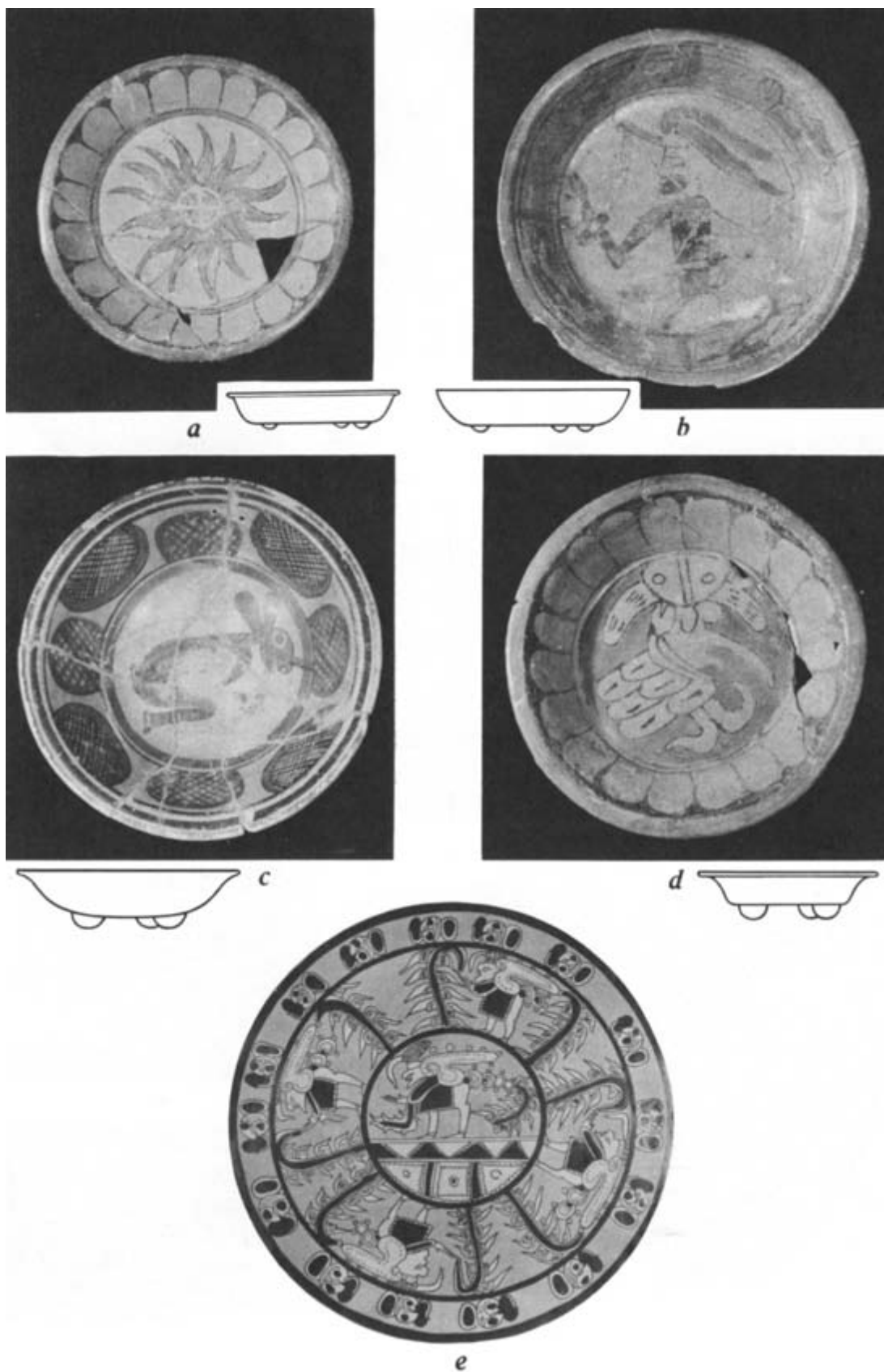
h



i



129.5. Tohil Plumbate anthropomorphic and bird effigies.



129.6. Classic Petén-like polychrome tripods.

nished, and decorated with encircling band of black hand bells framing a grotesque floor motif; lip diam. 25 cm, wall thickness 0.6–1.0 cm. Tepeu 2 type.

e. See Figure 129.1.i.

Fig. 129.7. Classic Peten-like Polychrome and Dichrome (d) Vessels.

a. See Figure 129.1h.

b. Basal-flange tripod dish with hollow oven-shaped feet; red-orange-and-black-on-cream; exterior smoothed, interior slipped, burnished, and decorated with an encircling rim band of step-frets and circles and a quatrefoil floor motif framed by a glyph-like band; lip diam. 22.4 cm, wall thickness 0.6–0.8 cm. Tepeu 2 design style and Tzakol 3 form.

c. See Figure 129.1.j.

d. Deep bowl with flat base; slipped and burnished all over; interior dark brown, exterior orange decorated with vertical grayish black stripes; ht. 13.8 cm, wall thickness 0.5 cm. Tepeu 1 type.

e. Deep bowl with flat base; slipped and burnished all over; interior decorated with black rim

band and vertical dark stripes on buff background, exterior decorated with multicolored design; ht. 13.2 cm, wall thickness 0.4–0.5 cm. Tepeu 1 type.

f. Tripod plate (actual vessel not seen; base supposedly had three feet); multicolored with buff or orange slip; figure painted group motif on floor framed by conventionalized glyph band; dimensions not known but a rather large plate.

g. Hemispherical bowl with flattish base; slipped and burnished all over; interior red rim band on bright orange background, exterior red-and-black-on-orange including a rim band of frets and dots and body decorated with parallel vertical stripes in contrasting red and orange tones; lip diam. 16 cm, wall thickness 0.6–0.7 cm. Tepeu 2 type.

h. Hemispherical bowl with flattish base; slipped and burnished all over; interior red rim band on bright orange background, exterior red-and-black-on-orange *including* glyphlike band of repeated cartouches and body decorated with parallel vertical stripes; lip diam. 16 cm, wall thickness 0.5–0.7 cm. Tepeu 2 type.



a



c



b



d



e



f



g



h

129.7. Classic Peten-like polychrome and dichrome vessels.

A New Inscription from the Temple of the Foliated Cross at Palenque

Heinrich Berlin

In Note 120 of this series J.E.S. Thompson stated that a fragmentary text from the Temple of the Sun at Palenque, published by the writer in Note 24 of this same series, fitted another fragment seen by Thompson in the Palenque storeroom. This statement is incorrect. Although the fragment published by Thompson fits the hieroglyphic text published in Note 24, it does not fit the actual fragments of the stone. His reading, however, remains valid.

When I was at Palenque in 1956 I had time to inspect the storeroom. Among the pieces there I noticed many carved stone fragments marked "Temple of the Foliated Cross." On being assembled they turned out to form a complete tablet, a drawing of which is published here (Fig. 130.1) with the kind permission of Sr. Alberto Ruz.

The tablet is composed of fourteen fragments (one small one is not shown separately on the drawing). Six were extracted during the 1953 excavations by Cesar Saenz from a pit inside the sanctuary, where he also found fragments of the large human figure tablets which existed on the façade of the sanctuary on either side of the doorway, together with splinters of glass. Hence it is evident that we are dealing with one or more rather modern excavations later refilled with whatever material was at hand.

Another fragment was found, also by Saenz, in 1954 on the lower temple terraces.

Seven fragments, according to the catalogue, were in the storeroom before 1951. Three of them are catalogued as from the Temple of the Foliated Cross; no provenience is given for the remaining four. As

I do not remember having seen any of these seven fragments during the field seasons from 1940 to 1942, when I was at Palenque, I imagine that they were found between 1943 and 1945 by the late Miguel Angel Fernandez.

The whole tablet measures 173 by 33 by 5 cm. On the narrow edge at the right there is carved a frame (Fig. 130.1); the corresponding left edge is plain. Examination showed the front walls of the sanctuary to be 25.5 cm thick. The new tablet exactly fits the door jamb in height, and the excess width of 7.5 cm corresponds to the thickness of the human figure tablet on the façade. For checking the projection of the façade tablet, we possess at present only fragments of the left (northern) one, which is about 5 cm thick. This tablet further shows a frame decoration 15 cm wide on the left side and 6 cm wide on the right side. Assuming that there were two jamb tablets, then the frames on the narrow edges were carved in order to complete the frames of the human figure tablets. I conclude, therefore, that the tablet under discussion must originally have been set against the right (southern) jamb.

It is strange that not one of the earlier writers on Palenque, who may have seen these jamb tablets *in situ*, mentions them. It is, of course, possible that they had been ripped off in pre-Spanish times. The writer regrets that he did not ascertain the exact location in the debris of the fragments published in Note 24. Incidentally, these were found in 1941 and not in 1942 as stated in that note.

The situation at the Temple of the Sun is similar. The thickness of the sanctuary wall of the temple is

130.1. Tablet from sanctuary in Temple of the Foliated Cross, Palenque.

32 cm, and the width of the fragment published in Note 24 is about 41 cm. Blom and LaFarge (1926–1927:1, Fig. 158) have published another fragment, Blom's Tablet No. 1. This is 39 cm wide and was found behind the Temple of the Sun. Here, then, we appear to have good evidence for the existence of inscribed tablets for both door jambs. It is curious that both of them show the 5 Eb 5 Kayab date.

On the other hand, the sanctuary walls of the Temple of the Cross are 31.5 cm wide. It is just possible that Tablet No. 1 once belonged to the Temple of the Cross. This requires the assumption that Blom's informant gave an incorrect provenience for this piece. Were that the case, then in each of the three temples one of the door jamb tablets would have had the same Calendar Round date. Other fragments, now in the storeroom, found around the Temple of the Cross may eventually supply the solution to this problem.

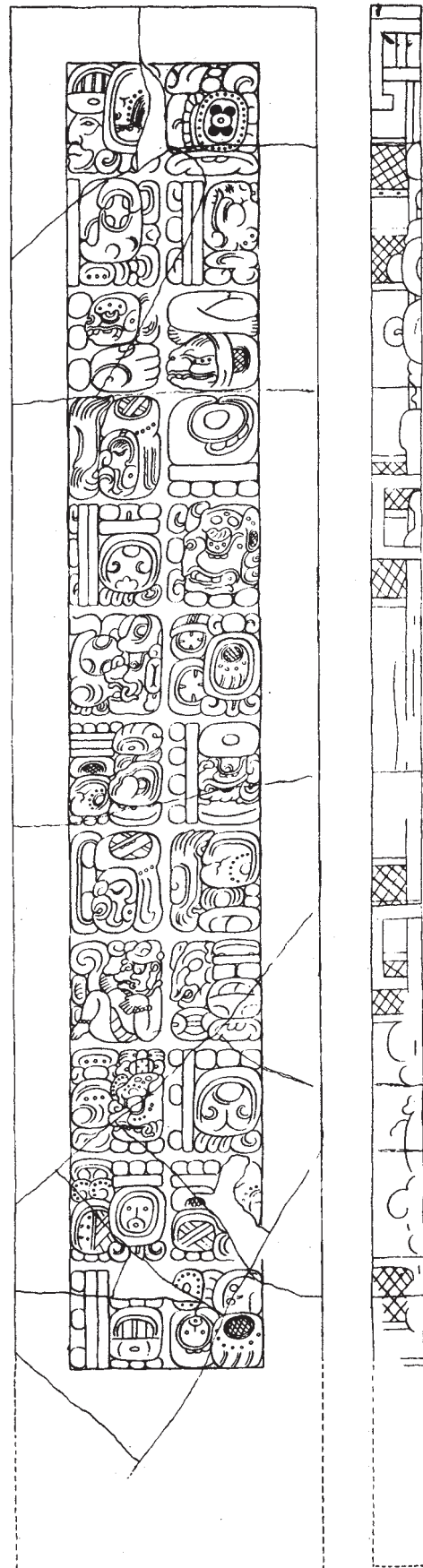
The reading of the calendaric part of our tablet presents no problem. A1-B4 read 5 Eb, G3F, 5 Kayab, 11D, 3C, X, B, 9A, corresponding to the Long Count 9.12.19.1.12.

The lunar data are exactly the same as those found with the same date on the fragment reported in Note 24. Again, Glyph G3 is recorded instead of Glyph G4, which this date calls for. Unless one assumes that the mistake was carelessly copied from whichever tablet was the earlier, one must suppose that this shift was intentional. It is curious that on both tablets a Calendar Round date, "wrongly" placed in the Long Count by Glyph G, is followed by a complete lunar series, which usually occurs only with Initial Series.

Glyphs A5 to B7 have been read by Thompson in Note 120.

The remaining glyphs, A8-B12, show a distance number in B10 of 3 uinals and 8 kins, a Calendar Round date 8 Ahau 8 Uo in A11b B11a, what is probably the seating of the tun in B11b, and 13 Katuns in A12. Indeed, adding the distance number to 9.12.19.1+.12 we reach 9.13.0.0.0 8 Ahau 8 Uo:

A1-A2	(9.12.19.14.12)	5 Eb 5 Kayab
A5-B5	1.7.11	Subtract
B6-A7	(9.12.18.7.1)	1 Imix 19 Ch'en
B10	3.8	Add to first date
A11-A12	(9)13.(0.0.0)	8 Ahau 8 Uo, seating of the tun



Palenque T of FC Sanc Jamb

The Marquez Collection of X Fine Orange Polychrome Vessels

Robert E. Smith

Approximately 200 X Fine Orange and fine orange polychrome vessels, the latter in small number, are included in the collection of the late Alberto G. Marquez of Merida, Yucatan, Mexico. The specimens, mostly whole and in excellent state of preservation, are said to have been found for the most part on Isla de Jaina and at Huaymil. The latter site, sometimes called Huaymin, is located 16 km north of Jaina (Shook 1955) on the northern coast of Campeche. Although the provenience of these vessels is by no means certain, there is no doubt about their belonging to, or being associated with, the X Fine Orange and fine orange polychrome categories. The present description of this collection is a contribution to our knowledge of shape, methods of decoration, and styles of design.

WARE

The essential characteristics of X Fine Orange paste are its fine texture, homogeneity, lack of temper, and orange color. The color is always even throughout the section; according to Brainerd (1941), although usually orange, it may occasionally range to gray. Since this collection is composed mostly of whole vessels it was possible to inspect sections of only a comparatively few cracked or slightly broken specimens. In general, the paste color is somewhat lighter than the slip or surface, which may on occasional specimens be well burnished rather than slipped. The most common surface color is 2.5YR5/8 all color readings from Munsell 1929). Other colors noted

(28 specimens examined for colors are, in order of importance, 2.5YR4/8, 2.5YR6/8, 5YR6 /6, 10R4/6. Thirteen specimens have a large darkened (2.5YR4/6 and 10R4/8) lower wall area covering from half to two-thirds of the vessel's exterior. These are confined to six shapes, all shown in Figure 131.1d, a, 1 (two examples); b, 2 (six examples); b, 4 (two examples); c (one example); d, 1 (one example); d, 2 (one example). Three pyriform vessels have blue paint on the inside of the pedestal bases. Two of these blues suggest Maya blue (Fig. 131.8c), and one is purplish blue (Fig. 131.12d).

The fine orange polychromes included in this study are of two varieties: the four-color polychromes (red-black-and-white-on-orange) and the three-color polychromes (red-and-black-on-orange, red-and-white-on-orange, and white-and-black-on-orange). The four-color polychromes appear to have approximately the same surface color range as the X Fine Orange examples. The three-color polychromes differ somewhat in surface color (5YR 5/4, 5YR5/6, and 5YR4/6) from the X Fine Orange range. The reds recorded on all fine orange polychromes examined are 7.5R3/6, 7.5RP3/4, and 2.5YR5/6. The four-color polychromes occur with four shapes (Fig. 131.1b, 5; d, 3, 4; g). The most frequent (Fig. 131.14, h-k) is a common X Fine Orange form; the others (Figs. 131.16c, e; 131.17h) are rare X Fine Orange shapes. The three-color polychromes are for the most part found with forms (Fig. 131.1d, l, 4; e, 3; f) not normally associated with the X Fine Orange type, but the white-and-black-on-orange is used on two com-

mon X Fine Orange shapes (Fig. 131.1b, 5, 7). These last (Fig. 131.14, g, 1) also suggest Cerro Montoso Fine Polychrome.

VESSEL FORM

SHAPE CLASSIFICATION (FIG. 131.1)

Brainerd (1941:164–169) has grouped X Fine Orange form into five main classes: globular jars; pyriform vessels; cylindrical vessels; bowls of several distinctive forms, including flat-bottomed basal-break and round-bottomed basal-break graters; tripods, hemispheroid and taper lip bowls; and rare and elaborate forms. In the Marquez collection the same main classes, with certain additions and new variations are present:

a. Jars, the standard form having a globular body with angle at body-neck juncture, usually a concave base, and (1) with outcurving or (2) with flaring neck. Other modifications of the jar are (3) a strongly convex or bulging neck plus three hollow conical feet, and (4) a high outcurving neck, rather sharp shoulder-body angle, and slightly concave base.

b. Pyriform vessels: (1) tapering to a relatively small orifice and supported by three hollow bulbous feet with single vents (in rear, on the side, or rarely in front) of wedge, ovoid, or slit shape; (2) same but bulbous shape; (3) same but effigy (hollow heads with square, wedge, ovoid, or slit vents), either animal (Fig. 131.7c–e) or human (Fig. 131.7a, b); frog effigies with concave base and no feet; (5) like 1 but with bell-shaped pedestal base instead of feet; (6) outcurving walls tapering to a relatively small orifice and angling convexly to a flat base, and supported by three hollow bulbous feet with the same vent pattern as 1; and (7) supported by a bell-shaped pedestal, one of which is of the rattle type (Fig. 131.12e).

c. Cylindrical vases with bell-shaped pedestal base.

d. Bowls: (1) hemispherical, a few with taper lip (not illustrated, but see Brainerd, 1941, pl. II, m) and all with flat bottom; (2) hemispherical supported by ring-stand; (3) subhemispherical with everted rim and flat bottom; (4) subhemispherical with direct rim and three hollow conical feet; (5) globular body, restricted orifice, and flat base; (6) globular body, restricted orifice or (7) with very low neck, both 6 and 7 being supported by three hollow bulbous or oven-shaped feet; (8) deep and nearly cylindrical, flat-bottomed; (9) barrel-shaped; and miscellaneous, including (10) two specimens with restricted orifice, shoulder-body angle, and flat base, and (11) two grater specimens with flaring walls angling to convex base and supported by three hollow bulbous feet.

e. Plates or dishes: (1) basal-break with three hollow bell-shaped or 2 bulbous feet, (3) same but flat-bottomed, and (4) basal-break receptacle with gutter spout, everted rim, and three hollow feet.

f. Drums of hand-bell shape.

g. A figurine container with a vertical tubular spout.

A few points of interest may be noted. A number of pyriform vases were cut down at the rim, possibly because of chipping or breakage (Figs. 131.6g, p, r; 131.10n), though it is hard to detect that some of them have been cut down and finished off at a lower level. One vessel (Fig. 131.16d) has four holes drilled through the wall on either side of a crack, evidence of lace mending of cracks. Finally, we note certain similarities: in shape of X Fine Orange to both Tohil Plumbate and Z Fine Orange vessels. Parallels with the former are numerous, as can be seen in the following list comparing our illustrations with those of Shepard (1948):

Jars. Figs. 131.1a, l; 131.13b; Shepard, Fig. 10a–e; Fig. 131.1a, 3; Shepard, Fig. 10j; Figs. 1a, 4; 4d; Shepard: Fig. 8c

Pyriforms. Figs. 131.1b, l; 131.6i; Shepard, Figs. 5,q; 11j; Figs. 131.1b, 3; 131.7a–f; Shepard, Fig. 5t; Figs. 131.1b, 4; 131.13o, p; Shepard, Fig. 14f, g; Figs. 131.1b, 5; Fig. 131, 10d; Shepard, Fig. 8g–i; Figs. 131.1b, 7; 131.12b–d, f; Shepard Fig. 8j.

Cylindrical vases. Figs. 131.1c; 131.12m; 131.17a–d; Shepard, Figs. 7d, g; 11m; 12e.

Bowls, Figs. 131.1d, 11; 131.5h, i; Shepard, Fig. 6d.

The X and Z Fine Orange matching forms are two, both bowls the hemispherical bowl with flat base and taper lip (see Brainerd 1941, Pl. II, m; X Fine Orange; Pl. III, t; Z Fine Orange); and the hemispherical bowl with stepped ring-stand base (Figs. 131.1d, 2, and 131, 4j; X Fine Orange; see Berlin, 1956, Fig. 3c, d, Z Fine Orange).

DECORATION

Techniques of Decoration (legend of Fig. 131.1). Nine techniques of decoration, rarely used singly but generally combined so that two or three are represented on a vessel, are exhibited in the collection: grooving, black painting, use of rim or body moldings, gouging-and-incising, modeling, polychrome painting, incising, dichrome painting, and stucco-and-painting.

Grooving, done before slipping, is usually applied as horizontal rim or body banding in conjunction with other techniques such as painting and gouging-and-incising. Rarely is it used by itself (Fig. 131, 1a, 3).

Black Painting is often applied with horizontal grooving or a rim molding. It is also used frequently with the gouged-and-incised and the modeled techniques. Occasionally black paint decoration is combined with gouging-and-incising through black and gouging-and-incising through white.

Moldings are produced by slicing back the vessel wall to form a clapboardlike horizontal step. With one exception (body moldings, Fig. 131.12e), the moldings are at the rim. Sometimes the molding is the only decoration (Fig. 131.13c), but it may be combined with several other techniques.

Gouging-and-Incising is a form of carving wherein the decoration is produced by scooping or gouging out small areas to accentuate an incised design. It is occasionally applied together with grooving and/or a rim molding. More often it is associated with black painted design. Less frequently it is combined not only with black design but also with a black or white background through which it is cut.

Modeling, used only with effigy vessels, usually involves an animal (Fig. 131.13h, j, k, m, n) or human (Fig. 131.13g, i, l) head attached (welded) to the vessel body wall. In a few specimens the limbs are modeled, but more often these, together with other details, are portrayed by means of black paint. The modeled limbs usually carry some incised as well as black details (Fig. 131.13o, p).

Polychrome Painting, is used with rim moldings on pyriform vessels (Fig. 131.14i–k), in which case it consists of red, black, and white on an orange slip. Another such vessel (Fig. 131.14, l) combines polychrome painting, black painting, and gouging-and-incising through white, and still another pyriform vase (Fig. 131.14g) is decorated in black-and-white-on-orange. Two bowls with red and black designs are embellished by a gouged-and-incised through white (Fig. 131.16e) and an incised through white (Fig. 131.16c) band. Two drums (Fig. 131.17g, i) have red-and-white-on-orange decoration, and one (Fig. 131.5m) has a red-and-black-on-orange arrangement. The only basal-break vessel with polychrome decoration has an interior rim band of black abstract motifs on a specular hematite red stripe (Figs. 131.51; 131.17e).

Incising, save for the details on modeled effigy limbs mentioned under modeling, and the more prevalent occurrence with gouging, is rare. Gouging and incising is a post-slip process. There is a single effigy vessel with the limbs formed by incising (Fig. 131.13, l). Incising is used to make "potter's marks" (Fig. 131.5n) on the base of five pyriform vessels (Figs. 131.8b; 131.10, 1; 131.11g; 131.14, 1; 131.15g) and on one basal-break tripod dish (Fig. 131.5j). Among 200 vessels examined, only six bear what evidently

are potter's marks, and these six are not outstanding, as might be expected for signed vessels, though none is crude. Another post-slip use for incising is a form of doodling or perhaps a post-finish attempt at further embellishment (Fig. 131.8h).

Dichrome occurs but twice. It consists of a horizontal red stripe on the interior. This decoration is not painted but is produced in the firing and therefore makes an uneven rim stripe (Fig. 131.4e). This same style of stripe is present on hemispherical bowls with taper lip, a few of which were in the Marquez collection but are not illustrated here (Brainerd 1941, Pl. II, m).

Stuccoed-and-painted decoration is present on one vase (Fig. 131.17d), on which vestiges of green stucco were scattered.

DESIGN STYLE (FIGS. 131.2, 131.3)

Design may be considered under four main headings: abstract, naturalistic, conventionalized, and glyphic. Nearly all the abstract design is found in banding, which may be one or more horizontal encircling bands. Naturalistic design occurs both in bands and as overall decoration. Conventionalized design is used in bands and in panels. Glyphic representation is always found in bands.

Abstract design is applied in several ways, specifically black painting, gouging-and-incising, and polychrome and dichrome painting. These methods occur separately (Fig. 131.2) or in various combinations (Fig. 131.3). In black painting the numerically predominant designs, all used in bands, are: step-fret, step-fret and V, concentric semicircles, and semicircles. Associated with the technique of gouging-and-incising, the principal designs, also used in bands, include: scroll meander, rectangle and circle, reverse curve, and braid. Accompanying polychrome horizontal striping and concentric circles in bands are the predominating designs, all others occurring but once each. Dichrome-designs are very rare, the only two noted being horizontal striping.

In respect to abstract design style, a close parallel exists between the gouged-and-incised scroll meander (Fig. 131.3c, 1, 2) and reverse curve (Fig. 131.3e) of X Fine Orange and the grooved simple scroll and related elements (Shepard 1948, Figs. 37c; 38b) and reverse curve design (Shepard 1948, Fig. 36d, f) of Tohil Plumbate.

Naturalistic design motifs all fall within the painted or modeled-and-painted categories. Like the abstract designs, they occur either as a single technique or in combination with other techniques of decoration. The outstanding painted motif is black birds (Fig. 131.3h, 1, 2), always represented in bands.

Other painted motifs are sometimes used as overall decoration (black hands, Fig. 131.3n), at other times represented in bands (serpents, Fig. 131.3m, and large birds, Fig. 131.3o). The modeled-and-painted representations include human (Fig. 131.3i), jaguar (Fig. 131.3k), frog (Fig. 131.3, 1), and monkey (Fig. 131.3, l).

Conventionalized design is applied in black, usually by means of gouging-and-incising, and rarely in polychrome: Again, these techniques are used either separately or in combination. The predominant motifs occurring in bands are floral, either bud-like (Fig. 131.3e, 1, 2) or quatrefoil (Fig. 131.3q, 1, 2). Other motifs include scroll grotesques, all gouged-and-incised, two found in panels (Figs. 131.10, 1; 131.12m), one in a band (Fig. 131.10c), and also a band of shell-like representations painted in black (Fig. 131.9d).

Glyphic Design occurs rarely, but appears both in black (Fig. 131.6f and by means of incising through white (Fig. 131.16c). The motifs are the *ilhuitl* sign and a kin-like sign, always in bands.

We have not yet considered floor decoration. Apart from the two graters, which have incised circles placed centrally and quartered, each quadrant being divergently hatched by incision, five vessels from this collection, three bowls and two tripod plates, have black painted floor designs. Two of the bowls have concentric circle motifs, one simple (Fig. 131.4k), the other with an outer zigzag line giving a starlike effect (Fig. 131.4g). The third bowl (Fig. 113.1a) shows an animal of some sort, possibly a dog or deer, on the floor, but it is weathered. One tripod plate has a floral design (Fig. 131.5j), the other an excellent turtle (Fig. 131.5k), painted on the floor and surrounded by a black step-fret, band.

SUMMARY

In this study of a large collection of well-preserved fine orange vessels we have examined ware, form, techniques of decoration, and styles of design. Since the paste of fine orange appears to the eye to be the same for all types, we must rely on form, techniques of decoration, and styles of design in determining whether or not a specimen is of X type.

Three-quarters of the vessels in this collection are pyriform; the function of this shape is not clear save that it is hardly utilitarian, seeming best adapted to ceremonial purposes. The other shapes, such as the jar, bowl, and dish, are all standard utility forms, but the vessels are so highly decorated that they appear to have been destined for ceremonial usage. All the X Fine Orange vessels so far found apparently were made for ritual use. Furthermore, most of the pyri-

form, effigy, and jar shapes are paralleled in Tohil Plumbate, which one can presume served primarily ceremonial purposes.

Of the decorative techniques on X Fine Orange vessels the most common is painting, usually black. Second comes gouging-and-incising, a technique closely associated with Early Classic Maya art. Another method of decoration is modeling, used in the forming of the heads and occasionally the limbs of animal and human effigy vessels. These effigy types are closely paralleled in Tohil Plumbate and Nicoya Polychrome. Rarely the heads may have been mold-made. As previously noted, four-color polychrome fine orange shares its commonest form with X Fine Orange, but the forms associated with three-color polychrome fine orange are rare in X Fine Orange. The decoration of these polychromes, the main differences in which involve design rather than technique suggests X Fine Orange, Cerro Montoso, and in some cases Classic Maya decoration.

Aside from the classification of design into abstract, naturalistic, conventionalized, and glyphic, there are four different styles presumably deriving from four traditions: the black-on-fine orange, the gouged-and-incised-on-fine orange, the red-black-and-white-on-fine orange, and the red-and-black-on-fine orange.

The black design patterns are mostly abstract and in interlocking bifold symmetry. The gouged-and-incised abstract patterns, on the other hand, are usually composed of elements different from those of the black and are arranged in slide reflection symmetry. The red-black-and-white design patterns have much in common with the black. Interlocking bifold symmetry and many of the same patterns, such as the step-fret, step-fret and V, concentric circle, and terrace and scroll, occur. Even a naturalistic serpent motif is represented, and there are a few conventionalized elements, including the quatrefoil and the shell. Save for the quatrefoil, and in one instance the stepfret, the gouged-and-incised designs are foreign to the red-black-and-white-on-fine orange style. To me, however, there is a clear association between this four-color polychrome and Maya Late Classic (Tepeu 2) style. In fact, both the black-on-fine orange and the red-black-and-white-on-fine orange design patterns resemble more closely those found in the Maya Late Classic period than do the design patterns habitually employed in the gouged-and-incised technique. These last have a close relationship with the Tohil Plumbate abstract design styles, both in patterns, such as simple scrolls and related elements, elaborate scroll bands (scroll meanders), and the reverse curve, and in the arrangement, which is usually slide reflection symmetry.

The fourth style, red-and-black-on-fine orange, has simple decoration; it is primarily striping, both horizontal and vertical. It has not yet been possible to associate this style with any definite tradition.

Interestingly enough, the same design elements, even the same design patterns, have been found in both the black-on-fine orange and the gouged-and-incised techniques, namely, the stepfret, reverse curve, braid, the ilhuitl sign, and floral devices. This fact leads me to believe that in this so-called Toltec period, perhaps better described as early post-Classic period, the Late Classic tradition is still so strong that it is reflected in separate bands, although frequently associated on the same vessel with a band or bands of pure early post-Classic style probably derived from the same tradition as that of the Tohil Plumbate abstract designs. In attempting to trace the abstract design tradition of Tohil Plumbate, however, we are faced with a difficult and complicated problem. For instance, the most important design element is the scroll, which goes back to pre-Classic times and continued to be used throughout Mesoamerica until after the arrival of the Spaniards. It does not seem to be related to the scroll used in the Classic Veracruz style as delineated by Proskouriakoff (1953), or to the Early Classic scroll patterns at Uaxactun (Smith 1956). Moreover, although there is a rather close similarity between this device as found at Uaxactun and Monte Alban (Bernal 1949), the Monte Alban style appears to offer more parallels to gouged-and-incised X Fine Orange and to Tohil Plumbate than does the Uaxactun style.

We have noted that fine orange polychrome occurs in two varieties, three-color and four-color. The latter, wherever found, is usually associated with X Fine Orange. It conforms to the X Fine Orange type in ware, in design, and in its most common shape. In the matter of design, X Fine Orange fostered two styles: the black, which suggests a Classic Maya tradition; the gouged-and-incised, which parallels the Toltec style. The fine orange four-color polychrome also shows the Classic Maya and Toltec styles of design, often on the same vessel. It seems to me, therefore, that fine orange four-color polychrome, if not included in the X Fine Orange type, is at least closely associated

ABBREVIATIONS AND FREQUENCIES OF DECORATIVE TECHNIQUES (FIGS. 131.1–131.3)

B	Black design	74
BGI	Black and gouged-and-incised	46
BGIB	Black and gouged-and-incised through black	6

BGIW	Black and gouged-and-incised through white	7
BMo	Body molding	1
D	Dichrome	2
GI	Gouged-and-incised	6
GIW	Gouged and incised through white	1
GR	Grooved	4
M	Modeled	1
MB	Modeled and black	14
MI	Modeled and incised	3
MP	Modeled and polychrome	1
P	Polychrome	10
PBGIW	Polychrome, black, and gouged-and-incised through white	1
PGIB	Polychrome and gouged-and-incised through black	2
PGIW	Polychrome, black, and gouged-and-incised through white	1
PIW	Polychrome and incised through white	1
RMo	Rim molding	16
U	Undecorated	2

FIG. 131.1. VESSEL SHAPES, DIMENSIONS, AND TECHNIQUES OF DECORATION.

a. Jars

1. Standard: lip diam. 9.0–9.8 cm, av. 9.3 cm; max. diam. 15.0–17.1 cm, av. 16.5 cm; base diam. 6.0–7.1 cm, av. 6.6 cm; neck ht. 4.7–5.0 cm, av. 4.9 cm; overall ht. 14.8–17.2 cm, av. 16.2 cm; wall thickness 0.3–0.5 cm to 0.5–0.6 cm, av. 0.4–0.6 cm. B (1), Gr (1), U (1).

2. Flaring-neck: lip diam. 15.5 cm, max. diam. 26.3 cm, base diam. 10.5 cm, neck ht. 3.0 cm, overall ht. 23.2 cm, wall thickness 0.5–0.7 cm. B (1).

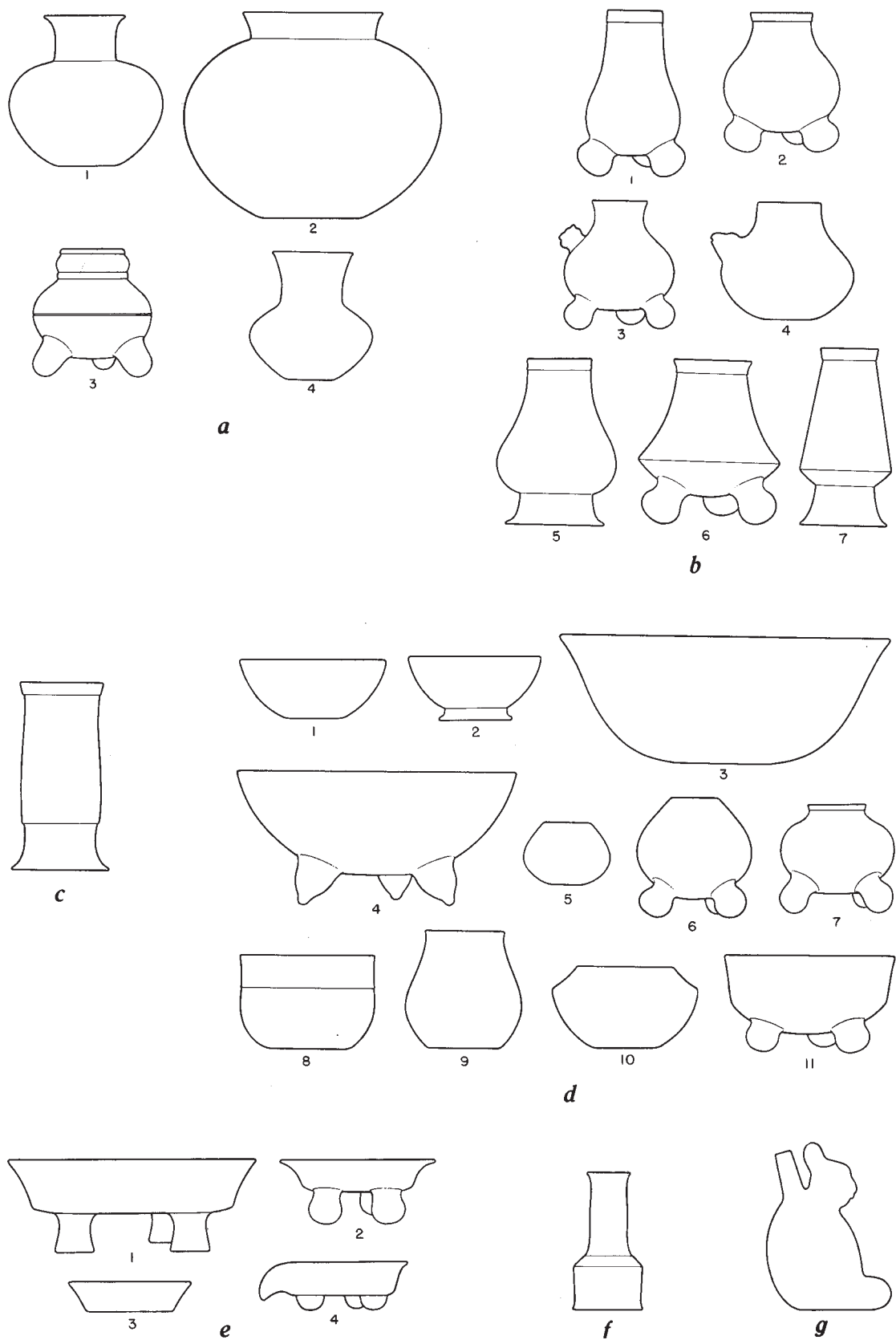
3. Bulbous-neck tripod: lip diam. 7.4 cm, max. diam. 13.2 cm, overall ht. 13.7 cm, wall thickness 0.3–0.6 cm. Gr (1).

4. High-neck, angled-body; lip diam. 9.2 cm, max. diam. 14.0 cm, base diam. 5.0 cm, neck ht. 5.5 cm, overall ht. 14.0 cm, wall thickness 0.5–0.6 cm. BMo (1).

b. Pyriform Vessels

1, 2. Tripods, typical pear-shaped, and more globular body: lip diam. 5.3–8.7 cm, av. 6.8 cm; max. diam. 9.5–15.5 cm, av. 12.4 cm; overall ht. 12.6–18.4 cm, av. 15.0 cm; wall thickness 0.3–0.6 cm, av. 0.37–0.55 cm. B (14), BGI (3), BGIB (2), BGIW (1), GI (1), RMo (9).

3. Tripod effigy: lip diam. 5.3–7.6 cm, av. 6.3 cm; max. diam. 10.5–15.2 cm, av. 12.5 cm; base diam. 4.5–



131.1. Vessel shapes, dimensions, and techniques of decoration.

6.6 cm, av. 5.7 cm; overall ht. 13.7–18.9 cm, av. 15.4 cm; wall thickness 0.3–0.9 cm, av. 0.35–0.55 cm. M (1), MB (14), MI (1).

4. Effigy: lip diam. 6.6–7.1 cm, max. diam. 14.8–17.6 cm, base diam. 5.2–6.5 cm, overall ht. 11.0–13.0 cm, wall thickness 0.3–0.6 cm. MI (2).

5. Pedestal-based: lip diam. 5.2–8.3 cm, av. 6.6 cm; max. diam. 8.0–13.7 cm, av. 10.9 cm; base diam. 7.2–12.1 cm, av. 9.6 cm; overall ht. 10.5–22.9 cm, av. 16.9 cm; wall thickness 0.2–0.8 cm, av. 0.4–0.57 cm. B (32), BGI (13), BGIW (2), P (5), RMo (3).

6. Tripod with body-base angle: lip diam. 5.0–9.0 cm, av. 6.4 cm; max. diam. 9.5–16.0 cm, av. 11.7 cm; base diam. 4.0–6.0 cm, av. 4.7 cm; overall ht. 12.7–20.5 cm, av. 16.6 cm; wall thickness 0.2–0.8 cm, av. 0.36–0.56 cm. B (9), BGI (25), BGIB (2), BGIW (1), GI (2), RMo (1).

7. Pedestal-based, with body-base angle: lip diam. 5.6–7.1 cm, av. 6.3 cm; max. diam. 9.8–11.2 cm, av. 10.5 cm; base diam. 9.0–10.8 cm, av. 9.9 cm; overall ht. 18.9–20.8 cm, av. 19.7 cm; wall thickness 0.2–0.6 cm, av. 0.34–0.54 cm. B (2), BGI (3), GI (1), PBGIW (1).

c. Cylindrical Pedestal-Based Vases: lip diam. 7.0–13.2 cm, av. 9.8 cm; max. diam. 8.8–11.8 cm, av. 9.8 cm; base diam. 8.3–13.3 cm, av. 11.2 cm; overall ht. 11.5–23.2 cm, av. 19.7 cm; wall thickness 0.3–0.7 cm, av. 0.5 cm. B (5), BGI (1), BGIB (1), GI (1), RMo (2).

d. Bowls

1. Hemispherical: lip diam. 11.9–34.0 cm, av. 22.2 cm; base diam. 4.5–9.5 cm, av. 7.3 cm; overall ht. 5.1–12.2 cm, av. 8.2 cm; wall thickness 0.5–1.0 cm, av. 0.57–0.85 cm. B (1), D (1), P (1), U (1).

2. Hemispherical ring-stand: lip diam. 14.5–21.4 cm, av. 16.6 cm; base diam. 7.0–11.0 cm, av. 8.9 cm; overall ht. 6.5–7.3 cm, av. 7.1 cm; wall thickness 0.4–0.8 cm, av. 0.43–0.58 cm. B (1), BGIW (1), D (1), RMo.

3. Subhemispherical, with everted rim: lip diam. 30.8–37.0 cm, base diam. 11.0 cm, overall ht. 10.5–14.0 cm, wall thickness 0.6–0.8 cm. BGIW (1), PIW (1).

4. Subhemispherical tripod: lip diam. 27.5–31.0 cm, av. 29.4 cm; base diam. 8.5–12.5 cm, av. 10.0 cm; overall ht. 13.2–15.4 cm, av. 14.1 cm, wall thickness 0.5–1.0 cm, av. 0.59–0.75 cm. BGIB (1), PGIB (2), PGIW (1).

5. Restricted-orifice: lip diam. 5.0–5.6 cm, max. diam. 8.8–9.9 cm, overall ht. 6.9–7.0 cm, wall thickness 0.4–0.8 cm. B (2).

6. Restricted-orifice tripod: lip diam. 4.7 cm, max. diam. 12.9 cm, overall ht. 13.4 cm, wall thickness 0.3–0.5 cm. BGI (1).

7. Low-necked tripod: lip diam. 6.0–6.5 cm, max. diam. 12.0–12.6 cm, overall ht. 12.3 cm, wall thickness 0.4–0.8 cm. GI (1), Gr (1).

8. Cylindrical deep: lip diam. 15.4 cm, base diam. 8.9 cm, overall ht. 10.3 cm, wall thickness 0.4–0.5 cm. B (1).

9. Outcurving-sided deep: lip diam. 9.0 cm, max. diam. 13.4 cm, base diam. 7.7 cm, overall ht. 13.0 cm, wall thickness 0.5–0.7 cm. Gr (1).

10. Restricted-orifice angle-sided: lip diam. 11.1–11.7 cm, max. diam. 16.3–19.2 cm, base diam. 9.5 cm, overall ht. 8.8–10.8 cm, wall thickness 0.3–0.5 cm. B (1), BGIW (1).

11. Tripod grater: lip diam. 18.8–19.1 cm, overall ht. 11.3–11.5 cm, wall thickness 0.5–0.6 cm. B (2).

e. Plate and Dishes

1. Tripod basal-break plate: lip diam. 28.0 cm, base diam. 22.2 cm, overall ht. 10.2 cm, wall thickness 0.6–0.9 cm. B (1).

2. Tripod basal-break dish: lip diam. 17.5 cm, base diam. 12.0 cm, overall ht. 7.0 cm, wall thickness 0.5 cm. B (1).

3. Flat-based basal-break dish: lip diam. 14.0 cm, base diam. 9.5 cm, overall ht. 3.0 cm, wall thickness 0.3–0.4 cm. P (1).

4. Tripod basal-break dish with gutter spout: lip diam. 15.0 cm, base diam. 11.7 cm, overall ht. 5.5 cm, wall thickness 0.4–0.8 cm. GIW (1).

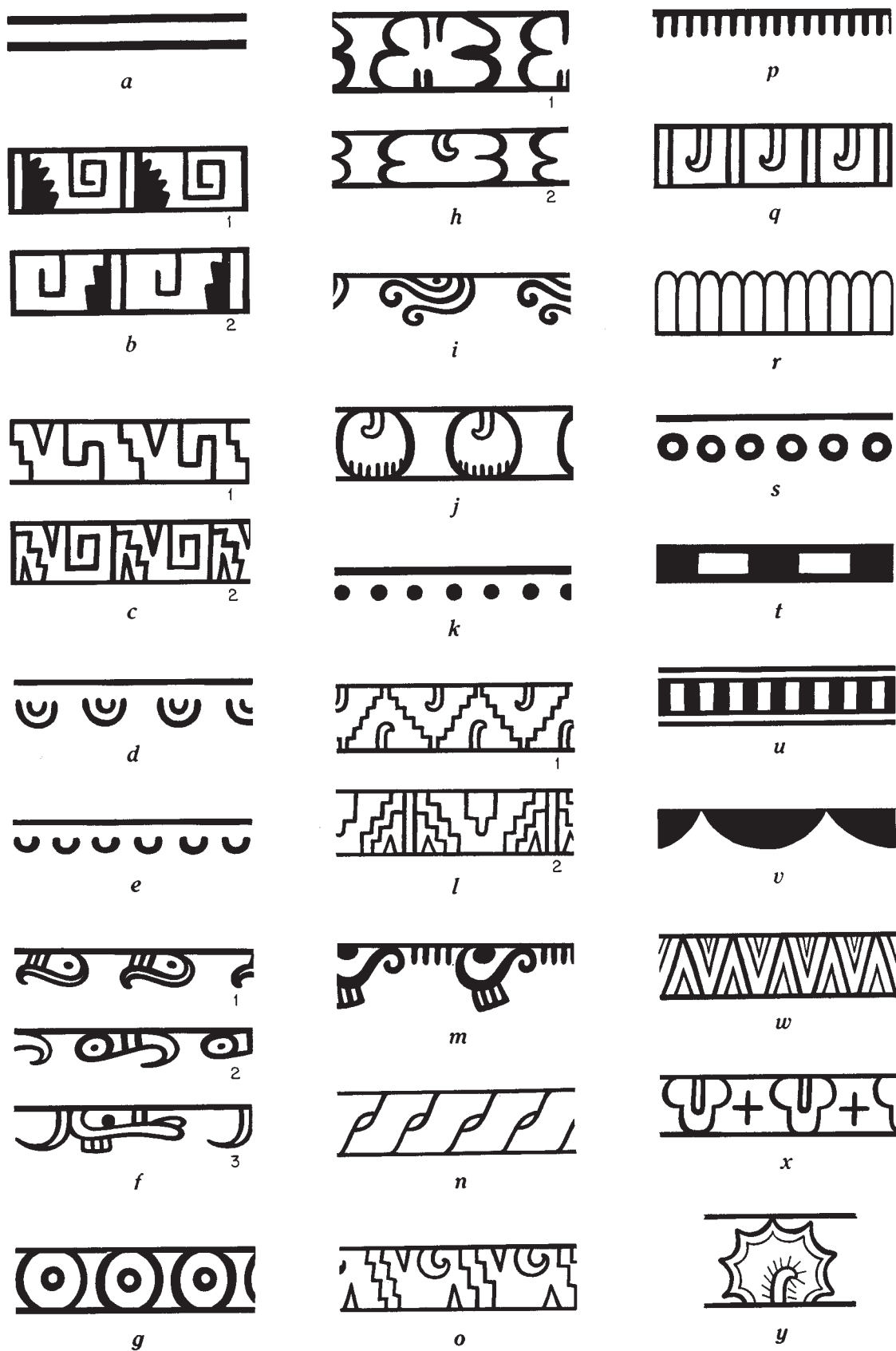
f. Drums: lip diam. 8.1–9.6 cm, av. 9.1 cm; max. diam. 7.7–8.5 cm, av. 8.2 cm; base diam. 5.1–6.0 cm, av. 5.7 cm; overall ht. 15.1–17.9 cm, av. 16.9 cm; wall thickness 0.3–0.5 cm, av. 0.3–0.5 cm. P (3).

g. Spouted Effigy Vase: overall ht. 19.0 cm. MP (1).

Scale is 1/6.

FIG. 131.2. STYLES OF DESIGN PRIMARILY PAINTED ABSTRACT.

a. Horizontal stripes and/or lines, B (numerous), Gr (numerous), P (3), D (2); *b.* Step-fret, B (37), GI (1), P (1); *c.* Step-fret and V, B (22), P (1); *d.* Concentric semicircles, B (13); *e.* Semicircles, B (11); *f.* Beaks or snouts, B (11); *g.* Concentric circles, B (4), P (2); *h.* Figure eight and other elements, B (6); *i.* Scroll border, B (6); *j.* "Down-balls," B (6); *k.* Dotted line, B (5); *l.* Terrace and other elements, B (4), P (1); *m.* S and pendant lines, B; *n.* Guilloche, B (3); *o.* Step and other elements, B (3); *p.* Pendant lines, B (2); *q.* Hook and vertical lines, B (2); *r.* Vertical lines joined at top, B (2); *s.* Circles, B (2); *t.* Rectangles, B (1), P (1); *u.*



131.2. Styles of design: primarily painted abstract.

Horizontal and vertical striping, P (2); v. Semidisks, B (1); w. Concentric triangles, P (1); x. Trefoil and cross, P (1); y. Star and hook, P (1).

**FIG. 131.3. STYLES OF DESIGN
ABSTRACT, NATURALISTIC,
CONVENTIONALIZED, GLYPHIC.**

a, b. Primarily painted abstract designs.

a. hand bells and scrolls, P (1).

b. miscellaneous: 1. V, hook, squiggle, and pendant lines, BGIW (1); 2. squiggle, B (1); 3. triangle and U band, BGI (1); 4. U band, BGI (1); 5. guilloches, circle and dots, and V's, BGI (1).

c-g. Primarily gouged-and-incised abstract designs.

c. scroll meander, GI (27), GIB (6), GIW (3), B (2).

d. rectangles and circles, GI (7), GIW (2).

e. reverse curve, GI (4), GIW (2), B (1).

f. braid, GI (5), B (1).

g. scroll and other elements, GI (4).

h-o. Primarily black or modeled and black naturalistic designs.

h. black birds, B (24).

i. human effigy, MB (8), B (1).

j. effigy frogs, MI (3), MB (2).

k. effigy jaguars, MB (3), MP (1).

l. effigy monkey, MB (1).

m. serpents, B (2), P (1).

n. hands, B(1).

o. large birds, B (2).

p-s. Primarily gouged-and-incised conventionalized designs.

p. budlike floral designs, GI (9), B (5).

q. quatrefoils GI (5), B (1), P (1).

r. scroll grotesques, GI (3), P (1).

s. shell. B (1).

t, u. Mostly gouged-and-incised glyphic motifs.

t. *ilhuitl* signs, B (2), GI (2).

u. kin-like sign, GI (1).

**FIG. 131.4. JARS AND BOWLS WITH
BLACK PAINTED AND GOUGED-
AND-INCISED DECORATION.**

a-d. Jars. *a.* tripod with bulbous neck, body groove; *b.* standard, decorated with black serpents; *c.* globular body and flaring neck, black step-fret and V band; *d.* angled body and high neck, body and neck moldings.

e-g. Hemispherical bowl; *e.* interior red band; *f.* exterior black band of concentric circles; *g.* interior floor design, black.

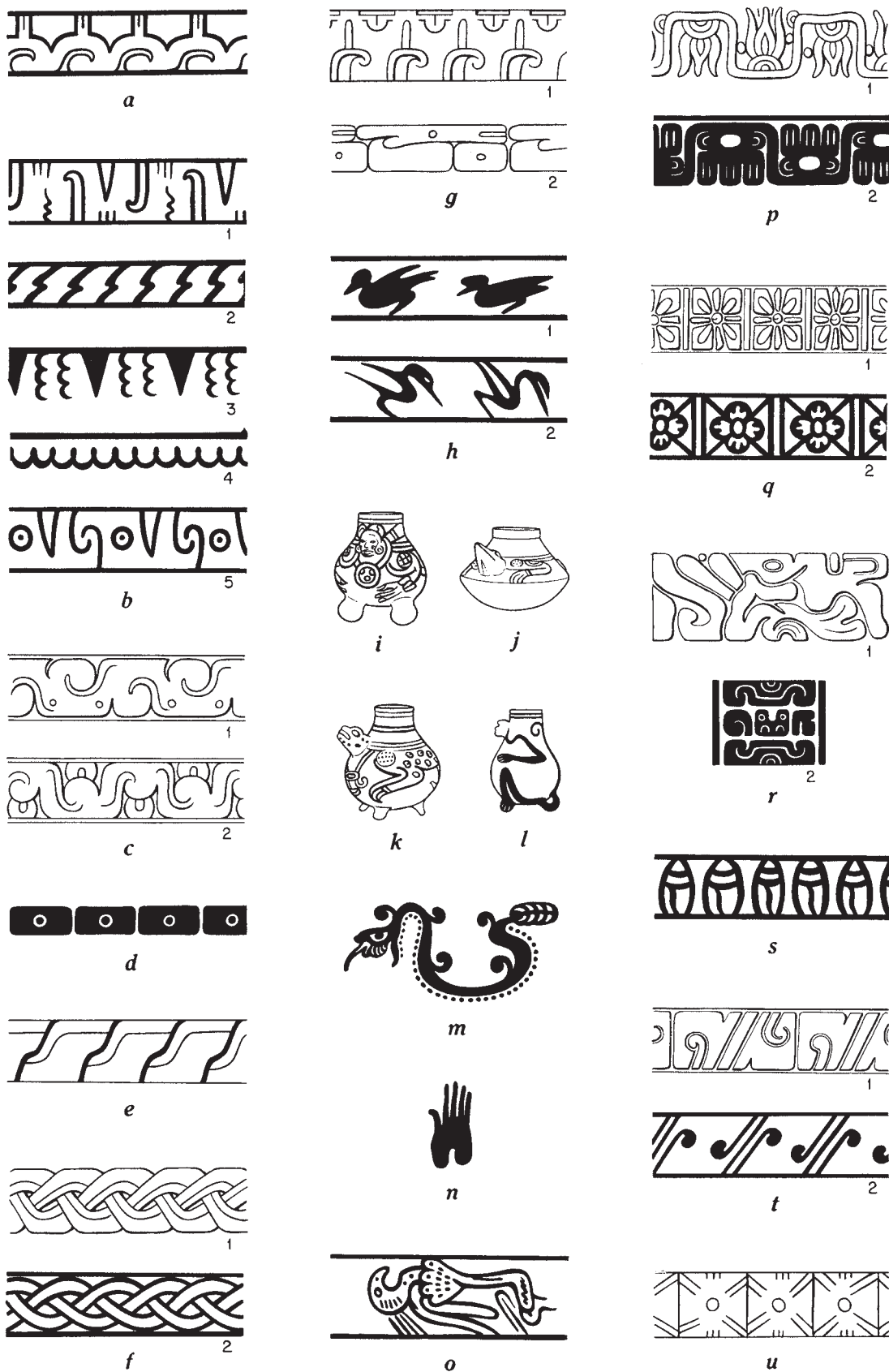
h-j. Hemispherical ring-stand bowls. *h.* interior red band; *i.* exterior black bird band; *j.* interior band, of black semi-disks, and exterior gouged-and-incised step-fret band with black stripe below.

k, l. Subhemispherical tripod bowls; *k.* interior horizontal black rim stripes and concentric circle floor design, exterior gouged-and-incised through black scroll meander; *l.* interior horizontal red and black stripes, exterior gouged-and-incised through black upper band with scroll meander and floral bud designs and lower band of black beaks or snouts. Scale is 1/4.

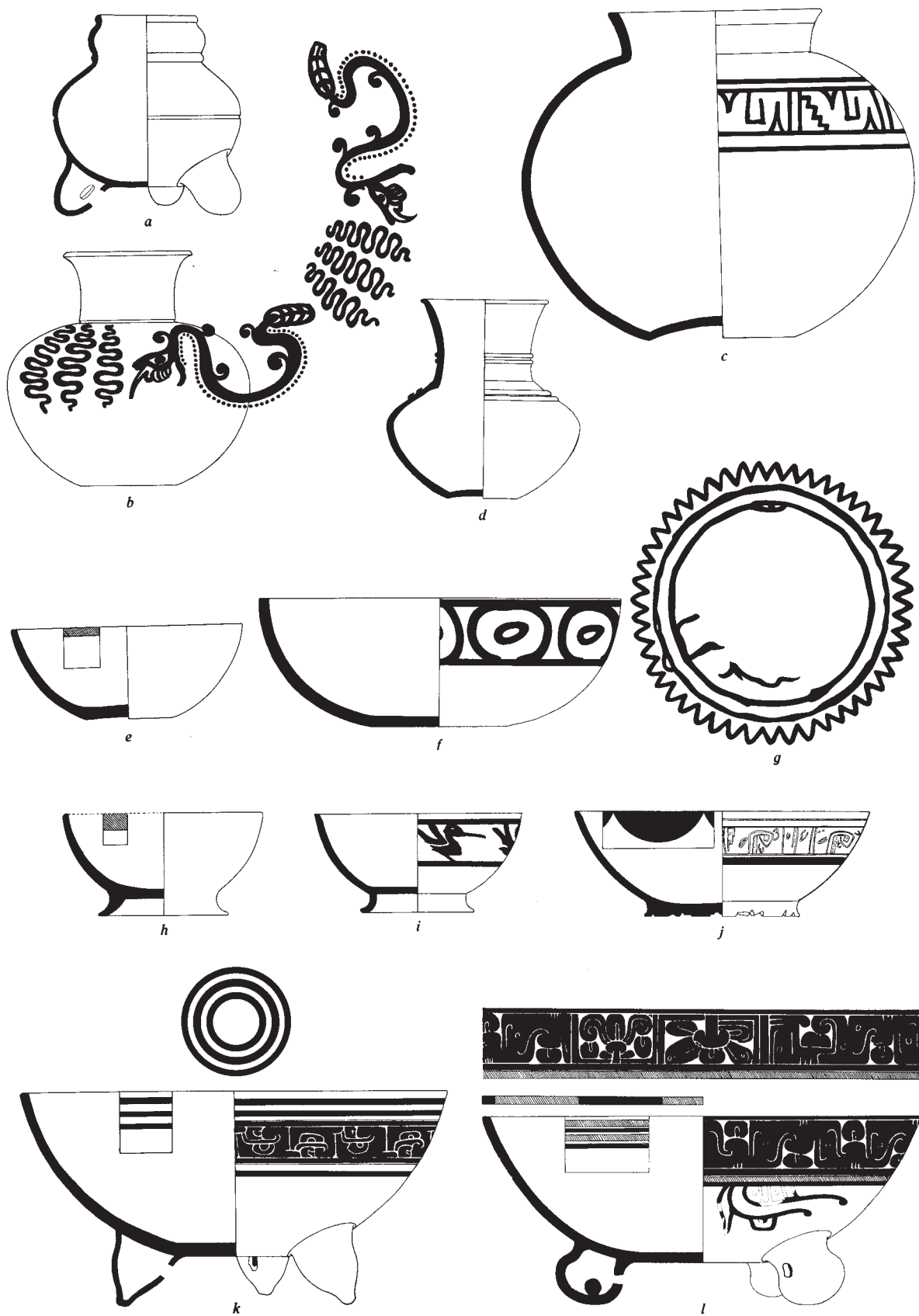
**FIG. 131.5. BOWLS, PLATES, DISHES,
DRUM WITH BLACK, GOUGED-AND-
INCISED, AND GROOVED DESIGN.**

a, b. Restricted-orifice bowls; *a.* exterior rim band of black "down-balls" (Thompson 1950:113); *b.* exterior rim band of black step-fret and V's.

c. Restricted-orifice tripod bowl with gouged-and-incised reverse curve band framed by black stripes and band of beaks or snouts.



131.3. Styles of design: abstract, naturalistic, conventionalized, glyphic.



131.4. Jars and bowls with black painted and gouged-and-incised decoration.

d. Low-necked tripod bowl grooved horizontally and vertically, giving gadrooning effect.

e. Nearly cylindrical deep bowl with vertical black stripes and rim molding.

f. Barrel-shaped deep bowl grooved vertically and with modeled disks.

g. Restricted-orifice angle-sided bowl with step-fret black rim band.

h, i. Tripod grater bowls; *h.* exterior black bird band; *i.* exterior black step-fret band.

j. Tripod basal-break dish having hollow bell-shaped feet, black floral floor design, black dots on red lip band, exterior black step, hook, and V band, and an incised potter's mark on base (Fig. 5n, 4).

k. Tripod basal-break dish having hollow bulbous feet and decorated with exterior black step-fret band, interior black step-fret rim band, and black turtle floor motif.

l. Flat-based basal-break dish with interior specular hematite red rim stripe with a badly weathered black design.

m. Hand-bell-shaped drum with red and black decoration.

n. Incised "potter's marks" on vessel bases (1, Fig. 8b; 2, Fig. 10,1; 3, Fig. 11g; 4, Fig. 5j; 5, Fig. 15g.).

Scale is 1/4.

FIG. 131.6. PYRIFORM TRIPOD VESSELS ALL HAVING HOLLOW BULBOUS FEET AND MOST HAVING RIM MOLDINGS.

a-d. Black step-fret bands; *c.* lower band of black birds separated from upper band by three horizontal encircling grooves; *d.* lower S band.

e-g. Black step-fret bands; *e.* lower band of black step-frets separated from upper band by three horizontal encircling grooves; *f.* lower band of black il-

huitl signs; *g.* tapering neck cut down; lower band of black split terraces, tau's, and v's.

h. Black figure eight band framed by paired horizontal black lines.

i. Black upper band of hooks separated by parallel vertical lines, lower band of black figure eights, black horizontal lines, and grooved U band in between. Two black bands, upper of concentric circles, lower of circles.

k. Two black bands, upper of birds, lower of scrolls.

l. Two black bands, upper of floral buds, lower of pendant lines.

m. Band of black floral panels bordered by band of U's.

n. Undecorated save for rim molding.

o. Gouged-and-incised band of scrolls and terraces.

p-r. Gouged-and-incised through black bands of scroll meanders.

p. lower black band of beaks or snouts.

q. lower black concentric semicircle band. *r,* tapering neck cut down. Scale is 1/4.

FIG. 131.7. EFFIGY JARS OR PYRIFORM VESSELS.

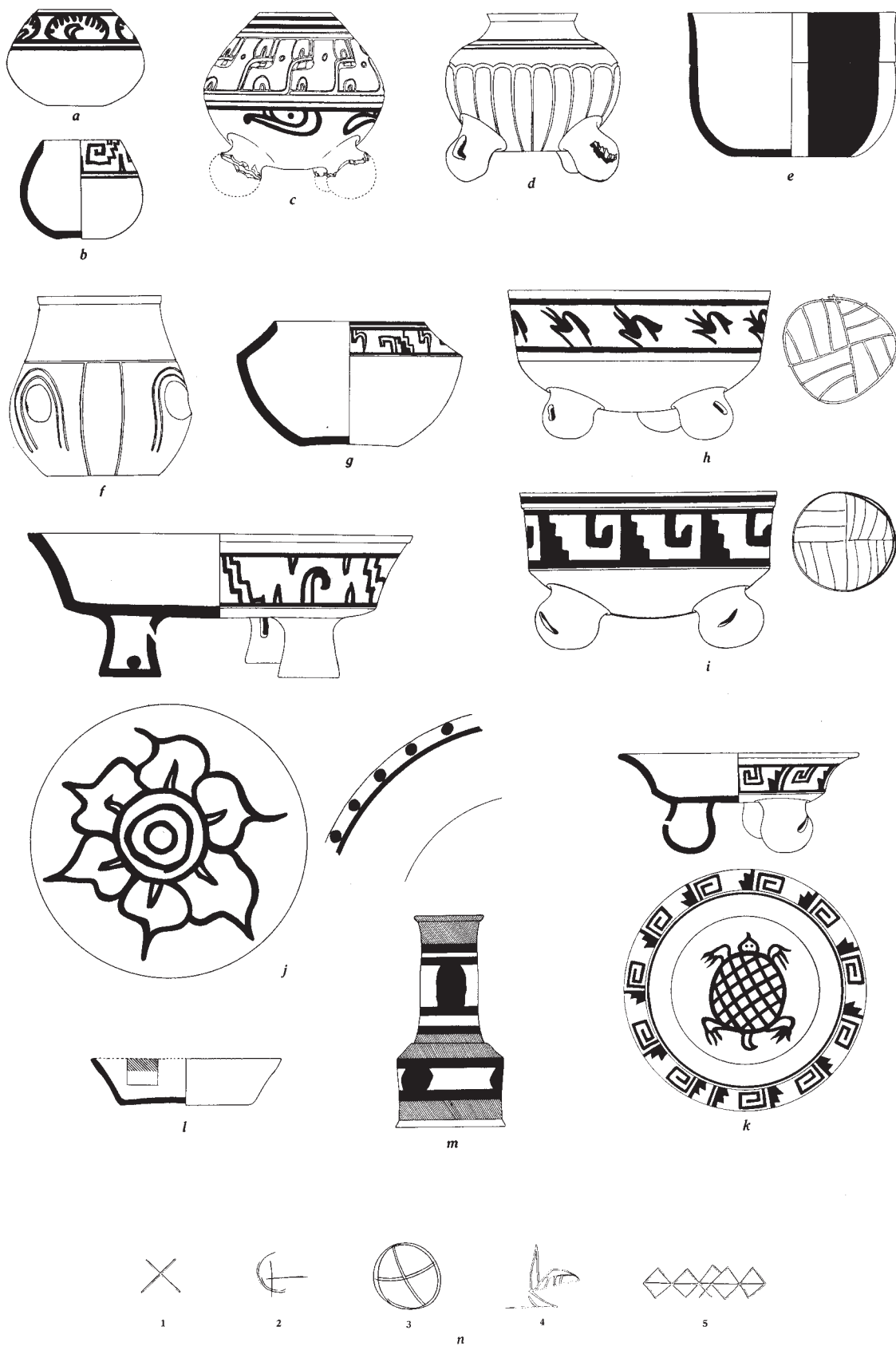
a, b. Human figures with modeled heads and black painted bodies.

c-e. Animal figures with modeled heads and black painted bodies; *c.* head missing; *d, e.* jaguars.

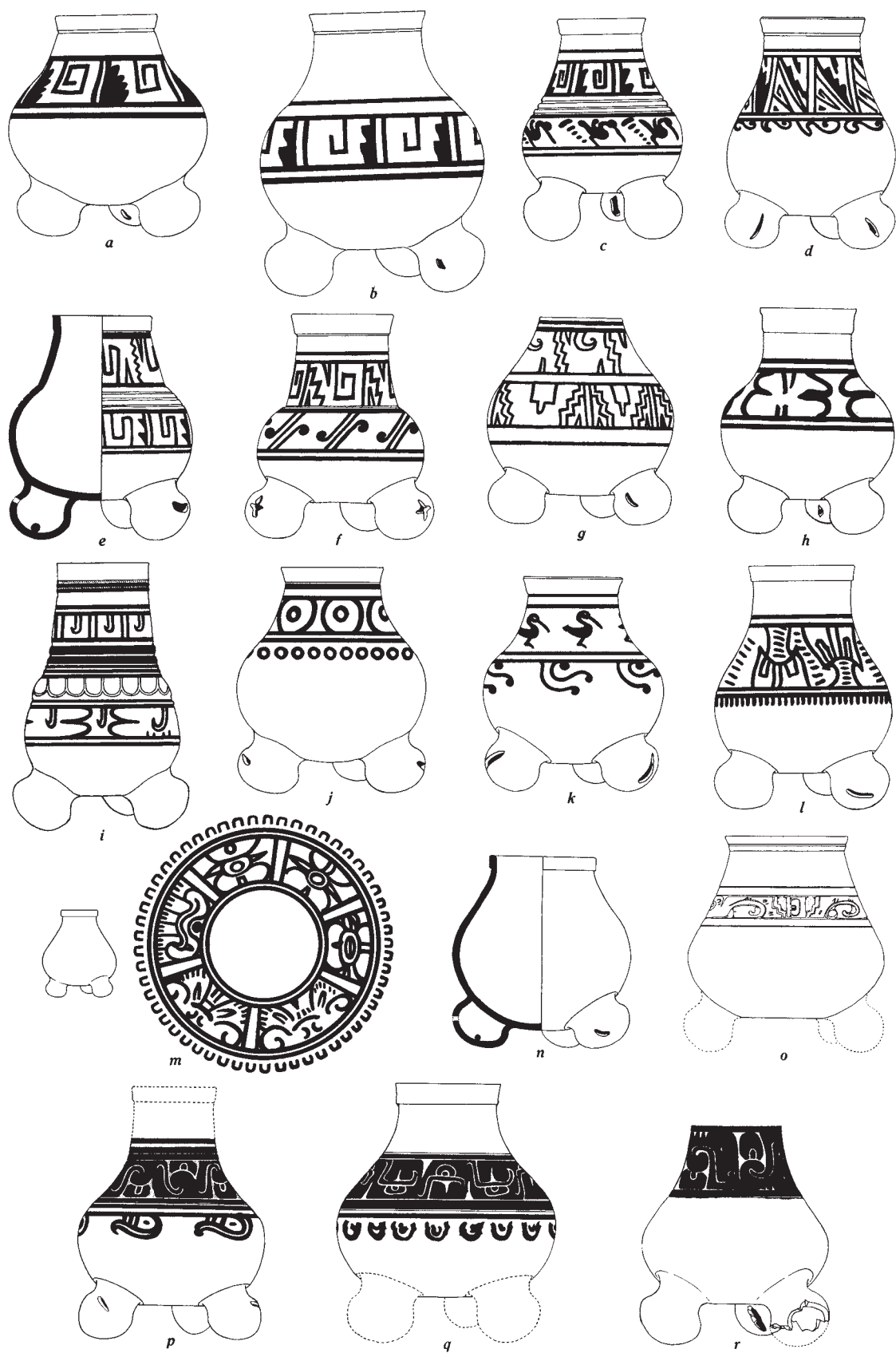
f. Human head, no visible decoration on body.

g. Monkey, head missing, arms, legs, and tail modeled and painted black.

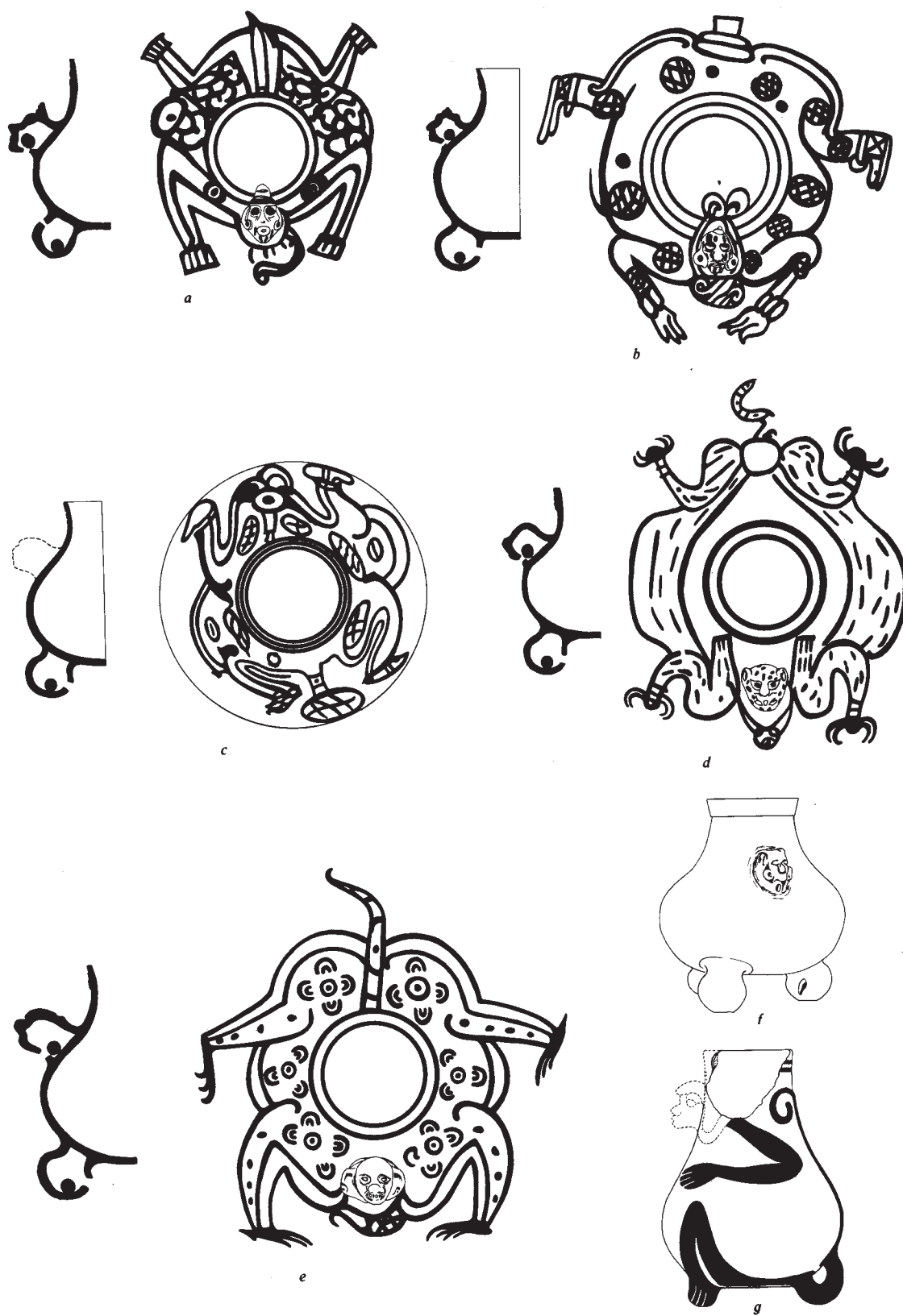
Scale is 1/4.



131.5. Bowls, plates, dishes, drum with black, gouged-and-incised, and grooved designs.



131.6. Pyriform tripod vessels.



131.7. Effigy jars or pyriform vessels.

FIG. 131.8. PYRIFORM VESSELS WITH BELL-SHAPED PEDESTALS, RIM MOLDINGS, AND BODIES DECORATED WITH BLACK DESIGNS.

a–j. Step-fret bands; *b.* incised potters mark on base (Fig. 5n, 1); *f.* bordered by lines of semi-disks and dots; *g.* bordered by lines of dots and semi-circles; *h.* two step-fret bands with lower border of semicircles, post-slip basal band of V's; *i.* lower border of semicircles; *j.* lower border of vertical lines joined at bottom.

k. Step-fret and V band with lower border of concentric semi circles.

l. Step and V band.

m. Semidisk rim border, upper band of terraces and hooks, lower of step-frets and V's.

n. Two bands, upper a braid, lower of steps, V's, and O's.

o. Step-fret and V band with lower scroll border.

p. Band of concentric circles separated by paired vertical parallel lines and framed by paired horizontal lines.

q. Guilache band.

r. Body band of steps and hooks with lower border of beaks or snouts, pedestal band of snake rattles.

s. Band and lower border of S's and pendant lines.

t, u. Black bird bands; *t.* lower border of concentric semi circles.

v. Two bands, upper of quatrefoils, lower of step-frets.

w. Semidisk rim border and floral bud band with lower border of scrolls.

Scale is 1/4.

FIG. 131.9. PYRIFORM VESSELS WITH BELL-SHAPED PEDESTALS AND RIM MOLDINGS.

a, b, e. Black naturalistic motifs. *a, e.* feathered rattlesnakes; *e* has black squiggle rim band; *b.* large

bird band framed by black step-fret and black scroll band.

c. Black glyphic band of *ilhuitl* signs separated by steps.

d. Black conventionalized shell band.

f–l. Gouged-and-incised scroll meander bands plus black bands; *f.* lower black beak or snout band; *g.* upper black dot band, lower black beak or snout band; *h.* lower band of black scroll meanders; *i.* lower band of black step-frets; *j.* lower band of black step-frets and V's; *k.* upper band of black steps, U's and circles and dots; lower band of black guilloches, V's, and circles and dots; *l.* lower band of black step-frets and V's.

m. Gouged-and-incised bands of rectangles and circles and bud like motifs framed by black bands of S's and pendant lines. Scale is 1/4.

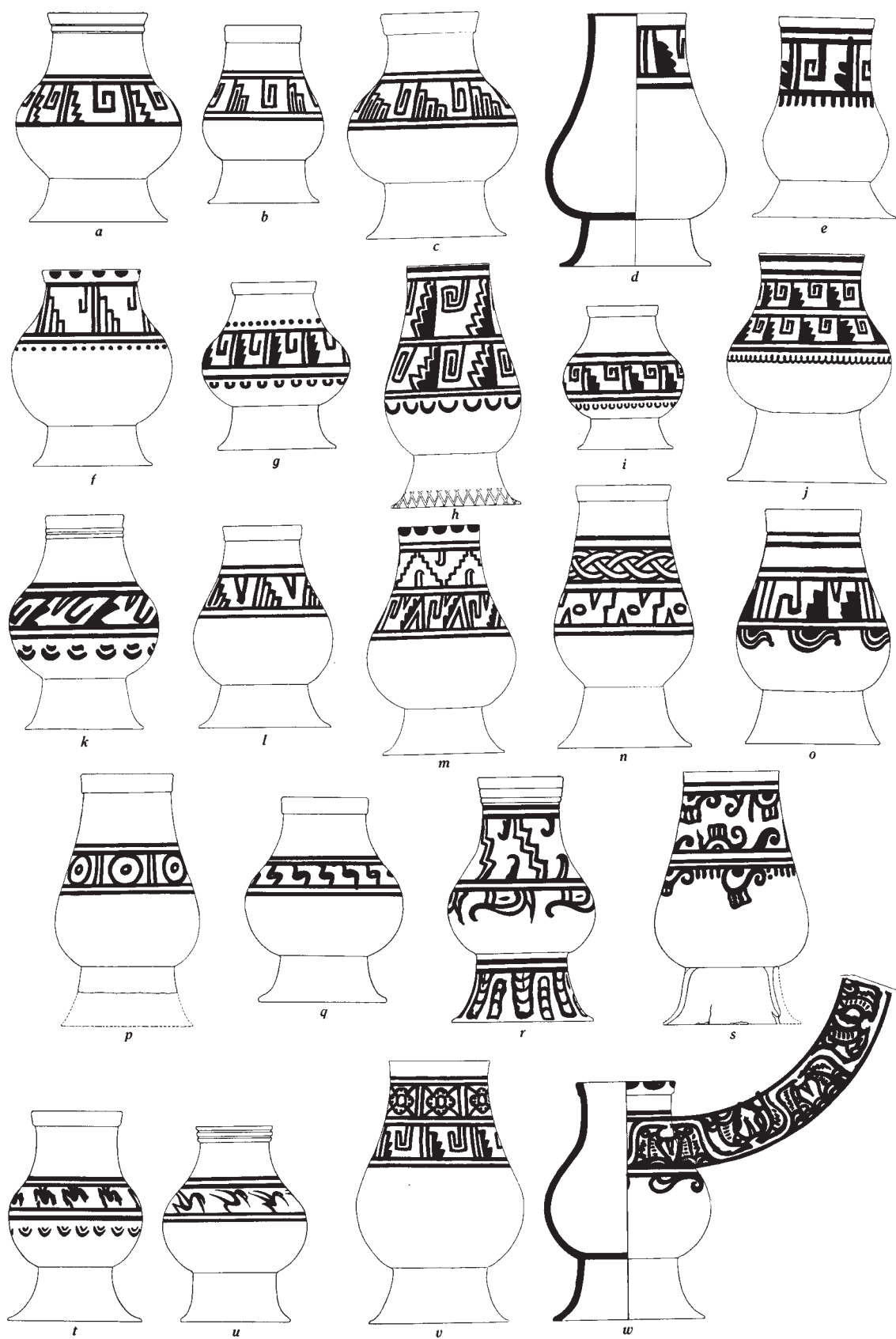
FIG. 131.10. PYRIFORM PEDESTAL-BASED VESSELS AND PYRIFORM TRIPODS WITH BODY-BASE ANGLE.

a–d. Pyriform pedestal-based vessels; *a.* gouged-and-incised budlike band framed by upper black band of step-frets and V's and lower border of black dots; *b.* gouged-and-incised quatrefoil band with lower band of black birds and border of black concentric semicircles; *c.* gouged-and-incised scroll grotesque band framed by paired horizontal black lines and bordered at bottom by black triangles and squiggles; *d.* gouged-and-incised floral band framed by black step-fret and black beak or snout bands.

e–o. Pyriform tripods with body-base angle; *e–k,* black painted abstract designs. *e,* step-fret band; *f.* upper band of step-frets, lower band of step-frets and V's; *g, h,* upper and lower bands of step-frets and V's; *i.* upper band of reverse curves, lower band of step-frets and V's; *j.* upper band of step-frets and V's, lower band of guilloches"; *k.* upper band scroll meander, lower band of "down-balls."

l–o. Gouged-and-incised in all cases, may have black design as well; *l.* two bands of gouged-and-incised budlike panels alternating with gouged-and-incised through black budlike and quatrefoil panels, incised potters mark on base (Fig. 131.5n, 2); *m.* gouged-and-incised through black scroll meander upper band, lower band of black birds; *n.* gouged-and-incised scroll meander band; *o.* two gouged-and-incised *ilhuitl* sign bands.

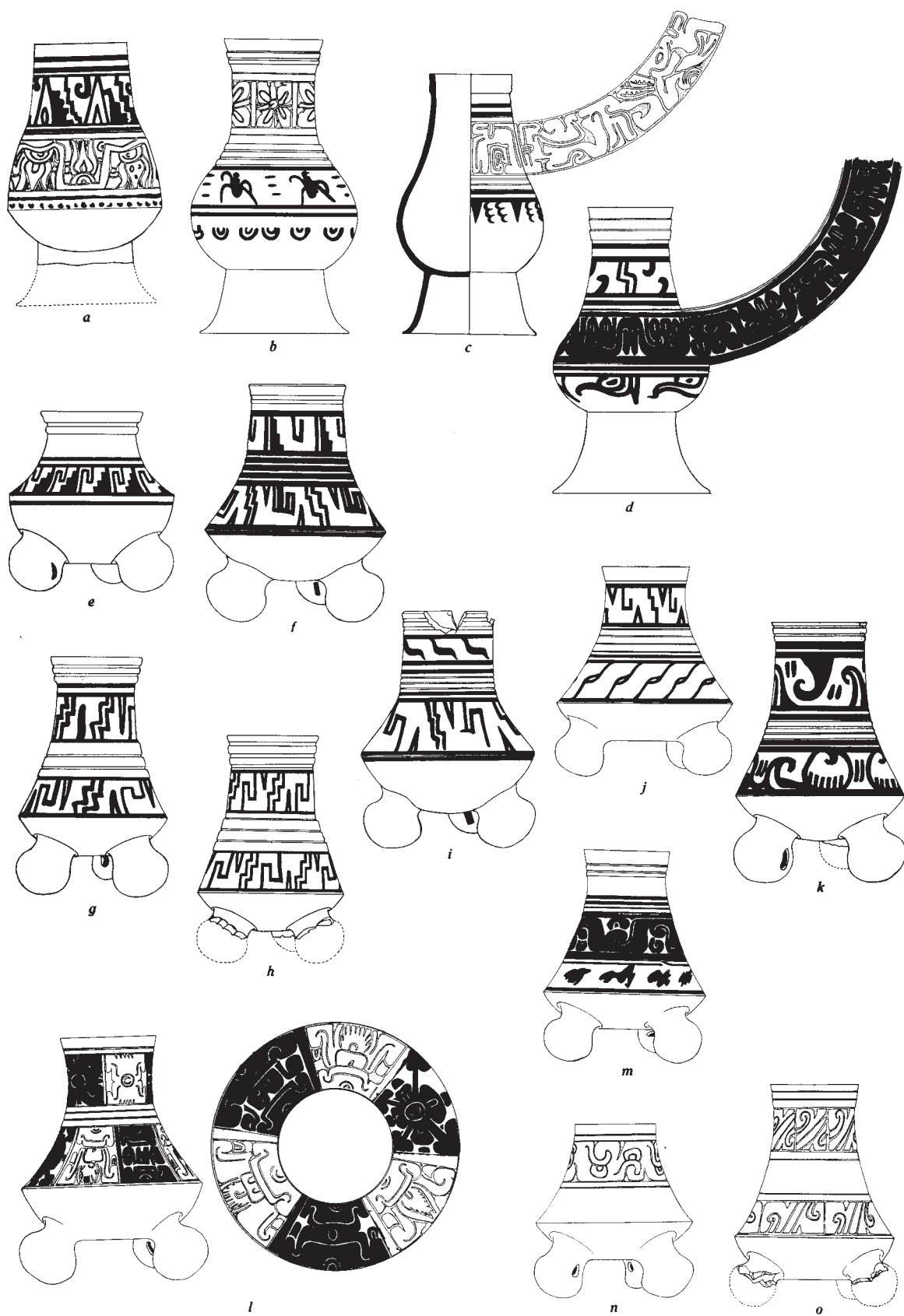
Scale is 1/4.



131.8. Pyriform vessels with bell-shaped pedestals, rim moldings, and bodies decorated with black designs.



131.9. Pyriform vessels with bell-shaped pedestals and rim moldings.



131.10. Pyriform pedestal-based vessels and pyriform tripods with body-base angle.

FIG. 131.11. PYRIFORM TRIPOD VESSELS WITH BODY-BASE ANGLE.

a–k. All have gouged-and-incised scroll meanders plus other black designs. *a, c–j.* black bird bands; *d* also has black beak or snout border; *g.* also has incised potter's mark on base (Fig. 131.5n, 3); *k.* black figure eight.

l. Gouged-and-incised scroll meander band framed by rectangle and circle bands, upper band of black step-frets and V's, lower band of black concentric circles.

m, n. Gouged-and-incised braid upper band, black bird lower band.

o, p. Gouged-and-incised reverse curve bands; *o.* lower black bird band; *p.* lower black band of semicircles and dots.

q. Gouged-and-incised quatrefoil band with lower black bird band.

r, s. Gouged-and-incised budlike bands; *r.* lower black band of semicircles and dots; *s.* upper black rectangle band, lower black band of S's and pendant lines.

Scale is 1/4.

FIG. 131.12. PYRIFORM PEDESTAL-BASED VESSELS WITH BODY-BASE ANGLE AND CYLINDRICAL PEDESTAL-BASED VASES.

a–g. Pyriform pedestal-based vessels with body-base angle; *a.* central black budlike band framed by upper black stepfret and lower black semicircle bands; *b.* central black budlike band framed by upper black step-fret and V and lower black semicircle bands; *c.* gouged-and-incised central bands of rectangles and circles and braid motif framed by upper black step-fret and lower black "down-ball" bands; *d.* gouged-and-incised upper band of reverse curves with band of black "down-balls" and band of black concentric semicircles below; *e.* hollow rattle pedestal, three gouged-and-incised bands of scroll meanders, upper two separated by molding probably painted black (weathered), lower bands divided by three horizontal grooves; *f, g.* central gouged-and-incised budlike band framed by horizontal black lines and black lines and lower band of black step-frets.

h–m. Cylindrical pedestal-based vases with multiple banding; *h.* three black bands including upper

step-fret and V, middle figure eight, lower vertical lines joined at top; *i.* three black bands, two upper of "down-balls," lower of concentric semicircles; *j.* three black bands, two upper of figure eights, lower of concentric semicircles; *k.* upper black step-fret, lower black semicircle bands; *l.* upper scroll meander band gouged-and-incised through black, middle black "down-ball" band, lower black scroll band; *m.* two gouged-and-incised scroll grotesque panels with gouged-and-incised band of scrolls, U's, and tau's below.

Scale is 1/4.

FIG. 131.13. JARS, PYRIFORM VESSELS, EFFIGIES.

a, b. Standard jars; *a.* darkened body area; *b.* gadrooned body (worked from exterior).

c, d, f. Pyriform tripods with bulbous bodies; *c.* darkened body area; *d.* black step-fret band; *f.* upper scroll meander band gouged-and-incised through white, lower S and pendant lines black band.

e. Pyriform tripod with body-base angle, grooved and gouged-and-incised with central band of quatrefoils framed by bands of rectangles and concentric circles.

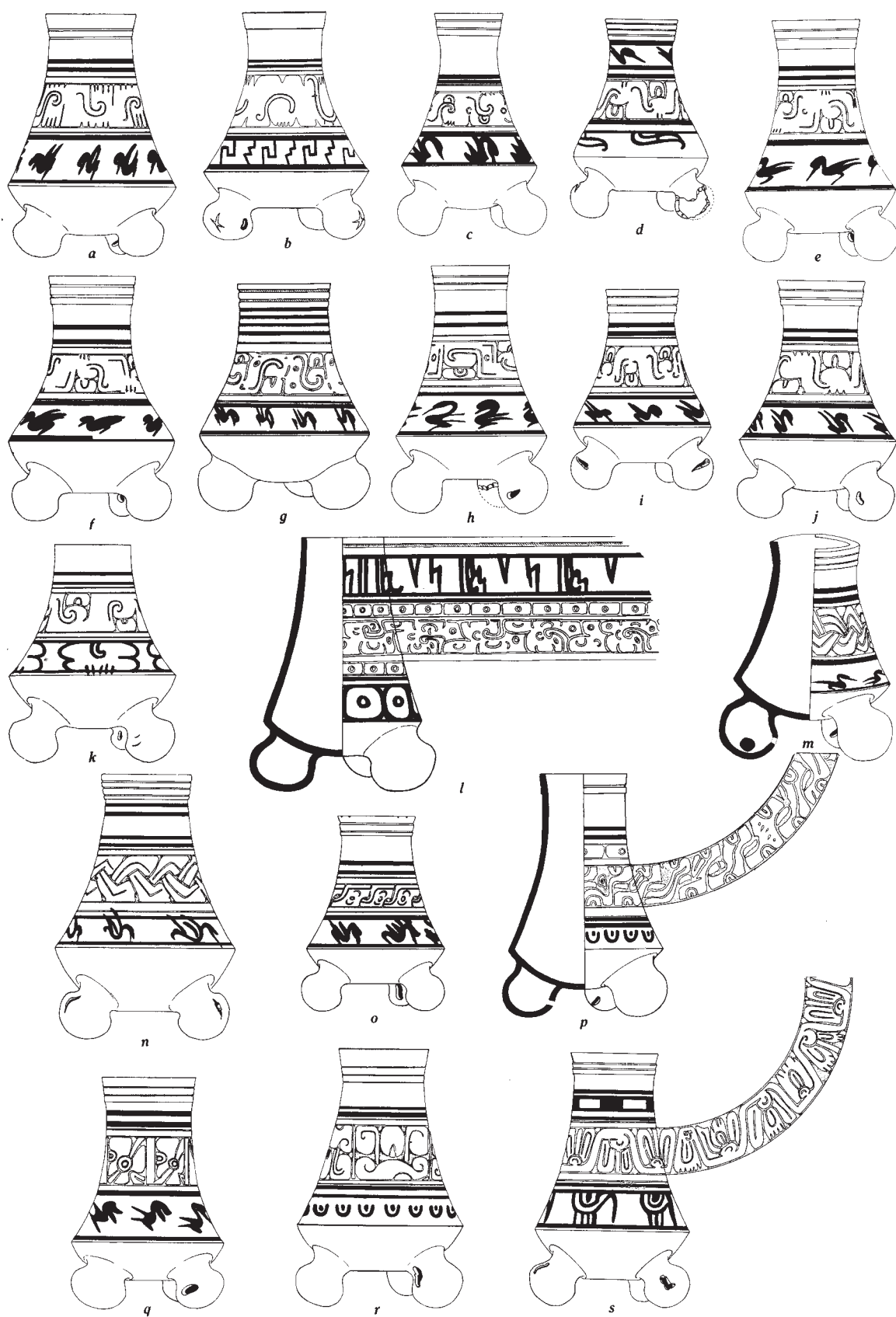
g–n. Effigy vessels with hollow modeled heads; *g.* human head without other visible decoration and hollow bulbous feet; *h.* frog with black body details and hollow bulbous feet; *i.* human with black body details and hollow bulbous feet; *j.* frog with black body details and four solid slab feet; *k.* monkey with black body details and hollow bulbous feet; *l.* human with black body details and hollow bulbous feet; *m.* frog with black body details and hollow bulbous feet; *n.* frog with black body details and solid animal feet.

o, p. Frog effigy vessels with flat bases and decorated with modeled and incised frog limbs and feet; both show darkened body area.

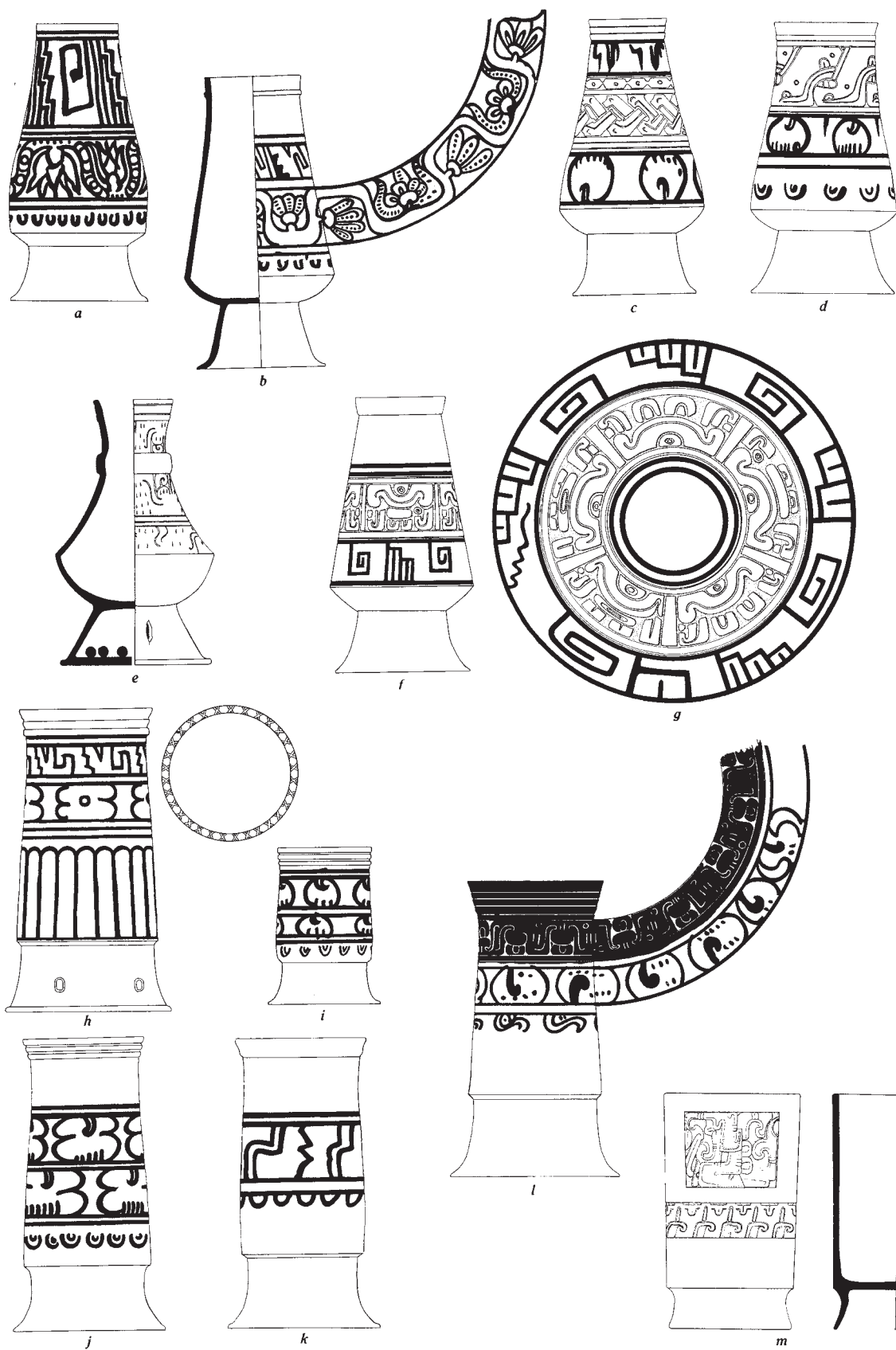
FIG. 131.14. PYRIFORM VESSELS WITH PEDESTAL BASES.

a, b. Black design; *a.* central band of step-frets and V's framed by upper band of "down-balls" and lower band of semicircles.

b. all-over bands and scrolls.



131.11. Pyriform tripod vessels with body-base angle.



131.12. Pyriform-based vessels with body-base angle and cylindrical pedestal-based vases.



a



b



c



d



e



f



g



h



i



j



k



l



m



n



o



p

131.13. Jars, pyriform vessels, effigies.

c. Gouged-and-incised scroll meander upper band, black stepfret and V lower band.

d. Two gouged-and-incised scroll meander bands.

e. Gouged-and-incised scroll meander upper band, black concentric semicircle lower band.

f. Two upper gouged-and-incised scroll meander bands, black lower band of semicircles.

g. Black-and-white-on-orange; step-fret and V upper band, concentric circle lower band. This appears to be Cerro Montoso Fine Polychrome.

h. Red-black-and-white-on-orange; concentric triangle upper band, parallel vertical alternating red, white, and black lines in lower band.

i-k. Red-black-and-white-on-orange; *i.* conventionalized serpent's jaw (?) motif upper band, step-fret lower band, incised potter's mark on base (similar to Fig. 131.5n, 1); *j.* central band of concentric circles separated by paired vertical lines, upper and lower bands of terrace motifs; *k.* upper band of crosses and U's, lower band of shells and rattlesnakes.

l. Vessel with body-base angle and pedestal base; gouged-and-incised through white scroll grotesque central band framed by upper black-and-white hand bell and scroll band and lower band of black semicircles.

FIG. 131.15. PYRIFORM TRIPOD VESSELS.

a-i. Vessels with body-base angle; *a.* darkened area on body; *b.* two black step-fret bands; *c.* upper band of four grooves framed by paired horizontal black stripes, lower black terrace band; *d.* gouged-and-incised scroll meander band framed by paired horizontal black stripes; *e.* central gouged-and-incised scroll meander band framed by upper black step-fret and lower black semicircle band; *f.* central gouged-and-incised rectangle and circle band framed by upper gouged-and-incised braid band and lower band of black "down-balls"; *g.* central gouged-and-incised scroll meander band framed by upper band of paired horizontal black stripes and lower band of black birds, incised potters mark on base (Fig. 131.5n, 5); *h.* central gouged-and-incised braid band framed by upper band of paired horizontal black

stripes and lower band of black step-frets and V's; *i.* central band of gouged-and-incised rectangles and circles framed by upper gouged-and-incised scroll meander band and lower band of black V's, hooks, squiggles, and pendant lines.

FIG. 131.16. BOWLS.

a. Hemispherical bowl with black deerlike head on floor and exterior black bird band.

b, c. Hemispherical bowls with everted rims; *b.* interior black rim band of semidisks and semicircles, exterior upper gouged-and-incised band of scrolls and other elements and lower band of black beaks or snouts; *c.* black-on-white rectangle, circle, and triangle interior lip band, exterior incised through white kinlike upper band and rectangle and circle incised through red lower band.

d, e. Hemispherical tripods with hollow conical feet; *d.* interior rim band of black rectangles, exterior gouged-and-incised through white guilloche band with black horizontal stripes below; *e.* flat lip with band of black and red rectangles, exterior gouged-and-incised through white band of reverse curves with two horizontal black stripes below.

f. Low-necked tripod bowl with gouged-and-incised bands, central quatrefoil band framed by rectangle and circle bands. Restricted-orifice angle-sided bowl with two exterior bands, upper a gouged-and-incised budlike motif, lower of black concentric semicircles.

FIG. 131.17. CYLINDRICAL PEDESTAL-BASED VASES, TRIPOD DISHES, DRUMS, EFFIGY VESSEL.

a-d. Cylindrical pedestal-based vases; *a.* undecorated but large darkened area over most of body; *b.* two black bands, upper of birds, lower of concentric semicircles; *c.* gouged-and-incised rectangular panel with seated human figure framed by rectangle and circle bands. *d.* two gouged-and-incised panels enclosing scroll grotesques, gouged-and-incised scroll, U, and tau band below; traces of green stucco.

e. Tripod basal-break dish with hollow bell-shaped feet, black floral floor design, black dots on flat red lip, black step, hook, and V exterior band, and incised potters mark on base (Fig. 131.5n, 4).



a



b



c



d



e



f



g



h



i



j



k



l

131.14. Pyrriform vessels with pedestal bases.



a



b



c



d



e



f



g



h



i

131.15. Pyriform tripod vessels.



a



b



c



d



e



f



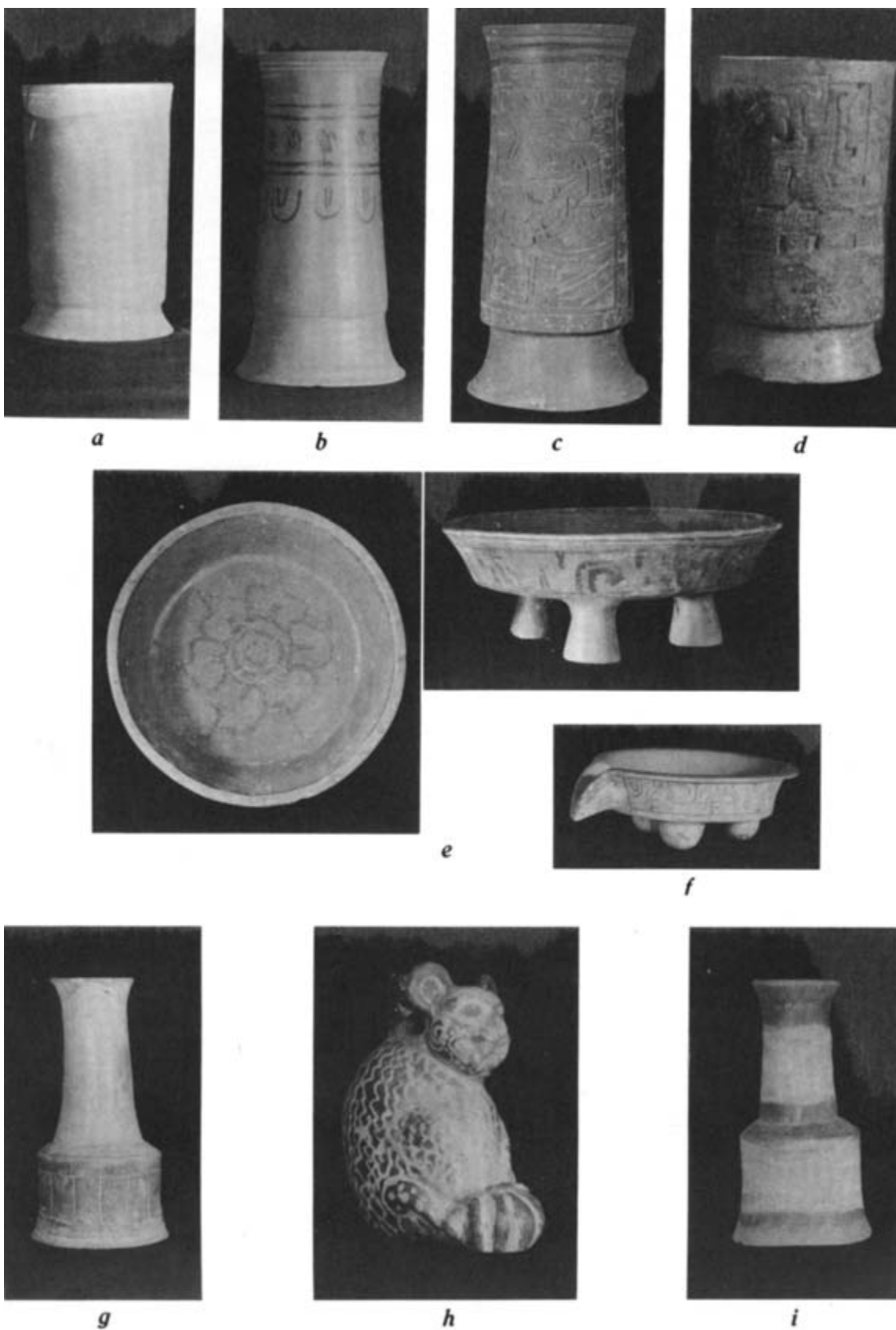
g

131.16. Bowls.

f. Tripod basal-break dish with gutter spout, hollow oven-shaped feet, and slipped white on exterior and over edge on base, exterior with gouged-and-incised scroll meander.

g, i. Drums with red and white decoration. *g*, horizontal and vertical striping; *i*, horizontal striping.

h. Spouted Jaguar effigy vessel, modeled, with red spots and black details on a white slip.



131.17. Cylindrical pedestal-based vases, tripod dishes, drums, effigy vessel.

References

- Alvarado, Pedro de. 1924. *An Account of the Conquest of Guatemala in 1524 . . . with a Facsimile of the Spanish Original, 1525*. Ed. Sedley J. Mackie. New York: Cortes Society.
- Andrews, E. Wyllys. 1938. Some New Material from Coba, Quintana Roo, Mexico. *Ethnos* 3:33–46.
- . 1942a. The Inscription on Stela 38, Piedras Negras, El Peten, Guatemala. *American Antiquity* 7:364–368.
- . 1942b. Yucatan: Architecture. *Carnegie Institution of Washington, Year Book* 41:257–263.
- . 1951 The Maya Supplementary Series. In *The Civilizations of Ancient America: Selected Papers of the 29th International Congress of Americanists*, ed. Sol Tax, 1:123–141. Chicago: University of Chicago Press.
- Anguiano, Ramón de. 1798. Proyecto para reducir a la fe a los yndios xicakes. Manuscript.
- Annals of the Cakchiquels. 1953. *The Annals of the Cakchiquels*. Trans. Adrian Recinos and Delia Goetz. Norman: University of Oklahoma Press.
- Archivo General de Indias. 1552. Guatemala, legajo 111. Probanza hecha en la Villa de la Victoria 4 pedimento de Don Francisco, cacique del pueblo de Xicalango. July 13.
- Armillas, Pedro. 1944. Exploraciones recientes en Teotihuacan, Mexico. *Cuadernos americanos* 16(4):121–138.
- Arreola, Jose M. 1935. *Nombres indígenas de lugares del estado de Jalisco; estudio etimológico*. Guadalajara: Sobre-tiro del Boletín de la Junta Auxiliar Jalisciense de la Sociedad Mexicana de Geografía y Estadística.
- Avendaño y Loyola, Andres de. 1696. Relacion de las dos entradas que hize a la conversion de los gentiles ytzaex y cehaches. Manuscript, Ayer Collection, Newberry Library, Chicago.
- Badiano, Juan, and Martin de la Cruz. 1939. *The de la Cruz-Badiano Herbal of 1552*. Trans. William E. Gates. The Maya Society, Publication 23. Baltimore.
- Baessler, Arthur. 1902–1903. *Ancient Peruvian Art: Contributions to the Archaeology of the Empire of the Incas, From His Collections*. Leipzig: Karl W. Hiersemann. 4 v.
- Bancroft, Hubert H. 1874–1876. *The Native Races of the Pacific States of North America*. New York: D. Appleton. 5 v.
- Barlow, Robert H. 1944. Relación de Xiquilpan y su partido. *Tlalocan* 1:278–306.
- . 1949. *The Extent of the Empire of the Culhua Mexica*. Berkeley: University of California, Ibero-Americana, no. 28.
- Barnard, Francis P.S. 1916. *Casting Counter and Casting Board*. Oxford: Oxford University Press.
- Barrera Vásquez, Alfredo. 1943. Horóscopos mayas, o el pronóstico de los 20 signos del tzolkin según los libros de Chilam Balam, de Káua y de Mani. *Registro de cultura yucateca* 1(6):33.
- Batres, Leopoldo. 1903. *Visita a los monumentos arqueológicos de La Quemada, Zacatecas*. Mexico: Imprenta de la viuda de F. Diaz de León.
- Beals, Ralph L. 1932. *The Comparative Ethnology of Northern Mexico before 1750*. Berkeley: University of California, Ibero-Americana, no. 2.
- Berlin, Heinrich. 1943. Notes on Glyph C of the Lunar Series at Palenque. *Carnegie Institution of Washington, Notes on Middle American Archaeology and Ethnology* 1(24):56–59.
- . 1944a. A Tentative Identification of the Head Variant for Eleven. *Carnegie Institution of Washington, Notes on Middle American Archaeology and Ethnology*, 2(33): 16–20.
- . 1944b. Un templo olvidado en Palenque. *Revista mexicana de estudios antropológicos* 6:62–90. Mexico.
- . 1945. A Critique of Dates at Palenque. *American Antiquity* 10:340–347.

- . 1953. Archaeological Reconnaissance in Tabasco. *Carnegie Institution of Washington, Current Report* 1(7): 102–135.
- . 1956. Late Pottery Horizons of Tabasco, Mexico. *Carnegie Institution of Washington, Notes on Middle American Archaeology and Ethnology* 12(59):95–153.
- Bernal, Ignacio. 1949a. La ceramica de Monte Alban. Doctoral dissertation, Escuela Nacional de Antropología, Mexico.
- . 1949b. La ceramica grabada de Monte Alban. *Anales del Instituto Nacional de Antropología e Historia* 3:59–77.
- Beyer, Hermann. 1931. Maya Hieroglyphs: The Variable Element of the Introducing Glyphs as Month Indicator. *Anthropos* 26:99–108.
- . 1932. Mayan Hieroglyphs: Some Tun Signs. *Middle American Research Series* 4:103–130.
- . 1935a. The Date on the Cornice of House C of the Palace at Palenque. *El Mexico antiguo* 3(9–10):53–55.
- . 1935b. The Dates on Lintel 10 of Yaxchilan. *Maya Research* 2(4):394–397.
- . 1936a. Decipherment of a Greatly Damaged Inscription at Palenque. *El Mexico antiguo* 4:1–6.
- . 1936b. Mayan Hieroglyphs: Glyph GB of the Supplementary Series. *American Anthropologist* 38:247–249.
- . 1936c. The Relation of Two Dates on Altar U; Copan. *Maya Research* 3:193–194.
- . 1936d. The True Zero Date of the Maya. *Maya Research* 3:202–204.
- . 1938. Eine weitere Mayahieroglyphe für Tag. *El México antiguo* 4(1–2):7–10.
- . 1939a. Elucidation of a Secondary Series on Lintel 2 of Piedras Negras. *El Mexico antiguo* 4:289–292.
- . 1939b. Die Tagesdaten auf dem Maya-Altar des mexikanischen Nationalmuseums. *Zeitschrift für Ethnologie* 70:88–93.
- . 1940. Rectification of a Date on Stela 12, Piedras Negras. *El Mexico antiguo* 5:7–8.
- . 1943. The Maya Hieroglyph “Ending Day.” *Proceedings of the International Congress of Americanists* (27th session, 1939, Mexico), v. 1, pt. 1, pp. 31–51. Mexico.
- Black, Stephen L. 1990. Carnegie Uaxactun Project and the Development of Maya Archaeology. *Ancient Mesoamerica* 1(2):157–176.
- Bliss, R. W. 1947. *Indigenous Art of the Americas*. Washington, DC: National Gallery of Art.
- Blom, Frans F. 1932. Commerce, Trade and Monetary Units of the Maya. *Middle American Research Institute, Tulane University, Research Series* 10:531–556.
- . 1934. Short Summary of Recent Explorations in Uxmal. *Proceedings of the International Congress of Americanists* (24th session, Hamburg, 1930), pp. 55–59. Hamburg.
- , and Oliver LaFarge. 1926–1927. *Tribes and Temples: A Record of the Expedition to Middle America Conducted by the Tulane University of Louisiana in 1925*. New Orleans: Department of Middle American Research, Tulane University. 2 v.
- Boban, Eugène. 1891. *Documents pour servir à l'histoire du Mexique; catalogue raisonné de la collection de M. E. Eugene Goupil . . . manuscrits figuratifs et autres sur papier indigène d'agave mexicana et sur papier européen antérieurs et postérieurs à la conquête du Mexique*. Paris: E. Leroux. 3 v.
- Boggs, Stanley H. 1944a. Excavations in Central and Western El Salvador. In *Archaeological Investigations in El Salvador*, by John M. Longyear, 55–72. Peabody Museum of Archaeology and Ethnology, Harvard University, Memoir, 9(2). Cambridge, MA.
- . 1944b. A Preconquest Tomb on the Cerro del Zapote, El Salvador. *Carnegie Institution of Washington, Notes on Middle American Archaeology and Ethnology* 2(32): 8–15.
- . 1949. Tlaloc Incensarios in the Baratta Collection, El Salvador. *Carnegie Institution of Washington, Notes on Middle American Archaeology and Ethnology* 4(94): 26–45.
- Bowditch, Charles P. 1901. Notes on the Report of Teobert Maler. In *Researches in the Central Portion of the Usumacinta Valley*, by Teobert Maler. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoirs 21(2). Cambridge, MA.
- . 1910. *The Numeration, Calendar Systems, and Astronomical Knowledge of the Mayas*. Cambridge, MA: privately printed.
- Brainerd, George W. 1941. Fine Orange Pottery in Yucatan. *Revista mexicana de estudios antropológicos* 5:163–183. Mexico.
- . 1951. Early Ceramic Horizons in Yucatan. In *The Civilizations of Ancient America: Selected Papers of the 29th International Congress of Americanists*, ed. S. Tax, 1: 72–78. Chicago: University of Chicago Press.
- Brasseur de Bourbourg, Charles Etienne. 1860. *Recherches sur les ruines de Palenque et sur les origines de la civilisation du Mexique*. Paris: Arthus Bertrand.
- Brigham, William T. 1887. *Guatemala, Land of the Quetzal: A Sketch*. New York: Charles Scribner's Sons.
- Brinton, Daniel G. 1883. Folk-lore of Yucatan. *Folk-lore Journal* 1(8):244–256.
- . 1885. *The Annals of the Cakchiquels*. Brinton's Library of Aboriginal American Literature, 6. Philadelphia.
- . 1890. *Essays of an Americanist*. Philadelphia: David McKay.
- Brunhouse, Robert L. 1971. *Sylvanus G. Morley and the World of the Ancient Maya*. Albuquerque: University of New Mexico Press.
- Bunzel, Ruth. 1952. *Chichicastenango: A Guatemala Village*. Locust Valley, NY: J. J. Augustin.
- Burkitt, Robert. 1924. A Journey in Northern Guatemala. *Museum Journal* 15:115–144.
- Butler, Mary. 1935. Piedras Negras Pottery. *Piedras Negras Preliminary Papers*, 4. Philadelphia.
- . 1940. A Pottery Sequence from the Alta Verapaz, Guatemala. In *The Maya and Their Neighbors*, ed. C. Hay, 250–267. New York: Appleton-Century.
- Canby, Joel S. 1949. Excavations at Yarumela, Spanish Honduras: Recovery, Description, and Interpretation of a Long Ceramic Sequence. Doctoral dissertation,

- Department of Anthropology, Harvard University, Cambridge, MA.
- Carrillo y Ancona, Crescencio. 1937. *Disertación sobre la historia de la lengua maya o yucateca*. Merida: Imprenta del editor.
- Caso, Alfonso. 1928. Las estelas zapotecas. Monografía del Museo Nacional de Arqueología, Historia y Etnografía, 3. Mexico.
- . 1936. *La religion de los aztecas*. Enciclopedia Ilustrada Mexicana, 1, Mexico: Imprenta Mundial.
- . 1938. *Exploraciones en Oaxaca, quinta y sexta temporadas, 1936–1937*. Instituto Panamericano de Geografía e Historia, Publicación, 34. Mexico.
- . 1942. El paraíso terrenal en Teotihuacan. *Cuadernos americanos* 6(6):127–136.
- Castañeda, Quetzil E. 1996. *In the Museum of Maya Culture*. Minneapolis: University of Minnesota Press.
- Cervantes de Salazar, F. 1914. *Crónica de la Nueva España*. Madrid: Hispanic Society of America.
- Chilam Balam of Tizimin. 1870. Photographic reproduction. Chicago: Newberry Library.
- Cocom. 1845. *Registro Yucateco* 1:349–350.
- Codex Fejervary-Mayer. 1901. *Codex Fejérváry-Mayer; eine altmexikanische Bilderhandschrift der Free Public Museums in Liverpool (12014 M); auf Kosten . . . des Herzogs von Loubat herausgegeben*. Ed. Eduard Seler. Berlin: Druck von Gebr. Unger.
- Codex Kaua. N.d. Photograph in Peabody Museum of Harvard University, Cambridge, MA.
- Codex Magliabecchi. 1903. *The Book of the Life of the Ancient Mexicans, Containing an Account of Their Rites and Superstitions*. Ed. Zelia Nuttall. Berkeley: University of California Press.
- Codex Mendoza. 1938. *Codex Mendoza: The Mexican Manuscript Known as the Collection of Mendoza and Preserved in the Bodleian Library, Oxford*. Ed. James Cooper Clark. London: Waterlow and Sons. 3 v.
- Codex Nuttall. 1903. *The Book of the Life of the Ancient Mexicans, Containing an Account of Their Rites and Superstitions: An Anonymous Hispano-Mexican Manuscript Preserved at the Biblioteca Nazionale Centrale, Florence, Italy*. Berkeley: University of California.
- Codex Perez. 1837. Photograph made for Carnegie Institution of Washington of original manuscript in Yucatan. Cambridge, MA.
- Códices indígenas de algunos pueblos del marquesado del Valle de Oaxaca. Ed. Rafael López, Luis González Obregón, and Luis G. Ceballos. Mexico: Talleres Gráficos de la Nación, 1933.
- Colson, F. H. 1926. *The Week: An Essay on the Origin and Development of the Seven-Day Cycle*. Cambridge: Cambridge University Press.
- Cortes, Hernan. 1908. *Letters of Cortes: The Five Letters of Relation from Fernando Cortes to the Emperor Charles V*. Ed. F. A. MacNutt. New York: G. P. Putnam's Sons. 2 v.
- Cosgrove, H. S., C. B. Cosgrove, and W. W. Howells. 1932. *The Swarts Ruin: A Typical Mimbres Site in Southwestern New Mexico; Reports of the Mimbres Valley Expedition, Seasons of 1924–1927*. Peabody Museum of American Archaeology and Ethnology, Papers, 15(1). Cambridge, MA.
- Costumbres de Nueva España. 1943. *Tlalocan* 2:1, 57.
- Couperie, T. de la. 1882. *The Old Numerals, the Counting-Rods and the Swan-Pan in China*. London: Trübner.
- Covarrubias, Miguel. 1944. La Venta: Colossal Heads and Jaguar Gods. *Dyn* 6:24–33.
- Cresson, Francis M. 1937. Foot Forms of Pottery Vessels at Piedras Negras. In *Twenty-Fifth Anniversary Studies, Philadelphia Anthropological Society*, ed. D. S. Davidson, 37–46. Philadelphia: Philadelphia Anthropological Society.
- Cuadro estadístico de Chiquilistlan*. 1881. Guadalajara: Edición Oficial, Guadalajara.
- De Morgan, Augustus. 1850. On Ancient and Modern Usage in Reckoning. In *The Companion to the British Almanac for the Diffusion of Useful Knowledge, for the Year of Our Lord, 1850*. London: C. Knight.
- Dieseldorff, Erwin P. 1926. *Kunst und Religion der Mayavölker; Im alten und heutigen Mittelamerika*. Berlin: Verlag von Julius Springer.
- . 1933. *Kunst und Religion der Mayavölker III: Die Datierung der Tempel*. Berlin: L. Friederischen.
- Dixon, Roland B. 1928. *The Building of Cultures*. New York: Charles Scribner's Sons.
- Douglass, A. E. 1889. A Portrait Pipe from San Salvador, Central America. *American Antiquarian* 11(6):348–353.
- Drucker, P. 1943a. *Ceramic Stratigraphy at Cerro de las Mesas, Veracruz, Mexico*. Bureau of American Ethnology, Bulletin 141. Washington, DC.
- . 1943b. *Ceramic Sequences at Tres Zapotes, Veracruz, Mexico*. Bureau of American Ethnology, Bulletin 140. Washington, DC.
- . 1952. *La Venta, Tabasco: A Study of Olmec Ceramics and Art*. Bureau of American Ethnology, Bulletin 153. Washington, DC.
- Durán, Diego. 1867–1880. *Historia de las Indias de Nueva-España y islas de Tierra Firme*. Mexico: Imprenta de J. M. Andrade y F. Escalante. 2 v.
- Du Solier, Wilfrido. 1938. La cerámica arqueológica del Tajín. *Anales del Museo Nacional de México* 5(3):147–192.
- Dutton, Bertha P., and Hulda R. Hobbs. 1943. *Excavations at Tajumulco, Guatemala*. School of American Research, Museum of New Mexico, Monograph, 9. Santa Fe.
- Ekholm, Gordon F. 1942. Excavations at Gusave, Sinaloa, Mexico. *American Museum of Natural History, Anthropological Papers*, 38. New York.
- . 1944. Excavations at Tampico and Panuco in the Huasteca, Mexico. *Anthropological Papers of the American Museum of Natural History* 38:319–512.
- . 1945. A Pyrite Mirror from Queretaro, Mexico. *Carnegie Institution of Washington, Notes on Middle American Archaeology and Ethnology* 2(53):178–181.
- . 1948. Ceramic Stratigraphy at Acapulco, Guerrero. In *Occidente de Mexico*, 95–104. Mesa Redonda de la Sociedad mexicana de antropología (4th session, Mexico, 1946). Mexico.
- Espinosa Espinosa, Manuel, and Luis H. Espinosa. 1928. *Calendario de Espinosa para los años de publicarse sucesivamente*. Merida: Librería de Espinosa.
- Exhibition of Pre-Colombian Art*. 1940. Cambridge, MA: William Hayes Fogg Art Museum.

- Fernández, Miguel Á. 1947. Exploraciones en Acanceh. *Proceedings of the International Congress of Americanists* (27th session, Mexico, 1939), v. 2, pt. 1, pp. 249–253. Mexico.
- Fernández, M. Á., and H. Berlin. 1954. Drawings of Glyphs of Structure XVIII, Palenque. *Carnegie Institution of Washington, Notes on Middle American Archaeology and Ethnology* 5(119):39–44.
- Forde, Daryll. 1931. Hopi Agriculture and Land Ownership. *Journal of the Royal Anthropological Institute of Great Britain and Ireland* 61:357–405.
- Fuentes y Guzman, Francisco A. de. 1882–1883. *Historia de Guatemala o recordación florida escrita en el siglo XVII*. Justo Zaragoza, ed. Madrid: Luis Navarro. 2 v.
- . 1932–1933. *Recordación florida; discurso historial y demostración natural, material, militar y político del reyno de Guatemala*. Guatemala: Tipografía Nacional. 3 v.
- Gage, Thomas. 1677. *A New Survey of the West Indies*. 3rd ed. London: A. Clark.
- Galindo, Juan. 1836. Ruins of Copan in Central America. *Transactions of the American Antiquarian Society* 2:543–550.
- Galindo y Villa, Jesús. 1912. *Las ruinas de Cempoala del templo de Tajin (estado de Veracruz) exploradas por el Director del Museo Nacional de Arqueología, Historia y Etnología, en Misión en Europa, Don Francisco del Paso y Troncoso*. Mexico: Museo Nacional de Arqueología, Historia y Etnología.
- Gamio, Manuel. 1913. Arqueología de Atzacapotzalco, D.F., México. In *Proceedings of the International Congress of Americanists* (18th session, London, 1912), v. 1, pp. 180–187. London.
- . 1922. *La población del valle de Teotihuacán; representativa de las que habitan las regiones rurales del distrito federal y de los estados de Hidalgo, Puebla, México y Tlaxcala*. Mexico: Dirección de Talleres Gráficos. 2 v.
- . 1926–1927. Cultural Evolution in Guatemala and Its Geographic and Historic Handicaps. *Art and Archaeology* 22(6):202–222; 23(1–3):70–78, 129–133.
- Gann, Thomas W.F. 1900. Mounds in Northern Honduras. *Bureau of American Ethnology, Annual Report* 19(2): 655–692.
- . 1918. *The Maya Indians of Southern Yucatan and Northern British Honduras*. Bureau of American Ethnology, Bulletin, 64. Washington, DC.
- . 1924. *In an Unknown Land*. London: Duckworth.
- . 1927. *Maya Cities: A Record of Exploration and Adventure in Middle America*. London: Duckworth.
- , and M. Gann. 1939. *Archaeological Investigations in the Corozal District of British Honduras*. Bureau of American Ethnology, Anthropological Papers, no. 7. Washington, DC.
- García de Palacio, D. 1860. Carta dirigida al Rey de España, por don Diego García de Palacio, año 1576; Being a Description of the Ancient Provinces of Guazacapan, Izalco, Cuscatlan, and Chiquimula in the Audiencia of Guatemala. In *Collection of Rare and Original Documents and Relations Concerning the Discovery and Conquest of America*. Ed. E. G. Squier. New York: C. B. Norton.
- García Icazbalceta, Joaquín. 1886–1892. *Nueva colección de documentos para la historia de México*. Mexico: Andrade y Morales. 3 v.
- García Payón, Jose. 1950. Restos de una cultura prehispánica encontrados en la región de Zempoala, Veracruz. *Revista trimestral, Universidad Veracruzana* 2:90–130.
- , and Julio Monreal y Jiménez Embun. 1936. *Amacoatl o libro del chocolate*. Toluca, Mexico: Tipografía Escuela de Artes.
- Gardiner, Alan H. 1943. Writing and Literature. In *The Legacy of Egypt*, ed. S.R.K. Glanville. Oxford: Oxford University Press.
- Gayton, A. H. 1927. The Uhle Collections from Nievería. *University of California Publications in American Archaeology and Ethnology* 21(8):91–97. Berkeley.
- , and Alfred L. Kroeber. 1927. The Uhle Pottery Collections from Nazca. *University of California Publications in American Archaeology and Ethnology* 24(1):1–46. Berkeley.
- Gemelli Careri, Giovanni F. 1699–1700. *Giro del mondo*. Napoli: Guiseppe Roselli. 6 v.
- Givens, Douglas R. 1989. The Impact of A. V. Kidder on the Carnegie Institution of Washington and American Archaeology. *Athenaeum Society Review* 5(1):5–11.
- . 1992. Sylvanus G. Morley and the Carnegie Institution's Program of Maya Research. In *Rediscovering Our Past: Essays on the History of American Archaeology*, ed. Jonathan E. Reyman, 137–144. Aldershot, England: Avebury.
- Gondra, Isidro R. 1836. Antigüedades mexicanas. *Mosaico mexicano* 1:102–105.
- Gordon, George B. 1898. *Caverns of Copan, Honduras: Report on Explorations by the Museum, 1896–1897*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoirs 1(5). Cambridge, MA.
- Guzman, Eulalia. 1934. Los relieves de las rocas del Cerro de la Cantera, Jonacatepec. *Anales del Museo Nacional de Arqueología, Historia y Etnografía* 5(1):237–251.
- Habel, S. 1878. The Sculptures of Santa Lucia Cozumalhupa in Guatemala, with an Account of Travels in Central America and on the West Coast of South America. *Smithsonian Contributions to Knowledge* 23(269):1–90.
- Haddon, Alfred C., and W.H.R. Rivers. 1901–1935. *Reports of Cambridge Anthropological Expedition to Torres Straits*. Cambridge: Cambridge University Press. 6 v.
- Hamly, D. H. 1949. The Ridgway Color Standards with a Munsell Notation Key. *Journal of the Optical Society of America* 39(7):592–599.
- Harris, Charles H., and Louis R. Sadler. 2003. *The Archaeologist Was a Spy: Sylvanus G. Morley and the Office of Naval Intelligence*. Albuquerque: University of New Mexico Press.
- Hendrichs Perez, P.R. 1945–1946. *Por tierras ignotas: Viajes y observaciones en la region del Rio de las Balsas*. Mexico: Editorial Cultural. 2 v.
- Henning, Paul. 1918. *La arqueología mexicana como norma para el estudio de las antigüedades Naho-Pipiles: El Xipe del Tazumal de Chalchuapa, Departamento de Santa Ana, República de El Salvador*. Servicio de Informaciones alemanas en Mexico, 4. Mexico.

- Herrera y Tordesillas, Antonio de. 1601–1615. *Historia general de los hechos de los castellanos en las islas i tierra firme del mar oceano*. Madrid: En la Emprenta Real. 4 v.
- . 1726–1728. *Historia general de las Indias Occidentales, o los hechos de los castellanos en las islas y tierra firme del mar oceano*. Madrid: Imprenta Real de Nicolas Rodríguez Franc.
- Hrdlicka, Ales. 1912. An Ancient Sepulchre at San Juan Teotihuacan, with Anthropological Notes on the Teotihuacan People. *Proceedings of the International Congress of Americanists* (17th session, Mexico, 1910), pp. 23–27. Mexico.
- Iberri, J. Ignacio. 1844. Ruinas de Monte Real, Departamento de Veracruz. *Museo mexicano* 3:21–24.
- Icaza, Francisco A. de. 1928. Miscelánea histórica. *Revista Mexicana de Estudios Históricos* 2:5.
- Joyce, Thomas A. 1914. *Mexican Archaeology: An Introduction to the Archaeology of the Mexican and Mayan Civilizations of Pre-Spanish America*. New York: G. P. Putnam's Sons.
- . 1926. Report on the Investigations at Lubaantun, British Honduras, in 1926. *Journal of the Royal Anthropological Institute* 56:207–230.
- . 1927. *Maya and Mexican Art*. London: The Studio.
- . 1929. Report on the British Museum Expedition to British Honduras, 1929. *Journal of the Royal Anthropological Institute* 59:39–59.
- . 1933. The Pottery Whistle-Figurines of Lubaantun. *Journal of the Royal Anthropological Institute* 63:15–25.
- Keleman, Pal. 1943. *Medieval American Art*. New York: Macmillan. 2 v.
- Kelly, Isabel. 1944. West Mexico and the Hohokam. In *El Norte de Mexico el Sur de Estados Unidos*. pp. 206–222. Mexico: Talleres de la Editorial Stylo.
- . 1947. *Excavations at Apatzingan, Michoacan*. Viking Fund Publications in Anthropology, no. 7. New York.
- Kidder, Alfred V. 1938. Division of Historical Research. *Carnegie Institution of Washington, Year Book* 37:137–172.
- . 1940a. Archaeological Problems of the Highland Maya. In *The Maya and Their Neighbors*, ed. C. Hay, 117–125. New York: Appleton-Century.
- . 1940b. Pottery from Champerico, Guatemala. *Carnegie Institution of Washington, Notes on Middle American Archaeology and Ethnology* 1(2):4–10.
- . 1943. Pottery from the Pacific Slope of Guatemala. *Carnegie Institution of Washington, on Middle American Archaeology and Ethnology* 1(15):81–91.
- . 1947. *The Artifacts of Uxactun, Guatemala*. Carnegie Institution of Washington, Publication 576. Washington, DC.
- , Jesse D. Jennings, and Edwin M. Shook. 1946. *Excavations at Kaminaljuyu, Guatemala*. Carnegie Institution of Washington, Publication 561. Washington, DC.
- , and Edwin M. Shook. 1946. Rim-Head Vessels from Kaminaljuyu. *Carnegie Institution of Washington, Notes on Middle American Archaeology and Ethnology* 3(69):54–58. Cambridge, MA.
- Krickeberg, Walter. 1933. *Los totonaca: Contribución a la etnografía histórica de la América Central*. Mexico: Talleres Gráficos del Museo Nacional de Arqueología, Historia y Etnografía.
- Kroeber, Alfred L. 1925. The Uhle Pottery Collections from Supe. *University of California Publications in American Archaeology and Ethnology* 21(6):235–264.
- . 1926. *Archaeological Explorations in Peru*. Field Museum of Natural History, Anthropology, Memoirs, 2(1). Chicago.
- , and William D. Strong. 1925. The Uhle Pottery Collections from Ica. *University of California Publications in American Archaeology and Ethnology* 21(3):95–133.
- L'art vivant au Mexique*. 1930. Paris: Librairie Larousse.
- La Farge, Oliver, and Douglas Byers. 1931. *Year Bearer's People*. Middle American Research Institute, Tulane University, Publication, 3. New Orleans.
- Landa, Diego de. 1941. *Landa's Relacion de las cosas de Yucatán*. Ed. Alfred M. Tozzer. Peabody Museum of American Archaeology and Ethnology, Harvard University, Papers, 18. Cambridge, MA.
- Larco Hoyle, Rafael. 1938–1940. *Los Mochicas*. Lima: Casa Editora La Crónica. 2 v.
- Lees, Robert B. 1953. The Basis of Glottochronology. *Language* 29(2):113–127.
- Lehmann, Walter. 1921. *Altmexikanische kunstgeschichte*. Orbis Pictus, Bd. 8. Berlin: E. Wasmuth.
- . 1938. *Die Geschichte der königreiche von Colhuacan und Mexico*. Stuttgart: W. Kohlhammer.
- León, Nicolas. 1905. Datos referentes a una especie Nueva de escritura jeroglífica en Mexico. *Anales del Museo Nacional* 2:410–412.
- . 1921. Supervivencias precolombinas. *La Pintura al Aje de Uruapan, America-Espanola* 1(5):333–336.
- León Pinelo, Antonio Rodríguez de. 1636. *Cuestión moral si el chocolate quebranta el ayuno eclesiástico; tratase de otras bebidas y confecciones que se usan en varias provincias*. Madrid: Por la Viuda de Iuan González.
- Lincoln, J. Steward. 1942. The Calendar of the Ixil of Guatemala. *Carnegie Institution of Washington, Contributions to American Anthropology and History* 7(38):99–128.
- . 1946. An Ethnological Study of the Ixil Indians of the Guatemala Highlands. Microfilm Collection of Middle American Cultural Anthropology, 1. Chicago.
- Linné, Sigvald. 1934. *Archaeological Researches at Teotihuacan, Mexico*. Ethnographical Museum of Sweden, Publication, no. 1. Stockholm.
- . 1938. *Zapotecan Antiquities*. Ethnographical Museum of Sweden, Publication, 4. Stockholm.
- . 1939. Blow-guns in Ancient Mexico. *Ethnos* 4:56–61.
- . 1942. *Mexican Highland Cultures: Archaeological Researches at Vicente Teotihuacan, Calpulalpan and Chalchicomula in 1934/35*. Ethnographical Museum of Sweden, Publication 7. Stockholm.
- Locke, Leland. 1923. *Ancient Peruvian Quipu or Knot Record*. New York: American Museum of Natural History.
- Lombardo Toledano, Vicente. 1931. Geografía de las lenguas de la Sierra de Puebla, con algunas observaciones sobre sus antiguos y sus actuales pobladores. *Revista Universidad de Mexico* 2(13):14–96.
- Long, R.C.E. 1923. Maya High Numbers. *Man* 23(39):66–69. London.

- . 1937. Remarks on the Correlation Question. *Carnegie Institution of Washington, Contributions to American Anthropology* 14:97–100.
- Longyear, John M. 1944. *Archaeological Investigations in El Salvador*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoirs, 9(2). Cambridge, MA.
- . 1952. *Copan Ceramics: A Study of Southeastern Maya Pottery*. Carnegie Institution of Washington, Publication 597. Washington, DC.
- Lopez de Cogolludo, Diego. 1867–1868. *Historia de Yucatan; escrita en el siglo XVII por el R..P. Diego López de Cogolludo, provincial que fue de la Orden franciscana*. 3rd ed. Merida: Imprenta de Manuel Aldana Rivas. 3 v.
- Lothrop, Eleanor B. 1948. *Throw Me a Bone: What Happens When You Marry an Archaeologist*. New York: McGraw-Hill.
- Lothrop, Samuel K. 1926. *Pottery of Costa Rica and Nicaragua*. Museum of the American Indian, Heye Foundation, Contribution 8. New York. 2 v.
- . 1927. *Pottery Types and Their Sequence in Salvador*. Museum of the American Indian, Heye Foundation, Indian Notes 1(1). New York.
- . 1929a. Canoes of Lake Atitlan, Guatemala. *Museum of the American Indian/Heye Foundation, Indian Notes* 6:216–221.
- . 1929b. Christian and Pagan in Guatemala. *The Nation* 128:74–76.
- . 1929c. Further Notes on Indian Ceremonies in Guatemala. *Museum of the American Indian/Heye Foundation, Indian Notes* 6:1–25.
- . 1932. Aboriginal Navigation off the West Coast of South America. *Journal of the Royal Anthropological Institute* 62:229–256.
- . 1933. *Atitlan: An Archaeological Study of Ancient Remains on the Borders of Lake Atitlan, Guatemala*. Carnegie Institution of Washington, Publication 444. Washington, DC.
- . 1936a. Sculptured Pottery of the Maya and the Pipil. *Maya Research* 3:140–152.
- . 1936b. *Zacualpa: A Study of Ancient Quiché Artifacts*. Carnegie Institution of Washington, Publication 472. Washington, DC.
- . 1952. *Metals from the Cenote of Sacrifice, Chichen Itza, Yucatan*. Peabody Museum of Archaeology and Ethnology, Harvard University, Memoir 10(2). Cambridge, MA.
- Makemson, Maud W. 1943. Astronomical Tables of the Maya. *Carnegie Institution of Washington, Contributions to American Anthropology and History* 8(42):183–221.
- Maler, Teobert. 1901–1903. *Researches in the Central Portion of the Usumatsintla Valley*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoirs 21(1–2). Cambridge, MA.
- Marcou, Philippe. 1920. Cacao, cacahuete ou cacaouete. *Journal de la Société des Américanistes de Paris* 12:65–67.
- Marquez Miranda, Fernando. 1930. La navegación primitiva y las canoas monóxilos (contribución a su estudio). *Proceedings of the International Congress of Americanists* (23rd session, New York, 1928), pp. 736–746. New York.
- Martínez, Maximino. 1928. *Las Plantas más útiles que existen en la Republica Mexicana*. Mexico: Ediciones Botas.
- Martínez Hernández, Juan. 1929. *Diccionario de Motul, maya-español atribuido a Fray Antonio de Ciudad Real y arte de lengua maya por Fray Juan Coronel*. Merida: Talleres de la Compañía Tipográfica Yucateca.
- Martyr, Peter. 1612. *De nouo orbe, or, The historie of the West Indies: Contayning the actes and aduentures of the Spanyardes, which haue conquered and peopled those countries, inriched with varietie of pleasant relation of the manners, ceremonies, lawes, gouernments, and warres of the Indians; comprised in eight decades*. Trans. Richard Eden, Michael Lok, and Thomas Adams. London: printed for Thomas Adams.
- Mason, Gregory. 1928. Pottery and Other Artifacts from Caves in British Honduras and Guatemala. *Museum of the American Indian, Heye Foundation, Indian Notes and Monographs* 47:1–45.
- Mason, J. Alden. 1937. Late Archaeological Sites in Durango, Mexico, from Chalchihuities to Zape. In *Twenty-Fifth Anniversary Studies, Publications of the Philadelphia Anthropological Society* 1:117–126.
- . 1938. Observations on the Present Status and Problems of Middle American Archaeology. *American Antiquity* 3(3):206–223.
- . 1944. Review: Carnegie Institution of Washington Notes on Middle American Archaeology and Ethnology. Washington, DC: Carnegie Institution of Washington.
- Maudslay, Alfred. 1889–1902. *Biologia Centrali Americana, or Contributions to the Knowledge of the Flora and Fauna of Mexico and Central America*. Archaeology. 5 v. London: John Murray.
- . 1912. *A Note on the Position and Extent of the Great Temple Enclosure at Tenochtitlan*. London: Taylor and Francis.
- Mazari, Manuel. 1925. Código Mauricio de la Arena. *Anales del Museo Nacional de Arqueología, Historia y Etnografía* 4(4):273–278.
- . 1926. Relación de los antiguos planos y pinturas de los pueblos de la jurisdicción del actual estado de Morelos existentes en el Archivo General y Publico de la Nación. *Memorias y Revista de la Sociedad Científica Antonio Azate* 46:309–351.
- McBryde, F. Webster. 1933. Solola: A Guatemalan Town and Cakchiquel Market-Center. *Middle American Research, Tulane University* 5:45–152.
- . 1947. *Cultural and Historical Geography of Southwest Guatemala*. Smithsonian Institution, Institute of Social Anthropology, Publication 4. Washington, DC.
- Means, Philip A. 1917. *History of the Spanish Conquest of Yucatan and of the Itzas*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Papers, 7. Cambridge, MA.
- Melgarejo Vivanco, Jose L. 1943. *Totonacapan*. Jalapa: Talleres Gráficos del Gobierno.
- Mendez, Santiago. 1921. Maya Indians of Yucatan in 1861. In *Reports of the Maya Indians of Yucatan*, by Santiago Mendez, Antonio García y Cubas, Pedro Sanchez de Aguilar, and Francisco Hernandez. Ed. Marshall H.

- Saville. *Indian Notes and Monographs, Museum of the American Indian, Heye Foundation* 9(3):137–226.
- Merrill, R. H. 1945. Maya Sun Calendar Dictum Disproved. *American Antiquity* 10:307–311.
- Merwin, R. E., and G. C. Vaillant. 1932. *The Ruins of Holmul, Guatemala*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoirs 3(2). Cambridge, MA.
- Milla y Vidaurre, Jose. 1937. *Historia de la America Central, desde el descubrimiento del país por los españoles (1502) hasta su independencia de la España (1821)*. Colección Juan Chapin, 11–12. Guatemala: Tipografía Nacional.
- Mitman, Carl W. 1923. *Catalogue of the Watercraft Collection in the United States National Museum*. United States National Museum, Bulletin 127. Washington, DC.
- Molina, Alonso. 1571. *Vocabulario de la lengua castellana y mexicana*. Mexico: Casa de Antonio de Spinosa.
- Molins Fabrer, N. 1954–1955. El código mendocino y la economía de Tenochtitlan. *Revista Mexicana de Estudios Antropológicos* 14:303–335. Mexico.
- Morley, Sylvanus G. 1920. *Inscriptions of Copan*. Carnegie Institution of Washington, Publication 219. Washington, DC.
- . 1938. *The Inscriptions of Peten*. Carnegie Institution of Washington, Publication 437. Washington, DC. 5 v.
- . 1939. Recent Epigraphic Discoveries at the Ruins of Copan, Honduras. In *So Live the Works of Men*. In *So Live the Works of Men*, ed. Donald D. Brand and Fred E. Harvey, 277–293. Albuquerque: University of New Mexico Press.
- . 1946. *The Ancient Maya*. Stanford, CA: Stanford University Press.
- Morris, Earl H., Jean Charlot, and Ann A. Morris. 1931. *The Temple of the Warriors at Chichen Itza*. Carnegie Institution of Washington, Publication 406. Washington, DC.
- Motolinia (Toribio de Benavente). 1914. *Historia de los indios de la Nueva España, escrita a mediados del siglo XVI por el R. P. Fr. Toribio de Benavente o Motolinia*. Barcelona: Herederos de Juan Gili.
- Munsell, A. H. 1929. *Book of Color: Defining, Explaining, and Illustrating the Fundamental Characteristics of Color*. Baltimore: Munsell Color Company.
- Nilsson, M. P. 1920. *Primitive Time Reckoning*. Lund: C.W.K. Gleerup.
- Noguera, Eduardo. 1935. Antecedentes y relaciones de la cultura teotihuacana. *El México antiguo* 3(5):3–90.
- Noticias. 1878. *Noticias varias de Nueva Galicia, intendencia de Guadalajara*. Guadalajara: Tipografía de Banda.
- Noticias geográficas y estadísticas del Departamento de Jalisco*. 1843. Guadalajara: Imprenta del Gobierno.
- Nuño de Guzmán contra Hernán Cortés, sobre los descubrimientos y conquistas en Jalisco y Tepic, 1531. 1937. *Boletín del Archivo General de la Nación* 8:541–576.
- Nuttall, Zelia. 1910. Island of Sacrificios. *American Anthropologist* 12(2):257–295.
- , and Leopoldo Batres. 1910. *La Isla de Sacrificios*. Mexico: Tipografía Económica.
- Oakes, Maud. 1951. *The Two Crosses of Todos Santos*. New York: Farrar, Strauss, and Young.
- O’Neale, Lila M. 1945. *Textiles of Highland Guatemala*. Carnegie Institution of Washington, Publication 567. Washington, DC.
- Ornelas Mendoza y Valdivia, N. A. de. 1941. *Crónica de la Provincia de Santiago de Xalisco*. Guadalajara: Tipografía Jaime.
- Orozco y Berra, Manuel. 1871. *Materiales para una cartografía mexicana*. Mexico: Imprenta del Gobierno.
- Oviedo y Valdés, Gonzalo F. de. 1851–1855. *Historia general y natural de las indias, islas y tierra firme del mar oceano*. Madrid: Imprenta de la Real Academia de la Historia. 4 v.
- Páez Brothie, Luis. 1940. *Jalisco: Historia minima*. Guadalajara: Delgado.
- Palacios, Enrique J. 1926. *En los confines de la selva lacandona; exploraciones en el Estado de Chiapas, mayo-agosto 1926*. Mexico: Talleres Gráficos de la Nación.
- . 1935. Más gemas del arte maya en Palenque. *Anales del Museo Nacional de Arqueología, Historia y Etnografía* 2:193–225.
- , and Enrique E. Meyer. 1932. *La ciudad arqueológica de El Tajín; sus revelaciones*. Mexico: Biblioteca de Estudios Históricos y Arqueológicos Mexicanos.
- Papeles de Nueva España. 1905. *Papeles de Nueva España, publicados de orden y con fondos del Gobierno Mexicano*. Ed. Francisco de Paso y Troncoso. Madrid. 6 v.
- Parsons, E. C. 1936. *Mitla, Town of the Souls*. Chicago: University of Chicago Press.
- Paso y Troncoso, Francisco del. 1897. Exposición histórico-Americana de Madrid para 1892; Sección de Mexico; Catalogo de la colección del señor presbítero don Francisco Plancarte, formada con la colaboración del dueño por el director del Museo Nacional de Mexico. *Anales del Museo Nacional de Mexico* 4:273–357.
- . 1905. *Papeles de Nueva España; publicados de orden y con fondos del Gobierno mexicano*. Madrid: Establecimiento Tip. “Sucesores de Rivadeneyra.”
- Peñafiel, Antonio. 1900. *Teotihuacan, estudio histórico y arqueológico*. Mexico: Oficina Tipográfica de la Secretaría de Fomento.
- Pérez, Juan Pío. 1866–1877. *Diccionario de la lengua maya*. Mérida: J. F. Molina Solís.
- . 1898. *Coordinación alfabética de las voces del idioma maya que se hallan en el arte y obras del padre fr. Pedro Beltrán de Santa Rosa, con las equivalencias castellanas que en las mismas se hallan*. Mérida: Imprenta de la Ermita.
- Pineda, E. 1845. *Descripción geográfica de Chiapas y Soconusco*. Mexico.
- Pomar, Juan B., and J. García Icazbalceta. *Relación de Tezcoco*. Mexico: Editorial Salvador Chavez Hayhoe.
- Ponce, Alonso. 1875. *Relacion breve y verdadera de algunas cosas de las muchas que sucedieron al Padre Fray Alonso Ponce en las provincias de la Nueva España, siendo Comisario General de aquellas partes*. Madrid: Imprenta de la Viuda de Calero.
- Ponce de León, L. 1882. Relacion de la Provincia de Soconusco, 1574. In *Historia de Guatemala; ó Recordación Florida*, escrita el siglo XVII por el capitán d. Francisco Antonio de Fuentes y Guzman, 1:423–428. Madrid: L. Navarro.

- Popenoe, Wilson. 1919. Batido and Other Indian Beverages Prepared from cacao. *American Anthropologist* 21:403–409.
- Porter, Muriel N. 1953. *Tlatilco and the Pre-Classic Cultures of the New World*. Viking Fund Publications in Anthropology, 19. New York: Wenner Gren Foundation for Anthropological Research.
- Proskouriakoff, Tatiana. 1944. An Inscription on a Jade Probably Carved at Piedras Negras. *Carnegie Institution of Washington Notes on Middle American Archaeology and Ethnology* 2(47):142–147.
- . 1950. *A Study of Classic Maya Sculpture*. Carnegie Institution of Washington, Publication 593. Washington, DC.
- . 1953. Scroll Patterns (Entrelaces) of Veracruz. *Revisita mexicana de estudios antropológicos* 13(2–3):389–401.
- Redfield, Robert. 1932. Maya Archaeology as the Mayas See It. *Sociologus* 8(3):299–309.
- . 1936. The Coati and the Ceiba. *Maya Research* 3: 231–243.
- , and Alfonso Villa Rojas. 1934. *Chan Kom: A Maya Village*. Carnegie Institution of Washington, Publication 448. Washington, DC.
- Reducción de los Lacandones. 1937. *Boletín del Archivo General del Gobierno* 2(2):133–184.
- Reina, B. 1925. Algunas observaciones acerca del Códice Vaticano 3738 o Códice Ríos. *El Mexico antiguo* 2:212–219.
- Relaciones de Yucatán. 1898–1900. In *Colección de documentos inéditos relativos al descubrimiento, conquista, y organización de las antiguas posesiones españolas de ultramar*. 2 ser. Madrid: Establecimiento Tipográfico Sucesores de Rivadeneyra. 2 v.
- Relacion de Zapotitlan. 1579. Memorial de las advertencias y cosas . . . y particularidades destas provincias . . . en esta Provincia y Costa de Çapotitlan y Suchitepéquez. J. Rodríguez Cabrillo de Medaño, encomendero. Manuscript, original in University of Texas Library, Austin.
- Reynolds, Dorothy. 1946. Fire Burn and Cauldron Bubble. *InterAmerican* (April).
- Ricketson, Oliver G. 1935a. Four Pottery Moulds from Guatemala. *Maya Research* 2:253–560. New Orleans.
- . 1935b. Maya Pottery Well from Quirigua Farm, Guatemala. *Maya Research* 2:103–105.
- , and Edith B. Ricketson. 1937. *Uaxactun, Guatemala, Group E, 1926–1931*. Carnegie Institution of Washington, Publication 477. Washington, DC.
- Ridgway, R. 1912. *Color Standards and Color Nomenclature*. Washington, DC.: Author
- Robelo, Cecilio A. 1900. *Nombres geográficos indígenas de Jalisco*. Cuernavaca.
- Rodas N., Flavio, and Ovidio Rodas Corzo. 1938. *Simbolismos (maya quiches) de Guatemala*. Guatemala: Tipografía Nacional.
- Rosales, Juan de Dios. 1949. *Notes on San Pedro La Laguna*. University of Chicago, Microfilm Collection of Manuscripts on Middle American Cultural Anthropology, 25. Chicago.
- Roys, Lawrence. 1945. Moon Age Tables. *Carnegie Institution of Washington, Notes on Middle American Archaeology and Ethnology* 2(50):159–169.
- Roys, Ralph L. 1931. *The Ethno-Botany of the Maya*. Middle American Research Institute. Tulane University, Research Series, v. 2. New Orleans.
- . 1933. *The Book of Chilam Balam of Chumayel*. Carnegie Institution of Washington, Publication 438. Washington, DC.
- . 1943. *Indian Background of Colonial Yucatan*. Carnegie Institution of Washington, Publication 548. Washington, DC.
- . 1949. Guide to the Codex Perez. *Carnegie Institution of Washington, Contributions to American Anthropology and History* 10(49):87–106. Washington, DC.
- . 1957. *The Political Geography of the Yucatan Maya*. Carnegie Institution of Washington, Publication 613. Washington, DC.
- Ruiz de Alarcón, Hernando. 1900. Tratado de las supersticiones y costumbres gentilitas que hoy viven entre los indios naturales desta Nueva España, escrito en Mexico, 1620. *Anales del Museo Nacional de Mexico* 6: 123–223.
- Ruppert, Karl. 1931. The Temple of the Wall Panels, Chichen Itzá. *Carnegie Institution of Washington, Contributions to American Archaeology* 1(3):117–140.
- . 1943. The Mercado, Chichen Itza, Yucatan. *Carnegie Institution of Washington, Contributions to American Anthropology and History* 8(43):223–260.
- . 1946. Investigations at Chichen Itza. *Carnegie Institution of Washington, Year Book* 45:205–206.
- . 1950. Gallery-Patio Type Structures at Chichen Itza. In *For the Dean: Essays in Anthropology in Honor of Byron Cummings on His Eighty-Ninth Birthday, September 20, 1950*, ed. Erik K. Reed and Dales S. King, 249–258. Tucson: Hohokam Museums Association.
- . 1952. *Chichen Itza: Architectural Notes and Plans*. Carnegie Institution of Washington, Publication 595. Washington, DC.
- , and John H. Denison. 1943. *Archaeological Reconnaissance in Campeche, Quintana Roo, and Peten*. Carnegie Institution of Washington, Publication 543. Washington, DC.
- Ruz Lhullier, Alberto. 1942. *Guía del Museo de Campeche*. Campeche: Gobierno del Estado.
- . 1945a. Campeche en la arqueología maya. *Acta Antropológica* 1:2–3.
- . 1945b. La costa de Campeche en los tiempos prehispánicos. Thesis, Escuela Nacional de Antropología e Historia, Mexico.
- Sahagun, Bernardino de. 1938. *Historia general de las cosas de Nueva España*. Ed. Pedro Robredo. Mexico: Editorial Pedro Robredo. 5 v.
- Sánchez de Aguilar, P. 1892. Informe contra idolorum cultores del Obispado de Yucatan. *Anales del Museo Nacional de Mexico* 6:13122. Mexico: Imprenta del Museo Nacional.
- San Juan, Alonso de, and Antonio de Ciudad Real. 1873. *Relación breve y verdadera de algunas cosas de las muchas que sucedieron al padre fray Alonso Ponce en las provincias de la Nueva España: Siendo comisario general de aquellas partes*. Madrid: Imprenta de la viuda de Calero. 2 v.
- Sapper, Karl. 1897. *Das Nördliche Mittel-Amerika Nebst einem Ausflug nach dem Hochland von Anahuac; Reisen*

- und Studien aus den Jahren 1888–1895. Braunschweig: Friedrich Vieweg.
- Satterthwaite, Linton. 1940. Another Piedras Negras stela. *University Museum Bulletin* 8(2–3):24–27.
- . 1943a. New Photographs and the Date of Stela 14, Piedras Negras. *Carnegie Institution of Washington, Notes on Middle American Archaeology and Ethnology* 1(28):182–188.
- . 1943b. *Piedras Negras Archaeology: Architecture, 1; Introduction*. Philadelphia: University of Pennsylvania Museum.
- Sauer, Carl O. 1930. Aztatlan: Prehistoric Mexico Frontier on the Pacific Coast. *Science* 72:403.
- Saville, Marshall H. 1897. An Ancient Figure of Terra Cotta from the Valley of Mexico. *Bulletin of the American Museum of Natural History* 9:221–224.
- . 1922. *Turquoise Mosaic Art in Mexico*. Museum of the American Indian, Heye Foundation, Contributions, 6. New York.
- . 1928. Ceremonial Axes from Western Mexico. *Museum of the American Indian/Heye Foundation, Indian Notes* 5:280–293.
- . 1929. The Aztec God Xipe Totec. *Museum of the American Indian/Heye Foundation, Indian Notes* 6:151–174.
- . 1930. Toltec or Teotihuacan Types of Artifacts in Guatemala. *Museum of the American Indian/Heye Foundation, Indian Notes* 7:195–206.
- Schellhas, Paul. 1904. Comparative Studies in the Field of Maya Antiquities. In *Mexican and Central American Antiquities, Calendar Systems, and History*. Ed. C. P. Bowditch, 591–622. Bureau of American Ethnography, Bulletin, 28. Washington, DC.
- Schmidt, Max. 1929. *Kunst und Kultur von Peru*. Berlin: Propyläen Verlag.
- Schmieder, Oskar. 1930. *The Settlements of the Tzapotec and Mije Indians, State of Oaxaca, Mexico*. University of California Publications in Geography, 4. Berkeley.
- Scholes, France V., and Eleanor B. Adams. 1938. *Don Diego Quijada, Alcalde Mayor de Yucatan, 1561–1565*. Biblioteca Histórica Mexicana, v. 14, 15. Mexico.
- Scholes, France V., and Eleanor B. Adams. 1958. Información sobre los tributos que los indios pagaban a Moctezoma, año de 1554. In *Documentos para la historia del Mexico Colonial*, v. 4. Mexico: J. Porrua.
- Scholes, France V., and Ralph L. Roys. 1948. *The Maya Chontal Indians of Acalan-Tixchel: A Contribution to the History and Ethnography of the Yucatan Peninsula*. Carnegie Institution of Washington, Publication 560. Washington, DC.
- Schulz, R.P.C. 1942. Apuntes sobre cálculos relativos al calendario de los indígenas de Chiapas. *El Mexico antiguo* 6:6–14.
- Seler, Eduard. 1901. *Die alten Ansiedlungen von Chaculá in Distrikte Nenton des Departments Huehuetenango der Republik Guatemala*. Berlin: Dietrich Reimer.
- . 1902–1923. *Gesammelte Abhandlungen zur amerikanischen Sprach- und Alterthumskunde*. Berlin: A. Asher. 5 v.
- . 1908. Alterthumer aus Guatemala. *Gesammelte Abhandlungen zur amerikanischen Sprach- und Alterthumskunde*, 3:578–640. Berlin.
- . 1915a. Archaeologische Reise in Sud- und Mittelamerika. *Gesammelte Abhandlungen zur amerikanischen Sprach- und Alterthumskunde*, 5:115–151. Berlin.
- . 1915b. *Beobachtungen und Studien in den Ruinen von Palenque*. Abhandlungen der Königlich Preussischen Akademie der Wissenschaften, 5. Berlin.
- . 1915c. Die Teotihuacan-Kultur des Hochlandes von Mexiko. In *Gesammelte Abhandlungen zur Amerikanischen Sprach- und Alterthumskunde*, 5:405–585. A. Asher, Berlin.
- . 1917. *Die Ruinen von Uxmal*. Abhandlungen der Königlich Preussischen Akademie der Wissenschaften, Philosophisch, Historische Klasse, Nr. 3. Berlin: Georg Reimer.
- Seler-Sachs, Caecilie. 1900. *Auf Alten Wegen in Mexiko und Guatemala; Reise erinnerungen und Eindrücke aus den Jahren 1895–1897*. Berlin: Strecker und Schröder Verlag.
- . 1922. Altertümer des Kanton Tuxtla im Staate Veracruz. In *Festschrift Eduard Seler*, ed. Walter Lehmann, 543–556. Stuttgart: Strecker und Schröder Verlag.
- Shepard, Anna O. 1948. *Plumbate: A Mesoamerican Trade Ware*. Carnegie Institution of Washington, Publication 573. Washington, DC.
- Shook, Edwin M. 1940. Explorations in the Ruins of Oxkinok, Yucatan. *Revista mexicana de estudios antropológicos* 4:165–171.
- . 1949. Historia arqueológica del Puerto de San José, Guatemala. *Antropología e historia de Guatemala* 1(2): 3–22.
- . 1951. Present Status of Research on the Preclassic Horizons in Guatemala. In *The Civilizations of Ancient America: Selected Papers of the 29th International Congress of Americanists*, ed. Sol Tax, 1:93–100. Chicago: University of Chicago Press.
- . 1955. Yucatan and Chiapas. *Carnegie Institution of Washington, Year Book* 54:289–295.
- , and Alfred V. Kidder. 1952. Mound E-III-3, Kaminaljuyu, Guatemala. *Carnegie Institution of Washington, Contributions to American Anthropology and History*, 53. Washington, DC.
- , and Robert E. Smith. 1950. Descubrimientos arqueológicos en Poptun. *Antropología e historia de Guatemala* 2(2):3–15.
- Smith, A. Ledyard. 1947. Guatemala Highlands. *Carnegie Institution of Washington, Year Book* 46:184–187.
- , and Alfred V. Kidder. 1943. Explorations in the Motagua Valley, Guatemala. *Carnegie Institution of Washington, Contributions to American Anthropology and History* 8(41):101–182.
- , and Alfred V. Kidder. 1951. *Excavations at Nebaj, Guatemala*. Carnegie Institution of Washington, Publication 594. Washington, DC.
- Smith, David E., and L. C. Karpinski. 1911. *The Hindu-Arabic Numerals*. Boston: Ginn.
- Smith, Robert E. 1936. Ceramics of Uaxactun: A Preliminary Analysis of Decorative Techniques and Design. Mimeographed for distribution to students, Guatemala.
- . 1944. Archaeological Specimens from Guatemala. *Carnegie Institution of Washington, Notes on Middle American Archaeology and Ethnology* 2(37):35–46.

- . 1950. Descubrimientos arqueológicos en Poptún: II, Los artefactos y la alfarería. *Antropología e historia de Guatemala* 2(2):3–15.
- . 1952. Pottery from Chipoc, Alta Verapaz, Guatemala. *Carnegie Institution of Washington, Contributions to American Anthropology and History* 11(56):215–236.
- . 1955. *Ceramic Sequence at Uaxactun, Guatemala*. Middle American Research Institute, Tulane University, Publication, 20. New Orleans. 2 v.
- Smith, T. Elliot. 1903. *Handbook of Mineral Resources of the State of Jalisco, Mexico*. Guadalajara: Jalisco Times.
- Solís Alcalá, Ermilo. 1949. *Código Pérez, traducción libre del Maya el Castellano*. Merida: Ediciones de la Liga de Acción Social.
- Spinden, Herbert J. 1913. *A Study of Maya Art: Its Subject Matter and Historical Development*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Memoirs, 6. Cambridge, MA.
- . 1922. *Ancient Civilizations of Mexico and Central America*. New York: American Museum of Natural History.
- . 1924. *Reduction of Maya Dates*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Papers 6(4). Cambridge, MA.
- Starr, Frederick. 1902. Notes upon the Ethnography of Southern Mexico. *Proceedings of the Davenport Academy of Science* 9. Davenport, IA: Davenport Academy of Science.
- . 1908. In *Indian Mexico: A Narrative of Travel and Labor*. Chicago: Forbes.
- Stephens, John L. 1843. *Incidents of Travel in Yucatan*. New York: Harper and Brothers. 2 v.
- Stirling, Matthew W. 1943. *Stone Monuments of Southern Mexico*. Bureau of American Ethnology, Bulletin, 138. Washington, DC.
- Stoll, Otto. 1883. *Etnografía de la Republica de Guatemala*. Guatemala: Tipografía Sanchez & de Guise.
- . 1886. *Guatemala: Reisen und Schilderungen aus den Jahren 1878–1883*. Leipzig: F. A. Brockhaus.
- Stone, Doris Z. 1941. *Archaeology of the North Coast of Honduras*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Papers 9(1). Cambridge, MA.
- Strebel, Hermann. 1885–1889. *Alt-Mexiko: Archaeologische Beiträge zur Kulturgeschichte seine Bewohner*. Hamburg: L. Voss. 2 v.
- Strömsvik, Gustav. 1941. Substela Caches and Stela Foundations at Copan and Quirigua. *Carnegie Institution of Washington, Contributions to American Anthropology and History* 7(37):63–96.
- Strong, William D. 1925. The Uhle Pottery Collections from Ancon. *University of California Publications in American Archaeology and Ethnology* 21(4):135–190.
- , Alfred V. Kidder, and A. J. Drexel Paul. 1938. *Preliminary Report on the Smithsonian Institution–Harvard University Archaeological Expedition to Northwestern Honduras*. Smithsonian Miscellaneous Collections, 97(1). Washington, DC.
- Suarez de Peralta, J. 1878. *Noticias históricas de la Nueva España; publicadas . . . tratado del descubrimiento de las Yndias y su conquista*. Madrid: M. G. Hernandez.
- Sullivan, Paul. 1989. *Unfinished Conversations: Mayas and Foreigners between Two Wars*. New York: Alfred A. Knopf.
- Swadesh, Morris. 1952. Lexicostatistic Dating of Prehistoric Ethnic Contacts. *Proceedings American Philosophical Society* 96:452–463.
- Taylor, Walter W. 1948. *A Study of Archeology*. American Anthropological Association, Memoir, 69. Washington, DC.
- Teeple, John E. 1925a. Maya Inscriptions: Glyphs C, D, and E of the Supplementary Series. *American Anthropologist* 27(1):108–115.
- . 1925b. Maya Inscriptions: Further Notes on the Supplementary Series. *American Anthropologist* 27(3): 544–549.
- . 1931. Maya Astronomy. *Carnegie Institution of Washington, Contributions to American Archaeology* 1(2): 29–115.
- Termer, Franz. 1930a. Über die Mayasprache von Chicomucelo. *Proceedings of the International Congress of Americanists* (23rd session, New York, 1928), pp. 926–936. New York.
- . 1930b. Zur Ethnologie und Ethnografie des nördlichen Mittelamerika. *Ibero-Amerikanisches Archiv* 4:303–492.
- . 1931. Zur Archäologie von Guatemala. *Baessler Archiv* 14:167–191.
- Thomas, Cyrus. 1882. A Study of the Manuscript Troano. *Bureau of American Ethnology, Contributions to North American Ethnology* 5:1–237. Washington, DC.
- Thompson, J. Eric S. 1927. *A Correlation of the Mayan and European Calendars*. Field Museum of Natural History, Anthropological Series, 17(1). Chicago.
- . 1929. Maya Chronology: Glyph G of the Lunar Series. *American Anthropologist* 31(2):223–231.
- . 1930. *Ethnology of the Mayas of Southern and Central British Honduras*. Field Museum of Natural History, Anthropological Series 17(25):27–213.
- . 1931. *Archaeological Investigations in the Southern Cayo District, British Honduras*. Anthropological Series, Field Museum of Natural History 17(3).
- . 1935a. The Dates on Altar U, Copan. *Maya Research* 2:11–13.
- . 1935b. Maya Chronology: The Correlation Question. *Carnegie Institution of Washington, Contributions to American Archaeology* 3(14):51–104.
- . 1936. *Archaeology of South America*. Field Museum of Natural History, Anthropology Leaflet, 33. Chicago.
- . 1937a. Lunar Inscriptions in the Usumacinta Valley. *El Mexico antiguo* 4:69–73.
- . 1937b. A New Method of Deciphering the Yucatecan Dates with Special Reference to Chichen Itza. *Carnegie Institution of Washington, Contributions to American Archaeology* 4(22):177–197.
- . 1938. Sixteenth and Seventeenth Century Reports on the Chol Mayas. *American Anthropologist* 40:584–604.
- . 1939. *Excavations at San Jose, British Honduras*. Carnegie Institution of Washington, Publication 506. Washington, DC.

- . 1940a. Apuntes sobre la estela numero 6 de Balakbal, Quintana Roo. *Revista mexicana de estudios antropológicos* 4:6–9.
- . 1940b. Archaeological Problems of the Lowland Maya. In *The Maya and Their Neighbors*, ed. C. L. Hay, 126–138. New York: Appleton-Century.
- . 1940c. Late Ceramic Horizons at Benque Viejo, British Honduras. *Carnegie Institution of Washington, Contributions to American Anthropology and History* 7(35):1–35. Cambridge, MA.
- . 1941a. Coordination of History of Chichen Itza with Ceramic Sequences in Central Mexico. *Revista mexicana de estudios antropológicos* 5(2–3):97–111.
- . 1941b. *Dating of Certain Inscriptions of Non-Maya Origin*. Carnegie Institution of Washington, Theoretical Approaches to Problems, 1. Washington, DC.
- . 1941c. Yokes or Ball Games Belts? *American Antiquity* 6(4):320–326.
- . 1942a. Maya Arithmetic. *Carnegie Institution of Washington, Contributions to American Anthropology and History* 36:37–62.
- . 1942b. A Trial Survey of the Southern Maya Area. *American Antiquity* 9(1):106–134.
- . 1943. The Initial Series of Stela 14, Piedras Negras, Guatemala, and a Date on Stela 19, Naranjo, Guatemala. *Carnegie Institution of Washington, Notes on Middle American Archaeology and Ethnology* 1(11):113–116.
- . 1944. Variant Methods of Date Recordings in the Jatate Drainage. *Carnegie Institution of Washington, Notes on Middle American Archaeology and Ethnology* 2:133–138.
- . 1948. An Archaeological Reconnaissance in the Cotzumalhuapa Region, Escuintla, Guatemala. *Carnegie Institution of Washington, Contributions to American Anthropology and History* 9(44):1–94.
- . 1949. Canoes and Navigation of the Maya and Their Neighbors. *Journal of the Royal Anthropological Institute of Great Britain and Ireland* 79:69–78.
- . 1950. *Maya Hieroglyphic Writing: Introduction*. Carnegie Institution of Washington, Publication 589. Washington, DC.
- . 1952. La inscripción jeroglífica del Tablero de El Palacio, Palenque. *Anales del Instituto Nacional de Antropología e Historia* 4:61–68.
- . 1954. Memoranda on Some Dates at Palenque, Chiapas. *Carnegie Institution of Washington, Notes on Middle American Archaeology and Ethnology* 5:45–52.
- , Harry E.D. Pollock, and Jean Charlot. 1932. *A Preliminary Study of the Ruins of Coba, Quintana Roo, Mexico*. Carnegie Institution of Washington, Publication 528. Washington, DC.
- Thompson, J. Eric S., Lawrence Roys, and R.C.E. Long. 1935. Maya Chronology: The Correlation Question. *Carnegie Institution of Washington, Contributions to American Archaeology* 14:51–104.
- Thureau-Dangin, F. 1939. Sketch of a History of the Sexagesimal System. *Osiris* 7:95–141.
- Torquemada, Juan de. 1723. *Monarchia indiana*. Madrid: N. Rodríguez Franco.
- Toscano, Salvador. 1943. Los códices tlapanecas de Azoyu. *Cuadernos americanos* 2(4):127–137.
- Toussaint, Manuel. 1932. *Tasco: Su historia, sus monumentos, características actuales y posibilidades turísticas*. Mexico: Editorial Cultura.
- Tozzer, Alfred M. 1907. *A Comparative Study of the Mayas and the Lacandones*. New York: MacMillan.
- . 1913. A Spanish Manuscript Letter on the Lacandones in the Archives of the Indies at Seville. *Proceedings of the International Congress of Americanists* (18th session, London, 1912), pp. 497–509. London.
- . 1921a. *Excavation of a Site at Santiago Ahuizotla*. Bureau of American Ethnology, Bulletin 74. Washington, DC.
- . 1921b. *Maya Grammar, with Bibliography and Appraisal of the Works Noted*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Papers, 9. Cambridge, MA.
- , and G. M. Allen. 1910. *Animal Figures in the Maya Codices*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Papers, 4(3). Cambridge, MA.
- Vaillant, George C. 1927. The Chronological Significance of Maya Ceramics. Doctoral dissertation, Department of Anthropology, Harvard University, Cambridge, MA.
- . 1930. *Excavations at Zacatenco*. American Museum of Natural History, Anthropological Papers, 32(1). New York.
- . 1931. *Excavations at Ticoman*. American Museum of Natural History, Anthropological Papers, 32. New York.
- . 1938. A Correlation of Archaeological and Historical Sequences in the Valley of Mexico. *American Anthropologist* 40(4):535–573.
- . 1939. History and Stratigraphy in the Valley of Mexico. *Smithsonian Institution, Report* 1938:521–530. Washington, DC.
- . 1941. *The Aztecs of Mexico: Origin, Rise and Fall of the Aztec Nation*. Garden City, NY: Doubleday, Doran and Company.
- Vaillant, Suzannah B., and George C. Vaillant. 1935. *Excavations at Gualupita*. American Museum of Natural History, Anthropological Papers 25(1). New York.
- Valenzuela, Juan. 1945a. Las exploraciones efectuadas en Los Tuxtlas, Veracruz. *Anales del Museo Nacional de Arqueología, Historia y Etnografía* 5(3):83–107.
- . 1945b. La segunda temporada en la región de los Tuxtlas, estado de Veracruz. *Anales del Instituto Nacional de Antropología e Historia de Mexico* 1:81–94.
- Vasquez de Espinoza, A. 1942. *Compendium and Description of the West Indies*. Trans. C. U. Clark. Smithsonian Institution, Miscellaneous Collections, 102. Washington, DC.
- Villacorta Calderón, José A. 1938. *Prehistoria e historia antigua de Guatemala*. Guatemala: Tipografía Nacional.
- Villagutierrez y Sotomayor, Juan de. 1933. *Historia de la conquista de la provincia de el Itza, reducción, y progresos de la de el Lacandón, y otras naciones de indios bárbaros, de las mediaciones de el reyno de Guatemala, a las provincias de Yucatan, en la America Septentrional*. Biblioteca Goethe-

- mala, 9. Guatemala: Sociedad de Geografía e Historia de Guatemala.
- Villa Rojas, Alfonso. 1945. *The Maya of East Central Quintana Roo*. Carnegie Institution of Washington, Publication 559. Washington, DC.
- Villafañá, Andrés. 1916. *Reseña minera de la región central y sureste del Estado de Jalisco*. Mexico: Departamento de Imprenta de la Secretaría de Fomento.
- Villaseñor y Sánchez, José A. 1746–1749. *Theatro americano: Descripción general de los reynos y provincias de la Nueva España y sus jurisdicciones; dedícala al rey nuestro señor, el señor D. Felipe Quinto, monarca de las Españas, su autor*. Mexico: Imprenta de la Viuda de D. Joseph Bernardo de Hogal. 2 v.
- Wagley, Charles. 1941. *Economics of a Guatemalan Village*. American Anthropological Association, Memoir, 58. Menasha, WI.
- . 1949. *The Social and Religious Life of a Guatemalan Village*. American Anthropological Association, Memoir, 71. Menasha, WI.
- Waterman, Thomas T. 1924. On Certain Antiquities in Western Guatemala. *Bulletin of the Pan American Union* 58(4):341–361.
- Wauchope, Robert. 1948. *Excavations at Zacualpa, Guatemala*. Middle American Research Institute, Tulane University, Publication, 14. New Orleans.
- . 1951a. Surface Collections at Chiche, Guatemala. *Middle American Research Records* 1:123–150.
- . 1951b. A Tentative Sequence of Preclassic Ceramics in Middle America. *Middle American Research Records* 1:211–260.
- Weeks, John M., and Jane A. Hill. 2006. *The Carnegie Maya: The Carnegie Institution of Washington Maya Research Program, 1913–1957*. Boulder: University Press of Colorado.
- Weiant, Clarence W. 1943. *Introduction to Ceramics of Tres Zapotes, Veracruz, Mexico*. Bureau of American Ethnology, Bulletin 138. Washington, DC.
- Weitlaner, Robert J. 1948. Exploración arqueológica en Guerrero. In *Occidente de Mexico*, 77–85. Mesa Redonda de la Sociedad mexicana de antropología (4th session, Mexico, 1946). Mexico.
- , and Robert H. Barlow. 1944. Expeditions in Western Guerrero: The Weitlaner Party, Spring, 1944. *Tlalocan* 1:364–375.
- Willson, Robert W. 1924. *Astronomical Notes on the Maya Codices*. Peabody Museum of American Archaeology and Ethnology, Harvard University, Papers, 6(3). Cambridge, MA.
- Winning, Hasso von. 1947. A Symbol for Dripping Water in the Teotihuacan Culture. *El Mexico Antiguo* 6:333–341.
- Wisdom, Charles. 1940. *The Chorti Indians of Guatemala*. Chicago: University of Chicago Press.
- Woodbury, Richard B. 1954. An Appraisal: A Study of Archaeology. *American Antiquity* 19(3):292–296.
- Ximenez, Francisco. 1929–1931. *Historia de la provincia de San Vicente de Chiapa y Guatemala de la Orden de Predicadores*. Biblioteca Goathemala, 1–3. Guatemala: Tipografía Nacional.

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THE CARNEGIE MAYA IV



THE CARNEGIE MAYA IV

CARNEGIE INSTITUTION OF WASHINGTON
THEORETICAL APPROACHES TO PROBLEMS, 1941-1947



COMPILED AND WITH AN INTRODUCTION BY

JOHN M. WEEKS



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Introduction

Theoretical Approaches to Problems is the fourth volume in the Carnegie Maya series, a publishing initiative by the University Press of Colorado to reissue the results of archaeological and anthropological investigations by the Division of Historical Research, Carnegie Institution of Washington, in southern Mesoamerica. Titles previously published in the series include excerpts summarizing the annual reports of the Division of Historical Research from 1913 through 1957 (*Carnegie Maya I*), the *Current Reports* that summarize the results originally published from 1952 to 1957 of the final CIW excavation program at Mayapan in northern Yucatan, Mexico (*Carnegie Maya II*), and *Notes on Middle American Anthropology and Anthropology*, a collection of various reports originally published from 1940 to 1957 (*Carnegie Maya III*). The fifth and final title in the series will republish the *Contributions to American Archaeology*.

The history and many accomplishments, and criticisms as well, of the Carnegie Maya program are presented elsewhere (Weeks and Hill 2006) and need not be repeated again. From 1914 to 1958 the Carnegie Institution of Washington sponsored archaeological and other investigations throughout the Maya region of southern Mexico and northern Central America. During these four decades the Carnegie Institution was the leader in the field, with monetary and human resources that no university or other research program could match, then or since. The more than 300 publications produced by Carnegie-supported researchers remain an impor-

tant, indeed essential, resource for modern scholars. The Carnegie Institution of Washington program is no more, although its framework has been modified, expanded, and replaced by several generations of new scholars. Its legacy stands as a firm foundation on which an entire discipline has been constructed.

The goal of the *Theoretical Approaches to Problems* series was clearly not to present final papers approaching a complete synthesis of Mesoamerican archaeology and anthropology as a result of the Carnegie Institution program. Rather, as the editor J. Eric S. Thompson (1941:i) states in his General Preface, the purpose of the series was to “outline tentative solutions which conform to information now at hand, with the purpose not of supplying final answers but of stimulating interest in these problems,” and to offer a “platform for such reconstructions and they are so clearly labeled as tentative that their authors will not be called on to stand by the ideas they advance.” The intention was simply to publish preliminary conclusions that “may later be reissued in modified form as a result of the flow of information that will, it is hoped, be stimulated by their publication.” Finally, Thompson makes clear that the series will serve to counterbalance the overspecialization that was replacing the broad comprehension of earlier generations.

By the 1930s, scholars generally recognized the Gulf Coast of southern Mexico as the heartland of the art style known as “Olmec” (Marcus 1976). Systematic excavation did not begin until 1939 when archaeologist Matthew Stirling conducted long-term

field investigations of Olmec sites with support from the Smithsonian Institution and the National Geographic Society. These included Tres Zapotes in 1939 and 1940, Cerro de las Mesas in 1940, La Venta in 1942 and 1943, and San Lorenzo in 1945 and 1946 (Stirling 1943).

The site of Tres Zapotes includes about fifty mounds and extends for three kilometers along the Arroyo Hueyapan near Chacalapa in the Mexican state of Veracruz. The mounds are separated into four plaza groups. Immediately in front of the principal mound of Group C, the easternmost cluster, was found Stela C, with a flat stone altar set in front of it. On the front of the monument was a “jaguar mask” panel, and on the back was a column of bars and dots placed horizontally. The numbers are not accompanied by period glyphs, but on the basis of position-value notation, Stirling reconstructed the Long Count date as [7].16.6.16.18. He predicted that the top half would include the Initial Series Introducing Glyph and the number 7, for Baktun 7, and the date would correlate to 32 BCE. He argued further that the Olmec was the mother culture for Mesoamerica, far earlier than the Maya civilization (Stirling 1939, 1940b).

There was great opposition to this position, especially by the Mayanists Sylvanus G. Morley and J. Eric S. Thompson, who regarded Olmec culture as a Classic period derivative of Maya civilization. The date was, however, accepted by the Mexican scholars Alfonso Caso, Miguel Covarrubias, and Roman Piña Chan, who argued that the Olmec represented the earliest civilization in Mesoamerica (Tellenbach 1978). In “Dating of Certain Inscriptions of Non-Maya Origin,” the first essay in *Theoretical Approaches to Problems*, J. Eric S. Thompson takes up the issue of dating inscriptions of non-Maya origin. He argues that the early inscriptions from southern Veracruz and the Pacific coastal plain of Guatemala, characterized by bars and dots between glyphs with numerical coefficients, are not Maya Initial Series but rather belong to a secondary series founded on the 400-day year. In essence, Thompson was taking on Stirling’s Stela C dating and detailed the evidence necessary to downgrade the dating of the Olmec (Tozzer 1942).

Stirling was proven correct in 1970, when the top half of Stela C was discovered by a local farmer, and the earlier date of 7.16.6.16.18, or 32 BCE, was confirmed. Another twenty to thirty years of dirt archaeology and radiocarbon samples collected at La Venta and San Lorenzo in the 1950s and 1960s demonstrated an even earlier placement of Olmec culture, prior to 400 BCE (Coe 1981:xi; Drucker, Heizer, and Squier 1957; Coe and Diehl 1980). Since

1939 only one older Long Count date has been discovered, on Stela 2 from Chiapa de Corzo, Chiapas, with a date of 7.16.3.2.13 (36 BCE). Stela C from Tres Zapotes remains one of the oldest dated monuments in the New World. More recent excavations have documented the development of the Olmec out of still earlier Formative cultures (Coe 1957).

In the second essay Thompson considers the fish as a Maya symbol for counting and explores directional glyphs. Thompson’s demonstration that *xoc*, or “count,” was represented in the inscriptions by the head of a large fish—the *xoc* or “shark”—was one of the discoveries that did the most to reopen some of the important questions about the fundamental nature of Maya script. Substituting for *xoc* in many inscriptions was the glyph T511, also found for the day Muluc. Since *xoc* shark is a patron deity of the day Muluc, Thompson assumed that the *xoc* head was the head form of the *muluc* glyph. This implied a straightforward rebus use for *xoc* and a symbolic secondary meaning for *muluc*, which he apparently thought should be read as *xoc* in this context.

Two “directional count glyphs” have long been recognized as the indicators of backward and forward chronological reckonings in Maya inscriptions. Their traditional decipherment, following Thompson, is based on reading *xoc*, “to count,” for one of the frequent signs in these glyphs. Stuart (1990) questions this reading by suggesting that all “count” glyphs are read *u-ti*, spelling the verb *ut*, “to come to pass.” This decipherment applies to all known contexts of the glyphs. Thompson’s original *xok ti* reading, later expanded by others to account for some variant forms, has gained wide acceptance among epigraphers. Stuart (1990), however, finds evidence for the *ut*, “to happen, come to pass,” decipherment more compelling.

The third essay, by John M. Longyear III, addresses the delineation of the limits of Maya civilization along the southern periphery of Mesoamerica. In the early 1940s, Longyear located and mapped many sites east of the Lempa River in El Salvador under the auspices of the Institute for Andean Research (Longyear 1944, 1951a, 1966). This was followed by several seasons working for the Carnegie Institution of Washington on the ceramic sequence at Copan in western Honduras (Longyear 1940a, 1940b, 1942, 1946, 1948, 1951b, 1952, 1957, 1969). His investigations identified the major local pottery types and determined the succession of the principal ceramic periods. He also identified numerous pieces of nonlocal or exotic manufacture, which stimulated questions about chronological relations and commercial contacts within and outside of the

Maya area. Longyear's study area was the frontier where Mesoamerican and non-Mesoamerican cultures met and presumably influenced each other. Scholars are still puzzling over the problem of just how far south the Maya expanded from their presumed homeland. Samuel K. Lothrop (1939) was the first to deal with the question of the southern frontier of the Maya, and his research was the foundation for a number of later studies, including Longyear's essay in *Theoretical Approaches to Problems*. Lothrop first placed the maximum limit of Maya penetration in Honduras east of Lake Yojoa and in El Salvador along the Lempa River. His approach was essentially ahistorical, linking sixteenth-century accounts of the Maya with what he considered to be Maya pottery. While taking Lothrop to task for making these connections, Longyear accepts the equally troublesome proposition that linguistic groups formed distinct archaeological cultures (Linares 1979). Arguing that there is very little that was Maya in the Ulua-

Yojoa archaeological complex, he places the Maya frontier during Classic times further to the west in Honduras, roughly where the Maya meet the Lenca. Despite this important contribution by Longyear, this question has since been considered by Doris Z. Stone (1959), J. Eric S. Thompson (1970), E. Wyllys Andrews V (1977), and John S. Henderson (1978).

Only three titles were published in the series, presumably because of the disruption to the CIW research program caused by World War II. The number of each publication is unknown, although a search of *WorldCat*, an electronic bibliographic database, indicates that twenty-six copies are known to exist in libraries for no. 1, fourteen for no. 2, and eleven for no. 3. Complete sets are found in several major library collections, including the libraries at Bowdoin College, Harvard University, Newberry Library, University of Colorado, University of Pennsylvania, Yale University, and the University of Alberta in Canada.

THE CARNEGIE MAYA IV

General Preface

J. Eric S. Thompson

Clearly the time for attempting a complete synthesis of Middle American cultures has not yet arrived, yet our thoughts should be turning in the direction of that final objective. Data now coming to light in increasing quantities can in some cases be utilized to interpret phases of cultural history; in other cases they merely add to the great pile of unrelated items of information as yet not adapted to the general picture. It might be argued that these unfitted facts are best set to one side until fuller information is available, and that when the time comes to write the story of these early cultures, these unjoined pieces will fall into their places and produce the final picture. That would, of course, be the obvious procedure were the reconstruction of history truly comparable to a jigsaw puzzle; but in a finished jigsaw puzzle every piece has its place, and the whole forms a complete picture. Archaeology can never hope for such perfection either in the fitting of the pieces or in the integration of the final scene, and it is therefore necessary to give some thought to the interpretation of data as it becomes available, principally in order to obtain guidance as to what avenues might best repay exploration.

Some general objectives of research are already delineated in our minds, but few solid steps toward their interpretation have yet been taken. Rather than await fuller data casually amassed, it would seem preferable to outline tentative solutions which conform to information now on hand, with the purpose not of supplying final answers but of stimulating interest in these problems.

Under ordinary circumstances such reconstructions are particularly dangerous to the reputations of those that make them. Data that subsequently come to light may bring down the whole flimsy edifice of half-proved facts and unsubstantiated theories, with the result that the archaeologist is tempted to play safe by not indulging in speculation. Nevertheless, the moral of the wise old owl, although doubtlessly of excellent value for children, is hardly applicable to our discipline. Progress in our field is largely through trial and error. A reconstruction which fits the facts as now known, meager though they be, can be extremely useful, even if largely incorrect. It stimulates others in the field to watch for further data in connection with every component element, and leads them to seek confirmation or refutation of every idea advanced. Few ideas in recent years have kindled greater interest or led to more independent thinking than that of the Q-complex, advanced by Lothrop and Vaillant. Even should every scrap of that outline prove to be false, its publication would still be more than justified by the new orientation of our thought it has produced. Speculation presented as substantiated fact has, of course, no place in an archaeological report, but it is high time a place were provided for it, with the proviso that it be plainly indicated as such.

This series offers a platform for such reconstructions and they are so clearly labeled as tentative that their authors will not be called on to stand by the ideas they advance or be expected to spend the rest of their days defending themselves against the

charge of rashness, unreasonably classed by most archaeologists as the most heinous offense in our discipline.

Papers printed in this series may later be reissued in modified form as a result of the flow of information that will, it is hoped, be stimulated by their publication. The series will also be open, as far as funds permit, to papers advancing evidence for or against ideas, general or specific, already published. In short, it is hoped to make of the series a forum, in which historical reconstructions will grandly evolve

from the hypothetical to factual in order to prepare the way for the final synthesis of Middle American cultural history.

Perhaps not of least importance, this series may serve as a counterbalance to overspecialization in single and distressingly narrow fields, for although we of the present generation collectively have fuller information at our disposal, yet individually we lack that broad comprehension of the field possessed by our predecessors, particularly those grand writers of nineteenth-century Mexico.

Dating of Certain Inscriptions of Non-Maya Origin

J. Eric S. Thompson

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OUTLINE OF THE PROBLEM

Recently there have been brought to light in southern Veracruz several stelae which utilize in peculiar fashion glyphs with numerical coefficients, and

numbers, expressed by bars and dots but unattached to glyphs. Their discovery has raised a number of chronological problems but, at the same time, has sensibly augmented data for segregating inscriptions that do not conform to the Maya patterns of date recording.

The aims of this paper are:

1. To separate these unorthodox inscriptions into two groups, Maya and presumably non-Maya.
2. To show that all inscriptions of the second group are related in method of epigraphic presentation.
3. To produce evidence indicating that one of the monuments of the second group is late, and thereby cast doubt on the antiquity of the whole group.
4. To outline cultural connections between the two areas (southern Veracruz and Pacific slope of Guatemala) in which monuments of Group 2 are found, and to present data tending to date the period of most intensive contact as approximately A.D. 1200 principally through comparisons with the well-defined and reasonably well-dated Mexican period at Chichen Itza and with the aid of certain artifacts that can also be dated with some assurance.
5. To suggest that present data can best be interpreted by assigning the monuments of Group 2 to the same cultural influences that were strongest about A.D. 1200.

Much of the second part of this paper, in which the fourth aim is discussed, is a theoretical construction, recognizably weak and primarily set up to be shot at by others in the field. It represents a re-employment of the methods and approach of the nineteenth century historian in combination with a utilization of the results of excavations of recent years. This method has been brilliantly pioneered by George C. Vaillant (1927), particularly in his paper "A Correlation of Archaeological and Historical Sequences in the Valley of Mexico." The present writer has, like many an imitator before him, wandered onto even more unstable ground, in this case with the additional, if somewhat doubtful, aid of an ethnological crutch.

EPIGRAPHIC DATA

GLYPH LESS NUMERICAL COEFFICIENTS ON MAYA INSCRIPTIONS

There are four known occurrences in inscriptions of indubitably Maya origin of numerical bars and dots unattached to glyphs. These are at El Pestac, Palenque, Menche (Yaxchilan), and in the Dresden Codex.

The Pestac stela (Blom 1929:10) has an Initial Series introducing glyph of normal form, followed

by 9, 11, 12, 9, and 0. The numbers are expressed by perfectly clear bars and dots, the zero by its normal Maya sign. There follow an eroded glyph, presumably the day sign, and a glyph with coefficient of 7 or 8. Since the Initial Series 9.11.12.9.0 reaches 1 Ahau 8 Cumhu, there can be little doubt that this second glyph is the month sign 8 Cumhu. Morley (1:132) considers the zero sign to be an effaced uinal glyph, and opts for 9.11.12.9.6 7 Cimi 14 Cumhu, apparently unaware of Blom's decipherment, which is that given above and which is without the slightest doubt the correct one. Glyphs on the back of the stela are in pure Maya style, certainly not early or very late, and are in agreement with acceptance of the Initial Series as the approximate date of the stela's erection.

On the hieroglyphic stairway at Palenque there is an apparent Secondary Series of 11.11.13 expressed by bars and dots unattached to period glyphs and enclosed in a cartouche, somewhat reminiscent of that on Stela 49, Menche, next to be discussed. This supposed Secondary Series lies between Calendar Round dates, but does not connect them, so far as one can tell from the rather eroded condition of this part of the inscription. The Initial Series and a Calendar Round date record 9.8.9.13.0 and 9.9.2.4.8, both of which are important dates recorded on other monuments falling in the period 9.10.10.0.0 to 9.13.0.0.0. There can, therefore, be little doubt that this inscription also dates from about 9.11.0.0.0. The style of the glyphs is in general agreement with this position.

On Lintel 49, Menche (Morley 1937-1938, 2:377), there is a series of bars and dots unaccompanied by glyphs within a sort of a cartouche forming one glyph block. This lintel is datable as not earlier than 9.4.10.0.0 and, on stylistic grounds, not later than 9.8.0.0.0. Morley's suggested position of 9.5.0.0.0 seems by far the most likely, but that it represents an Initial Series, as Morley supposes, is a different matter. Morley compares this series to the majority of Initial Series of the Dresden Codex on the grounds that both lack period glyphs and Initial Series introducing glyphs. That is true, but the important point is that in every case the terminal dates of these series in the Dresden Codex are given, whereas the series on Lintel 49 has no ending day. Furthermore, in every case in which the Initial Series introducing glyph is lacking in the Dresden Codex, the starting point is indicated, and in many cases this is not 4 Ahau 8 Cumhu. These series then are strictly speaking not Initial Series at all, since the term Initial Series is definable as a count from a fixed starting point in the past, which from usage had become so well established that it could be suppressed. The so-called Initial Series in the Dresden Codex which

lack introductory glyphs are in fact Secondary Series uniting varying starting points, always identified by day sign or Calendar Round date, to positions also expressed by day sign or Calendar Round date. They are, therefore, hardly to be compared to the series on Lintel 49, which, if it has a numerical meaning, must be a Secondary Series, similar to that of the Palenque inscription.

The Dresden Codex, in which, as noted above, period glyphs are suppressed, is of unknown date. The present copy probably dates from not earlier than A.D. 1100, and is certainly post-stela. Whether in an earlier original period glyphs were frequently suppressed naturally is a question that cannot be answered.

So far then as definitely Maya inscriptions are concerned, period glyphs were rarely suppressed on monuments of the Old Empire, but three cases being known. Two of these are probably Secondary Series, the third is an Initial Series. But this last has the introductory glyph and both day and month positions given, and there is strong evidence that the count was from 4 Ahau 8 Cumhu, both because of the form of the variable element in the introductory glyph and because the coefficient of the eroded month sign almost certainly requires a counting point with month coefficient of 8.

In the case of the Dresden Codex, starting and terminating points of periodless series are given without exception.

The rare examples in the Old Empire date from perhaps as early as 9.5.0.0.0, certainly not much later, to about 9.12.0.0.0. All are in the State of Chiapas.

GLYPH LESS NUMERICAL COEFFICIENTS ON SUPPOSEDLY NON-MAYA INSCRIPTIONS

Numerical bars and dots unattached to glyphs have been reported from two areas outside that of Maya culture; southern Veracruz and the Pacific slope of the Guatemalan highlands. They also occur in three Mexican codices, which are assigned by all authorities to southern Mexico. Unfortunately not one of these inscriptions is both complete and unequivocal. The best preserved is the Tuxtla statuette, followed by Monument 1, El Baul, Guatemala, and stelae from Cerro de las Mesas, Tres Zapotes, and Alvarado, all in southern Veracruz, in descending order of preservation.

The Tuxtla Statuette

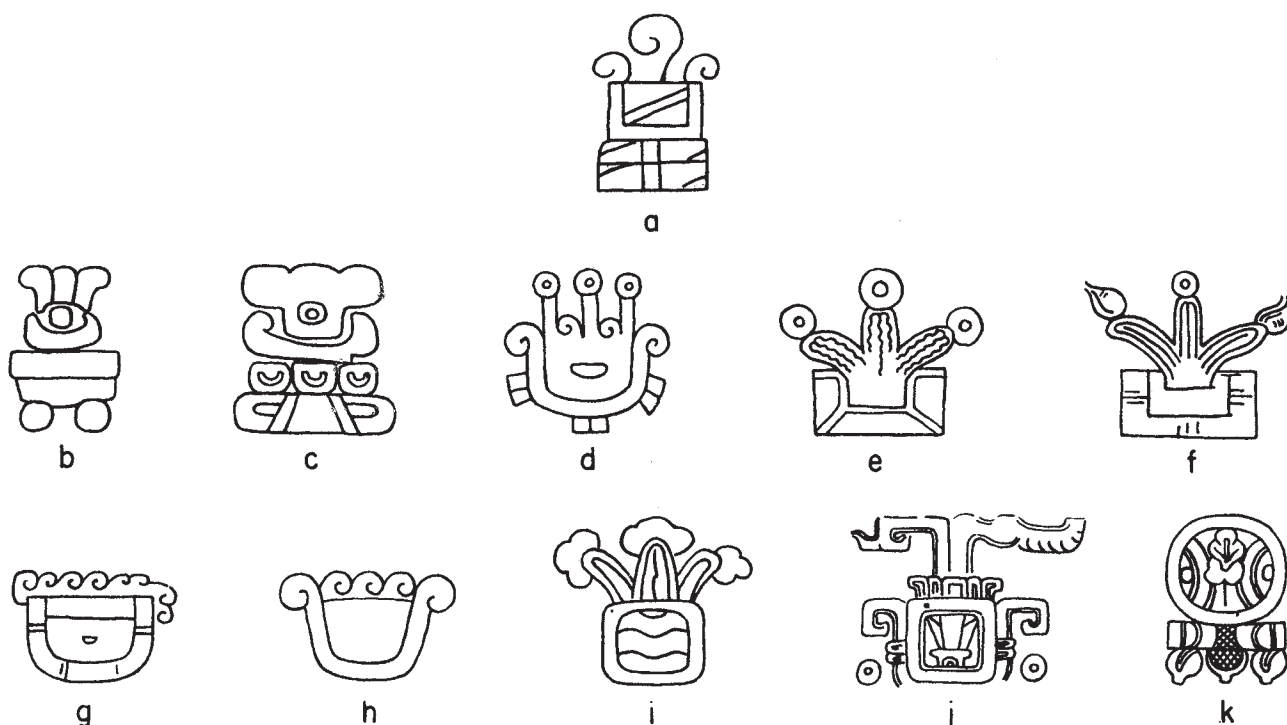
It is now popularly assumed that the bars and dots incised on the Tuxtla statuette have been correctly deciphered as an Initial Series of Maya type, forming a time count of 8.6.2.4.17, leading from the

Maya base 4 Ahau 8 Cumhu to 8 Caban and a suppressed 0 Kankin. However, at the time the statuette was first described, such was not the case. C. P. Bowditch (Holmes 1907) wrote of it, "I doubt, however, if the inscription is clear enough to make it possible, in the absence of the month glyph, to determine with certainty what this date is, or, indeed, whether it takes the place of an Initial Series in the inscriptions." At the same time he was not satisfied that the katun coefficient was surely six, or the cycle coefficient eight. At a later date (1910:122) he reiterated his scepticism. Eduard Seler (1902–1923, 3:682) even doubted the authenticity of the inscription. Morley (Holmes 1907:698) also expressed doubts concerning the coefficients queried by Bowditch, but concluded "the best reading would seem to be 8.6.2.4.17." Recently (Morley and Morley 1939:8) he has accepted the above reading without question, but lists objections which lead him to consider that the object itself may be of considerably later date.

Morley's identification of the glyph at the head of the inscription as the Initial Series introducing glyph was largely instrumental in leading to a general acceptance of the proposed reading. Nevertheless this identification is open to serious question, for a close examination of the glyph reveals that the lower part is formed by two bars, the numerical value of which is shown by the projection of their ends beyond the sides of the glyph above them (Fig. 1.1a). In Maya inscriptions numerical bars never project beyond the limits of the glyph (in the case of a Secondary Series, beyond the glyph and coefficient when more than one) to which they are attached, nor are they ever below the glyph, with the solitary exception of Glyph A of the lunar series.

A comparison of this glyph with others from non-Maya inscriptions in Mexico reveals definite resemblances not only in the glyphs themselves, and in the numerical bars with regard to position and projection beyond the limits of the glyph above, but also in the presence of triple elements of a spiral form in the superfix, the element which led Morley to identify the whole as the introducing glyph (Fig. 1.1a).

Actually, this supposed introducing glyph bears a quite marked resemblance to the Zapotec Glyph D (Fig. 1.1b, c; Caso 1928, Fig. 7) which Caso in turn relates to the Mexican glyph for water (Fig. 1.1d–i). This latter frequently takes the form of a wide-mouthed dish containing water, which is represented, as is the usual Mexican manner in picturing liquids, by curves and spirals (frequently terminating in circles or ovals, perhaps shells) rising from its surface. There is also some resemblance to the glyphs for reed and flower.



1.1. Various glyphs: *a*. so-called Initial Series introductory glyph of the Tuxtla statuette (drawn from the original); *b*, *c*. Zapotec Glyph D (after Caso 1928); *d*–*h*. day sign Atl (various codices); *i*. Zapotec glyph in Tomb 105, Monte Alban, Oaxaca (after Caso 1938); *j*. glyph at Xochicalco, Morelos (after Seler 1902–1923); *k*. Zapotecoid glyph in Temple of the Jaguars, Chichen Itza, Yucatan (after Maudslay 1889–1902).

The resemblances are certainly much stronger to Mexican glyphs than to the Maya Initial Series introducing glyph. Indeed, were it not for its position at the start of a series of bars and dots, there would be no reason to make the latter identification. The central element also recurs in a compound glyph on the (observer's) left side of the statuette.

If, as seems very probable, this is a non-Maya glyph with coefficient of 10, clearly the inscription is not Maya. We shall find other cases of presumably non-Maya inscriptions of possible Initial Series form in which a glyph with coefficient stands above the bars and dots. The only parallel to this arrangement of bars and dots lying between day signs is the so-called Initial Series of the Dresden Codex. It is, therefore, plausible that the bars and dots on the Tuxtla statuette connect the date at the head of the inscription with that at the bottom. Other reasons for doubting the Maya origin of this statuette are its style, which will be discussed later, and its provenience, San Andres Tuxtla being west of any known Maya site.

Also the supposed terminal date of the Initial Series, with coefficient of eight, so far as one can

make it out, is unlike any Maya day sign, least of all like Caban, the day sign required for an Initial Series 8.6.2.4.17 of Maya type. The glyph has a superfix, a detail found with no Maya day sign, but just conceivably the "centipede" element found with some early but also with some late (Thompson 1937:191) Maya inscriptions.

Of the hieroglyphic inscription on the Tuxtla statuette it can, therefore, be said:

1. In all probability it opens not with a Maya Initial Series introducing glyph, but with a non-Maya glyph with coefficient of 10, expressed by two bars beneath, a method frequently used outside the Maya area but never with a Maya day sign.
2. The terminal glyph has features which suggest that it is not Maya. Since, therefore, the only two glyphs on the front probably are not Maya, it is very doubtful that the inscription itself is Maya. Glyphs on the sides might be Zapotecoid or very crude Maya.
3. The bars and dots probably have been correctly identified but their numerical values are not certain.

4. Even if the bars and dots represent an Initial Series, there is no evidence that the count is from the Maya base, 4 Ahau 8 Cumhu, and in view of a possible day sign at the start of the inscription, it is more probable that that represents the starting point, as, for example, in the so-called Initial Series in the Dresden Codex.
5. Even should the bars and dots represent an Initial Series of Maya style, there is no evidence that the date expressed was present time when the jade was carved.

Monument 1, El Baul

This stela from a small site not far from Santa Lucia Cozumahualpa, on the Pacific slope of the Guatemalan highlands, was discovered some years ago and examined by T. T. Waterman (1924) and R. Burkitt (1933). On the left side of the front a day sign 12 Malinalli, accompanied by two indecipherable glyphs, is followed by a series of bars and dots unaccompanied by glyphs. To the right the inscription continues with a double column of totally eroded glyphs. In 1928 Walter Lehmann submitted to the 23d International Congress of Americanists in session at New York a decipherment of the inscription, which he claimed recorded an Initial Series 7.19.7.8.12 12 Malinalli (or Eb; the Maya equivalent), and that this was the date of the erection of the monument, thereby making it the earliest contemporaneously dated stela then known in Central America. Lehmann's paper was not published in the proceedings of the congress, perhaps because of the lively scepticism his views had evoked. Morley (1937–1938, 1:132) accepts Lehmann's reading, but rejects the date as being that of the erection of the monument. Waterman (1929) produces evidence that the monument is of late date, and assigns it to the Aztec.

Actually, Lehmann's reading is open to very serious question. A close examination of the supposed katun coefficient, the right side of which is missing (Waterman 1924, Fig. 5; Burkitt 1933, Fig. 4), reveals that there is not room above the three bars for the four dots necessary to make this number 19. A reading of 18 for this number is preferable, for were there two dots to the right of the two now remaining, equally spaced and of equal size, the circumference of the right-hand dot would pass beyond the edge of the glyph panel. It is also true that only three dots would not produce a symmetrical coefficient, but a photograph in my possession seems to show the surface to the right of the second dot not flaked off and with no sign of a dot on it. Had there been four dots in this row, the two on the right would I have been so squeezed that the left edge of the third

must have been touching the right edge of the second, but, to judge by the photograph, such was not the case. Morley's (1937–1938:1, Fig. 3) drawing shows a break immediately to the right of the second dot. This drawing, however, is clearly made from Waterman's illustration, for the parts of the design covered in the latter's photograph by an arm and a leg of two persons posed beside the monument are shown blank in Morley's drawing. However, Morley supplies details of the numerical bars and dots not visible in Waterman's or Burkitt's photographs or that in my possession.

As the supposed tun coefficient is entirely, eroded, Lehmann's identification of it as seven is purely a guess. Actually, the space between the supposed katun and uinal coefficients calls for not one bar and two dots, as Lehmann assumes and Morley draws, but for two bars and an unknown number of dots, i.e., a coefficient of 11 to 15 inclusive.

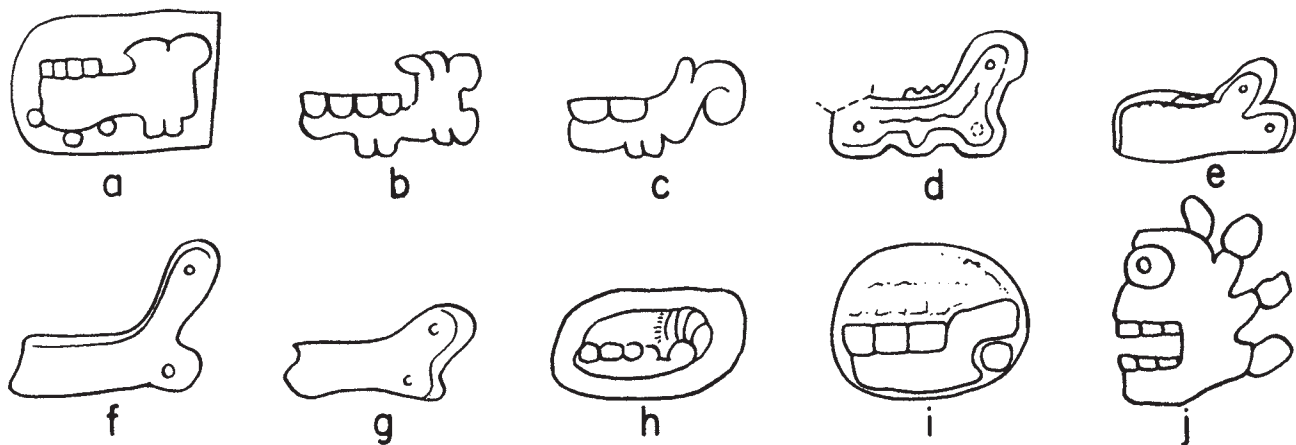
The uinal coefficient is seven or eight with no way of saying which is correct because of flaking.

The supposed kin coefficient is also badly eroded, and Lehmann's reading of it as 12 is due to his wish to make this conform with the day sign on the assumption that the count is from 4 Ahau 8 Cumhu. Furthermore, in Burkitt's photograph, taken when the monument was better preserved than it is now is, the first two numbers occupy a trifle less than half the length of the inscription, and therefore there is not room for the rest of Lehmann's reconstruction for that would require more than one and a third times the space filled by the first two numerical blocks.

The whole reading is clearly so farfetched that it was not worth publishing as a possibility. The inscription is too badly flaked to yield any decipherment that has more than one chance in twenty of being correct.

Waterman (1924:11) has called attention to the resemblance of the glyph at the head of the inscription (Fig. 1.2a) to the Aztec day sign Malinalli. Morley points out that Eb, the Maya day sign equivalent to Malinalli, also carries a jawbone, and, therefore, the day sign might conceivably be Eb. However, Eb is more usually a human skull in profile, and always seems to incorporate a Cauac element, even in the case of the Leiden plaque, where a jawbone replaces the skull (Fig. 1.2h). In most Mexican representations of the corresponding Malinalli a grass symbol is incorporated in the glyph.

There is, however, one detail that strongly supports a non-Maya and, at the same time, a non-Aztec origin for this day sign, and which hitherto has escaped attention. In Mexican codices of non-Aztec origin, jawbones, whether forming parts of skulls



1.2. Examples of day signs Malinalli and Eb and Jawbones: *a*. Malinalli, Monument 1, El Baul, Escuintla; *b*. Malinalli, Codex Laud; *c*. painted jawbone on vessel from Isla de Sacrificios, Veracruz (after Joyce 1912, 1914); *d*–*g*. examples of Maya sculptured jawbones; *h*, *i*. Eb, Leiden Plate and Lintel 12, Piedras Negras, Guatemala; *j*. Aztec form of Malinalli.

or representing the day sign Malinalli are very frequently equipped with serrated protrusions along the under side (Fig. 1.2b; Seler 1902–1923, 1:834). The same feature is seen on a plate from Isla de Sacrificios, Veracruz, of Cerro Montoso phase (Fig. 1.2c). In Maya Old Empire art these protuberances are absent or are replaced by slight indentations (Fig. 1.2d–g). In codices known to have originated in the vicinity of the Valley of Mexico, such as the Codices Borbonicus, Telleriano-Remensis, and Magliabecchi, and the Tonalamatl of the Aubin collection, the Malinalli glyph has become a fearsome death's head in profile and in no way resembles the glyph at El Baul (Fig. 1.2j). To this group also belong the Malinalli glyphs of Codex Porfirio Diaz, which is of conquest times, although perhaps of Cuicatec origin. In post-conquest pictures, such as the Sahagun and Duran illustrations, the grass element has become a naturalistic plant.

On the other hand, Malinalli signs in Codices Laud, Vindobonensis, Bologna, Zouche, and Fejervary-Mayer (Fig. 1.2b), all of which are not Aztec but from southern Mexico, are the closest in delineation to the Malinalli glyph of the monument from El Baul. It is of importance in this connection to bear in mind that in three of these five codices numerical bars and dots are found. There can accordingly be no doubt that this glyph on the El Baul stela is neither Maya nor Aztec, but is most closely related to Malinalli glyphs of codices from southern Mexico. Glyphs of this southern Mexican group of codices will hereafter be referred to as of the Laud type.

Of the El Baul stela it may therefore be said that the possible Initial Series cannot be deciphered with any assurance because of its damaged condition. As

probably in the case of the Tuxtla statuette, it stands between glyphs, and does not start the inscription, and the preceding day sign is not Maya but closest to Laud-type examples of Malinalli found in codices from southern Mexico which probably were executed not long before the Spanish conquest. As in the case of the Tuxtla statuette, there are no grounds for believing the count was from 4 Ahau 8 Cumhu. Indeed, the neighboring Cakchiquel did not use that base. There is, therefore, no evidence for concluding that the stela is Maya.

Cerro de las Mesas

Fourteen years ago Dr. Herbert J. Spinden (1927) reported the existence of stelae at Cerro de las Mesas, a large group of ruins west of Alvarado in southern Veracruz, and noted the presence of numerical bars and dots on some of them. In 1940 these ruins were visited by Dr. Matthew Stirling; who, in a paper given in Mexico City in the spring of that year, read one of the inscriptions as an Initial Series of Maya type recording 9.1.12.14.10 1 Oc. Dr. Stirling has kindly placed at my disposal photographs of this text which are clearer than the one already published (Stirling 1940a:322; for drawing of this stela see Spinden 1927). As in the case of the El Baul monument and probably the Tuxtla statuette, the bars and dots, is unattached to glyphs, lie between signs, for the inscription starts with several obliterated glyphs. Then come the bars and dots without accompanying glyphs and, below, the inscription closes with a single sign, the head of an animal. Above this head is a dot which Stirling reads as one, thereby reaching agreement with an Initial Series of 9.1.12.14.10, leading from 4 Ahau 8 Cumhu. Below the glyph is an element which might

be the "tail-like" element which protrudes from the mouth of Oc in Maya inscriptions, but which might also be a numerical bar.

The glyph itself appears at first to be an animal head in profile, like the Maya Oc, but there is an eroded part to the left which might convert it into a full-face representation of a jaguar or some other animal or bird. If this left part is considered to have been plain, the glyph occupies only two-thirds of the glyph block, a decidedly unusual and asymmetrical arrangement. The bars and dots are far from clear. The coefficient of the supposed cycle period is very indistinct. It might well be 10. There are obliterated elements above it which might be more bars and dots or, perhaps, glyphs. The dot assumed to be the coefficient of the day sign at the bottom touches the bar above it, instead of being separated by the regular space. This raises two further possibilities. It might belong with the bars to which it is joined, making a coefficient of 11 or, since it has an ornamented center, it might be an ornament on the animal's forehead. While the Stirling reading cannot be rejected offhand, it cannot be classed as more than a possibility.

All one can say is that as in the case of the Tuxtla statuette no month sign follows the supposed day sign, and the bars and dots are between glyphs.

Spinden has called my attention to a stela in the Mexican National Museum which carries a number of glyphs which very definitely are not Maya (Lehmann 1921, Fig. 30). In subject matter and style these two monuments resemble each other so extremely closely that there can be no doubt that they were made at approximately the same time and place, but since the Lehmann stela is clearly not Maya, the inscription on Stirling's twin monument obviously must also be of non-Maya type. Lehmann notes that the stela he publishes was said to have come from Cahpultepec, a locality I have been unable to identify.

Stela C, Tres Zapotes

Stela C, Tres Zapotes, is from a site in southern Veracruz not far from either San Andres Tuxtla, the provenience of the Tuxtla statuette, or Cerro de las Mesas. Unfortunately the top part of the monument is missing and to reach the suggested reading of 7.16.6.16.18 6 Ezab one must assume that the count is from 4 Ahau, that there was a coefficient of seven on the missing top piece and that the supposed coefficient of the katun is 16, not 15 (Stirling 1940). Again the bars and dots are followed by what is presumably a day sign, but this is the last glyph of this fragment and it is therefore impossible to say whether any month position was ever recorded on this mon-

ument. The day sign, because of its peculiar elaboration, resembles no known glyph Maya or Mexican.

Stela 1, Alvarado

This monument (Batres 1905), now in the Mexican National Museum, seems to carry a number of bars and dots some apparently attached, others unattached, to glyphs. At or near, the head of the inscription is a sign within a cartouche, and at the close a coefficient of 11 is beneath a glyph. The inscription is of value because it is from the same general region as all of those under discussion, with the exception of the stela from El Baul, and seems to conform to the general pattern of these tests in presenting bars and dots between glyphs.

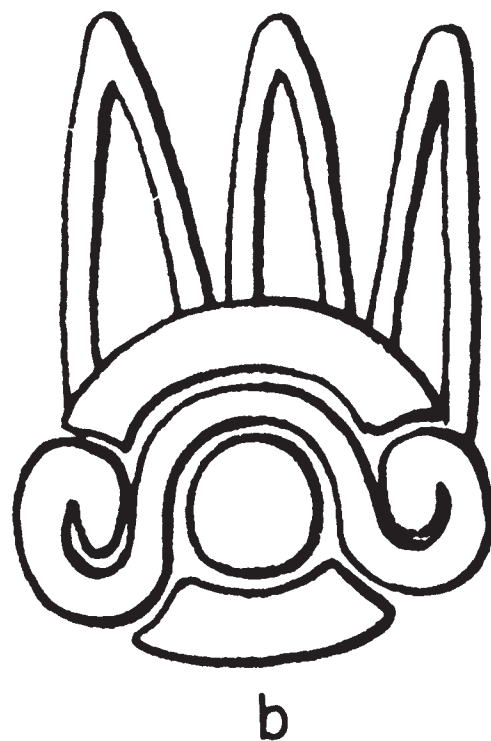
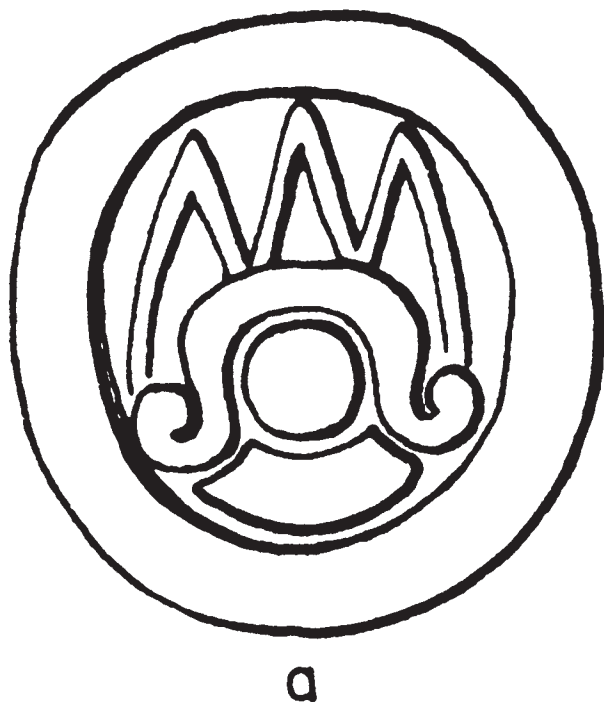
Stela 1, Piedra Labrada

This shaft has at the top a glyph within a cartouche, and underneath a coefficient of seven, expressed by a bar and two dots (Blom and LaFarge 1926, Fig. 38). The glyph has a superfix which is vaguely reminiscent of that of the day sign beneath the inscription on the Tuxtla statuette, and which, together with the position of the coefficient; definitely precludes the possibility that we are dealing with a Maya day sign. Caso (1937) has called attention to the resemblance of this glyph to others found on pottery of Teotihuacan.

THE 400-DAY YEAR

Before discussing further the above group of inscriptions, I wish to draw attention to another possible manner of recording time. We have seen that there are grounds for believing that these counts by means of bars and dots may not have been made from the fixed Maya base 4 Ahau 8 Cumhu, but from varying points of departure, and it has been noted that all the decipherable day signs on these monuments are non-Maya. Such being the case, there seem to be no grounds for accepting without question the assumption that the count is one of turns of 360 days and their multiples, since there is no evidence that a 360-day count was used by any people other than the lowland Maya.

We know that the Cakchiquel reckoned in years of 400 days and in 20-year periods of 8000 days. The Cakchiquel certainly did not borrow this 400-day count from the lowland Maya. Accordingly, if they themselves were not its inventors, they quite probably adopted it from their neighbors, the Pipil. This is not an unreasonable assumption since a number of the Cakchiquel month names are of Mexican origin, and the Pipil, as we shall see, certainly migrated to Guatemala from southern Mexican regions.



1.3. Derivation of Pipil glyph: *a*. glyph on Monument 1, El Castillo, Escuintla; *b*. headdress of figure at El Castillo, Escuintla.

In view of a possible southern Veracruz origin for this 400-day count, it is of interest to note that it works perfectly when applied to the Tuxtla statuette, if the first glyph has been correctly identified as a day sign with coefficient of 10 and is to be taken as the starting point of the count. The interval then would be 1, 328, 897 days (i.e., $160,000 \times 8$; 8000×6 ; 400×2 ; 20×4 ; and 1×17). Dividing this number by 13 for the 1–13 cycle of day coefficients, there is a remainder of 11. Adding this to the coefficient of 10 at the start of the inscription, a coefficient of eight is reached ($10+11=21-13=8$), and this is precisely the number attached to the day sign at the bottom of the series of bars and dots.

Unfortunately, none of the remaining inscriptions of this group is sufficiently well preserved to serve as a test of this system, but the fact that it works in the case of the Tuxtla statuette may be significant since in the case of pure chance the odds against reaching the correct coefficient would be 12 to 1.

STARTING POINTS OF COUNTS

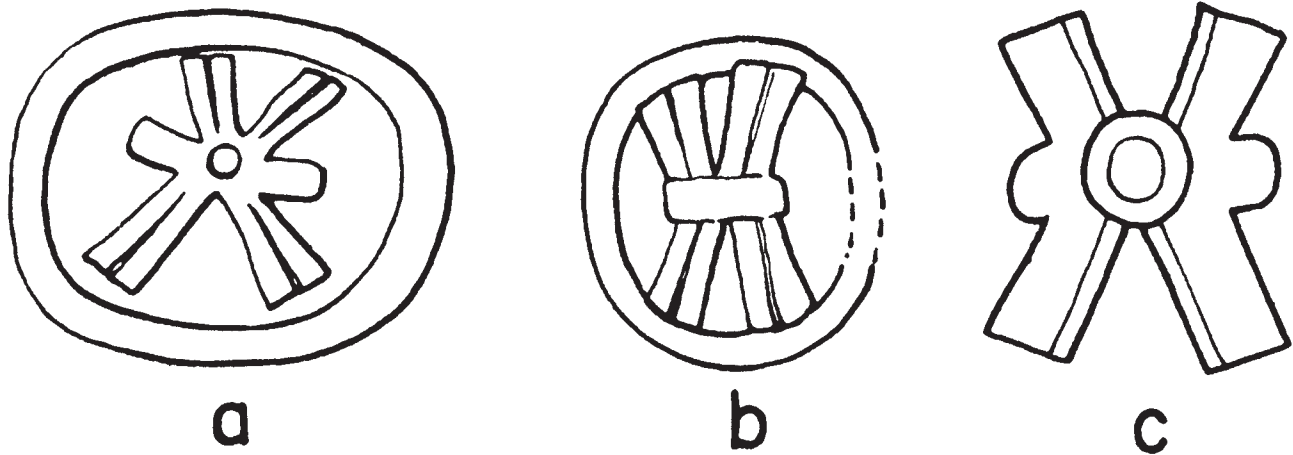
If the Tuxtla statuette is counted from a day with a coefficient of 10, the El Baul monument from a day 12 Malinalli, and the Cerro de las Mesas stela from

some other point, it is obvious that we may be dealing with inscriptions without fixed bases of departure and that the starting points were chosen perhaps for their astronomical importance and reached by backward calculation from current time, as presumably were such dates as the 9 Kan 12 Kayab and the Ring Numbers of the Dresden Codex. Even among Maya-speaking peoples the base 4 Ahau 8 Cumhu was not the only starting point, for the Cakchiquel count started from a day 11 Ah (equivalent to 11 Ben of the Yucatecan calendar), whereas in Mexico there were, it would seem, various points of departure.

USE OF BARS AND DOTS AND NON-MAYA GLYPHS IN SOUTHERN GUATEMALA

A feature of this supposedly non-Maya group of inscriptions is the use of bars and dots with what one may assume to be day signs. Sometimes these are placed above, sometimes below or to the left of the glyph.

On Monument 1 at El Baul we have seen that the coefficient of Malinalli was expressed by two bars and two dots. It has been claimed that no other monument in this region resembles it, the implication being that this monument is of great antiquity,



1.4. Day sign Ollin: *a.* Monument 6, El Baul, Escuintla; *b.* Monument 15, Santa Lucia Cozumahualpa, Escuintla; *c.* south Mexican codex.

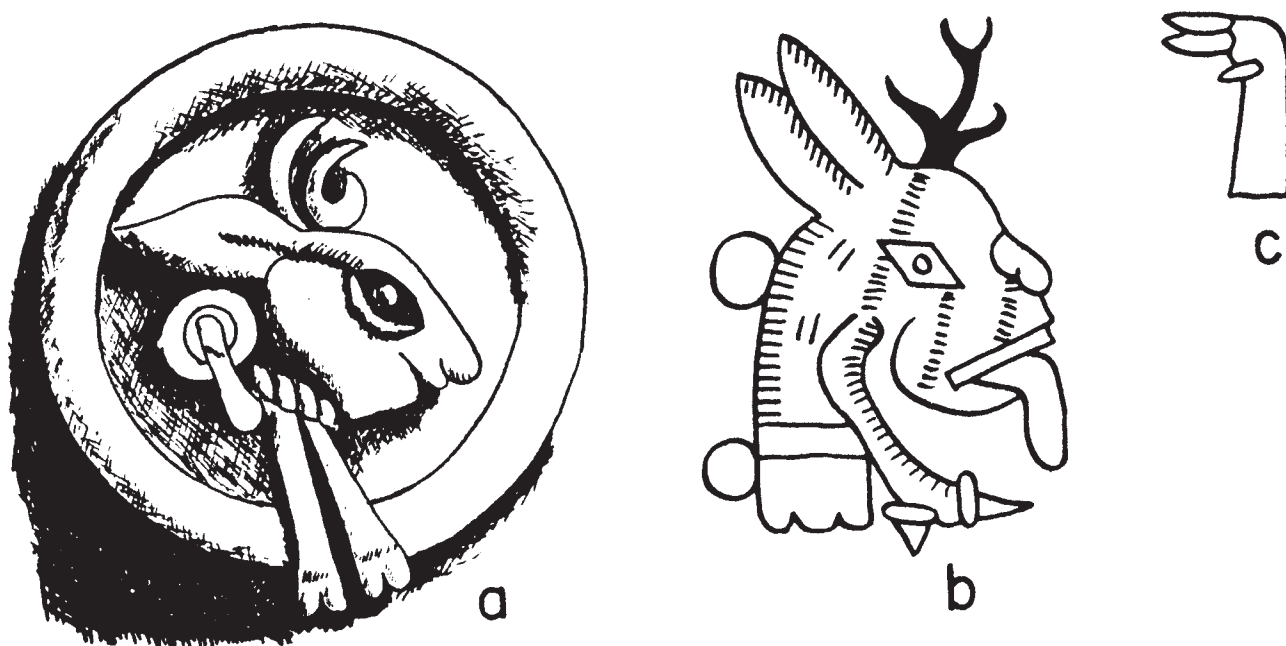
whereas the other sculptures from this and neighboring sites in the Department of Escuintla are very much more recent, and *inter alia* do not employ bars and dots (Stirling 1940:13).

At El Castillo, a site near El Baul, Stela 1 (see Appendix 3 for nomenclature of monuments in this area) carries a sequence of numbers from five to ten inclusive. All are expressed by means of dots except the number eight which is shown as a bar and three dots (Burkitt 1933, Fig. 9). The dots except those forming the number 10 are carved. The group of nine dots have monkey heads or perhaps skulls in their interiors. The group of six dots have carvings which superficially resemble the Aztec day sign Acatl, but the same sign is on the headdress of the individual ascending the rope in this sculpture and serves as, a celestial symbol on Monument 5, Santa Lucia Cozumahualpa (Fig. 1.3). Burkitt reads these as a series of consecutive days, but to do so one must make this last the day Tochtli, which it certainly is not, and consider the element at the bottom of the rope to be the day sign Malinalli, an extremely questionable identification.

Monument 6, El Baul (Burkitt 1933, Figs. 1, 2), has at the top a cartouche-enclosed glyph which can hardly be anything but the day sign Ollin 'movement' (Fig. 1.4a). To the left is distinguishable the outline of a numerical bar. Beneath are four circular cartouches with sculptured interiors and with arrangement similar to the dots on Monument 1, El Castillo. The Ollin glyph is not Aztec, but of the simpler Laud type found in codices from southern Mexico (Fig. 1.4c), for Aztec forms of Ollin show an elaboration which sets them apart (Beyer 1921:29). A somewhat similar Ollin with coefficient of nine is

on Monument 15, Santa Lucia Cozumahualpa (Fig. 1.4b; Seler 1892:249).

Monument 2, at El Baul (Waterman 1924, Fig. 3), carries a human figure, in front of which is a non-Maya glyph within a cartouche, which is without doubt Mazatl 'deer,' as Waterman states. From the deer's neck hang two stick-like objects with clefts in their ends. These probably represent the legs and cloven hoofs of the deer (Fig. 1.5a). In Codex Bologna a leg with cloven hoof is generally attached to the neck of Mazatl (Fig. 1.5b) and in Codex Fejervary-Mayer, belonging to the Laud group, the leg with cloven hoof sometimes serves alone as Mazatl (Fig. 1.5c). In codices from the Valley of Mexico and that neighborhood this hoof is never an element in the day Mazatl. This glyph, therefore, serves to link once more the inscriptions of this region with those of southern Mexico, yet it should be noted that whereas in southern Veracruz the glyphs resemble more those of central south Mexico and the Zapotec writing of Oaxaca, those of the Pacific slope of Guatemala are very close to glyphs of the Laud type. It is also noteworthy that, as in several codices of the south Mexican group, dots alone as well as bars and dots are found on the same inscription to record numbers above four. Glyphs within circular cartouches are not only common on these sculptures of the Pacific slope of the Guatemalan highlands, but also occur in Codex Borgia, which is undoubtedly of south Mexican origin. They are also found on the jade statue of Quetzalcoatl in the Stuttgart Museum (Seler 1902-1923, 3:392) which, from the style of the sun shield and that of the glyphs themselves, must belong to the period almost immediately prior to the Spanish conquest.



1.5. Day sign Mazatl: *a*. legs and hoofs attached to deer head, Monument 2, El Baul, Escuintla; *b*. leg and hoof attached to deer head, Codex Bologna; *c*. Leg and hoof substituting for head, Codex Fejervary-Mayer.

USE OF BARS AND DOTS AND ZAPOTECOID GLYPHS IN MEXICO

Bars and dots are found beneath glyphs in most Zapotec inscriptions (Caso 1928), at Xochicalco (Seler 1902–1923, 2:138–67) in numbers, on a stone vessel said to be from the Chalcan territory (Seler 1902–1923, 2:161); on a monolith from Tenango (Seler 1902–1923, 2:159), and at Teotihuacan (Caso 1937). In addition, on the sculptures of Room E of the Temple of the Jaguar at Chichen Itza, which are without question of the Mexican period, is a glyph with a coefficient of eight beneath (Fig. 1.1k). All these glyphs are of Zapotecoid type, by which is meant glyphs of the same general type as those in Zapotec inscriptions, which would include those of the southern Veracruz group. On a column of the Temple of the Warriors, another building of the Mexican period at Chichen Itza, is what appears to be a rabbit's head with a coefficient of 10, expressed by two bars beneath (Morris, Charlot, and Morris 1931, Fig. 231) and throughout this complex as well as in the Castillo, another building of the Mexican period at Chichen Itza, are numerous name glyphs of non-Maya type. Only in the Northeast Colonnade (E. B. Ricketson) are there name glyphs which might be Maya. The glyph from Room E with coefficient of eight beneath is of particular interest since it is a sign found also at Xochicalco and

on the Chalcan stone box and Caso believes that it is probably related to the Zapotec Glyph A (Caso 1928, Fig. 3). Since the temple of Xochicalco has already been compared to the Temple of the Jaguar of the Chichen Itza ball court and the suggestion made that they are very closely related (Breton), we have some grounds for dating this glyph as about A.D. 1200, the approximate date of the ball court at Chichen Itza. The occurrence of a plaque of pure Xochicalco style in the Aztec deposits of the Calle Escalerillas (Batres 1902:24) strengthens the late date assigned to that style. Some of the glyphs at Xochicalco are of Zapotecoid style, others of the Laud type. For example, the Ollin glyph with a coefficient of two beneath (Seler 1902–1923, 2:140) is of Laud, not Aztec style. We can, therefore, be reasonably certain that a mingling of these two styles of glyphs had taken place by about A.D. 1200.

Glyphs with numbers below have been reported from Tajin (E. S. Spinden 1933, Pl. 17), on the rock of Maltrata (Batres 1905, Pl. 6) and the latter of both Zapotecoid and Mexican types, and, on a stone from Cuilapan, Oaxaca, of Mixtec origin (Caso 1928, Fig. 95). The absence of Nahuatl type glyphs on pottery of Teotihuacan III or late II may be significant in dating the diffusion of this epigraphic style. Bars and dots are found together with glyphs of Laud style in Codices Fejervary-Mayer, Bologna, and Laud.

POSSIBLE YEAR-BEARER GLYPHS ON ESCUINTLA MONUMENTS

The prominence of the days Ollin, Mazatl, and Malinalli on the Escuintla monuments raises the possibility that these were employed as year bearers in contrast to the regular Mexican custom of using Calli, Tochti, Acatl, and Tecpatl. The former set of year bearers, however, is found in Codices Porfirio Diaz and Fernandez Leal, believed to be of Cuicatec (N. Oaxaca) origin, and in Fragment 1 of the Humboldt collection, of unknown origin.

SUMMARY OF EPIGRAPHIC DATA

Bars and dots unattached to glyphs occur on only three monuments of indubitably Maya origin. Only on Stela 1, Pestac, do they form a clear Initial Series, and there they are preceded by the regular Maya Initial Series introductory glyph and terminate with a weathered day sign and what is almost certainly the corresponding month position of 8 Cumhu. The bars and dots on the hieroglyphic stairway at Palenque surely represent a Secondary Series. Those on Lintel 44 at Menche (Yaxchilan) might form an Initial Series, but there is absolutely no proof that they do since there is no introducing glyph and no day or month sign at the end of the sequence. It may be significant that all three inscriptions are from ruins in the western part of the Maya area, and consequently not far from the sites in southern Veracruz where the same custom obtains. It is, therefore, possible that they may represent borrowings of an alien trait.

The so-called Initial Series in the Dresden Codex, formed of bars and dots without the corresponding period glyphs, invariably record the days from which they are counted and to which they proceed. The corresponding month positions are usually given except in the case of bases of tables which were constructed to serve over and over again at various points in the Maya Long Count.

The Maya use of bars and dots without corresponding period glyphs extends from approximately 9.5.0.0.0. to 9.12.0.0.0. There is no evidence of this practice on very early monuments.

The inscriptions of southern Veracruz and El Baul are distinguished from the period less Maya texts by the fact that they appear to lie between two day signs, month positions are suppressed, glyphs are of non-Maya forms, and numerical coefficients may be beneath day signs. It is possible that the count was strictly vesigesimal, i.e., that the approximate year was of 400 days, as in the Cakchiquel calendar. It is probable that the bars and dots represent

the interval between the days between which they lie, and that no fixed counting point, such as the 4 Ahau 8 Cumhu of the Maya, was employed. In view of this probability it is evident that these series cannot at present be related chronologically to the Maya Initial Series system.

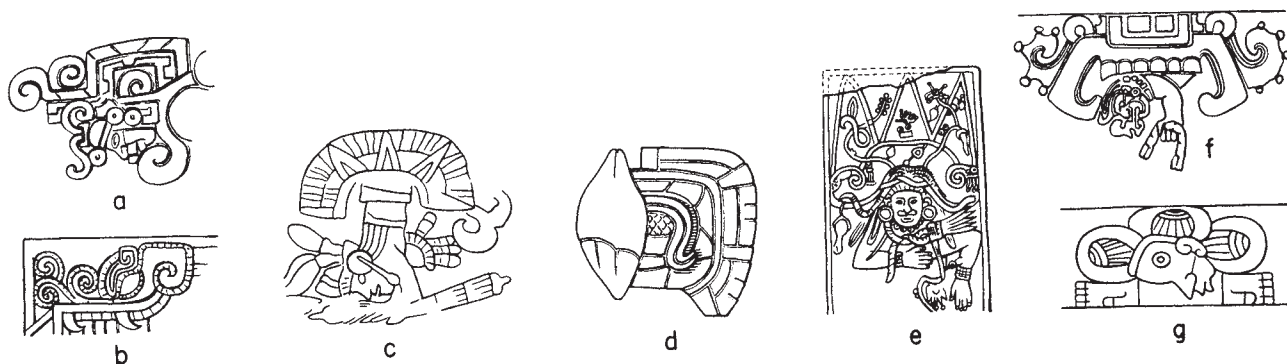
The glyphs on the monuments of southern Veracruz are Zapotecoid in form; those of the Pacific slope of the Guatemalan highlands are of Laud (south Mexican) style, but not Aztec. The mingling of these two types of glyphs occurs on the principal structure at Xochicalco, an admittedly late building; both styles continued their separate existences until the Mexican period at Chichen Itza, since at Chichen Itza glyphs of Zapotecoid type with bars and dots beneath occur on buildings of the Mexican period; glyphs of Laud (south Mexican) type in association with bars and dots are depicted on codices in use at the time of the conquest, and in one case (Bologna) apparently unfinished.

The evidence is not conclusive, but, so far as it goes, indicates that the various inscriptions of southern Veracruz are related to Monument 1, El Baul, and that in turn can be shown to have employed the same distinctive style of glyph, the Laud type, as the other monuments of the Pacific slope and therefore was probably of approximately the same period. The absence of Laud-type glyphs at Teotihuacan, but the presence of both Laud and Zapotecoid glyphs on the late structure at Xochicalco, and of Laud glyphs in codices in use at the time of the conquest, suggests that this style was flourishing at a comparatively late date. The use of bars and dots is no indication that an inscription is necessarily Maya or Zapotec.

STYLISTIC DATA

STYLISTIC AFFINITIES OF ESCUINTLA MONUMENTS

To clarify the extremely confused enumeration of bas relief monuments on the Pacific slope of the Guatemala highlands a new enumeration, largely based on that of Babel, is given in Appendix 1. We have seen that on many of these monuments there occur day signs of Laud type such as are found in codices which presumably do not long antedate the Spanish conquest, and it has been noted that both this type of glyph and the use of bars and dots are found on Monument 1, El Baul, as well as on other sculptures in this region. This would suggest that the former does not represent an entirely different horizon, as Stirling (1940:13) claims on the ground that no other monument in this area bears any resemblance to it. Actually, as we shall see, there is a very definite relationship.



1.6. Deities gazing from the heavens: *a*. Monument 1, El Baul, Escuintla (after Waterman 1929 and photographs); *b*. half of jaw of celestial monster, Monument 7, Santa Lucia Cozumahualpa, Escuintla; *c*. Temple of the Warriors, Chichen Itza, Yucatan (after Morris, Charlot, and Morris 1931); *d*. Acanceh, Yucatan (after Seler 1902–1923); *e*. Monument 5, Santa Lucia Cozumahualpa, Escuintla (after Habel 1878); *f*. Stone 1, National Museum of Mexico, Zapotec (after Caso 1928); *g*. from fresco at Mitla, Oaxaca (after Seler 1904a).

The subject most generally treated in these Escuintla sculptures is that of one or more supplicants who gaze up to, or climb toward, a deity placed at the top of the scene and represented by either the head and shoulders or the head only of a personage in an attitude of looking or falling down from the sky or the sun (Fig. 1.6e). To this group belong Monuments 2–8 and 15 at Santa Lucia Cozumahualpa, all of which represent ball-game players and may have formed part of the decoration of a ball court (Thompson, 1941), Monument 1 at El Castillo, and Monuments 1–3 at Palo Verde, although the sky to which the individuals in these last raise their hands is devoid of deities. Monument 1, El Baul, clearly belongs to this series since at the top a human head emerges from a celestial symbol (Fig. 1.6a). This last is, almost certainly a conventionalized representation of the upper jaw of a celestial monster. Monument 7, Santa Lucia Cozumahualpa, has at the top a deity descending or gazing down from the open jaws of a saurian monster, undoubtedly a celestial being. The volutes and treatment of the eye are very similar to that of the celestial monster on Monument 1, El Baul. A drawing of half of the former (Fig. 1.6b) illustrates the resemblance which would doubtlessly have been greater had the Santa Lucia monster's jaw also been shown in profile instead of being drawn to show the inside.

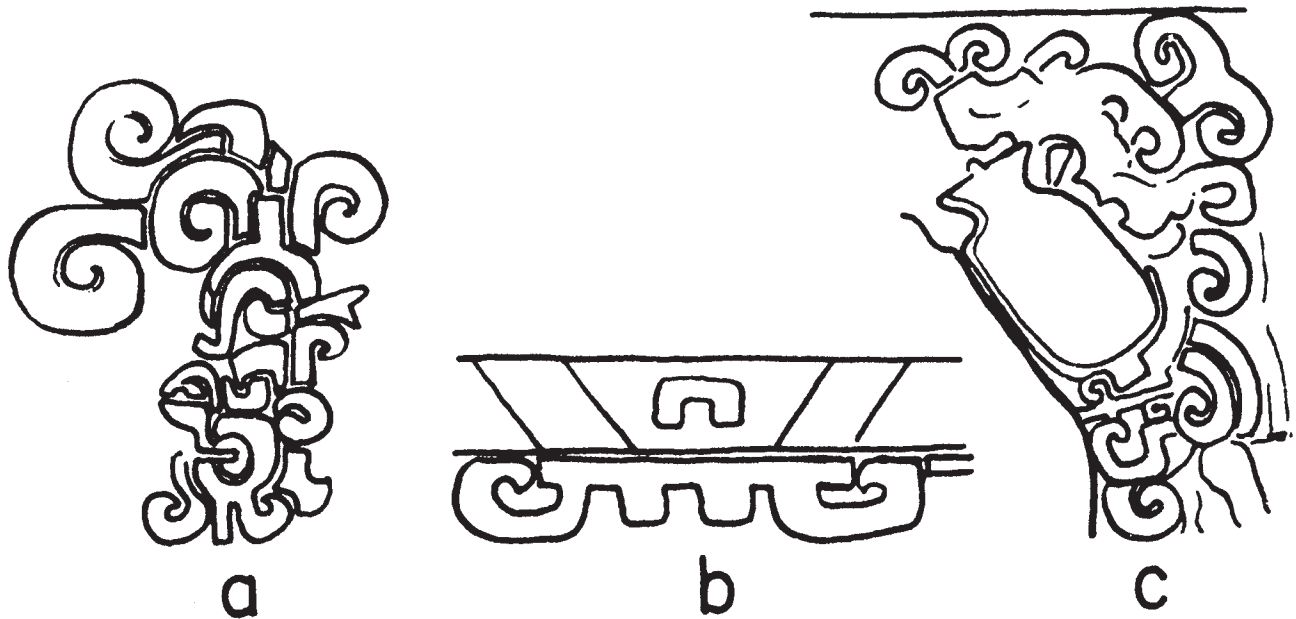
The concept of deities gazing down on worshippers from the sun, the sky, or the open jaws of a celestial monster is absent in the Old Empire with the possible exception of certain sculptures at Menche (Yaxchilan), falling between 9.11.0.0.0 and 9.17.0.0.0, which show the faces of gods looking down from Venus glyphs, which, in turn, are

pendent from celestial bands. On the other hand, this motif is extremely common in sculptures of the Mexican period at Chichen Itza, where the sections of sun disks bear a remarkable resemblance to those of Santa Lucia (Fig. 1.6c), in Mexican codices (Fig. 1.8d), and Zapotec stelae (Fig. 1.6f), and on frescoes at Mitla of the Mixtec period (Fig. 1.6g). The individual portrayed on Monument 1, El Baul, shares with almost all personages represented in Escuintla art the peculiar feature of a long headdress which reaches to the waist, although in the first case this is not as clear as it might have been because of flaking.

The head in the supposed jaw of the celestial monster on Monument 1, El Baul, is of a peculiar type. The nose is bulbous and from its end projects a round circle, presumably a bead worn as a nasal ornament, and the lips are extremely thick and protruding. The human head in the jaws of the *Xiuhcoatl* (celestial snake), which forms the headdress of the figure on Monument 2, El Baul, is of the same type. The same thick lips and bulbous nose with bead in front are present and the eyes are treated in the same manner.

These correspondences, when taken in conjunction with the head-in-sky motif, the use of bars and dots, and the employment of the same Laud type of glyph, surely show that there can be little doubt as to Monument 1, El Baul, belonging to the same general period as the other sculptures in this area.

The generous use of scrolls and curves, the treatment of the legs and, in fact, every feature which Stirling (1940:12) uses to set Monument 1, El Baul, apart from other sculptures of the region, are in reality shared by most of these sculptures, as an examination of the works of Habel, Seler (1892), Strebel (1901), and Figure 1.6b, e clearly shows. The



1.7. Volute decoration: *a*. Monument 1, El Baul, Escuintla; *b*. southern Veracruz element on Stela 6, Izapa, Chiapas; *c*. Stela 6, Izapa, Chiapas.

same style emphasizing scrolls occurs near Tonalá, Chiapas (Palacios), and particularly on monuments from Izapa, where there is a blending of Totonac and Pipil styles.

The dominant scene in the whole group of Escuintla sculptures, ball-game players, in all their ceremonial paraphernalia, rendering homage before or after the game, to celestial powers, in execution and in the elaboration of the subject matter hardly suggests an incipient stage of culture, even less so if the assumption that these sculptures formed decorative panels on a ball court be correct.

Another motif, the main subject of two monuments and a subsidiary subject on a third, is an eagle bending over a sacrificed person, and holding the newly removed head in his claw (Fig. 1.8a). As is well known, the Aztec and other peoples of Mexico considered the eagle to symbolize the sun. Persons to be sacrificed were called 'the eagle people'; and the hearts of sacrificial victims, which were offered to the sun, were called 'eagle tuna fruit.' This symbolism is entirely absent from Maya Old Empire art, from classical Teotihuacan, and, the writer believes, from the Zapotec periods at Monte Alban. There seem, therefore, good grounds for believing that the concept is not of great antiquity, and, therefore, these Pipil sculptures also can not be of great age. Actually, the concept appears at Chichen Itza in buildings of the Mexican period (Fig. 1.8b), is present in sculptures at Tajin believed to be of about the same date

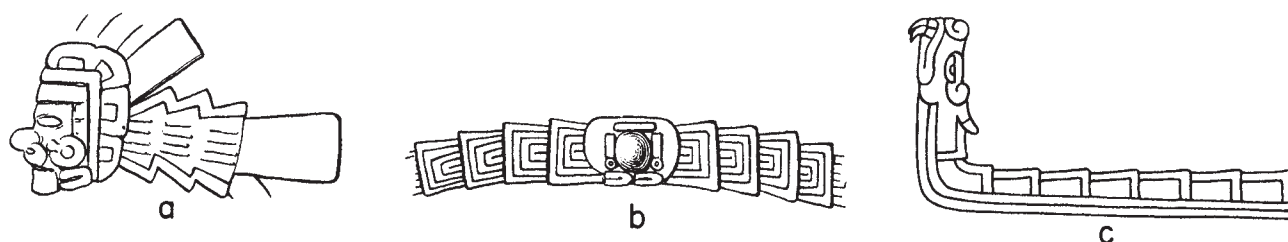
(Fig. 1.8c), and is found in Mexican codices, particularly those of south Mexican origin (Fig. 1.8d).

Monuments 6 and 8, Santa Lucia Cozumahualpa, Monument 1, El Castillo, and Monument 2, El Baul, are brought together by the fact that the main personages on them have headdresses decorated with Xiuhcoatl, which, like their wearers, are depicted in profile. The colossal head at El Baul can be brought into this group, since across its forehead stretches what is surely a Xiuhcoatl (Fig. 1.9). Perhaps the most characteristic features of the Xiuhcoatl are the cone-shaped segments which form its body. In Mexican art the belly of the Xiuhcoatl is usually smoothed, whereas in Escuintla sculpture it is the same as the back. The cone-shaped segmentation of snakes is unknown in Maya Old Empire art, and does not appear to be represented in classical Teotihuacan or Monte Alban, but is frequent in Mexican codices, especially those from southern Mexico (Fig. 1.9) and is occasionally found in Aztec sculpture. The characteristic style therefore is yet another link between Escuintla sculpture and rather later Mexican art. During the Mexican period at Chichen Itza a headdress very similar to that of the small Xiuhcoatl is worn. The snake's body is segmented, but the conical or trapezoidal outline is replaced by small squares, of equal size, with a dot in the center (Maudslay 1889-1902:3, Pl. 35b).

From the above it is clear that there are good grounds for relating Monument 1, El Baul, to the rest



1.8. The Eagle Cult of the Sun: *a*. Monument 16, Santa Lucia Cozumahualpa, Escuintla (after Habel 1878); *b*. Temple of the Warriors, Chichen Itza, Yucatan (after Morris, Charlott, and Morris 1931); *c*. greater ball court, Tajin, Veracruz (after E. S. Spinden 1933); *d*. Codex Selden A, p. 12.



1.9. The Xiuhcoatl: *a*. Monument 2, El Baul, Escuintla; *b*. Monument 3, El Baul, Escuintla; *c*. Codex Nuttall.

of the sculptures of the Pacific coast of Guatemala in the so-called Pipil style, and these in turn to art styles of Mexico, particularly the southern part, and to the Mexican period at Chichen Itza, datable as between A.D. 1100 and A.D. 1450.

SCULPTURES OF KAMINALJUYU

A number of sculptured monuments and fragments have been reported from Finca Arevalo, a part of the large site now known as Kaminaljuyu. Two of these are of particular interest in connection with the present study.

Sculpture E (Lothrop 1926a, Fig. 47) may be an altar. The top (or front) carries a seated figure in profile facing two columns of glyphs. The side has two weathered glyphs with bar and dot coefficient above, the second being enclosed in a cartouche. On the strength of these glyphs and the design, Lothrop assigned the sculpture to the close of the Old Empire. However, the features of the individual are not Maya. The thick lips and bulbous retrousse nose are the same as those already noted as occurring at

El Baul. Furthermore, the seated person wears the same fringed loin-skirt (of leather?) and perhaps the same wide belt as the ball-game, players on the Santa Lucia Cotzumalhuapa sculptures. The two glyphs cannot be a Calendar Round date or an end of a katun or tun date, as Lothrop suggests, since the first glyph lacks a cartouche.

Instead of considering these glyphs as lowland Maya, the nearest site (Copan) with definitely Maya glyphs being nearly 100 miles distant in a straight line, it is surely preferable to assign them to the Pipil, for Santa Lucia Cozumalhuapa is only some 40 miles distant, and the individual is stylistically closer to Pipil than to Maya sculpture. However, as we shall see, in some important respects the sculpture of this site is most closely tied to that of southwestern Chiapas.

Mixco, close to which the Finca Arevalo ruins are situated, is a Pokoman settlement, but Ximenez (1929-1931, Bk. 1, Ch. 26) cites an old lawsuit brought by the town of San Pedro Sacatepequez against Mixco, in which it is stated that the Pokoman of Mixco had been crowded out of El Salvador shortly

before the Spanish conquest (by Pipil?) and had been given lands at Mixco by San Pedro, a Cakchiquel town. In view of the Indian attitude toward the soil, one can conclude only that Mixco was deserted country; otherwise it would not have been voluntarily yielded to the Pokoman. It is, therefore, possible that the Pipil wave once reached as far as Mixco but later receded.

RESEMBLANCES BETWEEN MONUMENTS OF SOUTHERN GUATEMALA AND SOUTHERN CHIAPAS

According to tradition, as noted under that heading, the Pipil migrated to the Pacific slopes of Guatemala and El Salvador from central and southern Chiapas. It is therefore logical to seek in the latter areas for origins of the distinctive style of the sculptures of Escuintla tentatively assigned to the Pipil.

There are two large sites in southern Chiapas. That near Tonalá, close to the border of Oaxaca, has been briefly explored by Palacios (1928:13–29) while Seler-Sachs (1900:111) reproduces one stela now in the main plaza of Tonalá. Izapa, near Tapachula, has been visited by Mr. and Mrs. Kidder and Mr. Ruppert, and photographs of monuments taken by them are in the, photographic files of the Division of Historical Research. In addition Burkitt (1924) describes briefly various sites in the vicinity of Tapachula.

A stela now in the railroad station of Tonalá (Palacios 1928, Fig. 24) is of peculiar interest. The main figure, of which the head is missing, represents a ball-game player. Like those of the Department of Escuintla, the personage wears a ball-game belt with grotesque, head in relief (Thompson 1941), has one hand encased in a glove, and wears an elaborate pad on one knee. Beneath is a glyph with coefficient of nine expressed by a bar and four dots. Unfortunately the glyph is completely weathered, but there seems no reason to suppose it is not of Zapotecoid or Laud type since the nearest Maya site with hieroglyphic inscription is far distant, and Tonalá is a long way outside the Maya linguistic area.

Other monuments include a pedestal statue belonging to a type discussed in the distribution of traits, and three huge flat boulders, as much as 3 m. long, which carry curvilinear designs and human or animal faces in low relief. The curvilinear designs are somewhat reminiscent of Totonac art, particularly in broken-down examples of the conch-in-cross-section motif, found also outside the Totonac area at Teotihuacan and Xochicalco. These huge altars of granite, however, strikingly resemble Sculpture D at Finca Arevalo (Lothrop 1926a, Fig. 47), now part of the Kaminaljuyu site, for they share with it the some-

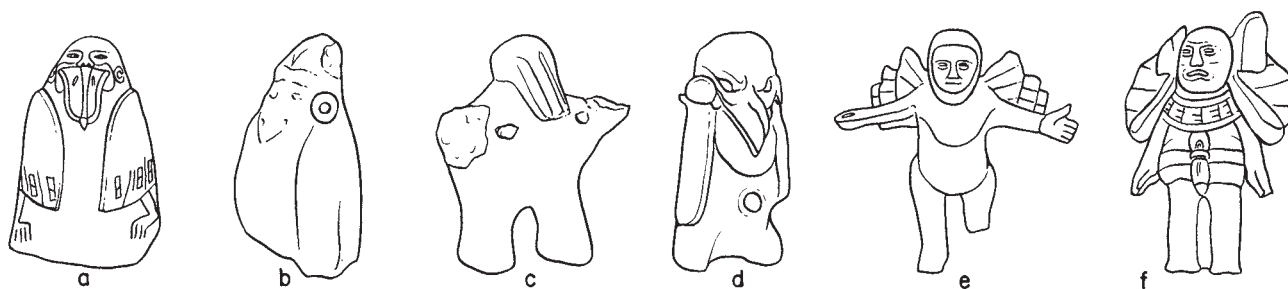
what unusual form of a long, rather flat boulder, and in addition their intricate curvilinear designs in low relief are quite reminiscent of those of this monument at Finca Arevalo, while the subject matter in both cases appears to be the same double-headed celestial monster.

At Izapa several stelae carry designs in which closely rolled scrolls predominate. These again are analogous to those on monuments at Santa Lucía Cozumahualpa and particularly to those on Monument 1, El Baul (Fig. 1.7). The Izapa stelae have every appearance of lateness. In one case the scene seems to portray a Tlaloc, with water bag on his back, lifting a rain barrel. Below him is a two-headed serpent treated in a strongly Totonac manner (cf. E. S. Spinden 1933, Pl. 18c) whereas above him is a band with a simple geometric pattern which approximates closely that on the base of the Alvarado stela and that on the Tepetlaxco relief (Seler 1902–1923, 3:515). However, this pattern is so simple that its occurrence at Izapa may have no significance. The Burkitt photograph shows at the base of Monument 1, El Baul, an indistinct element which appears to be a double-headed serpent of the type of that just noted.

Another Izapa stela portrays a priest with bent sacrificial knife in his upraised hand similar to that on a fresco of the Temple of the Warriors at Chichen Itza (Morris, Charlott, and Morris 1931, Pl. 145), a building of the Mexican period. Of more interest, however, is the fact that the priest wears a skull of a type close to those represented in Escuintla art, which in turn resemble strongly skulls on flat stone heads both in southern Veracruz and on the Pacific slopes of Central America. Indeed, there is a strong predominance of the skull motif in Totonac, Olmec, and Pipil art, a geographical extension which can hardly be fortuitous. During the Mexican period at Chichen Itza there is a certain emphasis on death symbols, but in no way comparable to that on the Pacific coast. Skulls and death symbols are also extremely prevalent in Aztec art.

In the plaza of Tuxtla Chico is a statue of a jaguar in an upright posture, which has been moved thither from the nearby ruins of Izapa. Stylistically it is closely paralleled by a statue of a jaguar, also in the round, at El Baul (Richardson 1940, Pl. 19a).

Both Tonalá and Izapa, therefore, appear to be links between the cultures of southern Veracruz and the Pipil sites of the coastal slopes of Guatemala. They serve also to substantiate that central and southern Chiapas were the centers of the Pipil dispersal, and that the Pipil in their Chiapan homes had been exposed to influences from southern Veracruz as implied by the Olmec pressure said to have caused



1.10. Birds and birdmen: *a*. Tuxtla statuette (after Holmes 1907); *b–e*. pottery figures, southern Veracruz (after Batres 1908); *f*. pottery figure of volador performer (after Batres 1908).

the migration. Traditions confirming such migrations are cited under a heading to that effect.

STYLISTIC AFFINITIES OF THE TUXTLA STATUETTE

A number of years ago Lothrop (1921) called attention to the strong resemblance certain large stone sculptures in Nicaragua bore to the Tuxtla statuette: He proposed the stimulating thesis that these Nicaraguan sculptures and the Tuxtla statuette were both products of a Chorotegan culture which preceded that of the Maya. Lothrop wrote at a time when the antiquity of the statuette was unhesitatingly accepted, and his whole thesis was based on that premise. With the strong possibility, already demonstrated, that the Tuxtla statuette may not be an early Initial Series of Maya type, this theory must be examined anew.

A number of pottery figurines and whistles from southern Veracruz, particularly from the Rio Papaloapam-Tuxtla region in which the Tuxtla statuette was found, are in the form of birdmen similar to that on the front of the Tuxtla statuette (Fig. 1.10). Batres (1908, Pls. 12, 53, 56) and Valenzuela (1938, Fig. 3) illustrate examples in this style. This same general area is the chief center of a more evolved type of birdman which almost surely represents participants in the volador ceremony (Fig. 1.10). Distribution is noted in connection with the discussion of the volador ceremony, but attention is now drawn to the occurrence of this advanced type of birdman on a stone sculpture from the High Priest's Grave, a building of the Mexican period at Chichen Itza (E. H. Thompson 1938, Fig. 11). A pottery plaque from Coban, Alta Verapaz, to which Seler (1902–1923, 3:682) called attention a number of years ago, also resembles strongly the figure of the Tuxtla statuette, but this specimen, as well as the cruder type from southern Veracruz, can not at present be dated.

Into this group of billed figures fits a jade ornament found in Votive Cache 1 at Mountain Cow

(Thompson 1931, Pls. 31, 17 and 32, 34). This cache was dated as belonging to the local equivalent of Holmul V, but because of finding in it a cylindrical cache container of pottery and certain shell figurines, there is a possibility that this and other caches at Mountain Cow were assigned to a later place than their actual position (Thompson 1938:191–92). Actually, this particular cache is more firmly dated as late because it also contained a remarkable polished celt inscribed with glyphs, and there are some grounds for believing that polished celts are of late date in the Peten (Thompson 1940:128–29). A somewhat similar inscribed celt of polished jade was found at Kendall, British Honduras (Gann 1918, Pl. 16, Fig. 36). The glyphs of both celts are more Zapotecoid than Maya.

The pupils of the eyes of both the Tuxtla statuette and the amulet from Mountain Cow are rendered by small holes. Although this is an early feature, it survived until late times since it is typical of Zapotec funerary urns of the Monte Alban IV period, of late Maya incensarios, and of relief figures on plumbate pottery, and is not infrequent on Aztec sculpture.

It is also typical of pottery figures from the Rio Papaloapam-Tuxtla region, which because of their resemblances to late types from the mouth of the Usumacintla River, from the cenote at Chichen Itza, from the east coast of Quintana Roo, and from the latest horizon in northern British Honduras, must themselves be late. Of particular interest in connection with the stylistic placement of this amulet from Mountain Cow is the presence of a slight nick at the top of the head such as is found on votive axes of Olmec style believed to be of southern Veracruz origin (Saville 1929), and on Teotihuacan II and III pottery heads.

The style of the Tuxtla statuette can not at present, therefore, be used to place it in its chronological position, although we have hints that it is probably not earlier than the basal flanged-bowl horizon of the Peten-British Honduras area and may be considerably later.

STYLISTIC AFFINITIES OF STELA C, TRES ZAPOTES

The mask on the back of Stela C, Tres Zapotes, is the sole stylistic clue as to the date of this monument. It represents the conventionalized head of a jaguar and thereby is related to Olmec art. The treatment of the lips is Olmec in feeling although not as exaggerated as on the Olmec votive axes illustrated by Saville (1929). Unfortunately a similar treatment of the jaguar's snout occurs in Middle American art perhaps over a long period. It is certainly late, since, as Vaillant has pointed out, it occurs on a gold pectoral from the Totonac city of Papantla (Peñafiel 1890, Pl. 112), which is clearly contemporaneous with one found in Tomb 7 at Monte Alban, a Mixtec burial dating from just before the Spanish conquest (Caso 1932, Fig. 41). A jaguar muzzle rendered in truly Olmec style occurs on a yoke in the American Museum of Natural History, but, as we shall see, these can be shown to have been distributed on a late horizon, although they may have originated earlier. The Olmec jaguar style may have considerable antiquity, but since it endured until the arrival of the Spaniards its presence on a monument is no criterion of antiquity.

The treatment of the nose on the mask from Tres Zapotes parallels that of the Mountain Cow amulet already discussed, but exactly the same nose treatment is on a Tlaloc head from Uxmal (Seler 1917, Fig. 86), whereas the mask as a whole is as close to masks on columns of buildings of the Mexican period at Chichen Itza as it is to those on Structure E-VII sub at Uaxactun. Actually, representations of conventionalized jaguar heads are frequent in Maya art of the middle and great periods of Cycle 9, and in the discussion under the heading "The Olmec" it will be shown that many of these are much closer to the Olmec type in almost all their characteristics, particularly in the employment of the croquet-hoop form of the muzzle, than are the masks of the Uaxactun pyramid (Fig. 18; Dieseldorff 1926-1933:1, Figs. 175, 176; Joyce 1914, Fig. 65; Spinden 1913:17, Fig. 1). A jaguar deity is also depicted on Zapotec urns of Monte Alban II and III, and he, too, frequently has the croquet-hoop muzzle. In view of these long persistences it is clear that neither as a whole nor in its details can the mask of Stela C, Tres Zapotes, serve as a chronological clue.

STYLISTIC AFFINITIES OF STELA 1, CERRO DE LAS MESAS

Stela 1, together with the other stelae at Cerro de las Mesas, has been pronounced late on general stylistic grounds by Spinden (1927). The twin sculpture now in the Mexican National Museum (Lehmann

1921, Pl. 30) is of peculiar interest because the figure on it is almost certainly Quetzalcoatl-Eecatl, with his usual grotesque snout. Since Eecatl, complete with his snout, does not seem to have been recognized on any horizon definitely earlier than Monte Alban V (he is plainly represented on Mitla frescoes of that period), it is difficult to see how Spinden's conclusion can be challenged.

SUMMARY OF STYLISTIC DATA

There are good stylistic grounds for placing all Escuintla sculptures of the so-called Pipil culture late in Middle American history, probably between A.D. 1100 and A.D. 1450, because that was the period in which such features as gods looking down from heaven, the sun as eagle, and the Xiuhcoatl had their widest distributions. The stylistic affinities of the monuments with inscriptions from southern Veracruz are very much less certain. Some details are definitely late, but might also be early. The stela from Cerro de las Mesas does, however, have every indication of lateness.

DEDUCTIONS AND SURMISES FROM EPIGRAPHIC AND STYLISTIC DATA

All scenes portrayed on monuments from Santa Lucia Cozumahualpa, El Castillo, and Palo Verde are so closely related in subject matter or individual motifs and details of dress as well as in the type of epigraphic writing, that they must all be of approximately the same period. There is strong evidence for dating this period as approximately A.D. 1200-1450.

Monument 1, El Baul, can be brought into this dated group on the grounds that it, too, portrays a subject (a deity gazing down from the sky) very common on the other monuments, shares with them the use of glyphs of the Laud type, and, like two of them employs the bar and dot method of writing. Furthermore, the combination of bars and dots and Laud-type glyphs is commonest in the centuries immediately preceding the Spanish conquest.

The monuments in southern Veracruz under discussion are more difficult to place. The glyphs might be of any date, but the evidence of the sculptured scenes, although by no means conclusive, supports a late dating. There is nothing pointing to considerable antiquity to the exclusion of a much later stage. In fact, some of the subjects are known to have been dominant during the centuries immediately antecedent to the Spanish conquest.

The method of presenting epigraphic data on these east-coast monuments appears to be the same

as that on Monument 1, El Baul, and since there are good grounds for dating the latter as approximately A.D. 1200–1450, the period which best fits the stylistic evidence, the presence of this method of recording dates tends to support the suggested assignment to a late horizon.

Sculptured monuments in southern Chiapas are intermediate in style and space between these two areas. Treatment and subject matter indicate their erection on the same late horizon, whereas at Tonalá, one of these south Chiapan sites, a stela carries a glyph with coefficient expressed by the bar and dot method.

The evidence, then, suggests that in both southern Veracruz and on the Pacific slope of the Guatemalan highlands there existed between approximately A.D. 1200 and A.D. 1450 a non-Maya system of recording dates wherein what are presumably day signs are linked by series of numerical bars and dots functioning as a sort of Secondary Series with period glyphs unknown or suppressed. Southern Chiapas may have served as a transmitting point between these two cultural areas.

MIGRATION FROM SOUTHERN MEXICO TO THE PACIFIC COAST OF GUATEMALA

Evidence has been produced that the sculptures of the Department of Escuintla have much in common with an unidentified style of southern Mexico in general and southern Chiapas in particular, and the text of one monument has been compared to those found in southern Veracruz. Traditions of migration confirm the resemblances and help to date them.

Francisco Ximenez (1929–1931, Bk. 1, Ch. 26) wrote that every one from Escuintla to San Salvador and as far as Nicaragua was Mexican-speaking. Strictly, this was not an entirely true statement, but it is correct in so far as the vast majority of the inhabitants of the plains bordering on the Pacific from Escuintla to central Salvador were Mexican-speaking. Fuentes y Guzmán (1882–1883, Bk. 3, Ch. 2) similarly states that Pipil, a Mexican dialect, was spoken at Esquintepeque (i.e., Escuintla) and at some towns of the south coast beyond. Until late in the nineteenth century Pipil was still spoken around Escuintla (Stoll 1938:2).

As long ago as 1895 Seler (1904:112) derived the Pipil from the Tabasco regions and connected them with the Mexicans who imposed their culture on Chichén Itzá. He called attention to the tradition of the Pipil of Salama, a detached colony in the northern highlands of Guatemala, that their ancestors had come from Tuxtla Grande, and, like Stoll (1876:343), considered that this migration was in fact

pre-Columbian despite traditions that it was post-conquest. Seler (1902–1923, 3:628) identifies Tuxtla Grande with Los Tuxtlas, Veracruz, but there can be little doubt that it is Tuxtla, Chiapas, now known as Tuxtla Gutiérrez, the present capital of the State of Chiapas. Far to the south of Tuxtla Gutiérrez, there is a Tuxtla Chico near Tonalá; and Tuxtla, as the state capital, has always been more important than Los Tuxtlas to everyone except archaeologists.

Actually there exists a much earlier tradition of the migration of the Pipil. Torquemada (1723, Bk. 3, Ch. 40) recounts that the Indians of Nicaragua and those of Nicoya, also called Mangue, originally lived in Soconusco (southeastern part of the Isthmus of Tehuantepec). Those of Nicoya, who were of Cholulan descent, lived inland toward the Sierra; the Nicaragua, who were Mexicans from the land of Anahuac, lived toward the coast. Both were large groups. About seven or eight ages or lives of very old men (the kind who were taken out to sit in the sun because of their age) before the recording of the story these peoples were conquered by their old hereditary enemy, the Olmec, who had come from the direction of Mexico. The yoke of their Olmec oppressors was so severe that they migrated. The Nicaragua followed the Pacific coast across Guatemala, leaving behind certain groups who settled such places as Ezalcos (Izalcos, actually a Pipil settlement in El Salvador), Mictlán (the modern Asunción Mita), and Yzcuintlán (the modern Escuintla), and were then called the Pipil. The rest passed on to Nicaragua.

Both Stoll (1938:7) and Lothrop (1926:1:6) connect the life spans of the seven or eight aged men with the stay in Soconusco, but the Spanish text will not bear that interpretation. The period can refer only to the lapse of time between the arrival of the Olmec in Soconusco and the recounting of the tradition. One suspects that the ages, which are amplified by stating that they were the equivalents of very long life spans, actually represent 52-year cycles, the *Xiuhmopilli* of the Mexicans. If this tradition had been collected about 1550, as seems not improbable in view of the fact that Torquemada's history is almost entirely a compilation of earlier source materials, and the ages are 52-year periods, the Olmec, pressure which led to the migrations occurred somewhere between A.D. 1150 and A.D. 1200. The Olmec, according to Mexican historical sources were being pushed southward by the incursions of the Nononcalca-Chichimeca at precisely this time, and it is therefore not improbable that the settlement of the Pipil on the Pacific slope of Guatemala was an indirect result of the fall of Tula and the break-up of the Toltec-Nononcalca-Chichimeca hegemony.

Strangely enough, Torquemada's tradition implies that Olmec groups also migrated at the same time into Central America. There is some confirmation of the migrations of the Mangué and Nicaragua in linguistics, for Nicoya and Mangué are sub-families of the Chorotegan stock, to which belongs Chiapanec, spoken in the mountainous country of Soconusco, the legendary home of the Mangué, whereas Nahuatl is spoken on the coastal strip of Soconusco (Thomas and Swanton 1911:76; Mason 1940:80) from which the Mexican-speaking Nicaragua are said to have emigrated. This same tradition is recounted by García de Palacio (1860, Bk. 5, Ch. 5, *fide* Lothrop 1926:1:29) with the added information that all the Chorotega came from the direction of New Mexico, bringing with them two or three gods, and that in Soconusco they divided into two groups, one to settle in Nicaragua, the other the State of Chiapas. That the Nicaragua or Nicaraó, as they were more commonly called, were not Aztec is clear not only from Torquemada's account but also from the absence of the Aztec tribal deity Huitzilopochtli from their pantheon and the Aztec *tl* from their speech.

Remesal (1932, Bk. 5, Ch. 13) contradicts Torquemada and García, reporting an emigration from Nicaragua to the vicinity of the present-day Chiapa del Corso, the center of Chiapanec territory. This, however, in view of the distribution of the Otomanguéan stock (Johnson) is not likely, or, at most, would represent an ebb.

Motolinia (1914:9) mentions a migration by sea to Nicaragua from Mexico about a hundred years before the arrival of Cortés. The rather confused passage, in which Motolinia frankly states that part of what he writes is merely what he suspects to be the truth, might have reference to a later migration, or the four years of drought, which was its cause, may have been the same as that which accompanied the dispersal of the Toltec toward the close of the twelfth century. Migrations by sea crop up in Mexican legend, but it is hard to credit such seamanship to the ancient inhabitants of Mexico.

Torquemada's account of the Pipil-Nicaraó migration is most convincing because it mentions the Pipil settlements of Izalcos, Mitlan, and Escuintla, which check well with the facts, because the points of dispersal he mentions agree with linguistic evidence not at his disposal, and finally because this tradition is partly confirmed by García. Whether the Mangué migration took place at the same time is a more debatable matter.

The evidence, then, is rather strong that the Mexican-speaking people of Nicaragua believed that they had migrated in the twelfth or thirteenth

century from southern Chiapas, that some of their numbers had remained in Escuintla and western El Salvador, and that the migration was due to Olmec pressure. As we have seen, there is archaeological evidence supporting this tradition.

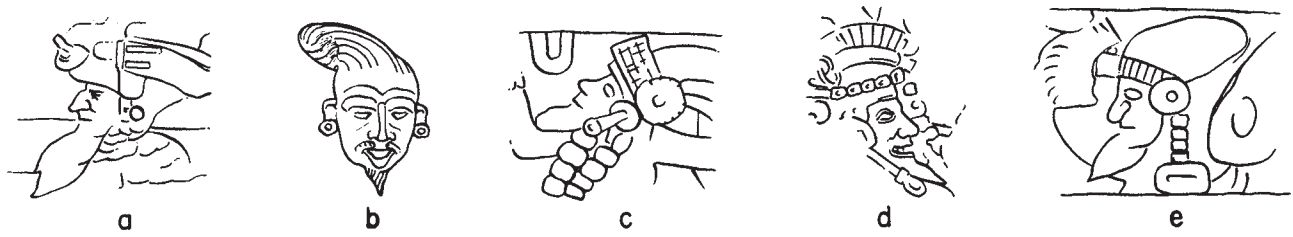
THE OLMEC

In recent years archaeological attention has been belatedly directed to the part of Veracruz state south of Veracruz City and the contiguous areas of Tabasco, Chiapas, and Oaxaca. Although but little excavation has been undertaken, enough is known of the archaeology of the area to permit the vague outlining of a culture to which on geographical grounds the name Olmec has been given tentatively and, one might add, almost furtively in the face of the present tendency to deprecate identification of archaeological remains with the sixteenth century inhabitants of the same area.

In her brilliant discussion of Totonac culture Ellen S. Spinden (1933:228, Note 8) has listed the authorities who accept with varying gusto the employment of the term Olmec to describe this culture, and she herself uses it in that sense.

Sahagún (1938, Bk. 10, Ch. 29) assigns the Olmec to the general region under discussion, but is vague as to the language they spoke. Indeed, he groups them with other peoples in a short general summary. In this area the languages spoken are Nahuatl and Mixe-Zoquean. Most typical of Olmec art are beautifully worked stone heads in full relief, on which the flattened snout of the jaguar is strikingly treated, yet we have noted that a somewhat similar treatment, but in low relief, occurs in Maya art. Typical, too, are the so-called baby faces, also duplicated in Maya art, and a rather heavy negroid type, parallels to which also exist in Maya sculpture. No writer has discussed Olmec art in detail, but Vaillant (1932) briefly defines the style. Although small portable examples of Olmec art are widely distributed, the only well-known examples on monuments too large to have been moved are located at San Martín Pajapan, Veracruz (Blom and LaFarge 1926, Fig. 43), La Venta, Tabasco (Joyce and Knox 1931; Blom and LaFarge 1926:81-90; Stirling 1939, 1940), Cerro de las Mesas (Spinden 1927; Stirling 1940a), and Tres Zapotes or Hueyapam, where the first colossal head was excavated as early as 1890 (Paso y Troncoso 1892:2:375; Seler Sachs 1922; Weyerstall 1932; Stirling 1939, 1940).

Recent discoveries at La Venta have greatly widened the art range in this field and have yielded information on motifs. The sides of Altar 2 (Stirling 1940:311, 312) carry adult figures holding children



1.11. Bearded type: *a.* stone sculpture, La Venta, Tabasco (after Stirling 1940a); *b.* pottery head, La Venta, Tabasco (after Stirling 1940a); *c–e.* sky-bearers on stone columns, Mexican period, Chichen Itza.

with adult features. One of the adults illustrated has typical Olmec features, yet wears the Aztec Xiuhuitzolli, royal crown, which is also typical of Mexican warriors or leaders of the Mexican period at Chichen Itza. The subject matter—children with adult features held by individuals, usually male—occurs in Codices Fejervary-Mayer, Borgia, and Vaticanus B, and in stucco reliefs on the Temple of the Inscriptions at Palenque, although in the last case the children's faces are missing. Women with children with adult features are represented in pottery figurines from a late Maya Old Empire horizon (Joyce 1933, Pl. III, 12; Thompson 1939, Fig. 92n) and seemingly in Aztec figurines (Fig. 12). A Pipil sculpture at Palo Verde in the style already assigned to approximately A.D. 1200–A.D. 1450 shows a man holding up a child with adult features.

This particular Olmec sculpture, then, can hardly be of great antiquity and, having regard to the combination of the Xiuhuitzolli and the child motif, can best be placed somewhere between A.D. 1100 and A.D. 1520.

Seemingly typical of Olmec art are aged individuals with pointed beards, aquiline noses, and an arrangement of the hair or headdress reminiscent of the liberty cap (Stirling 1940:317, 327; the latter, however, lacks the liberty cap). This identical type is found on sculpture of the Mexican period at Chichen Itza (Fig. 1.11), where he acts as a bacab or supporter of the heavens, but is unknown in Maya Old Empire art.

The placing of individuals in niches on the sides of altars at La Venta is almost exactly paralleled by Monument 8, Tonina (Blom and LaFarge 1926, Figs. 223–29), carrying the date 9.12.10.0.0, and less closely by individuals in niches on stelae at Piedras Negras and Quirigua.

Again one colossal Olmec head shows an oblong ornament pendent from the nose and covering the mouth (Stirling 1940:320). The outlines of this same feature are rather clearly portrayed in low relief around the mouth of the mask on Stela C,

Tres Zapotes. This same oblong decoration is found on pottery figurines which have no appearance of antiquity and which, perhaps, are datable in terms of the Mexican period at Chichen Itza because of the birds in the headdresses (Strebel 1885–1889, Pt. 1, Pl. 2). A somewhat similar plate can be seen on a mask from the Aztec deposits beneath Escalerillas Street, Mexico City (Seler 1902–1923, 2:854).

Spinden (1927), as already noted, is of the opinion that the various stelae he uncovered at Cerro de las Mesas can be dated as approximately thirteenth century.

There is therefore a body of evidence tending to place certain Olmec sculptures at about the time (A.D. 1100–1450) that Mexican influences were strongest at Chichen Itza, and this agrees with the tradition of Olmec pressure against the Pipil and the Nicaragua.

However, it is desired not to deny the claims of Olmec art to a considerable antiquity (Vaillant 1941a, 1941b) but merely to emphasize that this style was of long duration, and that diffusion of certain of its features need not necessarily have taken place at an early date. There is evidence that Olmec art influenced that of the Maya throughout Cycle 9 of Maya history, whereas its later manifestations on the A.D. 1100–1450 horizon had a strong infusion of Toltec motifs and style.

Most typical of Olmec art are the treatment of the muzzle and mouth in anthropomorphized representations of the jaguar and the blending of these feline features with those of a youthful deity. The characteristics of these feline heads are: (1) the flaring nostrils at the base of a narrow nose, (2) most important, the muzzle shaped like a croquet hoop, (3) the triangular or square appendage from the upper lip, (4) the up twist of the lower lip to follow the line of the upper lip and muzzle, and (5) the nick in the forehead.

It has been claimed that Olmec art must be early because of the resemblances of its jaguar masks and heads to the masks on Pyramid E-VII sub, Uaxactun,

but in actual fact of the five characteristics listed above, the latter possess only the appendage from the upper lip. There are closer resemblances to Olmec style in Maya art of Cycle 9 as can be seen in Figure 1.18. The second and third drawings are of jaguar masks on monuments dating from the great period. Both show all listed features except the up twist of the lower lip due to the fact that the lower jaw is suppressed in both cases. The nick on the forehead is replaced, as on some Teotihuacan figurines, by a circle, which, however, is hollowed out, as profile views reveal (Thompson 1932, Fig. 232g). Furthermore, in one case there are dots below the eyes, a common Maya feature in the representation of animals, but one which is absent from the Uaxactun masks, although found on the mask of Stela C, Tres Zapotes.

The appendage from the upper lip is usually represented in Maya art by the T-shaped filing of the central upper incisors. This is one characteristic of the sun god, who not infrequently is depicted with jaguar details, particularly when functioning as god of the number 7. With these jaguar features (particularly the characteristic jaguar 'ear' is often found a band which passes beneath the eyes and is twisted in a loop over the bridge of the nose. The various stages (probably not chronological) in the conversion of this appendage into T-filed central incisors is seen in Figure 1.18f-i. The shield on the panel of the Temple of the Sun, Palenque, shows a jaguar head (note the ears) with the twisted ornament and the triangular appendage. The muzzle is not shaped as a croquet hoop, but another jaguar head immediately beneath has an exaggerated croquet-hoop muzzle. The incense burner from El Salvador has a vestigial muzzle of croquet-hoop form, the twisted ornament, and a beard but no labial appendage. A pottery fragment from Panzamala, Alta Verapaz, has a muzzle of true croquet-hoop shape, supraorbital ridges

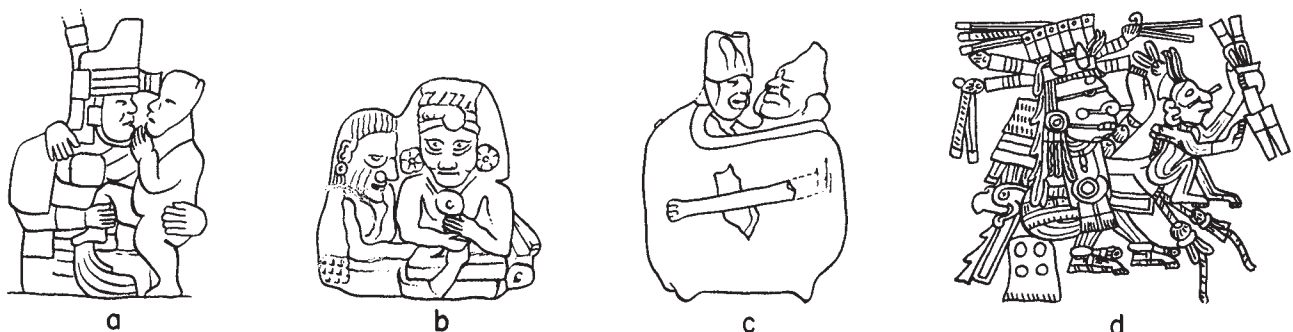
reminiscent of those on Olmec jaguars, twisted ornament, and the appendage from the upper lip closely paralleling the T-filed upper central incisors. Finally, a pottery head from Nebaj, El Quiche, now in the British Museum, has a poorly developed croquet-hoop muzzle below a thin nose with flaring nostrils, twisted ornament with dots below the eyes, and T-filed central upper incisors. This type of jaguar sun god occurs throughout the period of the Maya Old Empire.

If these resemblances are significant, Olmec and Maya art styles were influencing one another throughout Cycle 9 very much more strongly than at the time Pyramid E-VII sub was erected, and the masks on that Uaxactun structure cannot for that reason be used to date Olmec art. All that we can say at the present juncture is that Olmec art style appears to have endured for some centuries, during which time, presumably because of its proximity, it influenced the art of the Maya Old Empire, and then, after modification by intrusive Toltec elements, was carried by migrant groups to the northern and southern peripheries of the Maya area.

PROBLEMS OF DATING TRAITS

Having established the probability on the bases of epigraphy, style, and tradition that the Pipil sculptures can best be placed at about A.D. 1100-1450, and having shown that there are some grounds for considering the sculptures from southern Veracruz with hieroglyphic texts as of approximately the same date, and having produced some evidence that Olmec culture may have been flourishing at the same time, we may now look for archaeological evidence of diffusion of objects and style.

Olmec culture does not appear to have been pure. Such features as stone yokes, flat stone heads, pottery heads of the smiling-face type, and typical



1.12. Adult and child: *a.* stone sculpture, La Venta, Tabasco (after Stirling 1940a); *b.* pottery figurine whistle, Lubaantun, British Honduras (after Joyce 1929); *c.* pottery figurine, San Jose, British Honduras (after Thompson 1939); *d.* Codex Borgia, p. 16.

Cerro Montoso polychromes pottery are found not only in the Rio Papaloapam-Tuxtla region but also in the Totonac region to the north. At present there is no definite information whether these features are contemporaneous with typical Olmec sculpture or represent a later diffusion.

The problem is further complicated by the fact that a strong influence from the east coast of Mexico made itself felt in central Mexico. A fresco in a style reminiscent of Totonac has been uncovered at Teotihuacan, but the resemblance is much less marked in the colored reproduction than in the drawing Ramon Mena gives in discussing the Totonac influence (Gamio 1922:1, Pl. 30, and Fig. 149). Other east-coast influences are represented by a sculptured yoke (Lehmann 1910:737) from near the Pyramid of the Sun at Teotihuacan, presumably a surface find; a flat stone head (Plancarte y Navarrete 1911:129) of Totonac type but of a black stone, found at Teotihuacan; and Totonac designs on tripod bowls of Teotihuacan II-III form (Seler 1902-1923, 5:519; Linne 1934, Fig. 117). On the other hand, Teotihuacan II or III figurines are found in Veracruz from Papantla to Los Tuxtlas (E. S. Spinden 1933; Valenzuela 1938, Figs. 5, 29; Weyerstall 1932:32). The peculiar cleft in the foreheads of some suggests a connection with Olmec votive axes, as Beyer (1927:307) has noted.

In addition to these east-coast influences in the general region of the Valley of Mexico, Mexican influences on a Teotihuacan II-III horizon were strong in the highlands of Guatemala during the Esperanza phase at Kaminaljuyu, a manifestation of the wider basal flanged-bowl horizon. There is, therefore, a danger that Mexican elements that entered Guatemala on that horizon may for lack of evidence to the contrary be assigned to a later period. The tombs of Kaminaljuyu, however, serve as a check because of their richness and because the evidence of strong Mexican elements they show gives us a fair picture of the intrusions that were strong at that time. The absence of certain elements, such as yokes and flattened stone heads, from these graves is therefore of aid in establishing their chronological position. These particular absences from the Kaminaljuyu tombs also suggest that the occasional examples of the same objects at Teotihuacan are of later date than the local horizons (Late Teotihuacan II and Early III) contemporaneous with the Esperanza phase.

The date of the Mexican period at Chichen Itza is somewhat difficult to fix, first, because the correlation of the Maya calendar with our own is not yet certain, and second; because there are some grounds for believing that there may have been two separate influxes of Mexican influences at Chichen Itza,

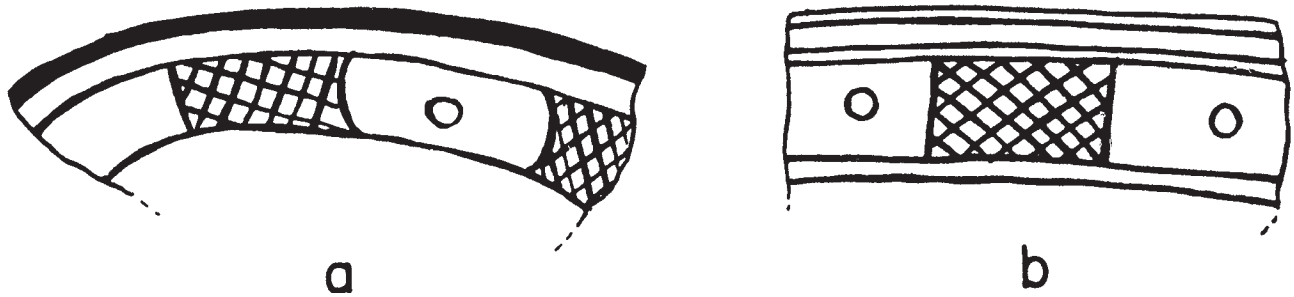
one perhaps as early as A.D. 1000. Vaillant, in the table he prepared for *The Maya and Their Neighbors*; places the Mazapan period, in which fine orange and plumbate occur, about A.D. 1100. Although plumbate lasted but a short while, and other traits to be discussed probably did not endure to within a century of the Spanish conquest, the traditional date of the fall of Mayapan is here utilized as the termination of the period, for the establishing of a definite chronological framework is beyond the scope of this paper.

Bearing in mind the complexity of these interrelationships, let us examine briefly the evidence for placing certain traits in the general A.D. 1100-1450 horizon tentatively assigned to Pipil sculpture and epigraphic material from southern Veracruz. Distributions are shown in Appendix 1. Owing to the paucity of excavation in the areas under discussion, the material objects must be largely those collected for their artistic, rather than their chronological, value.

Stone Yokes and Flat Stone Heads

Stone yokes and flat stone heads are encountered in considerable numbers from Veracruz to El Salvador with a wider distribution of occasional specimens. The occurrence of a plain yoke and a sculptured flat stone head in a burial at Patulul, near El Baul (Gann 1932; 1939:208-209) establishes the fact that these two distinctive types of stone sculpture were contemporaneous. The flat stone head, shaped as a long-beaked bird pecking at the eye socket of a skull (also illustrated in Villacorta 1938:133), is strongly reminiscent of sculptures of the same type from southern Veracruz. A palma of typical Totonac style in the Mexican National Museum carries a similar motif, but the bird is pecking at the side of the skull of a skeleton: The human remains of the Patulul interment were enclosed in two large cauldron-shaped pottery vessels. With the burial were a large number of pottery vessels, several decorated with monkeys in applique. Vessels with crude monkeys in relief are typical of this region, and appear to represent a late horizon (see under Monkey Effigy Vessels). Near the urn were several large pottery figures. The one illustrated by Gann (1932, Figs. 7, 9) is definitely of the type usually accepted as Pipil.

The absence of yokes and flat stone heads from burials at Kaminaljuyu of the Esperanza phase and their nonexistence in the Peten in contrast to their association at Patulul with pottery of a supposedly late date suggest, although they do not prove, the lateness of these two types. The relationship in subject matter to a Totonac palma indicates that the Patulul burial falls in the Totonac horizon, which



1.13. Designs on pottery vessels: *a.* on vessel from Los Tuxtlas, Veracruz (after Valenzuela 1938); *b.* on vessel from Las Flores, Honduras, of Upper Uloa polychrome (after Strong, Kidder, and Paul 1938).

Mrs. Spinden (1933:263) has already placed as contemporaneous with the Mexican period at Chichen Itza (A.D. 1190–1450). Many yokes and Palmas from Totonac territory have typically Totonac designs which would place them on that horizon.

At Matacapán, Los Tuxtlas, in the heart of Olmec territory, fragments of flat stone heads were excavated from beneath the floor of Mound 1 (Valenzuela 1938:14 and Pl. 4). In a lower level was a carved sherd of undoubted late type stylistically related to certain carved vases on expanding annular bases from Isla de Sacrificios, which, as will be shown, are also assignable to the A.D. 110–1450 horizon. Painted sherds in the same level and below the fragments of flat stone heads are mainly of two types. One carries what appear to be glyphs (on one sherd with a bar and dot coefficient) crudely executed in a style which in the Maya area would denote lateness (Valenzuela 1938, Pl. 5). The other style depends for its chief decoration on crosshatching of interiors of rectangles and triangles (Valenzuela 1938, Pl. 6). A remarkable parallel to one of these latter sherds occurs on upper polychrome sherds from Las Flores, Honduras (Strong, Kidder, and Paul 1938, Pl. 5a), which are late (Fig. 1.13). Indeed, painted crosshatching is not infrequent on Uloa Bold Geometric (Gordon 1898, Pl. 3).

In southern Veracruz, then, flat stone heads are as late or later than certain wares which themselves give every evidence of being late, and which can not long antecede the Mexican period at Chichen Itza. If is, of course, possible that these two fragments of flat stone heads were gathered up and thrown into a fill of later date, but in view of the evidence from Patutul and the Totonac tie, this is unlikely. It is also worth noting that one flat stone head (Batres 1905) has a jade bead in its mouth, a death symbol. It shares this distinctive feature with Olmec figurines (Weyerstall 1932, Pls. 4, 5), which in turn seem to be related to faces on late Maya incense burners.

In Escuintla flat stone heads can probably be placed on an equally late horizon through associated pottery also believed to be late.

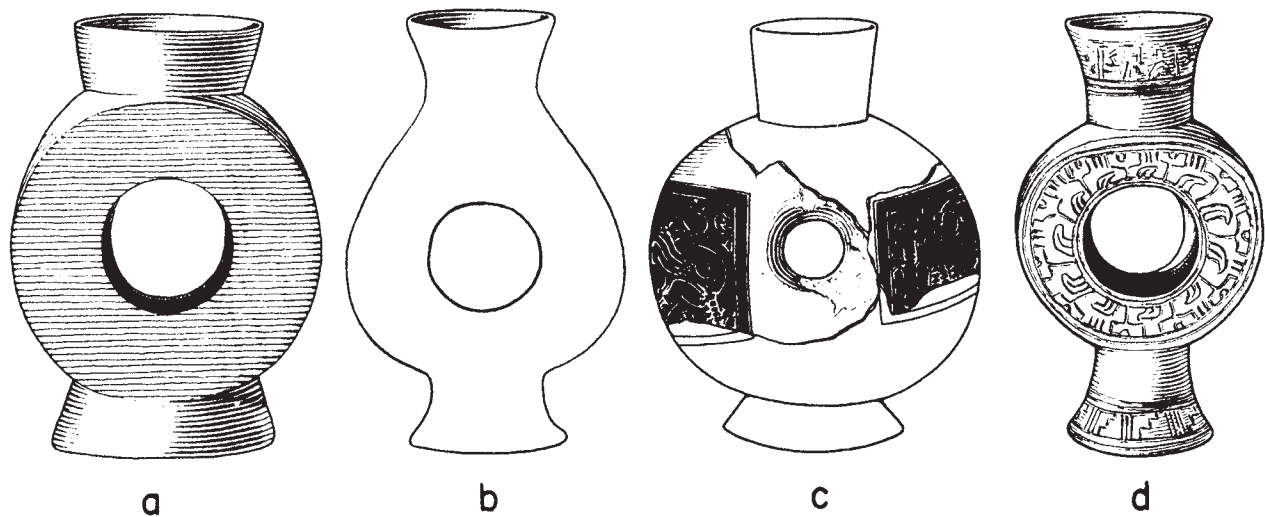
Plumbate and Fine Orange Wares

Plumbate pottery has been satisfactorily placed on the Mazapan-Mexican Chichen Itza (A.D. 1100–1450) horizon (Merwin and Vaillant 1932:80; Vaillant 1935:121; Thompson 1939:234–36), but it is worthy of note that present evidence now tends to place its center of manufacture in or near western Guatemala, yet the considerable number of plumbate vessels with Tlaloc features would argue against a Maya origin, unless one is prepared to accept the unlikely assumption that Maya potters deliberately catered for foreign markets by decorating their products with the features of the importers' chief god. Possibly Zoque-Mixe or Nahua speaking peoples of eastern Chiapas produced this interesting ware. Representations of tapirs suggest a lowland area, or its vicinity.

Fine orange ware (always untempered?), in the forms of cylindrical or pear-shaped vases, on expanding annular bases or tripod supports, and flat-based tripod bowls, has been shown to be contemporaneous with plumbate (Merwin and Vaillant 1932:80; Butler 1940:262), although fine orange vessels carved with life scenes may be somewhat earlier. Fine orange ware frequently is decorated with Totonac scrolls and other Totonac patterns, which serve to link it with yokes and flat stone heads. Fine orange ware has been satisfactorily placed in the Mexican period at Chichen Itza.

Nicoya Effigy Vessels in Polychrome

Into this same horizon, through resemblances in form, subject matter, and treatment to plumbate, can be brought effigy vessels from Nicaragua, with the head of the animal or person, modeled in the round, projecting from one side of the vessel in contrast to the limbs and minor details which are ren-



1.14. Vessels with central perforation: *a.* of alabaster, said to have come from Mitla, Oaxaca (Peabody Museum, Harvard University); *b.* pottery vessel, Chipal, Alta Verapaz, of Period III (after Butler 1940); *c.* fine orange ware, Utatlan, El Quiche (after Lothrop 1936); *d.* Cerro Montoso ware, Isla de Sacrificios, Veracruz (after Joyce 1914).

dered in low relief. Lothrop (1926:116) has drawn attention to the direct relation to plumbate of this group. The relationship also extends to fine orange ware since at Chichen Itza tall vases of that ware sometimes carry a figure on one side with head in the round, body in low relief, and accessories sometimes incised.

Tecali and Marble Vases

Relief decoration of a kind very similar to that of plumbate, fine orange, and effigy vessels of Nicoya polychrome occurs on vases of tecali (onyx or alabaster) from southern Mexico, particularly from Isla de Sacrificios, opposite Veracruz city, and from Oaxaca. To heighten the similarity, these vases generally stand on an expanding annular base or a tripod support. The unearthing of two tecali vases together with plumbate vessels near Teotihuacan Batres, 1906, Pl. 10) confirms that the two types were coeval. Furthermore, this placement of decorated tecali vessels is substantiated by the discovery of one in the cavern of the High Priest's Grave, Chichen Itza (in indirect association with a vase of fine orange ware on an expanding annular base) under conditions which left no doubt that it was assignable to the Mexican period at that city (E. H. Thompson 1938:61–62, Fig. 24).

Again tecali is linked to fine orange ware by another and much rarer form. In the Peabody Museum, Harvard University, is a tecali vessel with an artificial hole through the center, which is said

to have been found in Mitla. An incomplete vessel of the same unusual form, but in fine orange ware, in the same institution is from Utatlan. A third, in the British Museum, from Isla de Sacrificios is of Cerro Montoso ware, while a fourth, in University Museum, Philadelphia, of red ware, is from Chipal and falls in Period III, the plumbate horizon, which here, too, includes fine orange ware and tecali vessels. The four are brought together in Figure 1.14. Alta Verapaz thus serves to link these three traits.

Tecali vessels without relief are associated with copper at Los Tuxtlas (Valenzuela 1938, Fig. 41), and in Tomb 7, Monte Alban of the Mixtec (Monte Alban V) horizon (Caso 1932, Fig. 34), while the tecali vase with simple decorations from the High Priest's Grave, Chichen Itza, was indirectly associated with copper bells.

In the Uloa Valley and adjacent parts of Honduras are found marble vases, strongly reminiscent of those of the Isla de Sacrificios types, since they are usually cylindrical, and, like those of Isla de Sacrificios, are supported by either an expanding annular base or three feet. On the other hand, the pear shape, so typical of the Sacrificios examples, does not occur in the Uloa area. Whereas, the Sacrificios effigy vases of tecali have a head or body in relief on opposite sides, which might function as handles. The globular form with constricted neck, standing on three solid legs, small and of a truncated cone shape, is found in both areas, and at Los Tuxtlas one held copper bells (Valenzuela 1938). Also com-

mon to both areas are the perforations of walls with simple designs, a feature extremely rare in pottery.

Of particular interest is the strong Totonac feel of the low relief decoration on these vessels in the treatment of volutes and spirals in complex groupings, and the portrayal of faces largely by means of volutes (Fig. 1.15). This whole trend is so alien to art styles of western Honduras, that, taken in conjunction with resemblances in material and form, it surely points to a south Mexican inspiration for the marble vessels.

Pieces of Uloa marble vases are reported as surface finds at Uaxactun (Smith 1936, Pl. 12, Fig. 4) and San Jose (Thompson 1939:167), and thereby these beautiful pieces are placeable in a post-Old Empire horizon or at the very close of the Old Empire.

In the Bay Islands, W. Duncan Strong (1935:93, 143) found pottery imitations of Uloa marble vessels in a deposit which included Polychrome I sherds, a fragment of plumbate, and a small piece of copper. The deposit had every appearance of being of one period, no Polychrome II pottery being encountered. Actually a form common in Polychrome I is very close to that commonest in Uloa marble.

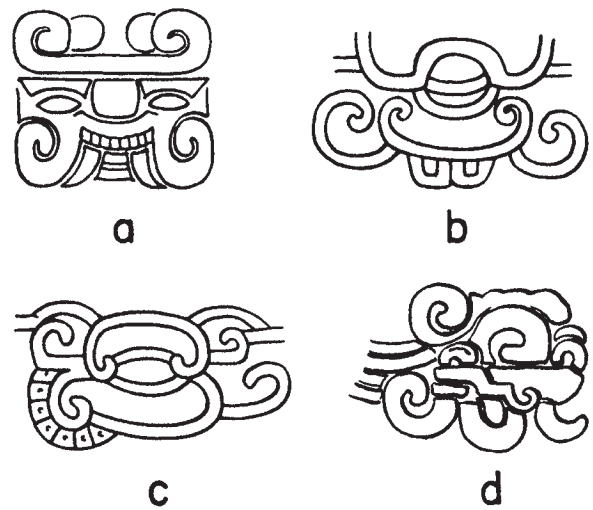
The evidence is strong that tecali effigy vases and Uloa marble vases are closely related. Both must have flourished on a post-Old Empire horizon, that of the Mexican period at Chichen Itza, because of associations with plumbate and copper.

Monkey Effigy Vessels

Evidence has been introduced to show that plumbate, fine orange, Nicoya polychrome, and tecali vases from southern Mexico fall in the A.D. 1100-1450 horizon. In all four cases decoration frequently takes the form of the heads of animals or persons in full relief projecting from the walls of the vessel, arms, legs, and tail being shown in lower relief or forming the legs of the vessel. Sometimes minor details are incised.

In Old Empire art such treatment is extremely rare. The writer knows of but one example, a very unusual vessel from Noh Mul which, because of the associated finds must be placed on the basal-flanged-bowl horizon (Gann and Gann 1939, Pl. 8). In this case there is a pair of heads in contrast to the single head of the plumbate-tecali style.

This style of decoration is also unrepresented in pre-Mazapan deposits in the Valley of Mexico and at Teotihuacan, and has not been reported from the tombs of Kaminaljuyu, but it occurs on the late phase of Alta Verapaz II (Butler 1940, Pl. 6g) and on Mixtec polychrome vessels of late form. Except on incensarios and the lids of vessels, effigy figures are uncommon in Maya art of the Old Empire.

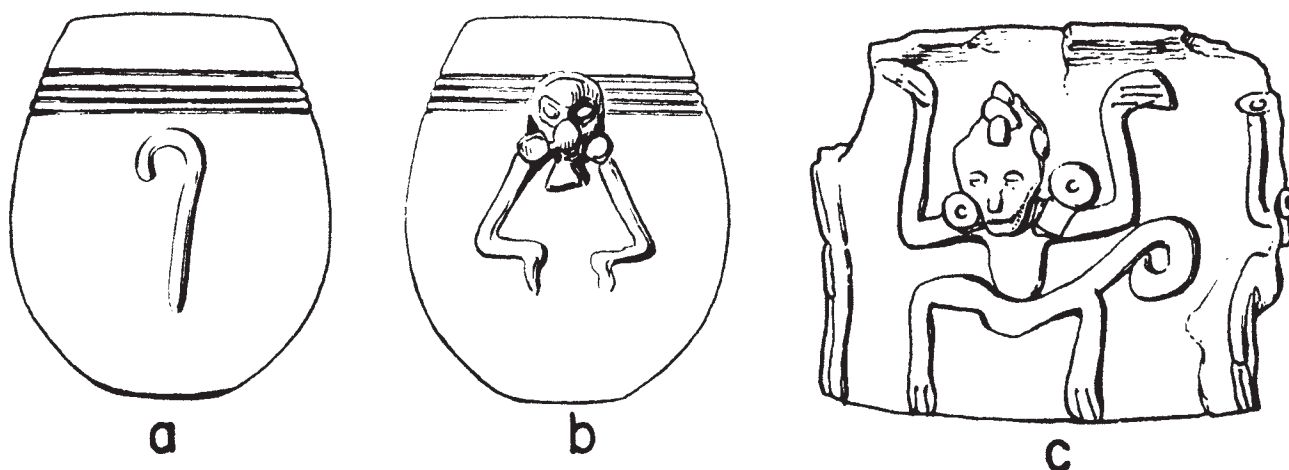


1.15. Volute and scrollwork: *a.* from marble vase, Uloa Valley, Honduras (after Stone 1937); *b, c.* elements in sculpture at Tajin, Veracruz (after E. S. Spinden 1933); *c.* head of snake, slightly weathered, at base of Stela 6, Izapa, Chiapas.

The spider monkey in profile with prominent tail curled at the end is not a decorative motif of Maya pottery of the basal-flanged-bowl horizon. The only example known to the writer occurs on a somewhat atypical squat tripod vessel of black ware in the same chamber that contained the unusual effigy vessel mentioned in the preceding paragraph (Gann and Gann 1939, Pl. 7, no. 3).

Monkeys painted in profile with prominent tail are not uncommon on polychrome pottery of the Piedras Negras equivalent of Holmul V. A very typical example in punctate black ware comes from a tomb of the same period at Mountain Cow (Thompson 1931, Pl. 48), whereas others are shown on vessels of the Tepeu phase at Uaxactun (A. L. Smith 1932, Pl. 3; Thompson 1939, Fig. 2a) and on sherds of the same general horizon from Pusilha (Joyce 1929, Pl. 45).

In western Honduras monkeys are frequently depicted on Yojoa polychrome of Bold Animalistic types. Frequently the head is in relief on the side of the vessel; the body with prominent tail painted on the surface (Yde 1938, Figs. 46, 49, 51, 53). The same general type occurs also in the Uloa Valley (Gordon 1898, Pls. 1, 3), in El Salvador (Spinden 1915, Fig. 68), and on Nicoya polychrome (Lothrop 1926, Pl. 69). But in these areas, the view is not always in profile. Profiles with prominent tail decorate flat pottery stamps of this same period in the Uloa Valley (Gordon 1898, Pl. 11) and flat stamps of the Aztec period. A cylindrical stamp from near Lubaantun, British



1.16. Effigy monkey vessels: *a.* vessel of dark brown ware, south Guatemala (Pullin Collection); *b.* unslipped ware, El Baul, Guatemala.

Honduras, now in Field Museum of Natural History, also carries a spider monkey in profile with prominent tail. This must be a late piece, since engraved cylindrical seals are post-Old Empire. Gann (1918, Figs. 51, 52) illustrates a vessel with annular base of post-Old Empire form on which are depicted two monkeys in profile with prominent tails. Blom and LaFarge (1926:226–233) found in the upper of two burial vaults at Yoxiha, Chiapas, vessels with incised monkeys in profile. There can be little doubt that this burial is assignable to the local equivalent of San Jose IV. E. H. Thompson, in an undated publication, illustrates a vase from Yucatan which is highly reminiscent of Nicoya effigy polychrome. The monkey's head, in full relief, is twisted to one side. Arms rest on knees, both being in relief, while the tail is depicted in low relief on the opposite side of the vessel. The general appearance of this vessel can leave little doubt that it belongs to the Plumbate-Nicoya Effigy-Fine Orange-Tecali horizon.

Monkeys are not uncommonly depicted in relief on the sides of tecali vases, but the tail is swung over the head and grasped by the monkey's upraised paws. One such effigy vessel of tecali is datable since it was found with plumbate vessels near Teotihuacan (Batres 1906, Pl. 10; see also Joyce, 1916).

Although it would be rash to draw the conclusion that the monkey motif is confined to a time subsequent to the basal-flanged bowl horizon, yet there can be no doubt that the spider monkey was an immensely popular subject in the Holmul V and plumbate-Nicoya-effigy polychrome horizons. The latter, however, was that in which relief figures on the sides of vessels were also most common. When, therefore, we find in the Escuintla region vessels

with monkey figures in relief we have good reason to assume, in the absence of contrary evidence, that they are assignable to the Pipil occupation (approximately A.D. 1100–1500), and probably to the first part of this.

As already noted, the grave opened by Gann at Patulul contained monkey effigy vessels as well as a yoke and flat stone head. The monkey effigy vessels, therefore, contribute slightly to the assignment of these associated artifacts to the Pipil occupation.

Chacmool Sculptures

The well-known statues of figures reclining uncomfortably on their backs with trunks slightly raised occur in considerable numbers at Chichen Itza. They can be assigned to the Mexican period because there is hardly a building in that distinctive style without its chacmool (as these statues are called), and because the features and certain insignia definitely link them with that phase. The chacmool concept must have been in vogue in El Salvador at the same time since one at Chalchuapa, El Salvador (Weber 1922, Fig. 39), displays a pectoral identical with those on some chacmoos at Chichen Itza, and which is worn on countless sculptures of the Mexico period but never found on figures of the pre-Mexican horizon.

Colossal Stone Heads

Colossal stone heads have been reported from southern Veracruz, the Pacific slope of the Guatemalan highlands, and from El Salvador. Those from southern Veracruz fall into the Olmec art style, which, as has been noted, certainly survived until shortly before the arrival of Cortes, and which appears to

have reached its apex at the period of Mexican influence at Chichen Itza.

It is highly probable that a class of ovoid stone heads of very much smaller size are related to these colossal heads. One, from Tenaspi Island near San Andres Tuxtla (Blom and LaFarge 1926, Fig. 21), has features which place it in the negroid group of Olmec sculpture. A second, now in Field Museum of Natural History (Holmes 1895–1897, Pl. 55) is reputed to have been found under Lake Texcoco, but, like another piece in the same collection and said to have come from the same region (Holmes 1895–1897, Pl. 50), its style is definitely not that of the Valley of Mexico, and it must represent an import if its provenience has been correctly given. Others may be represented in the Strebel collections (e.g. Strebel, 1885–1889, pt. 2, Pl. 5, no. 13). This ovoid in Field Museum is of a dark, highly polished diorite, and the face represented is that of Tlaloc, although there are no rings around the eyes. As in the case of the colossal head of Tres Zapotes, there is an encircling band at the level of the temples: Since Tlaloc figures are unreported prior to Teotihuacan; this diorite piece presumably can not possess great antiquity, a conclusion perhaps reinforced by the advanced techniques employed in its fashioning. If one can justifiably connect the colossal stone heads with these smaller heads, it follows that great antiquity can not be positively claimed for them either.

Of the colossal heads of Escuintla, that of El Baul is best known. This, however, has a Xiuhcoatl

headdress (Fig. 1.9b) somewhat resembling one from this area of recognizably late date (Fig. 1.9a). Furthermore this head bears such a strong resemblance to a type of portrait found on plumbate vessels that one is led to believe that both were executed in the same art period (Fig. 1.17). The occurrence of colossal heads in the department of Ahuachapan, a center of Mexican influence and in the heart of Pipil territory, is additional, although rather weak evidence, for placing this unusual type of sculpture on the Pipil horizon.

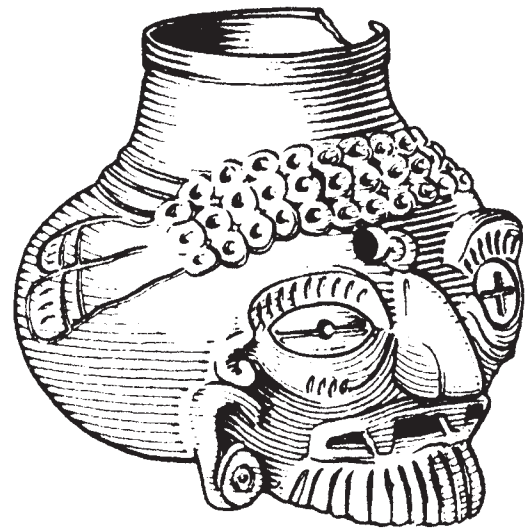
In brief, inconclusive evidence tends to place the colossal stone heads of the Olmec region about A.D. 1100–1450. Slightly stronger evidence supports the assignment of those of the Pacific slope of Guatemala and El Salvador to the Pipil horizon. This unusual concept obviously did not originate independently in the three areas and therefore must have prevailed in all three at the same time, presumably that of Pipil domination, since they occur at Pipil sites.

Deities Falling from the Sky

As already noted, the concept of deities falling from a sun disk, from the sky, or from a celestial monster is absent from Old Empire sculpture with the possible exception of scenes on two or three stelae at Menche (Yaxchilan). It appears suddenly at Chichen Itza in the Mexican period, becoming an extremely common motif. Diving gods are also depicted on late buildings at Tulum, Coba, and elsewhere in this area. Apparently it is unknown in Teotihuacan II–III

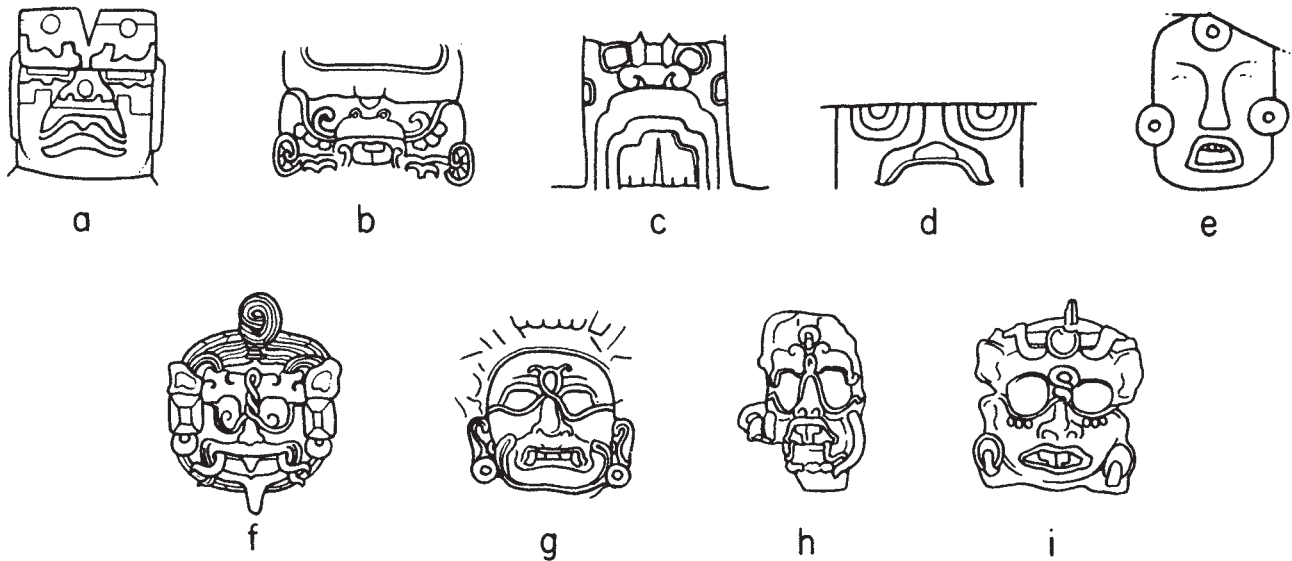


a



b

1.17. Aquiline noses and beards: a. Monument 3, El Baul, Escuintla; b. vessel of plumbate ware (after Seler 1902–1923).



1.18. Olmec types in the Maya Old Empire: *a.* typical Olmec jaguar head on axe in the U.S. National Museum; *b.* mask over head of principal personage, Stela F, Quirigua, dated 8.16.10.0.0 (after Maudslay 1899–1902); *c.* mask over crossed legs of human on Zoomorph P, Quirigua, dated 9.18.5.0.0 (after Maudslay 1899–1902); *d.* conventionalized jaguar face on planetary band forming frame of stucco figure, Temple of Inscriptions, Palenque, dated 9.13.0.0.0 or later (after Maudslay 1899–1902); *e.* head on belt of principal personage, Stela 14, Naranjo, dated 9.18.0.0.0 (after Maler 1903); *f.* mask on shield, Temple of the Sun, Palenque (after Maudslay 1899–1902); *g.* head on incense burner, El Salvador (after Lehmann 1921); *h.* pottery head, Panzamal, Alta Verapaz (after Seler 1901); *i.* head on incense burner, Nebaj, El Quiché (after Joyce 1914).

but is found in Aztec sculpture and in codices of both Aztec and south Mexican origin in use at the time of the Spanish conquest. It is common on Zapotec stelae of uncertain date, and on the later frescoes at Mitla of the Monte Alban Y (Mixtec) period, and is found in a modified form at Tajin (E. S. Spinden 1933, Fig. 6). It is therefore clear that this concept spread into the Maya area at the time of Mexican influence and, if not evolved at about that time, certainly reached it greatest florescence in the four centuries prior to the Spanish conquest. A diving figure on a flat stone head (Munich 1911, Fig. 24) of Totonac style perhaps serves to link these traits.

The Volador Ceremony and Birdmen

There are grounds for believing that the volador ceremony originated in eastern Mexico, and may not have reached the Aztec until after the conquest, for had this striking spectacle been witnessed in the first half of the sixteenth century in the Valley of Mexico, early chroniclers such as Motolinia and Sahagun hardly could have failed to mention it (Krickeberg 1933:71–75). It was, however, performed in the Pipil settlements of Guatemala, as well as in the Guatemala highlands, and among the Mexican-speaking Nicaraos, first cousins of the former. The volador ceremony is depicted in the

Porfirio Diaz and Fernandez Leal codices, believed to be of Cuicatec origin and certainly of late date, as they contain glyphs of Aztec type. It has not been reported from Yucatan.

To the south of Veracruz, particularly in the Papaloapam-Tuxtla region, pottery figurines fashioned as birds or as men dressed as birds are extremely common. Ellen Spinden (1932:269) has called attention to the similarity of stone birdmen from the High Priest's Grave at Chichen Itza to pottery figurines of this type from southern Veracruz. If this similarity connotes contemporaneity, as Mrs. Spinden suggests, seemingly with complete justification, the pottery figurines must, like the stone figures, fall in the period of Mexican influence at Chichen Itza. In any case the best examples can hardly be very much earlier because they are mold-made. The resemblance of some of the more bird-like figurines from southern Veracruz to certain palms (cf. Batres 1908, Pls. 11 and 56 with Strebel 1885–1889[1], Pl. 15, nos. 2 and 6) serves to confirm this dating, since the latter are in Tajin style; which in turn falls about A.D. 1100–1450; as Mrs. Spinden has shown. It is perhaps possible that the Tuxtla statuette and, birdmen statues from Nicaragua also represent participants in the volador ceremony, for it is reported that in Nicaragua some of the performers in this ceremony wore bird masks

(Oviedo y Valdes 1851–1855, Bk. 42, Ch. 11), and the flyers depicted in Codex Fernandez, Leal wear bird headdresses. Furthermore, Torquemada (1723, Bk. 10; Ch. 38) states that the flyers were dressed as birds and descended with outspread wings. Some of the pottery figurines show men with outstretched arms and surely represent participants in the volador ceremony (Fig. 1.10e; Butler 1935:648, Fig. 2h). Several of these figures have a hole in one hand. Could they have been to hold a rope?

Phallic Cults

In reading Garcia de Palacio's account of the Pipil, one is struck by the statement (1860:76) that there was a ceremony of cohabitation at the time the crops were sown. This is quite contrary to the general custom of the inhabitants of the Mexican plateau and of the Maya; among whom continence was generally the prelude to important ceremonies and, among the latter, is still especially emphasized in connection with the preparation of the land for sowing (Ximenez 1929–1931, Bk. 1, Ch. 31; Sapper 1897:281; Thompson 1930:49; Wisdom 1940:441).

Maya Old Empire art and that of central Mexico is remarkably free of eroticism. Indeed, the genital organs are displayed only when animals are represented. In Veracruz and adjacent areas, however, such is not the case. A number of figurines from that region are definitely erotic (Lombardo Toledano 1931, Figs. 52–54; others in the Mexican National Museum; Batres 1908, Pl. 48), and many stone phalli and one of gold were found at Yahualica, Hidalgo, which according to Nicolas Leon, is former Totonacan territory (Genin 1900:32, 38; Leon 1903). The representation in gold and the occasional exhibition of genitals on "Totonac" onyx vases show that this cult was flourishing after the eleventh century.

Phallic emblems are found in a temple at Chichen Itza, which architecturally is of the pre-Mexican period, but these might have been added at a later date, for an occupation of this building during the Mexican period is proved by potsherds and by the fact that it later served as the nucleus of a group of buildings of that period (Vaillant 1933). A nearby temple at Chichen Itza, that of the Little Heads, is, however, definitely of the Mexican period. The two Atlantean figures which helped support the roof have their loincloths drawn to one side deliberately to expose the genitals (Vaillant 1933:26). There is also evidence in literature to support this introduction of phallicism during the Mexican period at Chichen Itza, for of the Itza, the immigrants responsible for the introduction of Mexican features at Chichen Itza, we read in the Chilam Balam of Chumayel, "They brought shameful things when they lost their inno-

cence in carnal sins; they lost their innocence in the carnal sin of Nacxit Xuchit, in the carnal sins of his companions" (Roys 1933:83). Nacxit is Quetzalcoatl, legendary Itza leader. Although famed for his continence, it is related that he was guilty of certain unnatural practices.

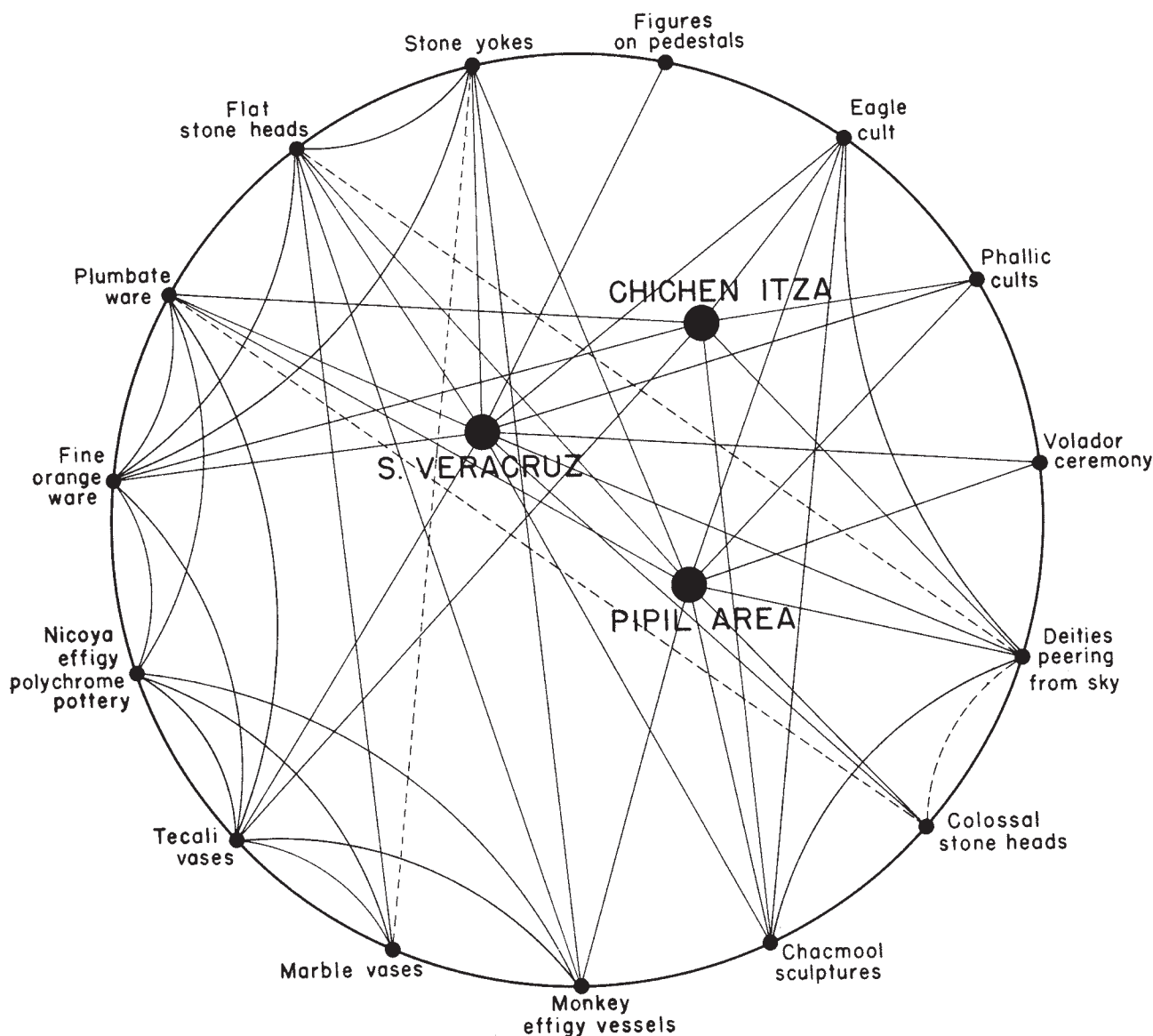
Stone phalli also exist at Uxmal, and a series of related sculptures mainly phallic and principally from Telantunich are discussed in a recent paper (Andrews 1939). These last are assignable, to a late period on the somewhat dubious evidence of the glyphs on one sculpture being late, and because of their relationship to erotic figurines of indubitably late date from Santa Rita, British Honduras (Gann 1918:60–62, Pl. 9, Figs. 15, 17). Attention might be called to the extremely important point that there exists a quite marked resemblance between some of the heads on these sculptures at Telantunich and typical Olmec sculpture (Andrews 1939, Pl. 1e, 2a,b).

The evidence indicates that phallicism was most strongly developed in Veracruz, was perhaps carried to Yucatan by the Itza during the Mexican period (A.D. 1100–1450) when they were dominant, and was a feature of Pipil culture on the Pacific slope.

The Eagle Cult

A common design in codices from Mexico is that of an eagle holding in its claw a conventionalized heart. Sometimes a jaguar or puma replaces the eagle. Eagle was one of the names for the sun (Sahagun 1938, Bk. 6, Ch. 37), the temple of the sun was called the home of the eagle, and eagle gourd was the name given the stone vessels in which the hearts and blood, offered to the sun, of sacrificial victims were deposited. A legend recounts that the eagle, by jumping first into the fire, had become the sun. The warrior orders of Eagles and jaguars the members of which donned the skins of that bird and animal, were intimately linked with the sun both because their object was to procure sacrificial victims for the sun's nourishment and because after death in battle they accompanied the sun from his rising to the zenith.

Eagles, jaguars, and an unidentified animal are constantly depicted on sculptures of the Mexican period at Chichen Itza. In their claws they hold hearts (Morris, Chariot, and Morris 1931, Figs. 24–28; Spinden 1913, Pl. 29), but this motif is quite unknown in Old Empire art. It occurs in sculptures at Tajin, placed by Mrs. Spinden in the same period as the Mexican domination of Chichen Itza, and in codices in use at the time of the Spanish conquest (Fig. 1.8). There is, therefore, little doubt that this concept spread to the fringes of the Maya area about



1.19. Interrelationship of traits: broken lines represent connections tenuously established.

A.D. 1200. It occurs at Santa Lucia Cozumahualpa (Fig. 1.8a).

Figures on Pedestals

The distribution in time and space of statues on high pedestals or columns is of some importance, since it has been suggested that they are of Chorotegan origin and the one or two found west of Nicaragua represent an early Chorotegan influence. Actually, there is a fairly wide distribution across Chiapas and up the east coast of Mexico. Unfortunately none are at present datable, but their occurrence in these areas makes it more probable that they were erected during the period of expan-

sion from southern Mexico into the Pacific lands of Central America. If a bone figure described by Caso (1934) can be related to the group by the short pedestal on which it stands, one could equate this style to that of the bone figure, which is the great period of Maya Old Empire art, but this is a very weak link. The interrelationship of these traits is brought out in Figure 1.19.

SUMMARY AND CONCLUSIONS

Certain hieroglyphic inscriptions in southern Veracruz and the Department of Escuintla, Guatemala, form a group which the writer believes to be neither

Maya, Zapotec, nor Aztec. They are characterized by the use of series of bars and dots, without accompanying glyphs, which lie between hieroglyphs with numerical coefficients. These last are almost certainly day signs. The Initial Series introducing glyph is absent, and positions in the 365-day year are not recorded. The glyph less bars and dots do not appear to represent Initial Series of the Maya type counted from a fixed starting point, such as the Maya 4 Ahau 8 Cumhu, but rather would seem to approach closer to the Maya Secondary Series, since there are reasons to believe that they serve to connect the day sign at the head of the inscription with that at the bottom. The actual calculations may have resembled those of the Cakchiquel Long Count in being made in years of 400 days and their multiples. The accompanying glyphs are Zapotecoid in the case of the southern Veracruz inscriptions; the south Mexican type, here called Laud, in the one inscription of this class reported from Escuintla. Both types of glyphs, however, occur together in the same text elsewhere in Mexico. Since the Olmec inhabited the part of southern Veracruz in question and are credited with related art, this hieroglyphic style can be tentatively designated as Olmec.

There is good, but not irrefutable, evidence that all the texts of this type, including that of the Tuxtla statuette, date from the period A.D. 1100–1450. It is probable that this method of recording was extended to the Department of Escuintla at the time of the Pipil migration, which was placed on the same time level by tradition and stylistic evidence, and which was said to have been initiated because of Olmec pressure.

The chronological position of fifteen traits has been discussed, and it has been shown with varying degrees of probability that these were flourishing from the twelfth to the fifteenth centuries of our era. The conclusion follows that therefore most of them were probably disseminated at about that time eastward and northeastward from southern Mexico. Many reappear at Chichen Itza, where it is known that influences from southern Mexico were particularly strong from about A.D. 1200 to A.D. 1450, when the city was dominated by the Itza, foreigners believed to have come from Mexico under the legendary leadership of Quetzalcoatl.

Others are reported from the Pacific slopes of the highlands of Guatemala, El Salvador, and Nicaragua, which were settled by the Pipil and allied peoples about A.D. 1100–1200.

It is not contended that all these elements spread at the same time, still less that all were carried by these two migrations. Some, particularly those of a religious or social nature, may have been carried by

the emigrants, but others may have spread through commercial contacts along well-marked trading and political routes, particularly in view of the identity of interests between the mother lands and the emigrants. Some traits, such as plumbate pottery, may have spread counter to the main northeast and east currents. Although most of the traits under discussion are well represented in the center of radiation, from southern Veracruz across the highlands of Chiapas, it is not suggested that all originated there or migrated thence. Neither is it contended that none evolved in a period prior to that in which they appear to have diffused to the peripheries of the Maya area. On the contrary, there is some evidence that elements from central and southern Veracruz reached Teotihuacan before they spread in the opposite direction. Others, notably marble vessels, may have appeared on the fringes of the Maya area before the Pipil migrations.

Those traits which are common to the Pacific coastal area and to Chichen Itza are with the exception of phallicism found also in central Mexico. These are: fine orange ware, plumbate ware, tecali or marble vessels, diving gods, chacmools, the eagle cult, and figures on relief on vessels (Group A). Yokes, flat stone heads, colossal heads, figures on columns, and the volador ceremony (Group B) are absent in Yucatan and absent or very rare in central Mexico, but are features of the Pacific coast and southern Veracruz.

One explanation of these anomalies would be that each of these groups of traits represents a separate period of expansion, one, a more widespread flocculation, penetrating to Yucatan and to the Pacific coastal area; the other, only to the latter region.

An alternative, and perhaps more logical, explanation would be that the two waves were approximately coeval, but that since the starting points of the migrations or trade routes which carried these traits were 150–200 km. apart (one perhaps near the mouth of the Coatzacoalcos River; the other in south-central Chiapas), influences which reached the one center of diffusion might not have reached the other. Yokes, flat stone heads, and figures on columns seem to have had a wide distribution across Chiapas, and might have been carried by migrants from that area, whereas those who proceeded to Chichen Itza, possibly following a well established commercial route, departed from an area where traits of Group B were absent or no longer strong, perhaps submerged as a result of the break-up of the Toltec hegemony and the resulting migrations. The tradition preserved by Torquemada suggests that the Pipil exodus from south-central Chiapas was in fact an indirect result of the disintegration of that empire, since it is said to

have been caused by pressure from the Olmec, but they in turn had been driven south by the Tolteca-Chichimeca. Thus such influences from central Mexico as were carried by the Pipil had first filtered through an intervening people.

On the other hand the Mexican period at Chichen Itza witnessed the introduction of certain features, such as serpent columns, Atlantean figures, and friezes of prowling jaguars, which are found elsewhere only in central Mexico. The implication is that these influences come indirectly from central Mexico, and probably were spread to southern Veracruz by the Nonoualca-Chichimeca. Moreover the Chilam Balam of Mani mentions the house Nonoual and Tulapan as the starting point of the migration, and this accords with Toltec tradition. Furthermore, the Quetzalcoatl cult, seemingly strongest among the Nonoualca-Chichimeca, gained considerable hold at Chichen Itza, whereas it was rather weak among the Pipil. The rival cult of Tezcatlipoca spread neither to Yucatan nor to the Pacific coast. It is not suggested that the Nonoualca-Chichimeca actually reached Chichen Itza, but rather that the Itza had been profoundly affected in their original home by that or some other group which had migrated southeastward as a result of the break-up of the Toltec regime, and in turn had carried to Yucatan traits they had adopted as a result of that contact.

The evidence that the two groups of traits were approximately contemporaneous is indirect and inconclusive, perhaps because of the little excavation in Pipil territory. In this connection it is worthy of note that elements of both groups tend to be found at the same sites on the Pacific slope. Thus yokes and flat stone heads appear to be plentiful in the Santa Lucia Cozumahualpa-El Baul area, where are found not only colossal stone heads but also manifestations of the second group such as the eagle cult and diving gods. Suchitoto and Campana San Andres, El Salvador, yield each a flat stone head and a yoke, and plumbate vessels are particularly numerous in that area (Lothrop 1927a:205). Chalchuapa, where no intensive excavation has been attempted, yields a chacmool and a phallic sculpture.

Salama, also an unexcavated area and, furthermore, a Pipil settlement, has produced a yoke, a statue on a pedestal, and a figurine representing the Mexican deity Eecatl. Such associations may be haphazard, but they do suggest that the traits with which we are dealing largely belong together.

Furthermore, a little stylistic evidence has been produced linking the colossal head of El Baul with sculptures which in turn are closely associated with Group A, and the designs on yokes from Totonac ter-

ritory are so close to Papantla art of A.D. 1200-1450 and to designs on fine orange ware, similarly dated, that there can be little doubt this trait was flourishing in Totonacapan at the time traits of Group A were being diffused.

It seems not improbable that there was a time lag in the case of certain elements of Group B. These may have diffused across Chiapas at an earlier period and then, mixed with what were perhaps more recent elements of Group A, been carried together to the coast of Guatemala.

One is wary of the term complex, now in little repute, because it implies a close interrelationship of all its elements, and, by extension, the components of an archaeological complex should be strictly contemporaneous. Here, however, we appear to be dealing with a loose mass of traits, perhaps not all in use at precisely the same time and in most cases only accidentally related. The term flocculation appears preferable with its implication that in some cases traits cohere, in others they form loose groupings, and may even have been detached from their original functional complex and reattached by historical accident to another group.

It is useless to suppose that the whole history of such flocculations will ever be known, although future research should do much to rectify or refine what is here outlined, in part as a suggested basis for future research and in part as a plea to combine archaeological findings with the immense stores of almost untouched ethnological data preserved for us by the writers of the sixteenth and subsequent centuries. If the main thesis stands, we shall have the framework of a general and rather late knitting-together of Middle American horizons, comparable to that earlier one which embraces Teotihuacan II-III, Monte Alban III, the Peten basal-flanged-bowl phase, and the Esperanza phase at Kaminaljuyu.

Although doubts are expressed in previous paragraphs that the whole thesis is proved to the hilt, yet enough evidence, historical, archaeological, and ethnological, has been amassed to show a definite flow of concepts and objects of material culture in the concluding centuries of indigenous culture.

Evidence has also been adduced tending to show that the Olmec system of recording dates, as on the Tuxtla statuette, was in vogue on this same general time level, and that this system made its appearance on the same horizon at El Baul, a region known to have been settled then by Mexican-speaking immigrants, who by tradition moved from their homes because of Olmec pressure. This calendar and style of glyphs presumably failed to establish themselves strongly at Chichen Itza because the Maya calendar was already firmly entrenched, although

Zapotecoid glyphs occur there principally as names of the conquerors.

Data now in hand can best be interpreted by placing this Olmec type of inscription in the period which was marked by the distribution of plumbate, fine orange, effigy vessels, tecali vases, yokes, and flat stone heads, and in all probability most if not all of the remaining traits discussed, and by accepting the thesis that this method of recording dates was carried from central and southern Chiapas to the Pacific coast of Guatemala by Pipil immigrants about A.M. 1100–1200. The thesis here propounded, if proved to be correct, would perhaps fit best a correlation placing the Spanish conquest of Yucatan somewhere around 11.3.0.0.0 rather than 11.16.0.0.0.

Finally, it must be emphasized that should the second part of this essay eventually be found to be hardly worth the paper on which it is printed, that would in no way affect the argument advanced in the first part. Had this paper appeared in any series other than that of "Theoretical Approaches to Problems," only the first section would have been submitted for publication. It is printed in full in view of the special license afforded by this series to place substantial mattresses under limbs before perching on them. It is intended that within a few years, with further research completed, this paper shall be reissued in amended form, or, it will be supplemented by a second paper incorporating further data, or, if necessary, it may be withdrawn with reasons given for the collapse of the ideas embodied in it.

APPENDIX 1

DISTRIBUTION OF TRAITS

The value of the distribution table given below can be questioned, for its authority varies with the intensity of excavation or exploration in the areas discussed, and even more so with the local development of stone sculpture. Thus, the absence of marble or tecali vases from the Chiapas and Escuintla areas may well be due to the lack of exploration in those regions. On the other hand, the absence of flat stone heads and yokes from Peten and Yucatan is significant, since excavations would have brought examples to light had they been present. Similarly, as such features as the eagle cult and deities peering from the sky are usually represented on stone or paper, the poor development of stone sculpture in Honduras and El Salvador may account for their not appearing in those sections of the distribution table.

Similarly the amount of ethnological data varies from region to region, and this should not be forgotten in noting distributions of the volador ceremony and phallic cults. The reader, therefore, should bear in mind that the absence or great rarity of a trait in areas of intensive excavation and exploration is significant, whereas several recordings of a trait in an area of little exploration suggests that it is well distributed there. It should also be remembered that geographical divisions are intentionally kept to a minimum, otherwise areas, such as La Mixteca, should certainly stand alone.

No attempt has been made to list all examples of a widely distributed trait in areas where it is known to be well represented, but where not more than two entries occur under a trait heading, no more are known to the writer.

VALLEY OF MEXICO AND ADJACENT TERRITORY	
<i>(Region of intensive excavations and exploration)</i>	
<i>Yokes</i>	
Teotihuacan	Sculptured fragment (Lehmann 1910:737)
Valley of Mexico	Museum of the American Indian, Heye Foundation has two labeled as from the Valley of Mexico, but this provenience must be accepted with reserve
<i>Flat Stone Heads</i>	
Teotihuacan	Plancarte y Navarrete (1911:129); also reproduced in Lehmann (1921, Pl. 28)
<i>Plumbate Ware</i>	
Teotihuacan	Batres (1906); Vaillant writes that he is almost certain these came from a Mazapan grave Vaillant (1937:319, 321) remarks that plumbate is found on the Mazapan horizon. It appears to be absent at Tenayuca
<i>Fine Orange Ware</i>	
	Under discussion are tall vases on bell-shaped or tripod supports, tripod bowls with flat bottoms, and vessels with incised black or white slip. There are some grounds for believing that fine orange carved with elaborate scenes antedates the above forms. Vaillant (1937:319) states that fine orange ware occurs on the Mazapan horizon, but gives no information as to forms
<i>Tecali or Marble Vessels</i>	
Teotihuacan	Batres (1906, Pl. 10); these almost certainly from same grave as the plumbate vessels
<i>Deities Peering from Sky</i>	
Colhuacan	Nuttall (1928, Fig. 15b)
Mexico City	Nuttall (1928, Fig. 19)
<i>Eagle Cult</i>	
Valley of Mexico	Sahagun and other early writers

VALLEY OF MEXICO AND ADJACENT TERRITORY—*continued*

Volador Ceremony

Practiced in post-Columbian period, but some doubt that it existed here in pre-Columbian times. Not mentioned by Sahagun, Duran, or other early writers, but witnessed in Mexico City by Torquemada

Chacmool Statues

Tacubaya	Seler (1902–1923, 2: 818)
Valley of Mexico	Tozzer (1927, Fig. 4)
Tula, Hidalgo	Information of H.E.D. Pollock

Colossal Stone Heads

None known to writer

Phallic Cults

None known to writer. Possibly associated with worship of the alien Tlazolteotl

CENTRAL OAXACA

(Intensive excavations only in Oaxaca Valley)

Yokes

None known to writer. Señor Jorge Acosta informs me that none has been found in the course of eleven years of excavation at Monte Alban

Flat Stone Heads

Oaxaca	Seler (1902–1923, 5:553–54) illustrates various said to come from Monte Alban, Xoxo, and Mitla, but Señor Jorge Acosta informs me that none has been found in the excavations at Monte Alban; Thord-Gray (1923, Fig. 34)
La Mixteca, Oaxaca	Fragment. Information of Señor Jorge Acosta

Plumbate Ware

La Mixteca, Oaxaca	Caso (1938:54. Seler 1902–1923:5, Pl. 81)
Etla, Oaxaca	Seler (1902–23:5, Fig. 237)
Oaxaca	Noguera (1930, Fig. 36d?)

Fine Orange Ware

Oaxaca Valley	End of Monte Alban IV or beginning of V; Vaillant (1941b)
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Tecali or Marble Vessels

Monte Alban, Oaxaca	Monte Alban V; Caso (1932, Fig. 34).
Xoxo, Oaxaca	Saville (1900)
Mitla, Oaxaca	Example in Peabody Museum, Harvard University (Fig. 1.14d)

CENTRAL OAXACA—*continued**Deities Peering from Sky*

Monte Alban, Oaxaca	Common on Zapotec stelae; see Caso (1928)
Mitla, Oaxaca	Mixtec (Monte Alban V) period; Seler (1904a, Pl. 37)
Codices	Nuttall and other codices of this group reveal many scenes of this type
Xoxo, Oaxaca	Diving god; Seler (1902–1923, 2: 325)

Eagle Cult

Codex Porfirio Diaz and other codices, such as Borgia, Selden. Laud perhaps more referable to other parts of southern Mexico

Volador Ceremony

Cuicateca	Represented in Codices Porfirio Diaz and Fernandez Leal
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Chacmool Statues

None known to the writer

Colossal Stone Heads

None known to writer

Statues on Pedestal Columns

Jamiltepec, Oaxaca	Peñafiel (1890, Pl. 138)
Santa Cruz Tututepec, Oaxaca	Peñafiel (1890, Pl. 225)

Phallic Cults

Monte Alban	Danzantes of Period I not infrequently have erotic aspect
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CENTRAL GUATEMALAN HIGHLANDS

(Average exploration and excavation)

Yokes

Kaminaljuyu	Fragment in Museo Nacional de Guatemala
Solola	Seler (1902–1923, 3:627); if this refers to the department, not the town of that name, the yoke might fall in the Escuintla area, since Pipil settlements occur in the south of the Department of Solola, which belongs to the coastal slopes rather than to the highlands)
Salama	Museum of the American Indian, Heye Foundation, but this is a Pipil settlement

Flat Heads

Totonicapan	Munich (1913:326)
San Cristobal, Totonicapan	Field Museum Natural History, Chicago
Without proveniences	Two in Ethnographic Museum, Rome; one in Museum of the American Indian, Heye Foundation; one in University Museum Philadelphia (Joyce 1912, Fig. 8). These might be from Escuintla, western or southeastern Guatemala

CENTRAL GUATEMALAN HIGHLANDS—*continued**Plumbate Ware*

Widespread throughout central highlands. Center of manufacture possibly western Guatemala, although Tlaloc type suggests a non-Maya origin, perhaps southeast Chiapas

Fine Orange Ware

Utatlan, El Quiche Two. Lothrop (1936, Figs. 78, 79); but note Maya design)

Chipal, Alta Verapaz Tripod bowl with black painted meander in University Museum, Philadelphia (NA 11434)

Tecali or Marble Vessels

Primitive examples in no way related to the forms under discussion were found in tombs of the Esperanza phase at Kaminaljuyu

Deities Peering from Sky

None known to writer. What may be a diving god is represented on an incensario from Amatitlan in Museum of the American Indian, Heye Foundation

Eagle Cult

None known to writer

Volador Ceremony

Ciudad Vieja Ciudad Real (1872:1: 421)

Various localities Termer (1931:450–456)

Chacmool Statues

None reported from this area

Colossal Stone Heads

None known to writer

Statues on Pedestal Columns

Salama vicinity O. G. Ricketson (1936, Fig. 4); but this is a Pipil settlement)

Guatemala Highlands Richardson (1940, Fig. 36b, c)

Phallic Cults

None, known to writer

TOTONACAPAN AND ADJACENT TERRITORY

(Average exploration and excavation)

Yokes

Central Veracruz Widely distributed; see Ernst (1892); Fewkes (1907); Genie (1928); Seler (1902–1923, 5:410); E. Spinden (1933); Strebel (1890); etc.

Puebla Lombardo Toledano (1931, Figs. 12, 13); E. Spinden (1933, Pl. 14)

Tuxtepec, Oaxaca Plain fragment in Oaxaca Museum

Cuicatlan, Oaxaca Beyer (1924–1927:274)

TOTONACAPAN AND ADJACENT TERRITORY—*continued**Flat Stone Heads*

	In this region flat stone heads appear to merge into palmas and are somewhat rare in central Veracruz
Veracruz	Fewkes (1907, Pl. 121h)
Coatlantan, Veracruz	Strebel (1885–1889:2, Pl. 14)
Papantla, Veracruz	In Diego de Rivera collection. Photograph in possession of F. R. Pleasants
Hueytamalco, Puebla	Lombardo Toledano (1931, Pl. 9)
Yohualichan, Puebla	Lombardo Toledano (1931, Pl. 8)
Jalapazco, Puebla	Seler (1902–1923:5, Pl. 76)

Plumbate Ware

Central Veracruz	Widely distributed; see Joyce (1914, Pl. 18); Strebel (1885–1889, Pl. 29, nos. 14–17, Pl. 30, no. 13)
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Fine Orange Ware

Isla de Sacrificios	Joyce (1914, Pl. 18, no. 10); Vaillant (1927, Fig. 384); Strebel (1885–1889, pt. 2, Pl. 30, no. 18?)
Tlaxcala	Vaillant (1927:120)

Tecali or Marble Vessels

Isla de Sacrificios	Nuttall (1910)
Soncautla, Veracruz	Lehmann (1907)
Jalapa, Veracruz	Lehmann (1907)

Deities Peering from Sky

Tajin, Veracruz	E. S. Spinden (1933, Fig. 6)
Mixteca, Puebla	Saville (1922, Pl. 1)
	A remarkable flat stone head in the Munich Museum carries a diving figure with features perhaps those of a monkey

Eagle Cult

Tajin	E. S. Spinden (1933, Pl. 13a)
Cempoallan, Veracruz	Paso y Troncoso (1892:2:311)

Volador Ceremony

	Totonacapan seems to have been the home of the volador ceremony; see Krickeberg (1933:71–75)
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Chacmool Statues

Cempoallan, Veracruz	Seler (1902–1923, 5:154)
Hacienda Mixco, Tlaxcala	Peñafiel (1890, Pl. 316)

Colossal Stone Heads

	None known to writer
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TOTONACAPAN AND ADJACENT TERRITORY—continued

Statues on Pedestal Columns

Xico Viejo, Veracruz	Fewkes (1907, Pl. 106)
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Phallic Cults

Yahualica, Hidalgo	Genin (1900:32, 38)
Puebla	Lombardo Toledano (1931, Figs. 52–54) illustrates a series of crude phallic figurines from Totonac territory of Puebla and adjacent parts of Veracruz. Others are in the Mexican National Museum
Morelos	Codex Magliabecchi, f. 29

SOUTHERN VERACRUZ AND ADJACENT WEST TABASCO AND NORTH OAXACA

(Little exploration; some excavation)

Yokes

Southern Veracruz	Beyer (1924–1927:272) notes that <i>Yokes</i> appear to be commoner in southern Veracruz than in actual Totonac territory
Santiago Tuxtla, Veracruz	American Museum of Natural History; Paso y Troncoso (1892:1:85); plain
Los Tuxtlas, Veracruz	Batres (1908, Pl. 22)
Paraiso Novillero, Veracruz	Genin (1928)
Tlacotalpan, Veracruz	In school museum; Paso y Troncoso (1892:1:92, nos. 47–52); four sculptured; two plain with closed ends
Tres Zapotes, Veracruz	Stirling (1938)
Juil, Veracruz	Batres (1908, Pl. 5?)
Garrabato, la Hoya de, Veracruz	Beyer (1924–1927)

Flat Stone Heads

Capoapam Island, Coatzacoalcos River, Veracruz	Seler (1902–1923, 5:555)
Matacapam, Veracruz	Valenzuela (1938:14, Figs. 64, 65); Mariscal (1940)
Sotavento coast, Veracruz	Batres (1905, Pl. 13); Paso y Troncoso (1892:1:93, 97, 98, nos. 56 58, 154, 161)
Los Tuxtlas, Veracruz	Paso y Troncoso (1892:1:85, 89)
Tabasco	British Museum; skull; Paso y Troncoso (1892:1:79); skull

Plumbate Ware

Los Tuxtlas, Veracruz	Seler Sachs (1922, Pl. 6, 34). Mr. Karl Ruppert states that among sherds excavated at Los Tuxtlas in 1939 were a few in all probability from plumbate vessels
Mixtan, Oax	Valenzuela (1941)
Playa Vicente, Oax	Valenzuela (1941)

Fine Orange Ware

	None known to writer, but many sherds of untempered (7) fine orange ware of varied forms found in this region
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SOUTHERN VERACRUZ AND ADJACENT WEST TABASCO AND NORTH OAXACA—*continued**Tecali or Marble Vessels*

Los Tuxtlas, Veracruz	Valenzuela (1938)
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Deities Peering from Sky

	None known to writer
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Eagle Cult

	None known to writer
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Volador Ceremony

	Figurines such as that in Batres (1908, Pl. 55) establish the former existence of this ceremony in southern Veracruz
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Chacmool Statues

Cotaxtla, Veracruz	Paso y Troncoso (1892:2:331). This site perhaps assignable to Totonacapan area
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Colossal Stone Heads

Tres Zapotes, Veracruz	Paso y Troncoso (1892:2:375); Seler Sachs (1922, Pl. 6); Stirling (1939, 1940a); Weyerstall (1932)
Cerro de las Mesas, Veracruz	Spinden (1927) expedition; Stirling (1940a)
La Venta, Tabasco	Blom and LaFarge (1926:85); Stirling (1940a)

Statues on Pedestal Columns

El Meson, Veracruz	Photographed by M. W. Stirling
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Phallic Cults

Alvarado, Veracruz	Figurine (Batres 1908, Pl. 48)
Playa Vicente, Tesechoacan River, Veracruz	
Oaxaca border	Stone phallus (Genin (1900)
San Andres Tuxtla, Veracruz	Stone phallus (Paso y Troncoso 1892:1:84)

CHIAPAS, SOUTHEAST OAXACA, WESTERN GUATEMALA*(Area of little exploration or excavation)**Yokes*

Tonina, Chiapas	Beyer (1930:84)
Finca La Preciosa, Chiapas	Beyer (1930:84)
Palenque, Chiapas	Two plain fragments in Peabody Museum, Harvard University
Huehuetenango, Guatemala	Beyer (1930:84)

CHIAPAS, SOUTHEAST OAXACA, WESTERN GUATEMALA—continued

Flat Stone Heads

Tuxtla Gutierrez, Chiapas	Seler (1902–1923, 5:555)
S. Cristobal de las Casas, Chiapas	Dupaix (1834, Pt. 3, Pl. 7)
Finca La Preciosa, Chiapas	Beyer (1930:84)
Tlacotepec, Oaxaca.	Field Museum of Natural History, Chicago
Guichicobe, Juchitan, Oaxaca	Seler (1902–1923, 5:554)
Western Guatemala	Two in Museum of the American Indian, Heye Foundation; one in Field Museum of Natural History

Plumbate Ware

Plumbate vessels are common throughout this region. For examples see Seler (1901:187, 188); Blom and LaFarge (1926, Fig. 349); Villacorta (1938). Western Guatemala may be the center of manufacture

Fine Orange Ware

Uaxac Canal, Huehuetenango	Seler (1901, Figs. 23, 25, 27)
Palenque, Chiapas	Vaillant (1927, Fig. 385)
Palenque neighborhood	Dieseldorff (1926–1933:3, Fig.109)
Piedras Negras, Guatemala	Butler (1935, Pl. 4, 8)
Yaxchilan, Chiapas	Vaillant (1927:118.)

Tecali or Marble Vessels

None known to writer

Deities Peering from Sky

None known to writer except possible examples from Yaxchilan discussed in text

Eagle Cult

None known to writer

Volador Ceremony

None known to writer but ethnological information from this area is negligible

Chacmool Statues

None known to writer

CHIAPAS, SOUTHEAST OAXACA, WESTERN GUATEMALA—*continued*

Statues on Pedestal Columns

Comitan, Chiapas	Seler (1901, Pl. 46)
Tonila, Chiapas	Dupaix (1834, Pt. 3, Pl. 9); said to be front Tonila near Ocosingo, probably a mistake for Tonina
Tonala, Chiapas	Palacios (1928, Fig. 17)
Izapa, Chiapas	Near Tapachula; Carnegie Institution of Washington files

Phallic Cults

None known to writer

ESCUINTLA AND ADJACENT PACIFIC SLOPE

(Region of practically no excavation, but some exploration)

Yokes

Patulul, Solola	Gann (1932, 1938:208)
El Baul, Escuintla	Gann (1938:240)

Flat Stone Heads

Patulul, Solola	Gann (1932, 1938:208)
Escuintla	Villacorta (1938:131–141); British Museum (human head); several in private collections in Guatemala
El Baul, Escuintla	Termer (1931, Figs. 30, 31)
San Andres Osuna, Escuintla	Termer (1931:186)

Plumbate Ware

Patulul, Solola	Seler (1902–1923, 5:565)
Buena Vista, Retalhuleu	Seler (1902–1923, 5:564)

Fine Orange Ware

None known to writer

Tecali or Marble Vessels

None known to writer

Deities Peering from Sky

Santa Lucia Cozumalhualpa, Escuintla	Very common motif
El Baul, Escuintla	Monument 1

Eagle Cult

Santa Lucia Cozumalhualpa, Escuintla	Subject matter of two monuments
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ESCUINTLA AND ADJACENT PACIFIC SLOPE—*continued*

Volador Ceremony

Escuintla	Fuentes y Guzman (1882–1883, Bk. 16, Ch. 5)
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Chacmool Statues

	None known to writer
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Colossal Stone Heads

El Baul, Escuintla	Waterman (1924, Fig. 4)
Monte Alto, Escuintla	Villacorta (1938:27); Richardson (1940, Pl. 18)
El Palmar, Escuintla	Richardson (1940:396)

Statues on Pedestal Columns

	None known to writer
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EL SALVADOR, NICARAGUA, AND SOUTHEAST GUATEMALA

(Area of some exploration; little excavation)

Yokes

Apaneca, El Salvador	Habel (1878:33)
Suchitoto, El Salvador	Lothrop (1925:14)
Campana San Andres, El Salvador	Information of Stanley Boggs
El Salvador	Several; Lothrop (1927:33)
Nicaragua	United States National Museum
Asuncion Mita	Museo Nacional, Guatemala

Flat Stone Heads

El Salvador	Two; Seler (1902–1923, 5:556)
Suchitoto, El Salvador	Lothrop (1926a, Fig. 50)
Campana San Andres, El Salvador	Information of Stanley Boggs
Barbarena, Santa Rosa, Guatemala	University Museum, Philadelphia; with fleshless lower jaw
	Palmas are also reported from El Salvador by Lothrop (1927:32)

Plumbate Ware

El Salvador	Lothrop (1927a:204) reports having personally inspected over 100 plumbate vessels
Tola, Nicaragua	Lothrop (1926, Fig. 280)

Fine Orange Ware

El Salvador	Vaillant (1927:120)
Nicaragua	Under-slip incised ware (Lothrop 1926:191–193) is perhaps technically related to fine orange and, as Lothrop points out, the motifs are reminiscent of Veracruz

EL SALVADOR, NICARAGUA, AND SOUTHEAST GUATEMALA—*continued*

Tecali or Marble Vessels

None known to writer

Deities Peering from Sky

None known to writer

Eagle Cult

None known to writer

Volador Ceremony

Nicaragua Oviedo y Valdes (1851–1855, Bk. 42, Ch. 11)

Chacmool Statues

Chalchuapa, El Salvador Weber (1922, Fig. 39)

Costa Rica Lothrop (1926:2:286)

Nicaragua Spinden file; Richardson (1940:403)

Colossal Stone Heads

Sonsonate, El Salvador Habel (1878:32)

Statues on Pedestal Columns

Nicaragua Area in which most strongly represented; see Lothrop (1926) for discussion and bibliography

Phallic Cult

Chalchuapa, El Salvador Henning (1918:9)

Pipil area García de Palacio (1860)

YUCATAN, CAMPECHE, AND QUINTANA ROO

(Area of intensive, but restricted, excavation and intensive exploration)

Yokes

None known to writer

Flat Stone Heads

None known to writer

Plumbate Ware

Common; for examples see Vaillant (1927:359, Figs. 338, 345, 373), and Thompson (1927, Pl. 12); but Roberts (1935:127) reports plumbate pottery absent from Puuc sites

Campeche Vessel in Regil collection

YUCATAN, CAMPECHE, AND QUINTANA ROO—*continued**Fine Orange Ware*

Chichen Itza, Yucatan	Vaillant (1927:117, Figs. 372, 374, 375); E. H. Thompson (1938, Fig. 16h)
Puuc, Yucatan	Roberts (1935:127), but of forms not under discussion
Maxcanu, Yucatan	In Regil collection; Miller and Carter (1932, Pls. 4, 14)
Merida, Yucatan	Seler (1901, Fig. 24)
Champoton, Campeche	Thompson (1927, Pl. 11)
Jonuta, Tabasco	University Museum, Philadelphia; practically duplicate of that in E. H. Thompson (1938, Fig. 16h), according to L. Satterthwaite

Tecali or Marble Vessels

Chichen Itza, Yucatan	E. H. Thompson (1938, Fig. 24)
Chichen Itza, Yucatan	Many fragments from cenote in Peabody Museum, Harvard University

Deities Peering from Sky

Chichen Itza, Yucatan	Very common on columns of buildings of the Mexican period
Tulum, Coba, etc., Quintana Roo	Diving gods on façades
El Carmen, Campeche	Elaborate figurine with diving god in Museo Nacional, Mexico

Eagle Cult

Chichen Itza, Yucatan	Represented on friezes of Mexican buildings such as the Temple of the Warriors, the so-called Tzompantli, etc.
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Volador Ceremony

No actual record of this ceremony in Yucatan appears to exist. Birdmen, however, are frequently represented at Chichen Itza and Uxmal. Nevertheless, it appears unlikely that such a spectacular performance would have passed unrecorded had it been observed in Yucatan

Chacmool Statues

Chichen Itza, Yucatan	More have been found here than at any other site; definitely associated with Mexican period
Chacmool, Quintana Roo	Lothrop (1924, Figs. 175, 176)

Colossal Stone Heads

None known to writer

Statues on Pedestal Columns

None known to writer

YUCATAN, CAMPECHE, AND QUINTANA ROO—*continued**Phallic Cults*

Chichen Itza, Yucatan	Temple of the Phalli. Stucco phallus in Field Museum of Natural History, Chicago
Uxmal, Yucatan	Casa de las Tortugas (Marquina 1928:64); others on ground (Seler 1917, Figs. 47, 52)
Xul, Yucatan	Photograph in Merida Museum
Xkichmook, Yucatan	E. H. Thompson (1898:225)
Nizucte, Quintana Roo	Le Plongeon (1886:13)
Telantunich, Quintana Roo	Andrews (1939)
Pustunich, Campeche	Andrews (1940)
San Pedro, Campeche	Carnegie Institution of Washington photograph file

HONDURAS AND ADJACENT TERRITORIES

*(Area of some excavation and exploration)**Yokes*

Copan, Honduras	Mr. Gustav Stromsvik writes that two plain <i>Yokes</i> and part of a third have been found at Copan. One was in the debris of the platform of Temple 11, and therefore cannot be earlier than 9.17.0.0.0. The fragment was a surface find. Lothrop (1923) reports a fragment of a plain yoke
La Union, Honduras	Mr. F. B. Richardson reports a fragmentary plain yoke

Flat Stone Heads

None known to writer

Plumbate Ware

Copan, Honduras	In Tomb 10 (Saville 1916)
Uloa and Yohoa Valleys, Honduras	No plumbate (Strong, Kidder, and Paul 1938:121)

Fine Orange Ware

None reported of the forms or decoration under discussion

Tecali or Marble Vessels

Uloa Valley, Honduras	The home of the most advanced work in marble vessels; see Gordon (1921) and Stone (1937)
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Deities Peering from Sky

None known to writer

Eagle Cult

None known to writer

Volador Ceremony

Not reported from this area

HONDURAS AND ADJACENT TERRITORIES—*continued*

Chacmool Statues

Quirigua, Guatemala	Joyce (1914:348); this is almost certainly the same as that placed at Amatlan, Guatemala, in Tozzer (1927, Fig. 4)
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Colossal Stone Heads

None known to writer

Statues on Pedestal Columns

Ocotepeque, Honduras	Richardson (1940, Fig. 36a)
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Phallic Cults

A very common scene on polychrome vessels shows pairs of individuals (Lehmann 1910, Figs. 8–10), in an attitude which Codex Mendoza employs to symbolize sexual intercourse, and which is that of the creation gods in various codices

PETEN AND ADJACENT AREAS

(Area of intensive excavation and exploration)

Yokes

None known to writer

Flat Stone Heads

None known to writer

Plumbate Ware

None reported from excavations. One probable example found in a cave near Benque Viejo, British Honduras, now in British Museum (Thompson 1939:235n)

Fine Orange Ware

None reported in the forms discussed in this paper

Tecali or Marble Vessels

Uaxactun, Peten	Smith (1936, Pl. 12); surface find
San Jose, Peten	Thompson (1939:167); surface find
Tayasal, Peten	A bowl with incurving sides, three small feet, and animal head in relief is in British Museum, and labeled Peten Itza

Deities Peering from Sky

None known to writer. Diving god on small tripod bowl from Corozal District, British Honduras (Gann (1918, Fig. 81); this vessel of late form (Thompson 1940:129)

Eagle Cult

None known to writer

PETEN AND ADJACENT AREAS—*continued*

Volador Ceremony

Not reported

Chacmool Statues

None reported

Colossal Stone Heads

None reported

Statues on Pedestal Columns

None reported

Phallic Cults

Santa Rita, British
Honduras

Gann (1918:62); belongs to late period

APPENDIX 2

ARGUMENT AGAINST THESIS

One of the principal objects in publishing this theoretical reconstruction, as already noted, is to achieve solid progress through stimulating criticism of such of its arguments as are untenable. On concluding the case it seemed advisable to put oneself in the position of a hostile critic and note where the whole argument or specific points are most open to attack. A few of these bases for criticism are given below as possible leads to issues worth special investigation.

1. The reconstruction of the supposed Olmec type of inscription is pretty shaky, for only the Tuxtla statuette is complete and fully legible. Another such full inscription would go far to prove or disprove the suggested 400-day period, but this, of course, is a secondary speculation which in itself in no way affects the general argument.
2. Assumption seems unwarranted that all Olmec art is late because all which appears datable on stylistic grounds fits best into that period. The same applies to Totonac art (Vaillant 1941 and 1941a).
3. Strong tendency to assume that the presence of the same motif on two or more monuments implies that they are of approximately the same date. In Maya art motifs continued over long periods. For example, with regard to the deity peering from the sky or sun, may the important point be not that it occurs on both Monument 1, El Baul, and demonstrably late monuments at Santa Lucia Cozumahualpa, but that its presentation on the former is in a different style?
4. Much stress on negative evidence, the absence of certain features, plumbate for instance, might be due not to the time factor but to questions of trade routes and uneven penetrations of foreign influences.
5. If all sculptural art at Santa Lucia Cozumahualpa is attributable to the Pipil, why are so many of its features absent in El Salvador? Would it not be more reasonable to assume that traits such as the huge stone heads represent one wave, the ball-game players and eagle-sun cult another? Or should one suppose that the group detached, according to tradition, at Escuintla was an ethnic subdivision with its own art style? Should one, attribute the fact that no colossal stone heads are known from central Chiapas to lack of sufficient exploration of that country? Why no chacmools in the Escuintla area?
6. Totonac style is dated about A.D. 1100–1450, but Totonac designs on Teotihuacan pottery and a fresco appear to be earlier. A time lag in central Chiapas offered as an explanation looks rather like fitting facts to the theory.
7. Some stelae at Quirigua carry scrolls resembling those supposed to be peculiar to Totonac art. If these are derived from the same influences as those which placed them on fine orange ware and Uloa marble vases, perhaps these latter should be placed on an earlier horizon, that of late Old Empire, together with plumbate and Nicoya effigy wares. Tombs at San Agustin Acasaguastlan have yielded an association of plumbate and polychrome wares reminiscent of those of late Old Empire, which would tend to support this attribution, but material in Alta Verapaz tombs negatives it. If, as is probable, these Quirigua scrolls have no bearing on the subject, they serve to warn of the dangers of picking isolated stylistic traits as links.
8. Although evidence for the spread of the various traits over much of Middle America in the centuries immediately preceding the Spanish conquest has, on the whole, been well demonstrated, the crucial point, the association of these with the supposedly Olmec calendar, is quite weak.
9. Zapotec culture is almost omitted from the picture. Because of its importance and geographical position, one would expect it to have played an important part.
10. Tlaloc vessels were found in the tombs of the Esperanza phase at Kaminaljuyu. Had these not yet been discovered, the type would almost certainly have been attributed to a later horizon in Central America, and their late appearance there reconciled with an early appearance at Teotihuacan by invoking the idea of delayed diffusion. This well illustrates the pitfalls of attempting to illuminate history with nothing better than a farthing dip. Actually, there appear to be certain differences which eventually may permit of a division of these Tlaloc vases into early and late styles.
11. Would not the whole problem be simplified by extending the last ceramic phases of the Old Empire to coincide in part With the Mexican period at Chichen Itza?

APPENDIX 3

NOMENCLATURE OF ESCUINTLA MONUMENTS

Proposed nomenclature of monuments at the sites in Department of Escuintla, Guatemala, discussed in this paper:

SANTA LUCIA COZUMALHUALPA

<i>Proposed</i>	<i>Habel 1878</i>	<i>Strebel 1901 and Villacorta 1930</i>	<i>Seler 1892</i>	<i>Eisen 1888</i>
1	1	1	1	1
2	2	8		
3	3	2	2	
4	4	7		
5	5	4	3	
6	6	3	6	
7	7	6	4	
8	8 and 19	5	5	
9	9	9		
10	10			
11	10			
12	12			
13	13	10		
14	14	11		
15	15		12	
16	16			
17	17	13		
18				Pl. 8
19				Pl. 9,1
20				Pl. 9,2
21				Seler Sachs 1900, Pl. 44
22		p. 376		Seler Sachs 1900:245

EL BAUL

	<i>Waterman 1924</i>	<i>Villacorta 1930</i>	<i>Burkitt 1933</i>
1	Fig. 5	p. 377	Fig. 4
2	Fig. 3	p. 378	
3	Fig. 4	p. 379	
4	Fig. 1	p. 376	
5	Fig. 12		
6			Figs. 1, 2

PALO VERDE

	<i>Seler Sachs 1900</i>	<i>Villacorta 1930</i>
1	p. 237	p. 371, left
2	p. 238	p. 370, right
3	p. 239	p. 371, right
4	p. 240	

EL CASTILLO

	<i>Burkitt 1933</i>
1	Figs. 6–9

Other sculptures (e.g., Habel's nos. 18, 20, etc.) can best be classified as Miscellaneous Sculpture.

The Fish as a Maya Symbol for Counting and Further Discussion of Directional Glyphs

J. Eric S. Thompson

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- Outline of Discussion
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- Illustration

OUTLINE OF DISCUSSION

In a previous paper (Thompson 1943) I reported the two glyphs, both head and normal forms, commonly used to indicate the starting and ending points of a count. For convenience these glyphs were temporarily labeled "A" and "B." In general usage they might be termed respectively "posterior date indicator" and "anterior date indicator,"

for, apart from whether the distance number is to be counted forward or backward, the former always indicates the later in time of a pair of dates; the latter the earlier. Nevertheless, it should be remembered that these terms do not translate the Maya expressions, for the idea of counting almost certainly enters both glyphs. Any truly descriptive term used for either of the two glyphs, however, would be too clumsy. Collectively, the glyphs might be termed "directional counting glyphs."

In the paper cited it was pointed out that the normal form of the main element of both indicators was the same as that often used for the day sign *Muluc* 'water,' and that the head variant appeared to be that of a fish. At the time that identification was made, its importance was not realized. Since then further research has shown that this identification may be of the highest importance.

I must use rather involved arguments in attempting to establish that the head form which is the main element of both directional glyphs is that of an anthropomorphized fish, and that the head or full picture of a fish is a general symbol for counting. In order to make the presentation easier to follow, I give below the main steps in the thesis:

1. Identification of the head variant of the central element of the directional counting glyphs as the head of an anthropomorphized fish by comparisons with realistic and conventionalized representations of fish in Maya art and epigraphy.
2. Identification of the flattened-head prefix as that of a fish.

3. Evidence that the comb element can be replaced in several glyphs by a fish or by the head tentatively identified as that of a fish.
4. Evidence for the interchangeability of supposed fish head, the fish-head prefix, the nicked and dot bracket prefixes, and the comb.
5. Assumption that glyphs that can be substituted for one another without perceptibly changing the meaning of the text must have the same or very similar meanings.
6. Evidence that the various glyphic elements already discussed can be translated as 'count' or 'counting,' and that the interpretation 'end' given to several of them is highly doubtful. Discussion of the hand and affix combination as a symbol for completion, and evidence that it is not interchangeable with other glyphic elements discussed.
7. Linguistic evidence that the Yucatec word for counting was also used as the name of a poorly defined group of large fish. The implication is that the use of the head of a fish as a symbol for counting is an example of rebus writing.
8. Discussion of the resemblances in the manner of recording dates on stelae and in the books of Chilam Balam.
9. Additional examples of anterior date indicators, and a list of all known examples in which the eel or snake prefix replaces the anterior date indicator.

IDENTIFICATION OF GLYPHIC ELEMENTS REPRESENTING HEADS OF FISH

Five Maya pictures of fish are shown on Figure 2.1a–e. Others are to be seen in Maudslay (1889–1902:4, Pl. 93), Seler (1902–1923, 4:705–711), and Tozzer and Allen (1910, Pls. 5, 6). As far as the heads of these fish are concerned, a characteristic feature is the finlike prolongation at the back of the top of the head. This presumably represents the start of the dorsal fin. The gill opening is also prominent, but at times seems to blend with a lateral fin or with what may be barbels. I would call particular attention to the barbels (?) sweeping upward before the forehead and curving downward behind the mouth (Fig. 2.1a, d). Serrated teeth are sometimes displayed. Most naturalistic fish in Maya art are fresh-water varieties, since they are usually shown feeding on water lilies. Fairly naturalistic fish are incorporated into the Initial Series Introductory Glyph on Stelae C and D at Copan, and on Lintel 3 at Piedras Negras (Fig. 2.1e) replacing the usual comb element. The frontal sweep of what may be barbell is usually shown, but the curving sweep around the mouth is absent except, perhaps, on the fish on the left of the Initial Series Introductory Glyph on the south side of Stela C, Copan.

On Stelae P and 16, Copan, the "comb" element in the Initial Series Introductory Glyph is not replaced by fairly naturalistic fish but is combined with conventionalized heads which are rather close to glyphs. Although the design is far from clear, I think that in view of the other substitutions, these, too, must represent fish (see also Goodman 1897:83): The curving lines, which may represent barbell off, perhaps, fins moved forward from their natural positions to serve as identification marks, are prominent (Fig. 2.1f). Glyphs representing offerings of fish in the Dresden Codex have the finlike prolongation at the back of the head prominently displayed, and pictures of fish in the same codex have lines at the back of the mouth corresponding to those already discussed.

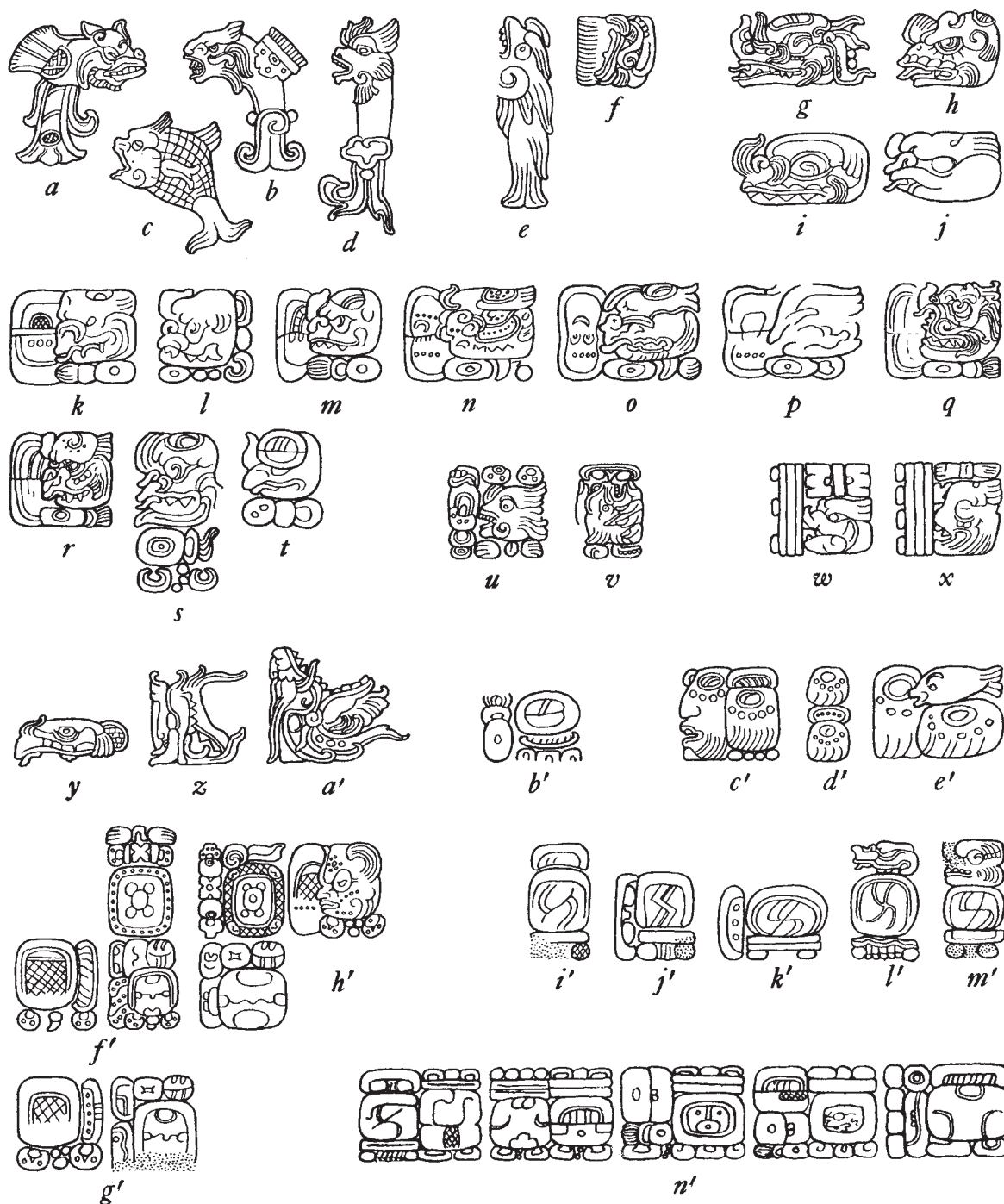
The same creature, with these prominent curving lines near the mouth and others curving like an elongated S around the rose and with the same ornament at the back of the top of the head, serves as the patron of the month Zotz, being placed in the Initial Series Introductory Glyph (Fig. 2.1g, j). In some cases the nose is prolonged to become an elongated and upturned snout, such as is typically found in Maya representations of reptiles. This is not a constant feature. Perhaps, if our identification of this creature as a fish is correct, it represents the elongated snout of the shark. Serrated teeth are prominent.

There can be no doubt that the head variant form of directional counting glyphs represents this same animal, for the curving sweep of lines around the corner of the mouth or dust above it, and the accompanying curve in front of the nose and the peculiar arrangement at the back of the crown of the head are prominently featured. Furthermore, the elongated and upturned snout is sometimes shown and the teeth are often pronounced (Fig. 2.1k–t). Again this same creature sometimes forms the main element of the month sign Mac, for the sweeping curve around the mouth and the prolongation at the back of the head are to be seen in various examples (Fig. 2.1w, x).

Sometimes this head, highly anthropomorphized, forms a separate glyph, presumably to indicate a count, but as that point cannot be proved, owing to the nature of the texts, this variant will not be considered. Examples may be seen on the Temple of the Cross, D8 and D16, and on the Temple of the Foliated Cross, L4 and N10, both, at Palenque,

A more naturalistic glyph of a fish from Copan, the meaning of which is not clear, is shown in Figure 2.1u.

Among the many, surely too many, glyphs and affixes to which the interpretation lending has been given is a common prefix obviously representing



2.1. Representation of fish and various glyphs: *a-d*. naturalistic representations of fish in sculpture and ceramics; *e*. naturalistic fish as part of Initial Series Introductory Glyph, Stela C, Copan; *f*. conventionalized head of fish as part of Initial Series Introductory Glyph, Stela P, Copan; *g-j*. heads of patron deity of the month Zotz, Stelae 6, 7, I, and M, Copan; *k-t*. directional counting glyphs (*k*. Seibal; *l-p*. Palenque; *q, r*. Chinikiha; *s, t*. Copan); *u*. fish head as glyph, Stela A, Copan; *v*. fish-in-hand glyph, Yaxchilan; *w, x*. head variant forms of the month Mac (*w*. Altar W, Copan; *x*. Altar 5, Tikal); *y-a'*. supposed fish-head prefixes (*y*. Stela P, Copan; *z, a'*. zoomorph B, Quirigua); *b'*. possible example of directional counting glyph, Stela 32, Naranjo; *c'-e'*. Double Imix glyphs with varying prefixes (*c'*. Stela A, Quirigua; *d'*. Lintel 56, Yaxchilan; *e'*. Lintel 2, Yaxchilan); *f'-h'*. texts with varying affixes, Palenque (*f'*. palace; *g'*. east panel); *i'-m'*. Secondary Series Introductory Glyphs with varying prefixes (*i'*. Seibal; *j'*. Stela D, Quirigua; *k'*. Altar I', Copan; *l'*. Stela 4, Copan; *m'*. Stela 5, Copan); *n'*. Secondary Series and distance number, Dates 22 and 23, Hieroglyphic Stairway, Copan (after Maler 1903; Maudslay 1899-1902; Morley 1920)

the rather flattened head of some member of the animal world. Herbert J. Spinden (1924, Fig. 9d) identifies it as the head of the bird of the mundane era. Beyer (1932:123) recognizes it as the head of a fish. I think there can be little doubt as to the correctness of Beyer's identification. Sometimes the head shows the swinging curved lines around the mouth, which is perhaps the most important attribute of the fish head (Fig. 1y, z, m'). Furthermore, the resemblance to the head of the fish flanking the Initial Series Introductory Glyph on the north side of Stela P, Copan, is very striking. Luckily, however, we have a full-figure representation of this affix in the picture of Glyph C of the lunar series on Zoomorph B, Quirigua. This fantastic creature is clearly a fish because of its bifurcated tail (Fig. 1a'). The ornament at the back of the head is present, there is a sweeping curve around the nose, and what are presumably the barbels are shown as a bearded tuft on the extremity of the lower jaw.

EVIDENCE FOR IDENTIFICATION OF FISH THROUGH SUBSTITUTION

In the portraiture of mythological animals the Maya were even less governed by nature than is Walt Disney, and, in addition, merged the characteristics of the creatures they depicted with a bewildering latitude not found even in our animated cartoons. It is possible, unfortunately, to run the gamut from fish to jaguars by a series of minor transitions so that one can not always be certain whether one is dealing with fish, flesh, fowl, or good red herring. It is therefore necessary to check as far as possible the identity of the glyphs assigned to the piscatorial world purely on the evidence of the style of delineation. There are two collateral lines of evidence, substitution and meaning.

As already noted, fish, naturalistic or highly conventionalized, can be substituted for the comb element in the Initial Series Introductory Glyph. Since the translation is thereby unchanged, fish and the comb element should have the same meaning. If it can be shown that the comb element can replace the glyphs tentatively identified as heads of fish, clearly their identification as such is correct.

There are two glyphs of known meaning in which the comb element occurs, excluding for the moment the Initial Series Introductory Glyph and the katun sign. These are the month symbols Mac and Tzec. Mac is the most variable of month signs, there being three common variants. Whatever the form of the main body of the glyph, the superfix is almost always of the same form on the monuments, being that generally found above the so-called

lahuntun glyph. Nevertheless, this superfix can have little importance, since it is absent from Mac glyphs in the codices, the main body of the glyph may be in the form of an Imix with a variable infix or it may be the grotesque face similar to that found with the directional counting glyphs, tentatively identified as that of a fish (Fig. 2.1w, x). When this head variant replaces the Imix element, the comb or combs, invariably found with the Imix form, are dropped. I think the only possible interpretation is that the head variant becomes the main element, substituting for the comb postfix (usually placed as a suffix, but rarely to the right of the glyph, as on Stela 13, Yaxha). That is to say that this head variant has the same meaning as the comb, just as the fish on each side of the Initial Series Introductory Glyph are interchangeable with the comb.

The third Mac variant appears to be confined to Yaxchilan. Both the comb and the tentatively identified fish are absent. The main element rather resembles Beyer's "serpent segment," but the various possibilities are too involved to discuss at this time. Suffice it to say that a good case can be made out for supposing that this element represents a fish. (Imix types of Mac may be seen in Morley (1920:3:135, nos. 3, 4, 7; Morley 1937-1938, Pls. 25c, 34m, 37h, 49b). The assumed fish variant is illustrated in Bowditch (1910, Pl. 10, nos. 1-3, 5, 6; Morley 1920:135, nos. 1, 2; Morley 1937-1938, Pls. 8g, 25b, h). The Yaxchilan variant is shown in Morley (1937-1938, Pls. 21o, p, 22i, 24m, 25p).

Tzec is almost invariably shown in its normal form, the Chuen element and a comb superfix. It occurs as a head form with the Chuen element as an infix but the comb suppressed on Stela F, Quirigua. Details can not be made out, but there is a projection in front of the forehead which may represent the curving sweep of lines typical of the head of the fish and which it has been suggested represents barbels or a lateral fin. A similar feature is visible on the head variant on Stela J, Quirigua. On Lintel 41, Yaxchilan, Tzec is represented as a grotesque head with prominent teeth. The Chuen element forms the head and the whole is surmounted by the comb element. The head does not look very piscatorial, but there is no particular why it should be so, in view of the presence of the comb element. Thus, although the evidence for a substitution of the head of a fish for the comb element in examples of Tzec is far from conclusive, yet it does, as far as it goes, tend to support such a substitution.

Hermann Bayer calls the comb element "eyelash." In his detailed study of the hieroglyphs of Chichen Itza (1937:38, 98; Figs. 131-136) he shows how a head which he identifies as that of a fish is

substituted for the “eyelash” (i.e. comb element). Other examples of this substitution are given in his Figures 1–14. In some cases these highly conventionalized heads of fish resemble the Yaxchilan variety of Mac.

There is one possible case of the comb element replacing the assumed fish head or the Muluc normal form in a directional counting glyph. This occurs on Stela 32, Naranjo. On the front of the celestial throne, at the foot of the monument, are incised fifteen glyph blocks (Morley 1937–1938, Pl. 92d. The last glyph records 8 Ahau, an abbreviated reference to 9.19.10.0.0 8 Ahau 8 Xul, the dedicatory date of the monument. The penultimate glyph is the possible directional counting glyph, a posterior date indicator (Fig. 2.1b'). Landa's “i” prefix is present, and so is the flame affix, but the latter is located as a prefix instead of standing in its usual position as a postfix. The central element is replaced by the comb, and there, in addition, a trinal suffix which is presumably ornamental. There is no distance number connecting the last date with 8 Ahau but in rather cases, particularly on late monuments, a directional counting glyph is carved where the distance number has been suppressed. A more serious objection to accepting this glyph as a posterior date indicator is that it also occurs earlier in this text, unassociated with either a distance number or a Calendar Round date. There are cases where directional counting glyphs occur under similar circumstances, presumably to record some astronomical or ritualistic reference, but the combination of this unusual form and its use under dubious conditions leads one to accept the identification of this particular glyph as a posterior date indicator with hesitation.

Rarely, the whole body of a fish is substituted for the comb in compounds. Beyer, in the paper, just quoted, gives one example (Fig. 542) and Morley (1937–1938, 2:557) notes another in the case of the double Imix glyph which not infrequently closes an inscription (Fig. 1c', e').

The prefix identified as that of a fish (Fig. 2.1y-a') can be substituted at will for the so-called ending bracket (Beyer's “fire teeth”). In this group also belongs a variant form in which a line of dots is enclosed within the bracket. I think this is a variant of the comb prefix since on some of the combs which flank the Initial Series Introductory Glyph there is a line of dots before the teeth of the comb.

Attention has just been called to the substitution of a complete fish for the usual comb of the double Imix. The dot-bracket variant can also be used as a substitute (Fig. 2.1d').

A glyph with crosshatching and a comb postfix occurs in a text at Palenque (Fig. 2.1f'). The same

glyph with a dot bracket and followed by the same glyph occurs elsewhere at Palenque (Fig. 2.1g'), whereas in several other examples these postfixes are replaced by a head which is almost certainly that of our supposed fish, since it is in conformity with Palenque forms of the central element of the directional counting glyph. In the case illustrated (Fig. 2.1h') the context is the same. Another example of the interchangeability of the nicked-bracket affix and comb is supplied by a jade bead from Tzibanche, Quintana Roo, for brackets replace combs on each side of the superfix recording 4 katuns (Gann 1935; Beyer 1932a). Such a substitution is not particularly surprising, for all the elements of the bracket, the curved line, the V nick, and the flanking small circles, are worked into the comb elements of the Initial Series Introductory Glyph on the south side of Stela P, Copan, and, less clearly (the circles have been reduced to semicircles), on Stela 7 at the same site.

The nicked-bracket affix can also replace our supposed fish glyph without altering the meaning. Stela D, Pusilha, supplies an example. The nicked-bracket prefix is substituted for the assumed fish head (or the Muluc variant) as the main element of an anterior date indicator. The reading is clouded, but the glyph lies between a distance number of 1.12.17 and a Calendar Round date 5 ? 3 ? which Morley reads as (9.8.0.0.0) 5 Ahau 3 Chen. Possibly this distance number is an error for 1.12.8, which will connect the last date with 2 Lamat 1 Zip, which is the next recorded date on this monument., viz.

9.8.1.12.8	2 Lamat 1 Zip
1.12.8	subtract
9.9.0.0.0	5 Ahau 3 Chen

The dot bracket similarly replaces the central element of the directional counting glyph in a posterior date indicator on the west side of Stela C, Quirigua, which lies between a distance number of 17.5.0.0 and the date 6 Ahau 18 Kayab.

Lintel 30, Yaxchilan, supplies a case where the bracket affix replaces Landa's *i* prefix on a posterior date indicator. I believe this is an erroneous carving, since Landa's *i* prefix conveys the idea of posteriority in time, and does not have the same meaning as the bracket.

The interchangeability of both kinds of bracket prefixes, comb, fish-head prefix, and fish-head glyph is demonstrated by examples of the Secondary Series Introductory Glyph. Examples of all five affixes are illustrated (Fig. 2.1i'–m'). These variations in no sense affect the meaning of the glyph. Indeed the

prefix can be entirely omitted from this glyph without affecting the meaning (Stone of Chiapa).

Finally, to complete the circle one might call attention to the replacing of the fish-head prefix or the nicked-bracket prefix by the fish-head glyph. Such a substitution occurs at Quirigua. The date 9.16.13.4.17 8 Caban 15 Yaxkin is declared by the Initial Series on the west side of Stela D. This date is the second katun anniversary of 9.14.13.4.17 12 Caban 5 Kayab. The anniversary is duly noted, for the date is followed by the hand-shell-tassel combination, the fish head as a prefatory glyph (a glyph which modifies the sequent sign with which it is to be read), occupying a full quarter block, and then 2 katuns.

Beyer (1932:123, Fig. 77) illustrates another example of the fish-head glyph substituting for the fish-head or bracket prefix with the so-called end of a tun glyph.

From the above material it is clear that the comb can be replaced by a complete fish or the fish-head glyph not only in the Initial Series Introductory Glyph but in other glyphs. That the fish-head prefix, nicked-bracket prefix, and dot-bracket prefix were interchangeable has long been known. It is now clear that the bracket prefix can replace the comb and the fish head without alteration of meaning, and the dot-bracket prefix can be substituted for the comb or the fish-head glyph. All these elements therefore must have the same meaning or meanings so close to one another that they could be interchanged at will. Presumably long usage had dictated that certain forms should be used in certain places, for example, the comb affix in the Initial Series Introductory Glyph; but substitutions were permitted just as in English "reckon" can in many cases be substituted for "count."

The free interchange of the comb affix with the elements identified by their delineations as heads of fish demonstrates that these are in truth representations of fish, in some cases partially anthropomorphized, since the interchangeability of the comb affix and naturalistic or conventionalized fish is well established.

SUGGESTED MEANING OF FISH AND ASSOCIATED SIGNS APPLIED TO VARIOUS TEXTS

In my previous discussion of directional glyphs (Thompson 1943) I showed that the central element of those glyphs, the fish head or the Muluc sign, the normal variant, must have a meaning such as count or counting. Clearly if the thesis here advanced is correct, the comb and bracket affixes should also

mean counting, and the various uses of the fish or its head should have the same meaning.

It has already been shown that either a comb postfix or a fish head as main element are constant elements of the usual forms of the glyph of the month Mae.

It has been noted that the normal form of Mac is usually an Imix sign with an infix, the "balls of down" superfix, and the comb as suffix or affix to the right. For a number of years I have felt fairly certain that this Imix sign modified by an infix represented the 260-day period, the misnamed tzolkin, a term unfortunately still used despite the evidence against its authenticity (Long 1934:64). As the end of the month Mac is 260 days from the start of the year, its conclusion also marks the end of a tonalpoualli counted from the start of the year. It is therefore highly logical that the glyph for Mac should mark this. The meaning of the superfix is unknown, but as it is omitted in representations of Mac in the Dresden Codex, and can be omitted from the lahuntun glyph, it cannot vitally affect the meaning of the whole glyph. The Imix, as we have seen, appears to stand for the 260-day period; our thesis requires that the comb element indicate a count. The glyph in that case would mean "260-day count" or "the 260-day period counted,"

The Yucatec name Mac seems to bear out this derivation, for Mac, according to the Motul dictionary, means "to shut by closing a lid or by placing in a box (*cerrar atapando o encaxando*), to shut up or place in reclusion." The 260-day period may well have been considered as occupying a compartment shut off within the haab. The month Tzec, of which the comb is also a component, is 260 days from the end of the tun or haab (i.e., the 360-day period; see Long 1925), not from its beginning. Its conclusion marks the end of 100 days from the start of the haab, with 260 to follow. The main element is akin to the uinal sign. Thus the whole might mean "the uinals counted," with the implication that the remaining 260 days formed a tonalpoualli. The tonalpoualli, then, might be considered to serve loosely as a subdivision of the haab, forming a compartment either at its start or at its end. That is to say that the Maya recognized that the haab could be divided into 260 days and 100 days, just as the 20-day period is divided into 13 days and 7 days in the Chilam Balam of Chumayel.

Combs or fishes combined with the tun sign (and the patron deity of the month) to form the Initial Series Introductory Glyph presumably means something like "the count of the tuns with so-and-so as the patron god." This is plausible, for a count of tuns almost invariably follows in the form of an

Initial Series. The combs often found with the katun sign would similarly indicate in combination with the Cauac element a count by twenties. Actually, elements denoting the head of the fish appear to be present in the head forms of cycle, katun, and tun, blending with the more dominant bird features.

The nicked and dot brackets, as well as the fish-head prefix, have been generally interpreted as having the meaning of ended or completion. The question of the numerous elements classified as ending signs is too involved to be discussed here at length, but a few words must be said to clarify the situation.

The prefixes just discussed are usually treated as though they were synonymous with the well-known prefatory glyph consisting of a hand with various affixes. The hand and shell (or tassel or moon) combination, which is translated as 'end,' almost certainly denotes completion, for it is used as the zero or completion sign with period glyphs in many Initial Series. It is difficult to suggest any other logical meaning for this sign (Whorf 1933:27-30) when it is attached to tun, uinal or kin glyphs of an Initial Series to indicate that they are completed. (We have information in the books of Chilam Balam that katuns, and presumably all time periods were reckoned by their endings). Similarly the hand over a sun glyph, which is the symbol for west, can best be translated as 'sun completed' or 'sun ended.' Also, I think that the use of the hand and a number with Glyph C of the lunar series must indicate "n moons completed" or perhaps even more probably "to the completion of n moons," that is, when the current moon is completed. Similarly Glyph D of the lunar series would state n days after the completion of a moon. I have given some thought to the possibility that the variable positions of the hand may affect the meaning, but that does not appear to be the case in the glyphs under discussion.

Now if the two bracket prefixes and the fish-head prefix were synonymous with the hand and affix combination, there would be no reason why they should not be interchangeable, but they are not. The hand combination can never be prefatory to the so-called hotun glyph, the lahuntun glyph, the Caban glyph, Glyphs B, C, or F of the lunar series or the Secondary Series Introductory Glyph; although in all these cases the bucket or fish-head prefixes are commonly attached. In the other hand neither bracket prefix nor the fish-head prefix can replace the hand in the lower orders of an Initial Series to denote completion or zero, nor can they replace the hand over the sun glyph as the symbol for west.

Sometimes the bracket or fish-head prefixes are attached to the hand combination or to the coeffi-

cient of the sequent glyph which the hand combination modifies. If both sets of symbols indicate completion or ending, one is redundant. It is surely incorrect to translate these signs collectively as 'end of,' for it is improbable that the Maya, addicted as they were to redundancy, would use together a prefatory glyph and a prefix with precisely the same meanings (although the same affix may be attached as both a prefix and a postfix to the same element, as for example in Gates' Glyph 142).

Evidence that the bracket does not mean 'ending' is supplied by Stela 1, Piedras Negras. There the bracket is prefixed to 5 kins (inverted Ahau variant). This is a normal distance number, connecting two Calendar Round dates, and the sense is not end of five days, but a count of five days. It is at the same time, highly improbable that the bracket, comb, or fishhead prefixes attached to the Secondary Series Introductory Glyph could imply completion, for this glyph declares that a distance number is about to be added or subtracted, not that that operation is completed.

Translation of the various prefixes under discussion as 'count' and the hand combination as 'completion,' is logical and in agreement with the ideas already discussed. A text consisting of one of these prefixes, the hand combination and a record of so many katuns (or cycles) would then mean "the completion of the count of n katuns [or cycles]" when the prefix was attached to the coefficient of the period; and "the count completed of n katuns [or cycles]" when the prefix was attached to the hand combination. Such translations, as we shall see, closely parallel those to be found in the Maya chronicles of the Book of Chilam Balam of Mani. In those numerous cases in which the prefix is attached to the period without any hand combination being present, the passage would merely record "n katuns [or cycles] counted" or "the count of n katuns (or cycles)."

Similarly the bracket or fish-head prefix, winged Cauac and hand combination, which is now read as "end of a tun," would mean "count of the tun completed" or "the completion of the tun count," or perhaps "count to the tun completed." Glyph C of the lunar series would mean "the count of n moons completed" where the prefix was present; "n moons completed" where it was omitted (ignoring for the sake of simplicity the possibility that the completion involves the current moon).

A translation of the various prefixes of the Secondary Series Introductory Glyph as 'count' is eminently satisfactory since a reckoning of so many days, uinals; and tuns follows it, The meaning of the main element of the glyph is unknown, but probably means 'time' (cf. the Aztec glyph for feast).

Parenthetically one might remark that the Maya displayed a loquacity in their inscriptions which augurs ill for those hopes we still cherish of extracting much meat from the inscriptions. In the text given in Figure 2.1n⁷ the Maya used nine glyphs to write "11 Ahau plus 11 tuns 14 uinals 6 kins reaches 6 Cimi Tzec." Translated literally, it reads: "A reckoning of time: 11 tuns 14 uinals and 6 kins counted forward from 11 Ahau is counted forward to 6 Cimi 4 Tzec." Three of the glyphs could have been suppressed without affecting the meaning, and the kin sign could also have been eliminated through the transference of its coefficient to the uinal signs. This is a redundancy of nearly 45 per cent, not far short of that of the average broadcaster, but extravagant when each glyph had to be laboriously carved.

These involved arguments show, at least to my satisfaction, that all these various elements, the naturalistic fish, the anthropomorphized head of a fish, the fish-head prefix, the comb element, and the nicked and dot types of bracket prefix, have a single origin and all signify count or counting. However as the nicked-bracket prefix is less interchangeable than the rest, it might be well to preserve this distinction by translating it as 'reckoning,' reserving the word 'count' for translation of the remaining elements. This discussion however, by no means exhausts the glyphs into which the fish enters. There is inconclusive evidence that the hand grasping a naturalistic fish (Fig. 2.1u) may mean the end of a count, in the sense that there is a reversal count, a distance number forward being followed by a backward count. This interpretation is tentative. The problem is complicated by the occasional use of lunar post-fixes, and is too involved to be discussed here.

It is quite probable that the bracket and comb affixes have other meanings in texts which do not involve matters of numbers, time, or astronomy. For example, in the various codices these affixes sometimes occur with the glyphs of gods, and so almost certainly do not in such cases carry the meaning of counting. Such matters are too involved to be discussed at this time.

POSSIBLE EVIDENCE FOR REBUS WRITING

Considering it possible that fish might be a form of rebus writing for count, I enlisted the aid of Ralph L. Roys. The usual Maya word for counting is *xoc*. The Motul dictionary gives the meanings 'to count,' 'counts,' 'to pray by telling [rosary] beads' and *xoc huun* 'to read.' Literally, this last would mean to count a book, but as Maya books largely consisted of dates and the intervals between them, the term is perfectly appropriate. The Motul dictionary also

gives *u xocan haab*, *u xocan kin* 'all the years or each year,' 'all the days or each day.' Actually the meanings here must be literally 'the count of the years,' 'the count of the days.' The word *xoc* is used in the Chilam Balam of Chumayel in the sense of counting, for on page 63 we read "*u tzolan kin zanzamal licil u xocol*" which Roys translates 'every day is set in order according to the count.' *Tzol* and *tzolan* carry the idea of setting in order, but they seem to have been interchangeable with *xoc*. On pages 22 and 23 of the Chilam Balam of Chumayel we find "the count [*tzol*] of days in one year, 365," and "the count [*xoc*] of days in a week . . . seven." The first chronicle is called "A record of the count [*xocan*] of the katuns," and the auguries used by modern Maya to tell the weather of the coming year is called the *xoc kin* (Thompson 1930:75), although this form of prognostication is of European derivation. In the Chilam Balam of Mani we read "The count [*xocol*] of 11 Ahau was not ended when the Spaniards . . . arrived," and "six years were lacking to the termination of the count [*xocol*] of 13 Ahau."

The word *xoc* (or *xooc*, for the duplication of vowels in Yucatec is seldom significant) has, however, another meaning, that of some large fish. Mr. Roys informs me that in the Vienna dictionary *xooc* is given as 'shark, the teeth of which the Indians remove to shoot arrows with.' He also notes that the Pio Perez dictionary lists *hkan xoc* as a species of shark, and that George Gaumer (1917:32, 35) identifies this as 'pilot or caaing whale' and as 'short-finned blackfish.' Roys also points out that on page 2 of Chilam Balam of Tizimin, in a section dealing with tun prophecies, there is mention of *chat u-ayab xooc* 'the great [or red] demon shark or whale.' He concludes that *xooc* or *xoc* refers to an ill-defined group of large fish or whales.

In the *Diccionario pokomchi-castellano y castellano-pokomchi de San Cristobal Cahcoh*, which dates from the end of the seventeenth century and the truncated remains of which are in the Berendt collection (Breton 1917), the word *xoc* is listed, with shark given as one of its meanings. However, nothing like counting is included among the remaining translations of the word.

Naturally, it is somewhat difficult to trace such a word in many vocabularies. Compilers, overwhelmingly clerical, would have had little interest in asking natives, who for the most part lived inland, their names for such denizens of the deep as sharks, whales, and perhaps mythical fish, unless a sermon on Jonah was contemplated.

It is possible that the Cakchiquel name for the rainbow, *xocok*, is connected with the mythical *xoc* fish. We are told that the Cakchiquel regarded the

rainbow as a snake, but that is hardly a serious objection, for the mythological creations of the Maya were so variable (cf. the celestial monsters which ranged from alligators to fairly realistic snakes) that cosmological snakes and fishes might well be confused with one another. This rainbow creature was sinister, since Cakchiquel mothers warned their children that if they pointed at it, they would have distorted fingers. I have not found *xoc* as a root for a word signifying counting in any Maya language other than Yucatec. In that connection Roys points to the absence of glyphic material in the Guatemala highlands as suggesting that the calendar was in all probability a creation of the lowland Maya. Actually, vocabularies for the Chol, Chontal, Chorti, and Tzotzil are far from complete, and it is quite possible that the absence of any record of a cognate of *xoc* in those languages or dialects is due to the lack of full word-lists. On the other hand, the word does not occur in the lengthy Tzeltal dictionary. Mr. Alfonso Villa R., who is at present engaged in investigations among the Tzeltal, informs me that the word *xoc* with the meaning of counting is unknown among the Tzeltal and that the term is not employed to designate any species of fish.

The glyph in question does not resemble a shark, but that is hardly surprising when one considers how little the inhabitants of the cosmological and mythical worlds of the Maya resemble their counterparts in nature. The *xoc* was probably a large mythological creature with no immutable characteristics, and with a tendency to become anthropomorphized.

Having reached the conclusion that in all probability the various fish symbols should be read as *xoc* 'count,' I now discuss the affixes of the directional glyphs. One, the flame-like postfix which forms part of both the anterior and posterior date indicators appears to be the same as Landa's glyph for the sound *ti*. This word means in Yucatec 'at, in, with, to, or from.' It is possible, therefore, that the head of a fish and this flame-like postfix together indicate 'count to' or 'count from.'

The affix Landa's *i* occurs only with posterior date indicators. It has already been suggested that it should have the meaning of 'forward.' Beyer christened this glyph, but actually one can seriously doubt that it is the same as Landa's glyph for *i*, although the term is retained. Actually the letter *i* has the meaning of a count not forward but into the past. For example Beltran gives *hobix* 'five days hence,' *hobixi* 'five days ago.' Roys informs me that *i* can apparently convey the idea of past time also in Chol, but it evidently has other meanings, as is certainly the case in Yucatec. However, here the sound is a postfix and the glyph is a prefix. I think this can

be only a strange coincidence, and that the glyph in question does not stand for the sound *i*. Yet the sound *eh* (*ih* in highland Maya) added to the number indicates a count into the future (Noyes 1935). Can Landa's *i* represent that sound? This is a possibility, hardly a probability. Noyes in the article cited brings together examples indicating that the sound *er* or *ir* was added to the number to denote a count into the past.

Among Landa's letters is the comb element, which is given the sound *ca*. This, however, is the first two letters of *cay* (or *cai*), the Yucatec word for fish. Tozzer (1921:19) has claimed that the *ay* or *ai* sound in Yucatec is the only diphthong in that language. However, one might question that. In cognate languages an aspirate may occur between *a* and *i* (e.g. Yucatec *ain* 'alligator,' Tzeltal and Chol *ahin* 'alligator'), and the shift from Yucatec *a* to *i*, Mopan and Chol group *u*, is to be seen in the word for fish (Yucatec *tai*, Tzeltal *chai*, Tzotzil *chai*, Chol *chui*). Stoll (1884), from whom these comparisons are taken, accents the first vowel of *cai* and the cognated words. Finally the Motul dictionary gives examples of the indiscriminate use in writing the same word of a single or double *a* before (e.g. *ah uay xibalba* 'sorcerer who speaks with the demon,' *ah uay chac* 'sorcerer who causes rain by the art of the devil,' *ah uaay* 'sorcerer,' *ah uaay ch'amac* 'sorcerer who takes the form of a gray fox'). Were *ay* a true diphthong, its first vowel could hardly be doubled. Accordingly there seems little doubt that *ca* can be the first syllable of the word *cai* 'fish,' and in a way the use of the comb here as the sound *ca* is confirmatory evidence that 'comb' (probably a conventionalized dorsal fin) was a symbol for fish. Long (1935:27) has disposed of the old idea that *ca* was a form of rebus writing for *kal* 'twenty.' Presumably *ca* could represent fish in general and *xoc* in particular.

CONCORDANCE BETWEEN RECORDS OF DATES ON STELAE AND IN THE BOOKS OF CHILAM BALAM

If the Maya chronicles were old chants or recitations reduced to writing (and much garbled in the process), and if those chants or recitations were also recorded in hieroglyphic form, a supposition warranted by the information that the Maya had hieroglyphic histories, there should be some correspondences between glyphs and chronicles. Unfortunately, the methods of recording dates varied between the Initial Series period of the southern area and the system used in the chronicles, and in parts of Yucatan at much earlier times. The former referred to the katuns by their numerical sequence in the cycle; the latter by

the Ahau days in which they ended. However, a few comparisons may be made.

INITIAL SERIES INTRODUCTORY GLYPH				
Elements:	comb or fish	tun sign	patron god	prefix
Maya:	(u) xocan (or xocol)	tunob	God X u uich	?
English:	the count of	the tuns	God X the face	?

CHILAM BALAM OF CHUMAYEL CHRONICLE (ROYS 1933:74):		
U kahlay	u xocan	katunob
The record of	the count of	the katuns

TYPICAL PASSAGE IN THE CHUMAYEL SERIES OF KATUN PROPHECIES			
Lahcabil	Ahau katun . . .	yaxal chuen	u uich
12	Ahau katun . . .	(the god) Yaxal Chuen	its face

It should be noted that the face in the Introductory Glyph is that of the patron of the month, not of the katun.

PERIOD ENDING GROUP OF GLYPHS (STELA 4, COPAN)			
Elements:	4 Ahau	13 Yax	fish-head prefix
Maya:	Can Ahau	oxlahunte Yax	xocan
English:	4 Ahau	13 Yax	counted
Elements:	hand, tassel, shell		15 katuns
Maya:	u dz'oc?		holhunte katunob
English:	the completion of		15 katuns

CHILAM BALAM OF MANI CHRONICLE				
Maya:	dz'ococ	u xocol	oxkahun	Ahau
English:	completed	the count of	(katun) 13	Ahau

CHRONICLE OF CHICXULUB			
Maya:	Lai	cu xocol	yabil
English:	Here	the count	of the years

This passage (Brinton, 1882:222) is suggestive of the Secondary Series Introductory Glyph.

From the above it is clear that the suggested translations of the hieroglyphs are closely paralleled by passages in the books of Chilam Balam when allowance is made for the different system of enumerating tuns, and to some extent these resemblances strengthen the interpretations proposed.

ADDITIONAL EXAMPLES OF ANTERIOR DATE INDICATORS

Posterior date indicators far outnumber anterior date indicators, because most distance numbers are counted forward. For instance, there are four distance numbers on Stela 3, Piedras Negras, and four on the west side of Stela E, Quirigua.. All eight lead forward, and all are followed by the posterior date indicator. Two posterior date indicators on Altar Q, Copan, are rather unusual in that Landa's *i* element becomes an infix set in the head of the main element.

In order to amplify the material recorded in Thompson (1943), the following examples of anterior date indicators may be noted: Copan, Stela A, glyph block E2b; Copan. Altar U, glyph block 26 (supplying confirmation of the reading offered in Thompson 1935); Quirigua, Stela C, west side, glyph block A9; Quirigua, Stela K, glyph block B6a; Quirigua, Zoomorph G, glyph block A'3 u.h.; Piedras Negras, Stela 12, glyph blocks A16a and D7b; Piedras Negras, Lintel 2, glyph block X3; Aguas Calientes, Stela 1, glyph block D9; and Los Higos, Stela 1, glyph block D13.

In several cases the identification of the indicator confirms readings offered by Morley as doubtful. An exception is supplied by the second distance number on Stela 2, Ixkun. As this distance number, almost surely 1.4.10, is followed by the anterior date indicator, and that in turn by 12 Ahau, the missing date must be restored as:

(9.17.11.4.10	7 Oc 8 Uo)
1.4.10	
(9.17.10.0.0	12 Ahau (8 Pax)

SNAKE OR EEL VARIANT OF THE ANTERIOR DATE INDICATOR

The use of a snake or an eel as a substitute for the more usual anterior date indicator was noted in my previous paper. As the cases in which this variant is used are few and as all occur at Palenque, it is possible to record all of them in the following table.

TABLE 2.1.

Monument	First Date	Distance Number	Second Date	Eel or Snake with	Glyph Block
Stela 1 Temple XVIII Jamb	9.12.6.5.8 3 Lamat (6 Zac)	1.10.1	9.12.4.13.7 1 Manik 10 Pop	1 Manik	A10
Panel of 96 Glyphs	9.17.13.0.7 7 Manik 0 Pax	7	9.17.13.0.0 13 Ahau 13 Muan	13 Ahau	K2
Temple of Inscriptions East Panel	9.8.17.9.0 13 Ahau 18 Mac	6.14	9.8.17.15.14 4 Ix 7 Uo	13 Ahau	M7
Temple of Inscriptions West Panel	9.9.2.4.8 5 Lamat 1 Mol	2.4.8	9.9.0.0.0 3 Ahau 3 Zotz	3 Ahau	E8
Temple of Inscriptions West Panel	9.11.0.0.0 12 Ahau 8 Ceh	6.16.17	9.11.6.16.17 13 Caban 10 Chen	12 Ahau	L8
Temple of Inscriptions West Panel	9.12.0.0.0 10 Ahau 8 Yaxkin	3.6.6	9.12.3.6.6 7 Cimi 18 Ceh	10 Ahau	P5
Temple of Inscriptions West Panel	9.9.13.0.0 3 Ahau 3 Uayeb	17	9.9.13.0.17 7 Caban 15 Pop	3 Ahau	R3
Temple of Inscriptions West Panel	1.0.0.0.0.8 5 Lamat 1 Mol	8	1.0.0.0.0.0 10 Ahau 13 Yaxkin	Tun sign	H8
Del Rio Stones Tableritos B	(9.11.1.12.6) 7 Cimi 4 Xul	1.(12.6)	9.11.0.0.0 12 Ahau 8 Ceh	12 Ahau	A1

Only in the last case is the record uncertain. This is because the starting point of the distance number is on an unrecovered stone. However, yet another stone, belonging to this group of stones of approximately the same size and with a similar glyphic arrangement, which is now in the National Museum of Archaeology in Madrid (Lothrop 1929), carries the date 7 Cimi 4 Xul. One of the possible positions in the Long Count for this floating Calendar Round date is 9.11.1.12.6, which is 1 tun, 12 uinals, and 6 kins after the date recorded on the six-block tablet in Mexico City. The opening glyph of the latter tablet is 1 tun, clearly the end of a distance number. If our assumption is correct, the remainder of the distance number (12 uinals 6 kins) should be on the missing tablet.

With the exception of this dubious reconstruction, every other date where this eel affix occurs is the earlier in time of a pair of dates connected by a distance number.

GENERAL REMARKS

Further investigation fails to confirm the guess that the flame element might indicate a forward count when attached to a day sign. In view of what has been written above, it might represent *ti*, which has the meanings of 'to, from, or on.' For example, the inscription on Temple 22, Copan, opens with a day 5 Lamat to which the flame affix is attached. There follow several glyphs of unknown meaning. "On 5

Lamat such and such a ceremony was performed or God X's influence was dominant" appears a reasonable translation. Where the flame element follows a Secondary Series without a directional counting glyph, the meaning would be 'to.' Parallels to such readings are to be found on page 66 of the Chronicle of Oxkutzcab where occur passages such as "9 Ahau the tun, on 2 Xul" or "9 Kan the year bearer, on 1 Pop."

As a warning against too ready acceptance of the thesis advanced in this paper, it might be noted that among Yucatec names of fish occur *xul* 'skate.' *Xul* is the usual Yucatec word for 'end.' I have given full consideration to the possibilities of this alternative, but have reached the conclusion that this is merely a confusing coincidence.

This paper is directed primarily to the student of Maya epigraphy. Nonspecialists in the Maya area interested in the development of Maya hieroglyphic writing are referred to the most recent discussions of the subject: Long (1935) and Whorf (1935). Whorf (1933) contains a fairly complete bibliography and a good historical summary of the subject by A. M. Tozzer, but in my opinion much of Whorf's text must be read with great reserve.

A summary of the tentative conclusions reached in this paper is omitted in view of the outline of arguments given on [the first two pages].

The fact that the paper is published in the present series is sufficient indication that the case is not considered to have been completely proved.

Cultures and Peoples of the Southeastern Maya Frontier

John M. Longyear III

CONTENTS

- Ulua-Yojoa Polychrome Complex
- Peoples Along the Southeastern Frontier
- Summary

Most linguistic maps of Central America attempt to represent the range and boundaries of peoples at, or shortly after, the Spanish conquest. This is only natural, since most of the information on which the maps are based has been gleaned from accounts written by itinerant Spanish soldiers and priests during the sixteenth century. When these accounts fail us, archaeological remains are commonly used to fix boundaries. This practice, of course, necessitates the assumption that major linguistic groups also form distinct archaeological complexes, an assumption which, I think, we are justified in making, at least in our present state of knowledge. An assumption we cannot always make, however, is that archaeological remains reflect sixteenth-century boundaries. They do not, simply because the great bulk of our digging, especially in the Maya area, has been conducted in sites abandoned long before the conquest. This is especially true of frontier regions, where we most need "contact" material to supplement historical data. Theoretically, archaeology should be of benefit to the linguist and historian in these very areas, as a clearly worked-out sequence of cultures would enable him to trace the movements of peoples, not in space alone, but also in time.

What we now regard as the southeastern frontier of the Maya was established, almost a decade ago.

His line ran just east of the lower Ulua River from the Atlantic coast to northern Lake Yojoa, thence to the Lempa River border of El Salvador by way of Sensenti, and finally down the Lempa to the Pacific. Although he clearly indicated that his "boundary" marked "maximum expansion . . . without regard to period" (Lothrop 1939, Fig. 3), this same line has since become quite generally adopted as the southeastern boundary of the Maya at the time of the conquest. At first this was done with due reservation, and only because no better information was available, but now "Lothrop's Southeastern Frontier" is rapidly approaching cliché status, with danger of its being accepted blindly and with no reservations whatsoever as "one of the things we all know about the Maya."

Considerable archaeological work has been carried on in this frontier section, especially Honduras, in the past decade, and we are fortunate in that some of this investigation has included contact sites as well as the older, classic material. Although the work was done by many people, without any coordinated plan, the results, together with our previous knowledge of the region, should greatly clarify our understanding of what went on in western Honduras and eastern El Salvador during and before the conquest.

THE ULUA-YOJOA POLYCHROME COMPLEX

This term distinguishes a large body of polychrome pottery, collected to date mainly from the banks of the lower Ulua River and the northern end of Lake Yojoa. None of the various attempts at classification of these

wares has been entirely successful, and only one was made on a stratigraphic basis (Strong, Kidder, and Paul 1938). The classification given below is based on shape, and is intended merely to list the most typical forms of the complex, together with the decorative styles especially peculiar to each.

A. Thick-Walled Bowls and Vases.

Form: Bowls with vertical to slightly flaring walls, dimpled bases; cylinder vases with three low, hollow slab feet; both forms characterized by incurving lip (Strong, Kidder, and Paul 1938, Pls. 12b,d,e).

Design: Grotesque birds, quadrupeds, and serpents; rather grotesque humans; textile patterns.

B. Thin-Walled Bowls and Vases.

Form: Bowls with flaring halls, dimpled bases; cylinder vases, usually flat-based, without supports; straight lip (Strong, Kidder, and Paul 1938, Pls. 8a,b, 12e).

Design: Very stylized human processional and "dancing?" figures; rows of stylized heads; interiors with "counters" pendent from lip.

C. Tripod Plates.

Form: Flat plates, supported on three long, hollow cylinder legs (Strong, Kidder, and Paul 1938, Pl. 8e,f).

Design: Intricate serpent patterns.

D. Handled "Bulge" Bowls.

Form: Globular body, usually with sharp shoulder; straight neck; two vertical loop handles attached at neck and shoulder; dimpled base (Strong, Kidder, and Paul 1938, Pl. 13a).

Design: Monkeys, usually highly conventionalized.

Several other shapes occur in this complex, notably "monkey-handled" ollas and tripod dishes but the ones listed above are, I think, the most typical.

Other ceramic artifacts associated with this polychrome pottery include solid and hollow mold-made figurines and whistles in human and animal forms, frying-pan incensarios, stamps, and candeleros. Nonceramic objects are comparatively rare, obsidian blades, drills and scrapers, cylindrical pestles, manos and metates, the last three being made generally of volcanic stone.

Our knowledge of the distribution of these polychrome wares in time is very incomplete. We know they lie above the monochrome and bichrome ceramics of the region in stratigraphic sequence, but no material has yet been found which overlies the polychrome. The complex is at least partially contemporaneous with the last period of occupa-

tion at Copan ending around 9.19.0.0.0 (ca. A.D. 850). This is shown by the occasional fragments of Ulua-Yojoa polychrome which occur in deposits of this date at Copan. Since no sherds of this ware are found in earlier Copan refuse, it is likely that the bulk of the Ulua-Yojoa complex postdates the Maya occupation at Copan. Even so, there must be quite a gap between it and the conquest. Material to fill this gap has not yet been found in stratigraphic relation to the Ulua-Yojoa complex. It does exist, however, as we shall see presently.

Within itself, the complex appears to be fairly constant from earliest to latest deposits. Our only source of information here comes from Strong, Kidder, and Paul's preliminary discussion of stratigraphic digs at Las Flores Bolsa and Santa Rita, on the lower Ulua and Comayagua rivers (1938:39-62). In general they found that realistic designs tended to be concentrated in the lower levels; conventional and geometric motifs, in the upper. Also, thin-walled vessels with "dancing" figures occurred almost exclusively in the lower levels. These distinctions, however, are not very sharp, and some forms certainly continue unchanged throughout the deposits. Although this impression of sameness is one that detailed examination of the sherd material would almost certainly change, for the present we will consider the whole polychrome complex as a unit.

In charting the distribution of the Ulua-Yojoa complex in space (Fig. 2.2), one naturally starts with the lower Ulua valley, where this polychrome pottery was first excavated and from where, owing to frequent subsequent investigations, it is best known. The great Sula plain is formed by the lower Ulua and Chamelecon rivers and the lowest part of the Comayagua River. Wherever excavations have been conducted in this plain, Ulua-Yojoa polychrome pottery has been recovered in abundance, occurring in deposits often reaching a depth of 4 m. The best-known sites are Playa de los Muertos, on the Ulua near Santiago, and Santa Rita, on the lower Comayagua (D. H. Popenoe 1934; Strong, Kidder, and Paul 1938).

Little is known about the extension of the polychrome complex to the west. Only two or three sites on the Chamelecon have been investigated; all lie in the Naco area. At one, Tres Piedras, a moderate amount of Ulua-Yojoa polychrome was recovered (Strong, Kidder, and Paul 1938:35-37), and this must form our westward limit for the present. Almost nothing, likewise, is known about the archaeology of the upper Ulua, Jicatuyo, and Otoro valleys, but the scattered finds so far reported indicate that the Ulua-Yojoa complex penetrated into at least part of this region.

East of the Sula plain, a similar lack of investigation prevails. A single sherd of a thick-walled polychrome vase from Lancetilla (W. and D. H. Popenoe 1931, Fig. 9) is our only evidence of the existence of the complex on the coast. Inland, on the Cuyamapa River, Ulua-Yojoa ceramics are well represented at La Honduras (Stone 1941:55). This site must lie fairly close to the eastern limit of the polychrome pottery, as recent studies have shown that the Aguan valley, just over the divide, was mainly occupied by the Paya in ancient times.

Our knowledge of the Ulua-Yojoa complex increases to the south. The northern end of Lake Yojoa is a noted polychrome center, the principal sites being Los Naranjos, La Ceiba, and Aguacate (Yde 1938; Strong, Kidder, and Paul 1938). Another focus is the high valley around Comayagua and La Paz, where sites such as Yarumela, El Bisquitil, and La de Vaca yield quantities of Ulua-Yojoa sherds (sherd collections in Peabody Museum, Harvard). The complex also appears to extend as far as the Tegucigalpa region, as a number of vessels in collections attest. Further evidence consists of a sherd collection made by Strömsvik near the capital, containing many polychrome specimens of good Ulua-Yojoa type (sherd collection in Peabody Museum, Harvard). Lack of investigation beyond this point compels us to call Tegucigalpa the limit of Ulua-Yojoa polychrome extension in this direction.

South and west of La Paz is a large stretch of archaeologically unexplored territory embracing the mountainous area on both sides of the Honduras-El Salvador border. Near San Miguel, however, is the large site of Quelepa, the source of numerous private ceramic collections. Among them are many examples of Ulua-Yojoa polychrome wares, in particular thick walled bowls and handled "bulge" bowls with monkey designs (Longyear 1944, Pl. IX, 7,8,13,21). West of the Lempa River, on the other hand, these forms appear but rarely, to judge from their sparse occurrence in collections from this area. The presence in eastern El Salvador of polychrome wares other than those of the Ulua-Yojoa complex but coexistent with the latter, is probably a reflection of the distance separating this region from the other centers to the north.

From the information at hand, then, we see that the Ulua-Yojoa complex embraced a considerable area: from the Sula plain on the north to eastern El Salvador on the south, and from Tegucigalpa on the east probably at least to the upper Ulua River on the west. The complex appears confined to river valleys and lakes, doubtless because such locations are logical dwelling-places for sedentary peoples, this holding true in ancient times as it does today.

All hill sites thus far examined in this region have the appearance of easily defended refuges rather than permanent habitations, and were probably occupied in times only briefly antedating the conquest. A possible exception here is Tenampua (D. H. Popenoe 1936; Lothrop, notes in Peabody Museum of Harvard files), which possesses a large number of mounds, including a ball court, and from where polychrome pottery has been reported (Squier, 1869, Fig. 6; D. H. Popenoe 1936, Fig. 2).

PEOPLES ALONG THE SOUTHEASTERN FRONTIER

As noted in the introduction to this paper, the Ulua Valley-Lake Yojoa line has long been assumed to form part of the southeastern boundary of the Maya. In support of this, archaeological evidence purporting to show the existence of Maya culture in this region has been quoted. This evidence may be grouped under four headings: (1) mound and temple plans, (2) masonry, (3) stone carving, and (4) pottery. Let us examine each of these in some detail.

Mound and temple plans. Rectangular mounds, grouped around plazas, have been considered of Maya origin, and the presence of such assemblages in the Ulua-Yojoa region has been cited as proof of Maya occupancy. This type of plan, however, although employed by the Maya, is certainly not peculiar to them alone. The ruins of Los Llanitos, in eastern El Salvador, consist of several rectangular mounds grouped around a definite plaza, yet there is not the slightest supplementary evidence of Maya occupation at this site (Longyear 1944, Fig. 19). Tenampua, the famous hilltop fortress near La Paz, also possesses rectangular mounds and plazas (D. H. Popenoe 1936, Fig. 1), yet it is mentioned as a "typical Lencan ruin" (Lothrop 1939:52) by the same author who proposed the identification of these features with the Maya: The only temple plan so far revealed by excavations in the Ulua valley is that of the "Temple of the Carvings" at Travesia (Stone 1941, Fig. 46). The design has been attributed to Maya influence, but in reality, if we except squared corners, there is nothing Mayoid about this plan. The typical vault is lacking, and the low square benches flanking the open side of the room are distinctly a non-Maya feature.

Masonry. The presence of cut stone masonry in certain ruins of the Ulua-Yojoa region has been attributed to the Maya, in refutation of this one can again cite Los Llanitos, where cut stone masonry occasionally appeared (Longyear 1944, Pl. IV,7). Cut

stones are apparently also found at Naco, a Nahuatl village of conquest date (Strong, Kidder, and Paul 1938:29).

Stone carvings. The carved "stelae" from the northern shore of Lake Yojoa, once thought to be due to Maya influence, are now generally recognized to have other cultural affinities. The finds consist, in the main, of crude anthropomorphic torsos and heads which seem on present evidence to be most closely related to similar sculptures found in Nicaragua and Costa Rica (Yde 1938, Figs. 12–14; Strong, Kidder, and Paul 1938, Pl. 16). The latter are usually attributed to the "Chorotegan" culture, a term which, of late, has fallen into questionable repute. Whether Chorotegan or not, however, the statues are certainly not classical Maya in type. In the entire territory now under discussion, only four sculptures of true Maya type have ever been reported. One is a human head surmounted by a headdress and another is a death's-head. Both are described by Ham (1896) as coming from the upper Choluteca valley (i.e., near Tegucigalpa), but the caption under the illustration of the human head lists the Humuya valley as its finding-place. Ham is sure the death's-head came from Copan, and the illustration indicates a similar place of origin for the other sculpture. Because of the unique character of these finds and the vagueness with which Ham describes their location, it does not seem reasonable to admit them as evidence of Maya penetration into the Comayagua-Tegucigalpa region. It is not improbable, in fact, that these pieces were actually transported from Copan to the Honduran capital sometime during the nineteenth century, a period in which the famous Maya ruins received several visits from scientists and travelers alike. Two similar sculptures, also reported from the upper Choluteca valley and now in the Genoa Museum (Carnegie Institution, Division of Historical Research, photograph file), may have been brought to Tegucigalpa at the same time.

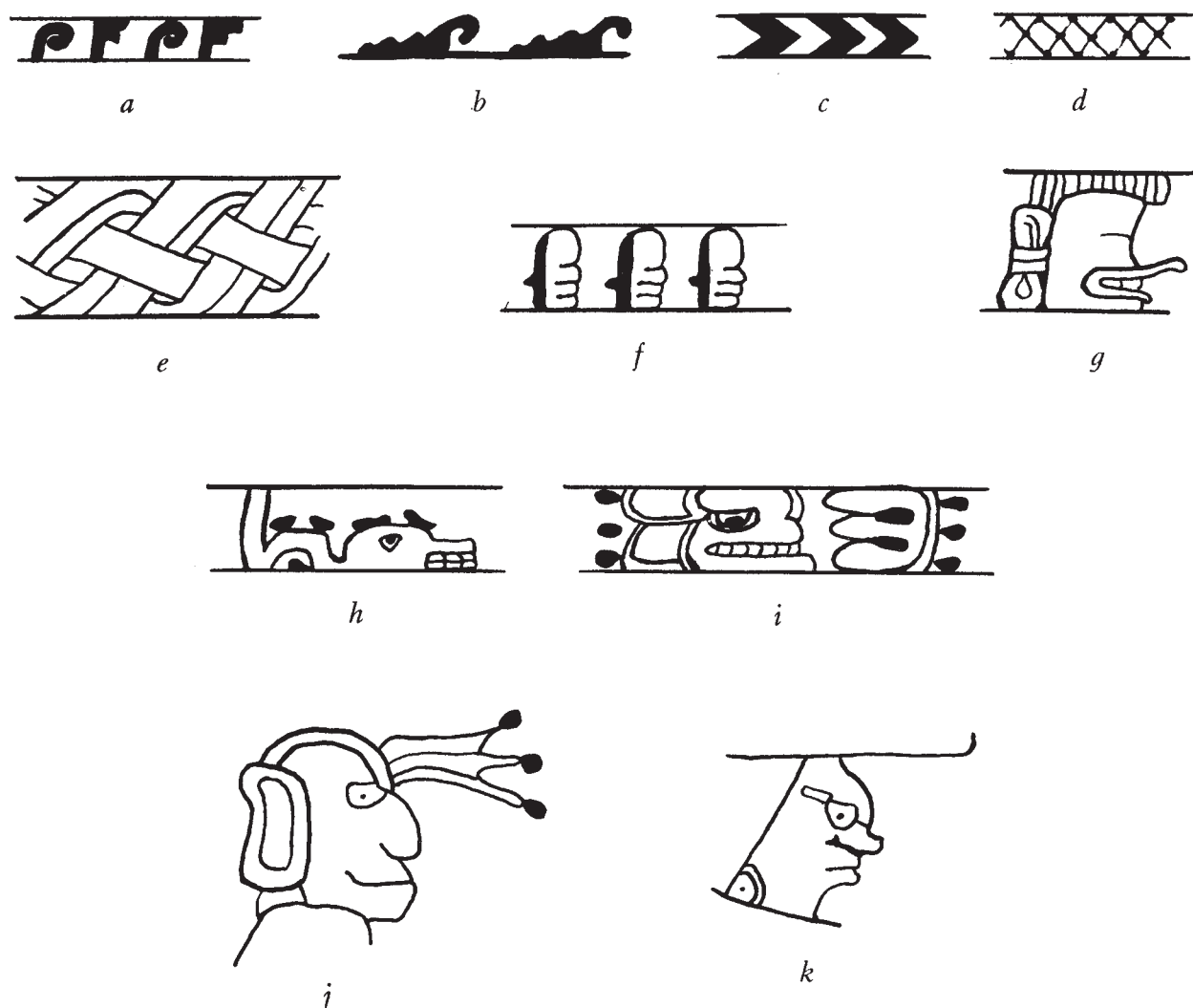
Pottery. The Ulua-Yojoa polychrome pottery has long been considered the most certain evidence of Maya occupation in this region, the specific diagnostics relating to the Maya being the "glyphs" and "Maya-like men" used as decoration. Upon analysis, however, these features lose much of their Mayoid character.

The "glyphs" on Ulua-Yojoa pottery fall, almost without exception, into one of the following categories: (1) stepped scrolls and frets and miscellaneous geometric motifs (Fig. 3.1a–c), (2) textile patterns (Fig. 3.1d,e), (3) highly conventionalized human

heads, on thin-walled vases and bowls (Fig. 3.1f,g), (4) grotesque birds and animals (Fig. 3.1h), and (5) conventionalized animal heads, especially one which appears to be that of a serpent (Fig. 3.1i). These elements are usually found as rim or basal bands on vessels and, as such, parallel the arrangement of glyphs on true Maya pottery. In other respects, however, they bear little, if any, resemblance to, glyphs, for they are concerned almost entirely with purely geometric or naturalistic designs. Very occasionally, nevertheless, characters of true glyph form are found on Ulua-Yojoa pottery (Strong, Kidder, and Paul 1938, Fig. 19). This assemblage, geometric and naturalistic motifs arranged in band form, plus rare glyph like elements themselves, leads me to believe that the Ulua-Yojoa polychrome complex was profoundly influenced by Maya pottery in this regard, but it does not convince me that it was actually manufactured by, or under the direction of, Maya peoples.

The "Maya-like men" on Ulua-Yojoa pottery are also open to question. They may be Maya and, again, they may not, for I know of no diagnostics on ceramics separating the Maya from their neighbors. To judge from their costumes and decoration, the people shown on Central American pottery dressed much alike throughout the area. In physical appearance they are also very similar, but I think it worthy of note that men on Ulua-Yojoa bowls and vases most frequently are equipped with irregular, even pug, noses and high or bulging foreheads as opposed to the aquiline noses and sloping foreheads usually associated with the classical Maya (Fig. 3.1j,k; Strong, Kidder, and Paul 1938, Pl. 1). True Maya pottery in the Ulua-Yojoa area is so rare that it probably arrived there only through trade; I refer especially to certain stamped wares figured by Gordon (1898, Fig. 11) and some stamped and carved sherds found by Stone at Travesia (1941, Figs. 66, 90).

Thus we see that there is very little, if any, Maya in Ulua-Yojoa culture. The ceramic industry, it is true, seems to have come under a good deal of Maya influence, but it really is quite a different complex. This is perhaps shown most clearly by the ease with which sherds of this culture can be separated from those of Maya deposits into which they intrude. Certainly, aside from this one possibility of ceramic influence, none of the other features of the "hierarchic" or ceremonial cult of the Maya ever seems to have reached the Ulua-Yojoa region. If we seek to trace the southeastern boundary of the Maya through archaeological evidence, we must stop at Los Higos on the Chamelecon, this ruin being the farthest-known extension of the stela cult down this valley (Morley 1920:381–90). To the south, in the val-



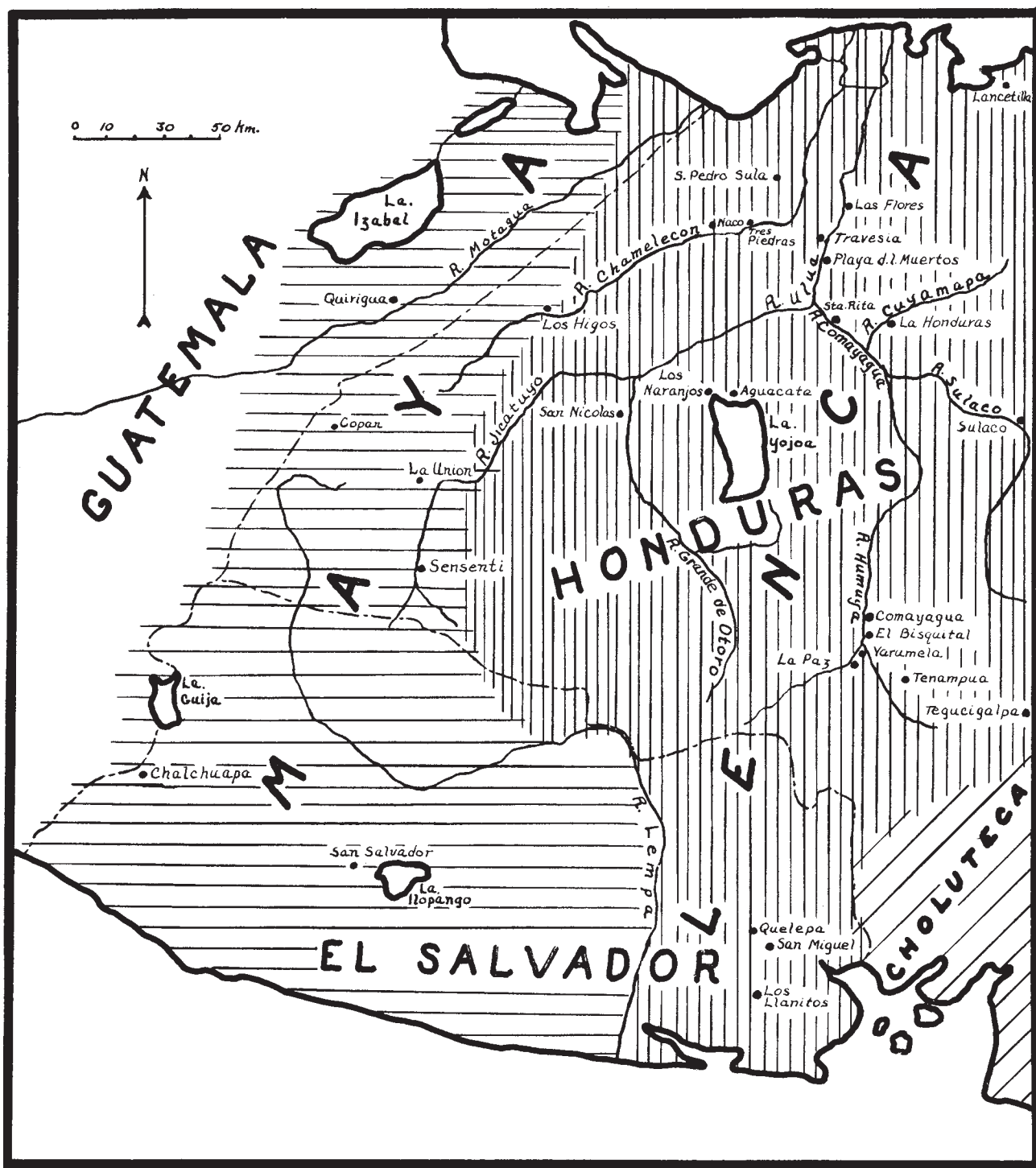
3.1. Ulua-Yojoa Polychrome pottery designs: *a-d, f, h, i*: from Strong, Kidder, and Paul 1938; *e, g, j, k*: from collections in the Peabody Museum, Harvard.

ley of the Rio Jicatuyo, the Maya may have reached as far as the present boundary of the Department of Copan, for we have Squier's information that the Chorti Maya extended to the valley of Sensenti (1855:385), while near La Union has been found a massive stone macaw head carved in Classic Copan style (Carnegie Institution, Division of Historical Research, photograph file). In El Salvador, Lothrop's setting of the eastern Maya frontier at the Lempa River finds no archaeological conflict to date (Fig. 3.2).

The peoples bordering the Maya on the east in Honduras and El Salvador, according to the consensus of historical accounts, were the Lenca and the Jicaque. At the time of the conquest, the former appear to have occupied eastern El Salvador and to

have extended north in Honduras to the beginning of the Sula plain and the southern part of the present department of Yoro: From here to the Atlantic coast was Jicaque territory. This distribution of peoples, however, probably, occurred only in times immediately surrounding the conquest. There is evidence to show that the picture in preconquest, Classic times was quite different.

Linguistic evidence concerning the Jicaque is vague and frequently contradictory. Since the early chroniclers used the term "Jicaque" to differentiate between the old inhabitants of a region and the later Mexican peoples, it often turns out that they were employing the word to designate Lenca or Paya, not still a third group. This confusion of terms, in fact, prompted Squier to suggest that all the "Jicaque"



3.2. Distribution of peoples along the southeastern Maya frontier during Classic Maya times (ca. A.D. 850).

might be nothing more than Lenca under another name (1855:380). There is only one clear-cut reference to a Jicaque linguistic group in the Sula-Yoro region. This consists of two Jicaque vocabularies, one collected from near San Pedro Sula and the other from

western Yoro, which were compiled and published by Membreño in 1897. Since the language indicated by these wordlists appears to be distinct from that of surrounding groups (Maya, Lenca, Paya, or Mexican), the identity of the Jicaque must be con-

ceded. From linguistic evidence alone, however, we can say only that the Jicaque occupied portions of the Sula plain and western Yoro in relatively recent times. If we add to this the possibility that some, at least, of the historical references to Jicaque are correct, the occupational picture is extended somewhat, both in space and in time. It is up to the archaeologist, however, to furnish proof of these historical accounts.

The Jicaque cannot surely be identified with any archaeological material dating from prequest times. Strong, it is true, considers it "highly probable" that his Bold Geometric type of Ulua polychrome pottery is Jicaque in origin (Strong, Kidder, and Paul 1938:123), but this premise is based on linguistic and historical data which we have already seen cannot be depended upon. Doris Stone has suggested that certain sherds from the Ulua Bichrome deposit at Santa Rita should be classified as "Sula-Jicaque," but her reasons for this are not convincing (1942, footnote 31; as the only basis for comparison between the ancient Ulua Bichrome sherds and the Jicaque pottery of conquest date is that both bear incised decoration, this comparison is hardly acceptable in view of the great disparity in the ages of these two ceramic groups). It appears from recent investigations by Mrs. Stone that most of the Aguan valley was occupied by the Paya in prequest times. If this is true, we have left only a narrow strip of coast land and the Sula plain in which to search for Jicaque remains. Since the Honduras coast in this area has never been examined archaeologically, we cannot discuss it here. In the Sula plain, however, a different situation obtains.

We have already seen from the previous discussion that the Sula plain was occupied in Classic times by a people whose culture embraced the Ulua-Yojoa polychrome pottery complex. This same complex is also found around Lake Yojoa, in the Comayagua-La Paz area, near Tegucigalpa, and south into eastern El Salvador. At the time of the conquest, the Lenca occupied these latter regions, and tradition has also always awarded them to the Lenca in more ancient times. Here we have no indefinite or conflicting statements. If, then, the Lenca were responsible for the Ulua-Yojoa type of ceramics in these upland regions, and if archaeological remains are at all indicative of linguistic areas, I think we are justified in proposing that the Lenca also occupied the Sula plain in polychrome pottery, or Classic, times. In other words, during the late occupation of Copan and the period of Maya extension down the Chamelecon valley and over into the Sensenti region, the Lenca, and only the Lenca, were the immediate eastern neighbors of the Maya, their territory extending in a rather narrow

belt entirely across Central America in Honduras and El Salvador (Fig. 3.2).

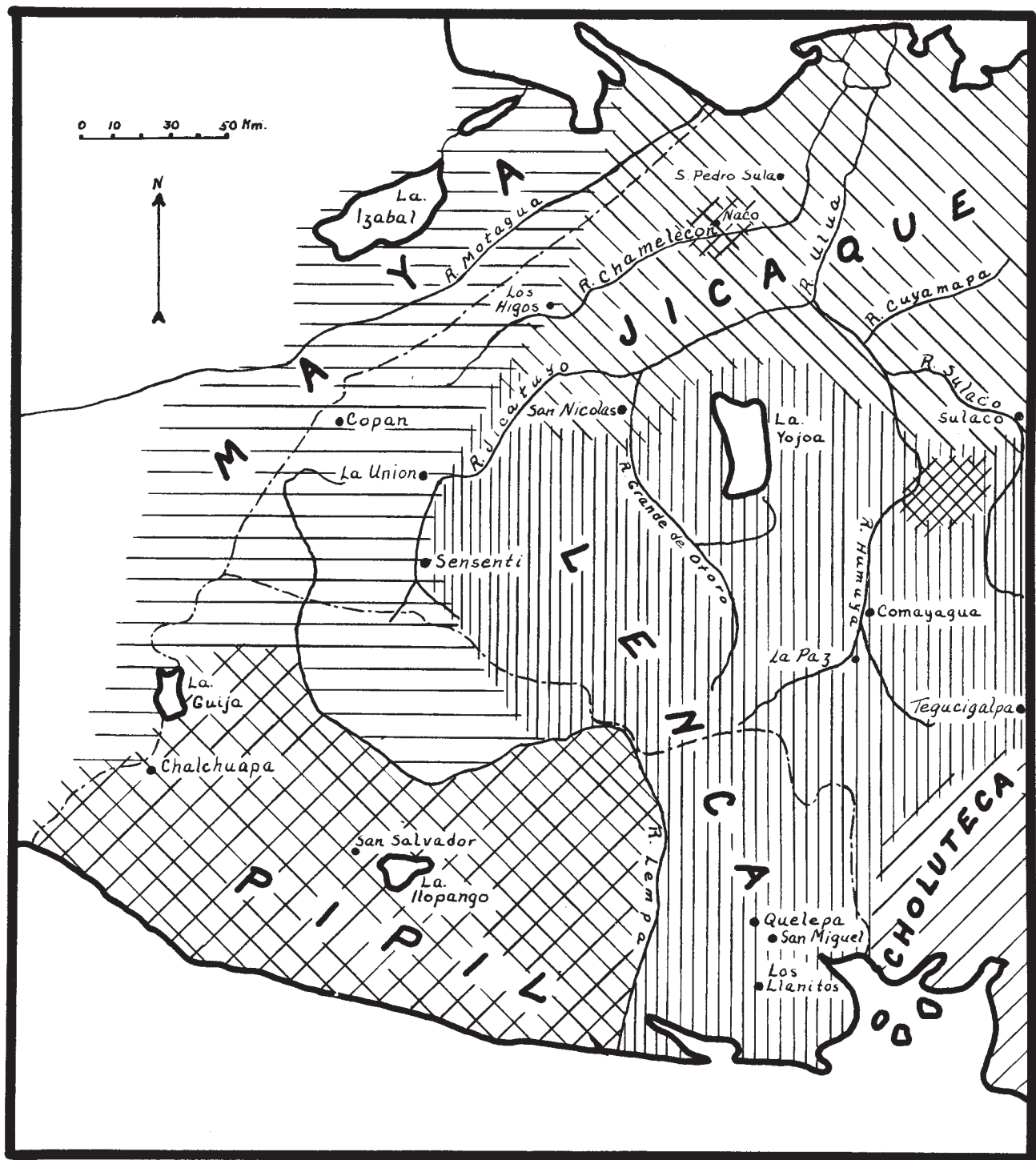
What, then, of the Jicaque? Their place in history comes later. The only archaeological finds definitely attributed to the Jicaque are from sites inhabited just before and during the conquest; some of the sites, in fact, are linked to the Jicaque through the medium of early Spanish accounts (Stone 1942). Their remains are widely scattered, being reported from the Lean River on the Atlantic coast, the Cuyamapa valley in western Yoro, Sulaco in southern Yoro, and San Nicolas on the upper Ulua River (Fig. 3.3). During the fifteenth and sixteenth centuries, then, the Jicaque appear to have occupied much, if not all, of the territory awarded them on linguistic maps. This being the case, they must have succeeded two peoples who held this land in earlier, Classic times: the Paya of the Aguan valley in the east and the Lenca of the Sula plain in the west. Lacking further evidence, we must assume for the present that the Jicaque immediately followed these earlier peoples, and that their cultural remains fill the gap hitherto existing between the latest Ulua-Yojoa polychrome pottery deposits and the conquest.

The original homeland of the Jicaque is unknown, but two likely possibilities present themselves. The archaeologically unexplored stretch of Atlantic coast between the Ulua River and Trujillo might have been the spot from where these people later expanded into the Aguan and Ulua valleys. The only other region from which they might logically have come lies to the east and south of this general area.

SUMMARY

Supposing the above reconstruction to be correct, we find there were two major distributions of peoples along the southeastern Maya frontier in ancient times. During the Classic Maya period, the Maya extended to a line which might be drawn from the middle Lempa River through Sensenti, La Union, and Los Higos to an indefinite point on the Atlantic coast. East of this line, the Lenca occupied the lower Ulua and Chamelecon valleys, the highlands of central and southern Honduras, and all of eastern El Salvador. Beyond the Lenca were the Paya, the Choluteca, and probably the Jicaque, among others (Fig. 3.2).

By the time of the Spanish conquest, there had been a considerable rearrangement in this area. The Pipil had taken over most of western El Salvador, compressing the Maya here into a few small enclaves, and also had penetrated into Honduras (Lothrop 1939, Fig. 1; I do not agree, however, with Lothrop's



3.3. Distribution of peoples along the southeastern Maya frontier in the fifteenth century (ca. A.D. 850).

placing of the Pipil east of the Lempa River, an extension which neither history nor archaeology seems to support). To the north, the Jicaque had pushed the Paya out of the Aguan valley and the Lenca from the Sula plain (Fig. 3.3). These reductions in the area

occupied by the Maya and the Lenca at the height of their culture are doubtless connected with the decline of their civilization, these tribes being almost completely shorn of their former power and glory by the time of the Spanish invasion.

References

- Andrews, E. Wyllys, IV. 1939. A Group of Related Sculptures from Yucatan. *Carnegie Institution of Washington, Contributions to American Anthropology and History* 5(26):71–79.
- . 1940. Exploration in Southwestern Campeche, Tabasco, and the Department of Peten. *Carnegie Institution of Washington, Year Book* 39:267–269.
- . 1977. Southeastern Periphery of Mesoamerica: A View from Eastern El Salvador. In *Social Process in Maya Prehistory: Studies in Honor of Sir Eric Thompson*, edited by Norman Hammond, 113–134. New York: Academic Press.
- Batres, Leopoldo. 1902. *Excavations in Escalerillas Street, City of Mexico, Year 1900*. Mexico: Tipografía y Literatura La Europea de J. Aguilar Vera y Compañía.
- . 1905. *La Lápida Arqueológica de Tepatlaxco-Orizaba*. Mexico: Tipografía de Fidencio Soria.
- . 1906. Les Fouilles Operées à Teotihuacan. In *Proceedings of the International Congress of Americanists* (15 session, Quebec, 1906). Vol. 2, pp. 277–282. Quebec.
- . 1908. *Civilización Prehistórica de las Riberas del Papaloapam y Costa de Sotavento, Estado de Veracruz*. Mexico: Imprenta de Buznego y León.
- Beltran de Santa Rosa, P. 1746. *Arte del Idioma Maya*. Mexico: Viuda de D. Joseph Bernardo de Hoyal.
- . 1859. *Arte del Idioma Maya*. 2nd ed. Merida: Imprenta de J. D. Espinosa é Hijos.
- Beyer, Hermann. 1921. El Llamado Calendario Azteca: Descripción e Interpretación del Cuauhxicalli de la Casa de las Aguilas. *El México Antiguo* 10:134–256.
- . 1924–1927. Los Yugos de Piedra Prehispanicos. *El México Antiguo* 2:269–278.
- . 1927. Bibliografía: Frans Blom and Oliver La Farge, *Tribes and Temples*. *El México Antiguo* 2:305–313.
- . 1930. A Deity Common to Teotihuacan and Totonac Cultures. *Proceedings of the International Congress of Americanists* (23 session, 1928, New York), pp. 82–84. New York.
- . 1932a. An Ahau Date with a Katun and a Katun-Ending Glyph. *Tulane University, Middle American Research Series* 4:131–136.
- . 1932b. Mayan Hieroglyphs: Some Tun Signs. *Tulane University, Middle American Research Series* 4:103–130.
- . 1937. Studies on the Inscriptions of Chichen Itza. *Carnegie Institution of Washington, Contributions to American Archaeology* 4(21):29–175.
- Blom, Frans. 1929. *Preliminary Report of the John Geddings Gray Memorial Expedition, 1928*. New Orleans: Tulane University, Middle American Research Institute.
- Blom, Frans, and Oliver La Farge. 1926. *Tribes and Temples: A Record of the Expedition to Middle America*. New Orleans: Tulane University, Middle American Research Institute.
- Bowditch, Charles P. 1910. *The Numeration, Calendar Systems, and Astronomical Knowledge of the Mayas*. Cambridge, MA: privately printed.
- Breton, A. C. 1906. Some Notes on Xochicalco. *Transactions of the Department of Archaeology, Free Museum of Science and Art* 2:51–65.
- . 1917. Pocomchi Notes. *Proceedings of the International Congress of Americanists* (19 session, 1915, Washington, DC), pp. 545–548. Washington, DC.
- Brinton, Daniel G. 1882. *The Maya Chronicles*. Brinton's Library of Aboriginal American Literature, 1. Philadelphia: D. G. Brinton.
- Burkitt, Robert. 1924. A Journey in Northern Guatemala. *Museum Journal* 15:115–137.
- . 1933. Two Stones in Guatemala. *Anthropos* 28:9–26, 781–782.
- Butler, Mary. 1935a. Piedras Negras Pottery. Doctoral dissertation, Department of Anthropology, University of Pennsylvania, Philadelphia.

- . 1935b. A Study of Maya Mouldmade Figurines. *American Anthropologist* 37(4):636–672.
- . 1940. A Pottery Sequence from the Alta. Verapaz, Guatemala. In *The Maya and Their Neighbors*, edited by C. Hay, 250–267. New York: Appleton-Century.
- Caso, Alfonso. 1928. *Las Estelas Zapotecas*. Museo Nacional de Arqueología, Historia y Etnografía, Monografía, 95. Mexico.
- . 1932. *Las Exploraciones en Monte Alban. Temporada, 1931–32*. Publicación, 7. Mexico: Instituto Panamericano de Geografía e Historia.
- . 1934. Sobre una Figurilla de Hueso del Antiguo Imperio Maya. *Anales del Museo Nacional de Arqueología, Historia y Etnografía* 1:11–16.
- . 1937. Tenían los Teotihuacanos Conocimiento del Tonalpohualli? *El Mexico Antiguo* 4:131–143.
- . 1938. *Exploraciones en Oaxaca, Quinta y Sexta Temporadas, 1936–37*. Publicación, 34. Mexico: Instituto Panamericano de Geografía e Historia.
- Ceballos Novelo, Roque J., and Eduardo Noguera. 1934. *Guía Para Visitar las Principales Ruinas Arqueológicas del Estado de Morelos*. Mexico: Secretaría de Education Publica.
- Chronicle of Oxtutzcab. N.d. A Manuscript Collection of Papers of the Xiu Family. Peabody Museum of Anthropology and Ethnology, Harvard University, Cambridge, MA.
- Ciudad Real, A. de. 1872. *Relación Breve y Verdadera de Algunas Cosas de las Muchas que Sucedieron al Padre Fray Alonso Ponce*. Colección de Documentos Inéditos Para la Historia de España, 17, 18. Madrid.
- Coe, Michael D. 1957. Cycle 7 Monuments in Middle America: A Reconsideration. *American Anthropologist* 59(4): 597–611.
- . 1981. Matthew Williams Stirling, 1896–1975. In *The Olmec and Their Neighbors: Essays in Memory of Matthew W. Stirling*, edited by Elizabeth P. Benson, ix–xii. Washington, DC: Dumbarton Oaks Research Library and Collections, Harvard University.
- Coe, Michael D., and Richard A. Diehl. 1980. *In the Land of the Olmec*. Austin: University of Texas Press. 2 vols.
- Dieseldorff, Erwin P. 1926–1933. *Kunst und Religion der Mayavölker*. Berlin: Verlag von Julius Springer.
- Drucker, Philip, Robert F. Heizer, and Robert H. Squier. 1957. Fechas de Radiocarbono de La Venta, Tabasco. *Boletín del Centro de Investigaciones Antropológicas de Mexico* 4:31–33.
- Dupaix, G. 1834. *Antiquités Mexicaines; Relation des Trois Expéditions du Capitaine Dupaix, Ordonnées en 1805, 1806, et 1807, Pour la Recherche les Antiquités du Pays, Notamment Celles de Mitla et de Palenque*. Paris: Imp. de J. Didot. 2 vols.
- Eisen, Gustav A. 1888. On Some Ancient Sculptures from the Pacific Slope of Guatemala. *Memoirs of the California Academy of Sciences* 2(2):9–20.
- Ernst, A. 1892. Notes on Some Stone Yokes from Mexico. *Internationales Archiv Für Ethnographie* 5:71–76.
- Fewkes, Jesse W. 1907. Certain Antiquities of Eastern Mexico. *United States Bureau of American Ethnology, Annual Report 1903–1904*:221–284.
- Fuentes y Guzmán, Francisco A. de. 1882–1883. *Historia de Guatemala ó Recordación Florida*. Madrid: Biblioteca de los Americanistas.
- Gamio, Manuel. 1922. *La Población del Valle de Teotihuacán*. Mexico, DF: Dirección de Antropología. 3 vols.
- Gann, Thomas W.F. 1918. *The Maya Indians of Southern Yucatan and Northern British Honduras*. Bulletin, 64. Washington, DC: United States Bureau of American Ethnology.
- . 1932. Worshipers of the Long-Nosed God. *Illustrated London News* 181:1006–1007.
- . 1935. Tzibanche, Quintana Roo, Mexico. *Maya Research* 2:155–166.
- . 1938. *Glories of the Maya*. London: Charles Scribner's Sons.
- Gann, Thomas W.F., and Mary Gann. 1939. *Archaeological Investigations in the Corozal District of British Honduras*. Anthropological Papers, 7. Bulletin, 123. Washington, DC: United States Bureau of American Ethnology.
- García de Palacio, Diego. 1860. Carta Dirigida al Rey de España por el Licenciado Dr. Don Diego García de Palacio, Oydor de la Real Audiencia de Guatemala, Año 1576: Being a Description of the Ancient Provinces of Guazacapan, Izalco, Cuscatlan, and Chiquimula on the Audiencia of Guatemala. In *Collection of Rare and Original Documents and Relations Concerning the Discovery and Conquest of America, Chiefly from the Spanish Archives, Published in the Original, with Translations, Notes, Maps, and Biographical Sketches*, by E. G. Squier. New York: Charles B. Norton.
- Gates, William E. 1931. *An Outline Dictionary of Maya Glyphs*. Publication, 1. Baltimore: Maya Society.
- Genin, A.M.A. 1900. Notes d'Archeologie Mexicaine. *Journal de la Société des Americanistes de Paris* 3:1–42.
- . 1928. Note Sur les Objets Precortéziens Nommés Induments Yugos ou Jous. *Proceedings of the International Congress of Americanists* (22 session, Rome, 1926), vol. 1, pp. 521–528. Rome.
- Gordon, George B. 1898. *Researches in the Uloa Valley, Honduras*. Memoirs, 1(4). Cambridge, MA: Peabody Museum of American Archaeology and Ethnology, Harvard University.
- . 1921. The Uloa Marble Vases. *Museum Journal* 12: 53–61.
- Habel, S. 1878. *The Sculptures of Santa Lucia Cosumahuilpa in Guatemala*. Smithsonian Contributions to Knowledge, 268. Washington, DC.
- Hamy, E. T. 1896. Étude Sur les Collections Américaines Reunies a Genes a l'Occasion du IVe Centenaire de la Découverte de l'Amérique. *Journal de la Société des Américanistes de Paris* 1(1):431.
- Henderson, John S. 1978. Valley of Naco Valley: Ethnohistory and Archaeology in Northwestern Honduras. *Ethnohistory* 24(4):363–377.
- Henning, Paul A.E. 1918. *La Arqueología Mexicana Como Norma Para el Estudio de las Antigüedades Nahoas-Pipiles*. Mexico: Servicio de Informaciones Alemanas.
- Holmes, William H. 1895–1897. *Archaeological Studies among the Ancient Cities of Mexico*. Anthropological Series, 1(1). Chicago: Field Columbian Museum.

- . 1907. On a Nephrite Statuette from San Andres Tuxtla, Vera Cruz, Mexico. *American Anthropologist* 9: 691–701.
- Jimenez Moreno, W. 1936. The Linguistic Map of Mexico and Central America. In *The Maya and Their Neighbors*, edited by C. Hay, 88–114. New York: Appleton-Century.
- Joyce, Thomas A. 1912. *A Short Guide to the American Antiquities in the British Museum*. London: British Museum.
- . 1914. *Mexican Archaeology: An Introduction to the Archaeology of the Mexican and Mayan Civilizations of Pre-Spanish America*. New York: G. P. Putnam's Sons.
- . 1916. Notes on a Fine Tecalli Vase of Ancient Mexican Manufacture. *Man* 16(3):33–34.
- . 1927. *Maya and Mexican Art*. London: The Studio.
- . 1929. Report on the British Museum Expedition to British Honduras, 1929. *Journal of the Royal Anthropological Institute* 63:439–459.
- Joyce, Thomas A., and H. A. Knox. 1931. Sculptured Figures from Vera Cruz State, Mexico. *Man* 31:17.
- Krickeberg, Walter. 1933. *Los Totonaca: Contribución a la Etnografía Histórica de la América Central*. Translated by P. Aguirre. Mexico: Secretaria de Educación Pública.
- Lehmann, Walter. 1907. Ergebnisse und Aufgaben der Mexikanische Forschung. *Archiv für Anthropologie* 6: 113–168.
- . 1910. Ergebnisse einer Forschungsreise in Mittelamerika und Mexico, 1907–09. *Zeitschrift für Ethnologie* 42:687–749.
- . 1921. *Altmexikanische Kunstgeschichte*. Orbis Pictur-Weltkunst Buchreihe, 8. Berlin: Orbis.
- Leon, Nicolas. 1903. El Culto al Falo en el México Precolombino. *Anales del Museo Nacional de Arqueología, Historia y Etnografía* 1:278–280.
- Le Plongeon, A. D. 1886. *Here and There in Yucatan*. New York: J. W. Lowell.
- Linares, Olga F. 1979. What Is Lower Central American Archaeology? *Annual Review of Anthropology* 8:21–43.
- Linne, Sigvald. 1934. *Archaeological Researches at Teotihuacan, Mexico*. Stockholm: Ethnographic Museum of Sweden.
- Lombardo Toledano, Vicente. 1931. Geografía de las Lenguas de la Sierra de Puebla, con Algunas Observaciones Sobre Sus Primeros y Sus Actuales Pobladores. *Universidad Nacional Autónoma de México* 2:14–96.
- Long, R.C.E. 1925. Some Maya Time Periods. *Proceedings of the International Congress of Americanists* (21 session, 1924, Göteborg), pt. 2, pp. 574–580. Göteborg.
- . 1934. The Dates in the Annals of the Cakchiquels and a Note on the 260-Day Period of the Maya. *Journal of the Royal Anthropological Institute* 64:57–68.
- . 1935. Maya and Mexican Writing. *Maya Research* 2:24–32.
- Longyear, John M. 1940a. Copán Ceramics: Their Chronological and Historical Significance. Doctoral dissertation, Harvard University, Department of Anthropology, Cambridge, MA.
- . 1940b. Ethnological Significance of Copán Pottery. In *The Maya and Their Neighbors*, edited by C. Hay, 268–271. New York: Appleton-Century.
- . 1942. A Southern Maya-Petén Pottery Correlation. *American Antiquity* 7(4):389–396.
- . 1944. *Archaeological Investigations in El Salvador*. Memoirs, 9(2). Cambridge, MA: Peabody Museum of Archaeology and Ethnology, Harvard University.
- . 1946. Copán Pottery. *Carnegie Institution of Washington, Year Book* 45:203–205.
- . 1948. A Sub-Pottery Deposit at Copán, Honduras. *American Antiquity* 13(3):248–249.
- . 1951a. A Historical Interpretation of Copán Archaeology. In *The Civilizations of Ancient America: Selected Papers of the 29th International Congress of Americanists*, edited by S. Tax, 1:86–92. Chicago: University of Chicago Press.
- . 1951b. Notes on Some Spindle Whorls from Quelepa, El Salvador. *Middle American Research Records* 1: 9–11.
- . 1952. *Copán Ceramics: A Study of Southeastern Maya Pottery*. Publication, 597. Washington, DC: Carnegie Institution of Washington.
- . 1957. Further Notes on Copan Incense Burners. *American Antiquity* 22:287–288.
- . 1966. Archaeological Survey of El Salvador. In *Archaeological Frontiers and External Connections*, edited by Gordon F. Ekholm and Gordon R. Willey, 132–156. Handbook of Middle American Indians, 4. Austin: University of Texas Press.
- . 1969. Problem of Olmec Influences in the Pottery of Western Honduras. In *Proceedings of the International Congress of Americanists* (38 session, Stuttgart and Munich, 1968). Vol. 1, pp. 491–497. Munich.
- Lothrop, Samuel K. 1921. The Stone Statues of Nicaragua. *American Anthropologist* 23(3):311–319.
- . 1923. Stone Yokes from Mexico and Central America. *Man* 23(19):97–98.
- . 1924. *Tulum: An Archaeological Study of the East Coast of Yucatan*. Publication, 335. Washington, DC: Carnegie Institution of Washington.
- . 1925. The Museum Central American Expedition, 1924. *Museum of the American Indian, Heye Foundation, Indian Notes* 2:12–23.
- . 1926a. *Pottery of Costa Rica and Nicaragua*. Contributions, 8. New York: Museum of the American Indian, Heye Foundation.
- . 1926b. Stone Sculptures from the Finca Arevalo, Guatemala. *Museum of the American Indian, Heye Foundation, Indian Notes* 3:147–171.
- . 1927a. The Museum Central American Expedition, 1925–26. *Museum of the American Indian, Heye Foundation, Indian Notes* 4:12–33. New York.
- . 1927b. *Pottery Types and Their Sequence in El Salvador*. Indian Notes and Monographs, 1(4). New York: Museum of the American Indian, Heye Foundation.
- . 1929. Sculptured Fragments from Palenque. *Journal of the Royal Anthropological Institute* 59:53–63.
- . 1936. *Zacualpa: A Study of Ancient Quiche Artifacts*. Publication 472. Washington, DC: Carnegie Institution of Washington.
- . 1939. The Southeastern Frontier of the Maya. *American Anthropologist* 41(1):42–54.

- Maler, Teobert. 1903. *Researches in the Central Portions of the Usumatsintla Valley: Reports of Explorations for the Museum*. Memoirs, 2. Cambridge, MA: Peabody Museum of American Anthropology and Ethnology, Harvard University.
- Marcus, Joyce. 1976. The Origins of Maya Writing. *Annual Review of Anthropology* 5:35–67.
- Mariscal, M. 1940. Un Emporio Maya Descubierto en los Tuxtlas. *Revista de Revistas* 31(1549). Marquina, Ignacio. 1928. *Estudio Arquitectónico Comparativo de los Monumentos Arqueológicos de Mexico*. Mexico: Secretaría de Educación Pública.
- Mason, J. Alden. 1940. The Native Languages of Middle America. In *The Maya and Their Neighbors*, edited by C. Hay, 52–87. New York: Appleton-Century.
- Maudslay, Alfred P. 1889–1902. *Archaeology: Biologia Centrali Americana, or, Contributions to the Knowledge of the Fauna and Flora of Mexico and Central America*. London: R. H. Porter and Dulau.
- Membreño, Alberto. 1897. *Hondureñismos; vocabulario de los provincialismos de Honduras*. Tegucigalpa: Tipografía Nacional.
- Merwin, Raymond E., and George C. Vaillant. 1932. *The Ruins of Holmul, Guatemala*. Memoirs, 3(2). Cambridge, MA: Peabody Museum of American Anthropology and Ethnology, Harvard University.
- Miller, L. H., and J. R. Carter. 1932. *Maya Artifacts*. Cleveland: privately printed.
- Monumentos Arqueológicos de Mexico*. Mexico: Departamento de Monumentos, Secretaria de Educación Pública, 1933.
- Morley, Frances R., and Sylvanus G. Morley. 1938. The Age and Provenance of the Leyden Plate. *Carnegie Institution of Washington, Contributions to American Anthropology and History* 5(24):1–17.
- Morley, Sylvanus G. 1920. *The Inscriptions at Copan*. Publication, 219. Washington, DC: Carnegie Institution of Washington.
- . 1937–1938. *The Inscriptions of Peten*. Publication 437. Washington, DC: Carnegie Institution of Washington.
- Morris, Edward H., J. Charlot, and A. A. Morris. 1931. *The Temple of the Warriors at Chichen Itza, Yucatan*. Publication 406. Washington, DC: Carnegie Institution of Washington.
- Motolinia, Toribio de Benavente. 1914. *Historia de los Indios de la Nueva España; Escrita a Medios del Siglo XVI por el R. P. Fr. Toribio de Benavente o Motolinía*. Barcelona: Herederos de Juan Gili.
- Motul Dictionary. 1929. *Diccionario de Motul, Maya-Español Atribuido a Fray Antonio de Ciudad Real y Arte de Lengua Maya por Fray Juan Coronel*. Merida: Talleres de la Compañía Tipográfica Yucateca.
- Munich Museum. 1911. *Berichte des Königlichen Ethnographisches Museum in München* 4:98–103.
- . 1913. *Berichte des Königlichen Ethnographisches Museum in München* 5:312–335.
- Noguera, E. 1930. Algunas Características de la Cerámica de Mexico. *Journal de la Société des Americanistes de Paris* 22:249–310.
- . 1933. Bibliografía de los Codices Precolombinos y Documentos Indígenas Posteriores a la Conquista. *Anales del Museo Nacional de Arqueología, Historia y Etnografía* 8:538–602.
- Noyes, E. 1935. Notes on the Maya Day-Count. *Maya Research* 2:383–393.
- Nuttall, Zelia. 1910. The Island of Sacrificios. *American Anthropologist* 12:257–295.
- . 1928. Nouvelles Lumieres Sur les Civilisations Americaines et le Systeme du Calendrier. *Proceedings of the International Congress of Americanists* (22 session, Rome, 1926), vol. 1, pp. 119–148. Rome.
- Oviedo y Valdes, G. F. de. 1851–1855. *Historia General y Natural de las Indias, Islas y Tierra Firme del Mar Oceano*. Madrid: Imprenta de la Real Academia de la Historia.
- Palacios, E. J. 1928. *En los Confines de la Selva Lacandona; Exploraciones en el Estado de Chiapas*, 1926. Mexico: Secretaria de Educación Pública.
- Paso y Troncoso, F. del. 1892. *Exposición Histórico-Americana de Madrid; Catálogo de la Sección de Mexico*. Madrid: Museo Nacional de Mexico.
- Peñafiel, Antonio. 1890. *Monumentos del Arte Mexicano Antiguo; Ornamentacion, Mitologia, Tributos y Monumentos*. Berlin: A. Asher. 5 v.
- . 1910. *Destrucción del Templo Mayor de Mexico Antiguo y los Monumentos Encontrados en la Ciudad en las Excavaciones de 1897 y 1902*. Mexico: Oficina Tipográfica de la Secretaria de Fomento.
- Plancarte y Navarrete, F. 1911. *Tamoanchan. El Estado de Morelos y el Principio de la Civilización en Mexico*. Mexico: Editorial el Escritorio.
- Popenoe, Dorothy H. 1934. Some Excavations at Playa de los Muertos, Ulua River, Honduras. *Maya Research* 1:61–85.
- . 1936. The Ruins of Tenampua, Honduras. *Smithsonian Institution, Annual Report for 1935*, pp. 559–72. Washington, DC: Smithsonian Institution.
- Popenoe, Wilson, and Dorothy H. Popenoe. 1931. The Human Background of Lancetilla. *Unifruitco Magazine*, August.
- Remesal, Antonio de. 1932. *Historia General de las Indias Occidentales y Particular de la Gobernación de Chiapa y Guatemala*. Biblioteca Goathemala, 4–5. Guatemala: Tipografía Nacional.
- Richardson, Francis B. 1940. Non-Maya Monumental Sculpture of Central America. In *The Maya and Their Neighbors*, edited by C. Hay, 395–416. New York: Appleton-Century.
- Ricketson, Edith B. 1927. Sixteen Carved Panels from Chichen Itza, Yucatan. *Art and Archaeology* 23:11–15.
- Ricketson, Oliver G. 1936. Ruins of Tzalcum, Guatemala. *Maya Research* 3:18–23.
- Roberts, Henry B. 1935. Ceramics. *Carnegie Institution of Washington, Year Book* 34:126–127.
- Roys, Ralph L. 1933. *The Book of Chilam Balam of Chumayel*. Publication 438. Washington, DC: Carnegie Institution of Washington.
- Sahagun, Bernardino de. 1938. *Historia General de las Cosas de Nueva España*. Mexico: Editorial Pedro Robredo. 5 vols.

- Sapper, Karl. 1897. *Das nördliche Mittel-Amerika Nebst einem Ausflug Nach dem Hochland von Anahuac*. Braunschweig: Friedrich Vieweg und Sohn.
- Saville, Marshall H. 1900. An Onyx Jar from Mexico in Process of Manufacture. *American Museum of Natural History Bulletin* 13:105–107.
- . 1916. The Glazed Ware of Central America with Special Reference to a Whistling Jar from Honduras. In *Holmes Anniversary Volume; Anthropological Essays Presented to William Henry Holmes in Honor of his Seventieth Birthday, December 1, 1916*, edited by F. W. Hodge, 421–426. Washington, DC: J. W. Bryan Press.
- . 1922. *Turquoise Mosaic Art in Ancient Mexico*. Contributions, 6. New York: Museum of the American Indian, Heye Foundation.
- . 1929. Votive Axes from Ancient Mexico. *Museum of the American Indian, Heye Foundation, Indian Notes* 6:266–299, 335–342.
- Schumann, E. A. 1936. A Recent Visit to Southern Mexico. *Maya Research* 3:296–305.
- Seler, Eduard. 1892. Los Relieves de Santa Lucia Cozumalpa. *El Centenario* 3:241–252.
- . 1901. *Die Alten Ansiedelungen von Chacula im Distrikte Nenton des Departements Huehuetenango der Republik Guatemala*. Berlin: D. Reimer Verlag.
- . 1902–1923. *Gesammelte Abhandlungen zur Amerikanischen Sprach- und Alterthumskunde*. Berlin: A. Asher. 5 vols.
- . 1904a. Antiquities of Guatemala. In *Mexican and Central American Antiquities, Calendar Systems, and History*, edited by C. P. Bowditch, 75–121. Bulletin, 28. Washington, DC: United States Bureau of American Ethnology.
- . 1904b. The Wall Paintings of Mitla. In *Mexican and Central American Antiquities, Calendar Systems, and History*, edited by C. P. Bowditch, 243–324. Bulletin, 28. Washington, DC: United States Bureau of American Ethnology.
- . 1917. *Die Ruinen von Uxmal*. Abhandlungen der Königlich Preussischen Akademie der Wissenschaften, Philosophisch-Historische Klasse. Nr. 3. Berlin.
- Seler Sachs, Caecilie. 1900. *Auf Alten Wegen in Mexiko und Guatemala: Reiseerinnerungen und Eindrücke aus den Jahren 1895–1897*. Berlin: D. Reimer.
- . 1922. Altertümer des Kantons Tuxtla im Staate Veracruz. *Festschrift Eduard Seler*, edited by W. Lehmann, 543–556. Stuttgart: Strecker und Schröder.
- Smith, A. Ledyard. 1932. Two Ceramic Finds at Uaxactun. *Carnegie Institution of Washington, Contributions to American Archaeology* 2(5):1–25.
- Smith, Robert E. 1936. Ceramics of Uaxactun: A Preliminary Analysis of Decorative Technics and Design. Manuscript.
- Spinden, Ellen S. 1933. The Place of Tajin in Totonac Archaeology. *American Anthropologist* 35(2):225–270.
- Spinden, Herbert J. 1913. *A Study of Maya Art: Its Subject Matter and Historical Development*. Harvard University, Memoirs, 6. Cambridge, MA: Peabody Museum of American Archaeology and Ethnology.
- . 1915. Notes on the Archaeology of Salvador. *American Anthropologist* 17(3):446–491.
- . 1924. *The Reduction of Maya Dates*. Papers, 6(4). Cambridge, MA: Peabody Museum of American Archaeology and Ethnology, Harvard University.
- . 1927. Study Dead City of “Rubber People.” *New York Times*, May 1. New York.
- . 1931. An Archaeological Junket in Yucatan. *Brooklyn Museum Quarterly* 18:133–138.
- Squier, E. G. 1852. *Nicaragua: Its People, Scenery, Monuments, and the Proposed Inter-oceanic Canal*. New York: D. Appleton.
- . 1855. *Notes on Central America; Particularly the States of Honduras and San Salvador*. New York: Harper Brothers.
- . 1869. Tongues from Tombs; or The Stories That Graves Tell; 5. Central America. *Frank Leslie's Illustrated Newspaper*, June 26. New York.
- Stirling, Matthew W. 1939. Discovering the New World's Oldest Dated Work of Man; A Maya Monument Inscribed 291 BC Unearthed near a Huge Stone Head by a National Geographic-Smithsonian Expedition to Mexico. *National Geographic* 76:183–218.
- . 1940a. Great Stone Faces of the Mexican Jungle: Five Colossal Heads and Numerous Other Monuments of Vanished Americans Are Excavated by the Latest National Geographic-Smithsonian Expedition. *National Geographic* 78:309–334.
- . 1940b. *An Initial Series from Tres Zapotes, Vera Cruz, Mexico*. Mexican Archaeology Series, 1(1). Washington, DC: National Geographic Society.
- . 1943. *Stone Monuments of Southern Mexico*. Bulletin, 138. Washington, DC: United States Bureau of American Ethnology.
- Stoll, Otto. 1884. *Zur Ethnologie der Republik Guatemala*. Zürich: Druck von Orell Füssli.
- . 1886. *Guatemala: Reisen und Schilderungen aus den Jahren 1878–1883*. Leipzig: F. A. Brockhaus Verlag.
- . 1938. *Etnografía de la Republica de Guatemala*. Translated by Antonio Goubaud Carrera. Guatemala: Tipografía Sánchez y de Guise.
- Stone, Doris Z. 1937. *Masters in Marble*. Middle American Research Series, 8(1). New Orleans: Middle American Research Institute, Tulane University.
- . 1941. *Archaeology of the North Coast of Honduras*. Memoirs, 9(1). Cambridge, MA: Peabody Museum of American Anthropology and Ethnology, Harvard University.
- . 1942. A Delimitation of the Area and Some of the Archaeology of the Sula-Jicaque Indians of Honduras. *American Antiquity* 7(4):376–387.
- . 1959. The Eastern Frontier of Mesoamerica. *Mitteilungen der Museum für Völkerkunde und Vorgeschichte* 25:118–121.
- Strebel, Hermann. 1885–1889. *Alt-Mexiko: Archäologische Beiträge zur Kulturgeschichte seiner Bewohner*. Hamburg and Leipzig: L. Voss.
- . 1890. Studien Über Steinjoch aus Mexico and Mittel-Amerika. *Internationales Archiv für Ethnographie* 3:16–28, 49–61.
- . 1901. The Sculptures of Santa Lucia Cozumalpa, Guatemala, in the Hamburg Ethnological

- Museum. *Smithsonian Institution, Annual Report* 1899: 549–561.
- Strömsvik, Gustav, and John M. Longyear. 1946. A Reconnaissance of El Rincon del Jicaque, Honduras. *Carnegie Institution of Washington, Notes on Middle American Archaeology and Ethnology* 3(68):44–53.
- Strong, W. D. 1935. *Archaeological Investigations in the Bay Islands, Spanish Honduras*. Miscellaneous Collections 92(14). Washington, DC: Smithsonian Institution.
- Strong, W. D., A. V. Kidder, and A.J.D. Paul. 1938. *Preliminary Report of the Smithsonian Institution Harvard University Archaeological Expedition to Northwestern Honduras, 1936*. Miscellaneous Collections, 97(1). Washington, DC: Smithsonian Institution.
- Stuart, David. 1990. The Decipherment of “Directional Count Glyphs” in Maya Inscriptions. *Ancient Mesoamerica* 1:213–224.
- Tablada, J. J. 1939. Animal Expressions in Aztec Art. *Mexican Art and Life* 1(6):1–4.
- Tellenbach, Michael. 1978. Algunas Consideraciones Sobre la Estela C y Su Complemento, la Estela Covarrubias, de Tres Zapotes, Veracruz. *Indiana* 4:63–74.
- Termer, Franz. 1931. Zur Archäologie von Guatemala. *Baessler Archiv* 14:167–191.
- . 1936. Die Bedeutung der Pipiles für die Kulturgegestaltung in Guatemala. *Baessler Archiv* 19:108–113.
- Thomas, Cyrus. 1904. Mayan Calendar Systems II. *United States Bureau of American Ethnology, Annual Report for 1900–1901*:197–305.
- Thomas, Cyrus, and John R. Swanton. 1911. *Indian Languages of Mexico and Central America*. Bulletin 44. Washington, DC: United States Bureau of American Ethnology.
- Thompson, Edward H. 1898. Ruins of Xkichmook, Yucatan. *Field Columbian Museum, Anthropological Series* 2:209–229.
- . 1938. *The High Priest's Grave, Chichen Itza, Yucatan, Mexico; A Manuscript . . . Prepared for Publication, with Notes and Introduction by J. Eric S. Thompson*. Anthropological Series, 27(1). Chicago: Field Museum of Natural History.
- Thompson, Edward H. N.d. Antiquities of Yucatan. Manuscript and portfolio of watercolors in Peabody Museum, Harvard University, circa 1910.
- Thompson, J. Eric S. 1927. *Civilization of the Mayas*. Anthropological Leaflet, 25. Chicago: Field Museum of Natural History.
- . 1930. *Ethnology of the Mayas of Southern and Central British Honduras*. Anthropological Series, 17(2). Chicago: Field Museum of Natural History.
- . 1931. *Archaeological Investigations in the Southern Cayo District, British Honduras*. Anthropological Series 17(3). Chicago: Field Museum of Natural History.
- . 1932. *The Solar Year of the Mayas at Quirigua, Guatemala*. Anthropological Series 17(4). Chicago: Field Museum of Natural History.
- . 1934. Sky Bearers, Colors and Directions in Maya and Mexican Religion. *Carnegie Institution of Washington, Contributions to American Archaeology* 2(10): 209–242.
- . 1935. The Dates on Altar U, Copan. *Maya Research* 2:11–13.
- . 1937. A New Method of Deciphering Yucatecan Dates with Special Reference to Chichen Itza. *Carnegie Institution of Washington, Contributions to American Archaeology* 4(22):177–197.
- . 1938. *Excavations at San Jose, British Honduras*. Publication 506. Washington, DC: Carnegie Institution of Washington.
- . 1939. The Moon Goddess in Middle America. *Carnegie Institution of Washington, Publication* 509, *Contributions to American Archaeology and History* 5(29): 121–174.
- . 1940. Archaeological Problems of the Lowland Maya. In *The Maya and Their Neighbors*, edited by C. Hay, 128–138. New York: Appleton-Century.
- . 1941. Yokes or Ball Game Belts? *American Antiquity* 6(4):320–328.
- . 1943. Maya Epigraphy: Directional Glyphs in Counting. *Carnegie Institution of Washington, Notes on Middle American Archaeology and Ethnology* 1(20):122–126.
- . 1970. *Maya History and Religion*. Norman: University of Oklahoma Press.
- Thord-Gray, Ivor. 1923. *Fran Mexicos Forntid: Bland Tempelruiner och Gudabilder*. Stockholm: A. B. Gunnar Tisells Tekniska Förlag.
- Torquemada, J. 1723. *Primera [Segunda, Tercera] Parte de los Veinte i Vn Libros Rituales i Monarchia Indiana, Con el Origen y Guerras, de los Indios Occidentales, de Sus Poblaciones Descubrimiento, Conquista, Conversion, y Otras Cosas Maravillosas de la Mesma Tierra*. Madrid: N. Rodriguez Franco.
- Tozzer, Alfred M. 1921. *A Maya Grammar with Bibliography and Appraisal of the Works Noted*. Papers, 9. Cambridge, MA: Peabody Museum of American Archaeology and Ethnology, Harvard University.
- . 1927. Time and American Archaeology. *Natural History* 27:210–221.
- . 1942. Review: J. Eric S. Thompson, Dating of Certain Inscriptions of Non-Maya Origin. *American Anthropologist* 44(3):490–493.
- Tozzer, Alfred M., and George M. Allen. 1910. *The Animal Figures in the Maya Codices*. Papers, 4(3). Cambridge, MA: Peabody Museum of American Archaeology and Ethnology, Harvard University.
- Vaillant, George C. 1927. The Chronological Significance of Maya Ceramics. Doctoral dissertation, Department of Anthropology, Harvard University, Cambridge, MA.
- . 1932. A Pre-Columbian Jade and Where the Jade Tiger Was Discovered: Artistic Comparisons Which Suggest the Identification of a New Mexican Civilization. *Natural History* 32(6):512–520, 556–558.
- . 1933. Hidden History: How a Little-Known Corner of Chichen Itza Adds a Page to the Story of Pre-Columbian Yucatan. *Natural History* 33(6):618–628.
- . 1935. Chronology and Stratigraphy in the Maya Area. *Maya Research* 2:119–143.
- . 1937. History and Stratigraphy in the Valley of Mexico. *Scientific Monthly* 44:307–324.

- . 1938. A Correlation of Archaeological and Historical Sequences in the Valley of Mexico. *American Anthropologist* 40(4):535–573.
- . 1941a. The Archaeological Matrix of Maya History. In *Los Mayas Antiguo*, edited by C. Lizardi Ramos, 233–242. Mexico: Colegio de Mexico.
- . 1941b. Tiger Masks and Platyrhine and Bearded Figures from Middle America. *Proceedings of the International Congress of Americanists* (27 session, Mexico, 1939). Mexico.
- Valenzuela, Juan. 1938. Informe Preliminar de las Exploraciones Efectuadas en Los Tuxtlas, Estado de Veracruz, por el Departamento de Monumentos de la Secretaría de Educación Pública y por la Institucion Carnegie de Washington. November and December 1937. Manuscript.
- . 1941. Breve Informe de las Exploraciones y Reconido que Practicamos al Sur de Veracruz Comprendiendo al Efecto Varios Lugares de las Cuencas del Rio Tesichuacan y la Piramide del Castillo en Tuxtepec, Oaxaca. Manuscript.
- Villacorta, J. Antonio. 1938. *Prehistoria e Historia Antigua de Guatemala*. Guatemala: Tipografía Nacional.
- Waterman, Thomas T. 1916. The Delineation of Day-Signs in the Aztec Manuscripts. *University of California, Publications in American Archaeology and Ethnology* 11:297–398.
- . 1924. On Certain Antiquities in Western Guatemala. *Bulletin of the Pan-American Union* 58(4):341–361.
- . 1929. Is the Baul Stela an Aztec Imitation? *Art and Archaeology* 28(5):182–187.
- Weber, F. 1922. Zur Archaologie Salvadors. *Festschrift Eduard Seler*, edited by W. Lehmann, 619–644. Stuttgart: Strecker und Schroder.
- Weeks, John M., and Jane Hill. 2006. Introduction. In *The Carnegie Maya: The Carnegie Institution of Washington Maya Research Program, 1913–1957*, 3–26. Boulder: University Press of Colorado.
- Weyerstall, A. 1932. Some Observations on Indian Mounds, Idols and Pottery in the Lower Papaloapan Basin, State of Vera Cruz, Mexico. *Tulane University, Middle American Research Series* 4:23–69.
- Whorf, Benjamin L. 1933. *The Phonetic Value of Certain Characters in Maya Writing*. Papers, 13(2). Cambridge, MA: Peabody Museum of American Archaeology and Ethnology, Harvard University.
- . 1935. Maya Writing and Its Decipherment. *Maya Research* 2:367–382.
- Wisdom, Charles. 1940. *The Chorti Indians of Guatemala*. Chicago: University of Chicago Press.
- Ximenez, Francisco de. 1929–1931. *Historia de la Provincia de San Vicente de Chiapa y Guatemala de la Orden de Predicadores*. Biblioteca Goathemala, 1–3. Guatemala: Tipografía Nacional.
- Yde, Jens. 1938. *An Archaeological Reconnaissance of Northwestern Honduras: A Report of the Work of the Tulane University–Danish National Museum Expedition to Central America, 1935*. Publication, 9. New Orleans: Middle American Research Institute, Tulane University; Copenhagen: Levin and Munkgaard.

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